# United Auburn Indian Community School Project

SCH# 2017102081

## Draft Environmental Impact Report

**Volume II of II**
**Appendices D - N**

Prepared for
Placer County

August 2018

Prepared by

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# APPENDIX D

# CalEEMod Emissions Estimation

# United Auburn Indian Community School Project

**Placer County APCD Air District, Annual**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| Elementary School | 130.00 | Student | 45.00 | 48,650.00 | 0 |
| Parking Lot | 109.00 | Space | 1.45 | 43,600.00 | 0 |
| Other Asphalt Surfaces | 30.13 | 1000sqft | 0.69 | 30,125.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Rural | **Wind Speed (m/s)** | 2.2 | **Precipitation Freq (Days)** | 74 |
| **Climate Zone** | 2 | | | **Operational Year** | 2021 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 394.52 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

United Auburn Indian Community School Project - Placer County APCD Air District, Annual

Project Characteristics - CO2 Intensity adjusted for PG&E progress towards RPS

Land Use - Project Info

Construction Phase - Project Info

Trips and VMT - Per RAW

Demolition -

Grading - Applicant/RAW Information

Vehicle Trips - Based on Traffic Information for project

Area Mitigation -

Energy Mitigation -

Water Mitigation -

Stationary Sources - Emergency Generators and Fire Pumps -

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblConstructionPhase | NumDays | 50.00 | 25.00 |
| tblConstructionPhase | NumDays | 30.00 | 15.00 |
| tblConstructionPhase | NumDays | 75.00 | 66.00 |
| tblConstructionPhase | NumDays | 55.00 | 22.00 |
| tblConstructionPhase | NumDays | 740.00 | 198.00 |
| tblConstructionPhase | NumDays | 55.00 | 198.00 |
| tblConstructionPhase | PhaseEndDate | 8/9/2019 | 7/5/2019 |
| tblConstructionPhase | PhaseEndDate | 9/20/2019 | 7/26/2019 |
| tblConstructionPhase | PhaseEndDate | 1/3/2020 | 10/28/2019 |
| tblConstructionPhase | PhaseEndDate | 1/20/2023 | 11/27/2019 |
| tblConstructionPhase | PhaseEndDate | 11/4/2022 | 8/31/2020 |
| tblConstructionPhase | PhaseEndDate | 4/7/2023 | 9/15/2020 |
| tblConstructionPhase | PhaseStartDate | 8/10/2019 | 7/6/2019 |
| tblConstructionPhase | PhaseStartDate | 9/21/2019 | 7/27/2019 |

| | | | |
|---|---|---|---|
| tblConstructionPhase | PhaseStartDate | 11/5/2022 | 10/29/2019 |
| tblConstructionPhase | PhaseStartDate | 1/4/2020 | 11/28/2019 |
| tblConstructionPhase | PhaseStartDate | 1/21/2023 | 12/13/2019 |
| tblGrading | AcresOfGrading | 165.00 | 17.69 |
| tblGrading | MaterialExported | 0.00 | 1,400.00 |
| tblGrading | MaterialExported | 0.00 | 340.00 |
| tblLandUse | LandUseSquareFeet | 10,868.44 | 48,650.00 |
| tblLandUse | LotAcreage | 0.25 | 45.00 |
| tblLandUse | LotAcreage | 0.98 | 1.45 |
| tblProjectCharacteristics | CO2IntensityFactor | 641.35 | 394.52 |
| tblProjectCharacteristics | UrbanizationLevel | Urban | Rural |
| tblStationaryGeneratorsPumpsUse | HorsePowerValue | 0.00 | 201.00 |
| tblStationaryGeneratorsPumpsUse | HoursPerDay | 0.00 | 0.03 |
| tblStationaryGeneratorsPumpsUse | HoursPerYear | 0.00 | 12.00 |
| tblStationaryGeneratorsPumpsUse | NumberOfEquipment | 0.00 | 2.00 |
| tblTripsAndVMT | HaulingTripLength | 20.00 | 84.00 |
| tblTripsAndVMT | HaulingTripNumber | 43.00 | 42.00 |
| tblTripsAndVMT | HaulingTripNumber | 175.00 | 260.00 |
| tblVehicleTrips | WD_TR | 1.29 | 1.95 |

## 2.0 Emissions Summary

## 2.1 Overall Construction

### Unmitigated Construction

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | tons/yr | | | | | | | | | | MT/yr | | | | | |
| 2019 | 0.3120 | 3.1888 | 2.0269 | 4.1200e-003 | 0.3830 | 0.1454 | 0.5284 | 0.1947 | 0.1344 | 0.3291 | 0.0000 | 371.9938 | 371.9938 | 0.0939 | 0.0000 | 374.3423 |
| 2020 | 0.4592 | 2.0432 | 1.8751 | 3.7000e-003 | 0.0758 | 0.1087 | 0.1844 | 0.0204 | 0.1028 | 0.1232 | 0.0000 | 325.6569 | 325.6569 | 0.0546 | 0.0000 | 327.0230 |
| **Maximum** | **0.4592** | **3.1888** | **2.0269** | **4.1200e-003** | **0.3830** | **0.1454** | **0.5284** | **0.1947** | **0.1344** | **0.3291** | **0.0000** | **371.9938** | **371.9938** | **0.0939** | **0.0000** | **374.3423** |

### Mitigated Construction

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | tons/yr | | | | | | | | | | MT/yr | | | | | |
| 2019 | 0.3120 | 3.1888 | 2.0269 | 4.1200e-003 | 0.3830 | 0.1454 | 0.5284 | 0.1947 | 0.1344 | 0.3291 | 0.0000 | 371.9934 | 371.9934 | 0.0939 | 0.0000 | 374.3419 |
| 2020 | 0.4592 | 2.0432 | 1.8751 | 3.7000e-003 | 0.0758 | 0.1087 | 0.1844 | 0.0204 | 0.1028 | 0.1232 | 0.0000 | 325.6567 | 325.6567 | 0.0546 | 0.0000 | 327.0227 |
| **Maximum** | **0.4592** | **3.1888** | **2.0269** | **4.1200e-003** | **0.3830** | **0.1454** | **0.5284** | **0.1947** | **0.1344** | **0.3291** | **0.0000** | **371.9934** | **371.9934** | **0.0939** | **0.0000** | **374.3419** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

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| Quarter | Start Date | End Date | Maximum Unmitigated ROG + NOX (tons/quarter) | Maximum Mitigated ROG + NOX (tons/quarter) |
|---|---|---|---|---|
| **1** | **6-3-2019** | **9-2-2019** | 1.7083 | 1.7083 |
| **2** | **9-3-2019** | **12-2-2019** | 1.4917 | 1.4917 |
| **3** | **12-3-2019** | **3-2-2020** | 0.9374 | 0.9374 |
| **4** | **3-3-2020** | **6-2-2020** | 0.9356 | 0.9356 |
| **5** | **6-3-2020** | **9-2-2020** | 0.9176 | 0.9176 |
| **6** | **9-3-2020** | **9-30-2020** | 0.0204 | 0.0204 |
| | | **Highest** | 1.7083 | 1.7083 |

## 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 0.2186 | 2.0000e-005 | 2.4800e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | 0.0000 | 4.8100e-003 | 4.8100e-003 | 1.0000e-005 | 0.0000 | 5.1300e-003 |
| Energy | 2.4800e-003 | 0.0226 | 0.0190 | 1.4000e-004 | | 1.7200e-003 | 1.7200e-003 | | 1.7200e-003 | 1.7200e-003 | 0.0000 | 76.4181 | 76.4181 | 4.2800e-003 | 1.2400e-003 | 76.8943 |
| Mobile | 0.0596 | 0.4262 | 0.7115 | 2.7200e-003 | 0.2016 | 2.4100e-003 | 0.2040 | 0.0542 | 2.2700e-003 | 0.0565 | 0.0000 | 249.8272 | 249.8272 | 9.6600e-003 | 0.0000 | 250.0687 |
| Stationary | 3.9600e-003 | 0.0111 | 0.0101 | 2.0000e-005 | | 5.8000e-004 | 5.8000e-004 | | 5.8000e-004 | 5.8000e-004 | 0.0000 | 1.8370 | 1.8370 | 2.6000e-004 | 0.0000 | 1.8434 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 4.8150 | 0.0000 | 4.8150 | 0.2846 | 0.0000 | 11.9288 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.1000 | 0.8127 | 0.9127 | 0.0103 | 2.5000e-004 | 1.2469 |
| **Total** | **0.2846** | **0.4599** | **0.7431** | **2.8800e-003** | **0.2016** | **4.7200e-003** | **0.2063** | **0.0542** | **4.5800e-003** | **0.0588** | **4.9149** | **328.8997** | **333.8147** | **0.3091** | **1.4900e-003** | **341.9873** |

## 2.2 Overall Operational

**Mitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 0.2044 | 2.0000e-005 | 2.4800e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | 0.0000 | 4.8100e-003 | 4.8100e-003 | 1.0000e-005 | 0.0000 | 5.1300e-003 |
| Energy | 2.4800e-003 | 0.0226 | 0.0190 | 1.4000e-004 | | 1.7200e-003 | 1.7200e-003 | | 1.7200e-003 | 1.7200e-003 | 0.0000 | 76.4181 | 76.4181 | 4.2800e-003 | 1.2400e-003 | 76.8943 |
| Mobile | 0.0596 | 0.4262 | 0.7115 | 2.7200e-003 | 0.2016 | 2.4100e-003 | 0.2040 | 0.0542 | 2.2700e-003 | 0.0565 | 0.0000 | 249.8272 | 249.8272 | 9.6600e-003 | 0.0000 | 250.0687 |
| Stationary | 3.9600e-003 | 0.0111 | 0.0101 | 2.0000e-005 | | 5.8000e-004 | 5.8000e-004 | | 5.8000e-004 | 5.8000e-004 | 0.0000 | 1.8370 | 1.8370 | 2.6000e-004 | 0.0000 | 1.8434 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 4.8150 | 0.0000 | 4.8150 | 0.2846 | 0.0000 | 11.9288 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0800 | 0.6248 | 0.7048 | 8.2600e-003 | 2.0000e-004 | 0.9720 |
| **Total** | **0.2704** | **0.4599** | **0.7431** | **2.8800e-003** | **0.2016** | **4.7200e-003** | **0.2063** | **0.0542** | **4.5800e-003** | **0.0588** | **4.8949** | **328.7118** | **333.6067** | **0.3070** | **1.4400e-003** | **341.7123** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **4.99** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.41** | **0.06** | **0.06** | **0.67** | **3.36** | **0.08** |

## 3.0 Construction Detail

**Construction Phase**

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| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Demolition | Demolition | 6/3/2019 | 7/5/2019 | 5 | 25 | |
| 2 | Site Preparation | Site Preparation | 7/6/2019 | 7/26/2019 | 5 | 15 | |
| 3 | Grading | Grading | 7/27/2019 | 10/28/2019 | 5 | 66 | |
| 4 | Building Construction | Building Construction | 11/28/2019 | 8/31/2020 | 5 | 198 | |
| 5 | Paving | Paving | 10/29/2019 | 11/27/2019 | 5 | 22 | |
| 6 | Architectural Coating | Architectural Coating | 12/13/2019 | 9/15/2020 | 5 | 198 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 17.692**

**Acres of Paving: 2.14**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 72,975; Non-Residential Outdoor: 24,325; Striped Parking Area: 4,424 (Architectural Coating – sqft)**

**<u>OffRoad Equipment</u>**

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| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Demolition | Concrete/Industrial Saws | 1 | 8.00 | 81 | 0.73 |
| Demolition | Excavators | 3 | 8.00 | 158 | 0.38 |
| Demolition | Rubber Tired Dozers | 2 | 8.00 | 247 | 0.40 |
| Site Preparation | Rubber Tired Dozers | 3 | 8.00 | 247 | 0.40 |
| Site Preparation | Tractors/Loaders/Backhoes | 4 | 8.00 | 97 | 0.37 |
| Grading | Excavators | 2 | 8.00 | 158 | 0.38 |
| Grading | Graders | 1 | 8.00 | 187 | 0.41 |
| Grading | Rubber Tired Dozers | 1 | 8.00 | 247 | 0.40 |
| Grading | Scrapers | 2 | 8.00 | 367 | 0.48 |
| Grading | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Paving | Pavers | 2 | 8.00 | 130 | 0.42 |
| Paving | Paving Equipment | 2 | 8.00 | 132 | 0.36 |
| Paving | Rollers | 2 | 8.00 | 80 | 0.38 |
| Building Construction | Cranes | 1 | 7.00 | 231 | 0.29 |
| Building Construction | Forklifts | 3 | 8.00 | 89 | 0.20 |
| Building Construction | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Building Construction | Tractors/Loaders/Backhoes | 3 | 7.00 | 97 | 0.37 |
| Building Construction | Welders | 1 | 8.00 | 46 | 0.45 |
| Architectural Coating | Air Compressors | 1 | 6.00 | 78 | 0.48 |

**Trips and VMT**

United Auburn Indian Community School Project - Placer County APCD Air District, Annual

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Demolition | 6 | 15.00 | 0.00 | 52.00 | 16.80 | 6.60 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Site Preparation | 7 | 18.00 | 0.00 | 42.00 | 16.80 | 6.60 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Grading | 8 | 20.00 | 0.00 | 260.00 | 16.80 | 6.60 | 84.00 | LD_Mix | HDT_Mix | HHDT |
| Paving | 6 | 15.00 | 0.00 | 0.00 | 16.80 | 6.60 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Building Construction | 9 | 51.00 | 20.00 | 0.00 | 16.80 | 6.60 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Architectural Coating | 1 | 10.00 | 0.00 | 0.00 | 16.80 | 6.60 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

## 3.2 Demolition - 2019

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 5.6300e-003 | 0.0000 | 5.6300e-003 | 8.5000e-004 | 0.0000 | 8.5000e-004 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0439 | 0.4473 | 0.2758 | 4.9000e-004 | | 0.0224 | 0.0224 | | 0.0209 | 0.0209 | 0.0000 | 43.2829 | 43.2829 | 0.0120 | 0.0000 | 43.5839 |
| **Total** | **0.0439** | **0.4473** | **0.2758** | **4.9000e-004** | **5.6300e-003** | **0.0224** | **0.0281** | **8.5000e-004** | **0.0209** | **0.0217** | **0.0000** | **43.2829** | **43.2829** | **0.0120** | **0.0000** | **43.5839** |

## 3.2 Demolition - 2019

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 2.3000e-004 | 7.8000e-003 | 1.2700e-003 | 2.0000e-005 | 4.4000e-004 | 3.0000e-005 | 4.7000e-004 | 1.2000e-004 | 3.0000e-005 | 1.5000e-004 | 0.0000 | 2.0450 | 2.0450 | 7.0000e-005 | 0.0000 | 2.0468 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 9.9000e-004 | 7.6000e-004 | 7.8300e-003 | 2.0000e-005 | 2.2900e-003 | 1.0000e-005 | 2.3000e-003 | 6.1000e-004 | 1.0000e-005 | 6.2000e-004 | 0.0000 | 2.0205 | 2.0205 | 5.0000e-005 | 0.0000 | 2.0218 |
| **Total** | **1.2200e-003** | **8.5600e-003** | **9.1000e-003** | **4.0000e-005** | **2.7300e-003** | **4.0000e-005** | **2.7700e-003** | **7.3000e-004** | **4.0000e-005** | **7.7000e-004** | **0.0000** | **4.0655** | **4.0655** | **1.2000e-004** | **0.0000** | **4.0686** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 5.6300e-003 | 0.0000 | 5.6300e-003 | 8.5000e-004 | 0.0000 | 8.5000e-004 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0439 | 0.4473 | 0.2758 | 4.9000e-004 | | 0.0224 | 0.0224 | | 0.0209 | 0.0209 | 0.0000 | 43.2829 | 43.2829 | 0.0120 | 0.0000 | 43.5839 |
| **Total** | **0.0439** | **0.4473** | **0.2758** | **4.9000e-004** | **5.6300e-003** | **0.0224** | **0.0281** | **8.5000e-004** | **0.0209** | **0.0217** | **0.0000** | **43.2829** | **43.2829** | **0.0120** | **0.0000** | **43.5839** |

## 3.2 Demolition - 2019

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 2.3000e-004 | 7.8000e-003 | 1.2700e-003 | 2.0000e-005 | 4.4000e-004 | 3.0000e-005 | 4.7000e-004 | 1.2000e-004 | 3.0000e-005 | 1.5000e-004 | 0.0000 | 2.0450 | 2.0450 | 7.0000e-005 | 0.0000 | 2.0468 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 9.9000e-004 | 7.6000e-004 | 7.8300e-003 | 2.0000e-005 | 2.2900e-003 | 1.0000e-005 | 2.3000e-003 | 6.1000e-004 | 1.0000e-005 | 6.2000e-004 | 0.0000 | 2.0205 | 2.0205 | 5.0000e-005 | 0.0000 | 2.0218 |
| **Total** | **1.2200e-003** | **8.5600e-003** | **9.1000e-003** | **4.0000e-005** | **2.7300e-003** | **4.0000e-005** | **2.7700e-003** | **7.3000e-004** | **4.0000e-005** | **7.7000e-004** | **0.0000** | **4.0655** | **4.0655** | **1.2000e-004** | **0.0000** | **4.0686** |

## 3.3 Site Preparation - 2019

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 0.1355 | 0.0000 | 0.1355 | 0.0745 | 0.0000 | 0.0745 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0325 | 0.3418 | 0.1655 | 2.8000e-004 | | 0.0179 | 0.0179 | | 0.0165 | 0.0165 | 0.0000 | 25.6265 | 25.6265 | 8.1100e-003 | 0.0000 | 25.8292 |
| **Total** | **0.0325** | **0.3418** | **0.1655** | **2.8000e-004** | **0.1355** | **0.0179** | **0.1535** | **0.0745** | **0.0165** | **0.0910** | **0.0000** | **25.6265** | **25.6265** | **8.1100e-003** | **0.0000** | **25.8292** |

## 3.3 Site Preparation - 2019

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 1.9000e-004 | 6.3000e-003 | 1.0200e-003 | 2.0000e-005 | 3.5000e-004 | 3.0000e-005 | 3.8000e-004 | 1.0000e-004 | 3.0000e-005 | 1.2000e-004 | 0.0000 | 1.6517 | 1.6517 | 6.0000e-005 | 0.0000 | 1.6532 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 7.1000e-004 | 5.5000e-004 | 5.6300e-003 | 2.0000e-005 | 1.6500e-003 | 1.0000e-005 | 1.6600e-003 | 4.4000e-004 | 1.0000e-005 | 4.5000e-004 | 0.0000 | 1.4548 | 1.4548 | 4.0000e-005 | 0.0000 | 1.4557 |
| **Total** | **9.0000e-004** | **6.8500e-003** | **6.6500e-003** | **4.0000e-005** | **2.0000e-003** | **4.0000e-005** | **2.0400e-003** | **5.4000e-004** | **4.0000e-005** | **5.7000e-004** | **0.0000** | **3.1065** | **3.1065** | **1.0000e-004** | **0.0000** | **3.1089** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 0.1355 | 0.0000 | 0.1355 | 0.0745 | 0.0000 | 0.0745 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0325 | 0.3418 | 0.1655 | 2.8000e-004 | | 0.0179 | 0.0179 | | 0.0165 | 0.0165 | 0.0000 | 25.6265 | 25.6265 | 8.1100e-003 | 0.0000 | 25.8292 |
| **Total** | **0.0325** | **0.3418** | **0.1655** | **2.8000e-004** | **0.1355** | **0.0179** | **0.1535** | **0.0745** | **0.0165** | **0.0910** | **0.0000** | **25.6265** | **25.6265** | **8.1100e-003** | **0.0000** | **25.8292** |

## 3.3 Site Preparation - 2019

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 1.9000e-004 | 6.3000e-003 | 1.0200e-003 | 2.0000e-005 | 3.5000e-004 | 3.0000e-005 | 3.8000e-004 | 1.0000e-004 | 3.0000e-005 | 1.2000e-004 | 0.0000 | 1.6517 | 1.6517 | 6.0000e-005 | 0.0000 | 1.6532 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 7.1000e-004 | 5.5000e-004 | 5.6300e-003 | 2.0000e-005 | 1.6500e-003 | 1.0000e-005 | 1.6600e-003 | 4.4000e-004 | 1.0000e-005 | 4.5000e-004 | 0.0000 | 1.4548 | 1.4548 | 4.0000e-005 | 0.0000 | 1.4557 |
| **Total** | **9.0000e-004** | **6.8500e-003** | **6.6500e-003** | **4.0000e-005** | **2.0000e-003** | **4.0000e-005** | **2.0400e-003** | **5.4000e-004** | **4.0000e-005** | **5.7000e-004** | **0.0000** | **3.1065** | **3.1065** | **1.0000e-004** | **0.0000** | **3.1089** |

## 3.4 Grading - 2019

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 0.2082 | 0.0000 | 0.2082 | 0.1103 | 0.0000 | 0.1103 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.1564 | 1.7992 | 1.1014 | 2.0500e-003 | | 0.0786 | 0.0786 | | 0.0723 | 0.0723 | 0.0000 | 183.8144 | 183.8144 | 0.0582 | 0.0000 | 185.2683 |
| **Total** | **0.1564** | **1.7992** | **1.1014** | **2.0500e-003** | **0.2082** | **0.0786** | **0.2868** | **0.1103** | **0.0723** | **0.1826** | **0.0000** | **183.8144** | **183.8144** | **0.0582** | **0.0000** | **185.2683** |

## 3.4 Grading - 2019

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 3.7900e-003 | 0.1169 | 0.0204 | 3.9000e-004 | 9.1800e-003 | 6.4000e-004 | 9.8200e-003 | 2.5300e-003 | 6.1000e-004 | 3.1400e-003 | 0.0000 | 37.3169 | 37.3169 | 5.0000e-004 | 0.0000 | 37.3294 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 3.4900e-003 | 2.6700e-003 | 0.0275 | 8.0000e-005 | 8.0600e-003 | 5.0000e-005 | 8.1100e-003 | 2.1400e-003 | 5.0000e-005 | 2.1900e-003 | 0.0000 | 7.1122 | 7.1122 | 1.9000e-004 | 0.0000 | 7.1169 |
| **Total** | **7.2800e-003** | **0.1196** | **0.0479** | **4.7000e-004** | **0.0172** | **6.9000e-004** | **0.0179** | **4.6700e-003** | **6.6000e-004** | **5.3300e-003** | **0.0000** | **44.4291** | **44.4291** | **6.9000e-004** | **0.0000** | **44.4463** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 0.2082 | 0.0000 | 0.2082 | 0.1103 | 0.0000 | 0.1103 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.1564 | 1.7992 | 1.1014 | 2.0500e-003 | | 0.0786 | 0.0786 | | 0.0723 | 0.0723 | 0.0000 | 183.8141 | 183.8141 | 0.0582 | 0.0000 | 185.2681 |
| **Total** | **0.1564** | **1.7992** | **1.1014** | **2.0500e-003** | **0.2082** | **0.0786** | **0.2868** | **0.1103** | **0.0723** | **0.1826** | **0.0000** | **183.8141** | **183.8141** | **0.0582** | **0.0000** | **185.2681** |

## 3.4 Grading - 2019

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 3.7900e-003 | 0.1169 | 0.0204 | 3.9000e-004 | 9.1800e-003 | 6.4000e-004 | 9.8200e-003 | 2.5300e-003 | 6.1000e-004 | 3.1400e-003 | 0.0000 | 37.3169 | 37.3169 | 5.0000e-004 | 0.0000 | 37.3294 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 3.4900e-003 | 2.6700e-003 | 0.0275 | 8.0000e-005 | 8.0600e-003 | 5.0000e-005 | 8.1100e-003 | 2.1400e-003 | 5.0000e-005 | 2.1900e-003 | 0.0000 | 7.1122 | 7.1122 | 1.9000e-004 | 0.0000 | 7.1169 |
| **Total** | **7.2800e-003** | **0.1196** | **0.0479** | **4.7000e-004** | **0.0172** | **6.9000e-004** | **0.0179** | **4.6700e-003** | **6.6000e-004** | **5.3300e-003** | **0.0000** | **44.4291** | **44.4291** | **6.9000e-004** | **0.0000** | **44.4463** |

## 3.5 Building Construction - 2019

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.0283 | 0.2530 | 0.2060 | 3.2000e-004 | | 0.0155 | 0.0155 | | 0.0146 | 0.0146 | 0.0000 | 28.2125 | 28.2125 | 6.8700e-003 | 0.0000 | 28.3843 |
| **Total** | **0.0283** | **0.2530** | **0.2060** | **3.2000e-004** | | **0.0155** | **0.0155** | | **0.0146** | **0.0146** | **0.0000** | **28.2125** | **28.2125** | **6.8700e-003** | **0.0000** | **28.3843** |

## 3.5 Building Construction - 2019

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.0000e-003 | 0.0297 | 6.1400e-003 | 7.0000e-005 | 1.4200e-003 | 1.7000e-004 | 1.5900e-003 | 4.1000e-004 | 1.6000e-004 | 5.7000e-004 | 0.0000 | 6.2006 | 6.2006 | 3.5000e-004 | 0.0000 | 6.2093 |
| Worker | 3.2300e-003 | 2.4800e-003 | 0.0255 | 7.0000e-005 | 7.4700e-003 | 5.0000e-005 | 7.5200e-003 | 1.9900e-003 | 4.0000e-005 | 2.0300e-003 | 0.0000 | 6.5950 | 6.5950 | 1.7000e-004 | 0.0000 | 6.5993 |
| **Total** | **4.2300e-003** | **0.0321** | **0.0317** | **1.4000e-004** | **8.8900e-003** | **2.2000e-004** | **9.1100e-003** | **2.4000e-003** | **2.0000e-004** | **2.6000e-003** | **0.0000** | **12.7955** | **12.7955** | **5.2000e-004** | **0.0000** | **12.8086** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.0283 | 0.2530 | 0.2060 | 3.2000e-004 | | 0.0155 | 0.0155 | | 0.0146 | 0.0146 | 0.0000 | 28.2125 | 28.2125 | 6.8700e-003 | 0.0000 | 28.3843 |
| **Total** | **0.0283** | **0.2530** | **0.2060** | **3.2000e-004** | | **0.0155** | **0.0155** | | **0.0146** | **0.0146** | **0.0000** | **28.2125** | **28.2125** | **6.8700e-003** | **0.0000** | **28.3843** |

## 3.5 Building Construction - 2019

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.0000e-003 | 0.0297 | 6.1400e-003 | 7.0000e-005 | 1.4200e-003 | 1.7000e-004 | 1.5900e-003 | 4.1000e-004 | 1.6000e-004 | 5.7000e-004 | 0.0000 | 6.2006 | 6.2006 | 3.5000e-004 | 0.0000 | 6.2093 |
| Worker | 3.2300e-003 | 2.4800e-003 | 0.0255 | 7.0000e-005 | 7.4700e-003 | 5.0000e-005 | 7.5200e-003 | 1.9900e-003 | 4.0000e-005 | 2.0300e-003 | 0.0000 | 6.5950 | 6.5950 | 1.7000e-004 | 0.0000 | 6.5993 |
| **Total** | **4.2300e-003** | **0.0321** | **0.0317** | **1.4000e-004** | **8.8900e-003** | **2.2000e-004** | **9.1100e-003** | **2.4000e-003** | **2.0000e-004** | **2.6000e-003** | **0.0000** | **12.7955** | **12.7955** | **5.2000e-004** | **0.0000** | **12.8086** |

## 3.5 Building Construction - 2020

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.1844 | 1.6692 | 1.4658 | 2.3400e-003 | | 0.0972 | 0.0972 | | 0.0914 | 0.0914 | 0.0000 | 201.5007 | 201.5007 | 0.0492 | 0.0000 | 202.7297 |
| **Total** | **0.1844** | **1.6692** | **1.4658** | **2.3400e-003** | | **0.0972** | **0.0972** | | **0.0914** | **0.0914** | **0.0000** | **201.5007** | **201.5007** | **0.0492** | **0.0000** | **202.7297** |

## 3.5 Building Construction - 2020

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 6.0700e-003 | 0.1991 | 0.0392 | 4.7000e-004 | 0.0103 | 8.3000e-004 | 0.0111 | 2.9700e-003 | 7.9000e-004 | 3.7700e-003 | 0.0000 | 44.6065 | 44.6065 | 2.3300e-003 | 0.0000 | 44.6649 |
| Worker | 0.0215 | 0.0159 | 0.1661 | 5.1000e-004 | 0.0542 | 3.4000e-004 | 0.0545 | 0.0144 | 3.2000e-004 | 0.0147 | 0.0000 | 46.2833 | 46.2833 | 1.0900e-003 | 0.0000 | 46.3106 |
| **Total** | **0.0276** | **0.2149** | **0.2052** | **9.8000e-004** | **0.0645** | **1.1700e-003** | **0.0656** | **0.0174** | **1.1100e-003** | **0.0185** | **0.0000** | **90.8898** | **90.8898** | **3.4200e-003** | **0.0000** | **90.9755** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.1844 | 1.6692 | 1.4658 | 2.3400e-003 | | 0.0972 | 0.0972 | | 0.0914 | 0.0914 | 0.0000 | 201.5005 | 201.5005 | 0.0492 | 0.0000 | 202.7294 |
| **Total** | **0.1844** | **1.6692** | **1.4658** | **2.3400e-003** | | **0.0972** | **0.0972** | | **0.0914** | **0.0914** | **0.0000** | **201.5005** | **201.5005** | **0.0492** | **0.0000** | **202.7294** |

## 3.5 Building Construction - 2020

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 6.0700e-003 | 0.1991 | 0.0392 | 4.7000e-004 | 0.0103 | 8.3000e-004 | 0.0111 | 2.9700e-003 | 7.9000e-004 | 3.7700e-003 | 0.0000 | 44.6065 | 44.6065 | 2.3300e-003 | 0.0000 | 44.6649 |
| Worker | 0.0215 | 0.0159 | 0.1661 | 5.1000e-004 | 0.0542 | 3.4000e-004 | 0.0545 | 0.0144 | 3.2000e-004 | 0.0147 | 0.0000 | 46.2833 | 46.2833 | 1.0900e-003 | 0.0000 | 46.3106 |
| **Total** | **0.0276** | **0.2149** | **0.2052** | **9.8000e-004** | **0.0645** | **1.1700e-003** | **0.0656** | **0.0174** | **1.1100e-003** | **0.0185** | **0.0000** | **90.8898** | **90.8898** | **3.4200e-003** | **0.0000** | **90.9755** |

## 3.6 Paving - 2019

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.0160 | 0.1677 | 0.1613 | 2.5000e-004 | | 9.0700e-003 | 9.0700e-003 | | 8.3400e-003 | 8.3400e-003 | 0.0000 | 22.5227 | 22.5227 | 7.1300e-003 | 0.0000 | 22.7009 |
| Paving | 2.8000e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **0.0188** | **0.1677** | **0.1613** | **2.5000e-004** | | **9.0700e-003** | **9.0700e-003** | | **8.3400e-003** | **8.3400e-003** | **0.0000** | **22.5227** | **22.5227** | **7.1300e-003** | **0.0000** | **22.7009** |

## 3.6 Paving - 2019

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 8.7000e-004 | 6.7000e-004 | 6.8900e-003 | 2.0000e-005 | 2.0100e-003 | 1.0000e-005 | 2.0300e-003 | 5.4000e-004 | 1.0000e-005 | 5.5000e-004 | 0.0000 | 1.7781 | 1.7781 | 5.0000e-005 | 0.0000 | 1.7792 |
| **Total** | **8.7000e-004** | **6.7000e-004** | **6.8900e-003** | **2.0000e-005** | **2.0100e-003** | **1.0000e-005** | **2.0300e-003** | **5.4000e-004** | **1.0000e-005** | **5.5000e-004** | **0.0000** | **1.7781** | **1.7781** | **5.0000e-005** | **0.0000** | **1.7792** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.0160 | 0.1677 | 0.1613 | 2.5000e-004 | | 9.0700e-003 | 9.0700e-003 | | 8.3400e-003 | 8.3400e-003 | 0.0000 | 22.5227 | 22.5227 | 7.1300e-003 | 0.0000 | 22.7008 |
| Paving | 2.8000e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **0.0188** | **0.1677** | **0.1613** | **2.5000e-004** | | **9.0700e-003** | **9.0700e-003** | | **8.3400e-003** | **8.3400e-003** | **0.0000** | **22.5227** | **22.5227** | **7.1300e-003** | **0.0000** | **22.7008** |

## 3.6 Paving - 2019

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 8.7000e-004 | 6.7000e-004 | 6.8900e-003 | 2.0000e-005 | 2.0100e-003 | 1.0000e-005 | 2.0300e-003 | 5.4000e-004 | 1.0000e-005 | 5.5000e-004 | 0.0000 | 1.7781 | 1.7781 | 5.0000e-005 | 0.0000 | 1.7792 |
| **Total** | **8.7000e-004** | **6.7000e-004** | **6.8900e-003** | **2.0000e-005** | **2.0100e-003** | **1.0000e-005** | **2.0300e-003** | **5.4000e-004** | **1.0000e-005** | **5.5000e-004** | **0.0000** | **1.7781** | **1.7781** | **5.0000e-005** | **0.0000** | **1.7792** |

## 3.7 Architectural Coating - 2019

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Archit. Coating | 0.0155 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 1.7300e-003 | 0.0119 | 0.0120 | 2.0000e-005 | | 8.4000e-004 | 8.4000e-004 | | 8.4000e-004 | 8.4000e-004 | 0.0000 | 1.6596 | 1.6596 | 1.4000e-004 | 0.0000 | 1.6631 |
| **Total** | **0.0172** | **0.0119** | **0.0120** | **2.0000e-005** | | **8.4000e-004** | **8.4000e-004** | | **8.4000e-004** | **8.4000e-004** | **0.0000** | **1.6596** | **1.6596** | **1.4000e-004** | **0.0000** | **1.6631** |

## 3.7 Architectural Coating - 2019

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 3.4000e-004 | 2.6000e-004 | 2.7100e-003 | 1.0000e-005 | 7.9000e-004 | 1.0000e-005 | 8.0000e-004 | 2.1000e-004 | 0.0000 | 2.2000e-004 | 0.0000 | 0.7005 | 0.7005 | 2.0000e-005 | 0.0000 | 0.7009 |
| **Total** | **3.4000e-004** | **2.6000e-004** | **2.7100e-003** | **1.0000e-005** | **7.9000e-004** | **1.0000e-005** | **8.0000e-004** | **2.1000e-004** | **0.0000** | **2.2000e-004** | **0.0000** | **0.7005** | **0.7005** | **2.0000e-005** | **0.0000** | **0.7009** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Archit. Coating | 0.0155 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 1.7300e-003 | 0.0119 | 0.0120 | 2.0000e-005 | | 8.4000e-004 | 8.4000e-004 | | 8.4000e-004 | 8.4000e-004 | 0.0000 | 1.6596 | 1.6596 | 1.4000e-004 | 0.0000 | 1.6631 |
| **Total** | **0.0172** | **0.0119** | **0.0120** | **2.0000e-005** | | **8.4000e-004** | **8.4000e-004** | | **8.4000e-004** | **8.4000e-004** | **0.0000** | **1.6596** | **1.6596** | **1.4000e-004** | **0.0000** | **1.6631** |

## 3.7 Architectural Coating - 2019

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 3.4000e-004 | 2.6000e-004 | 2.7100e-003 | 1.0000e-005 | 7.9000e-004 | 1.0000e-005 | 8.0000e-004 | 2.1000e-004 | 0.0000 | 2.2000e-004 | 0.0000 | 0.7005 | 0.7005 | 2.0000e-005 | 0.0000 | 0.7009 |
| **Total** | **3.4000e-004** | **2.6000e-004** | **2.7100e-003** | **1.0000e-005** | **7.9000e-004** | **1.0000e-005** | **8.0000e-004** | **2.1000e-004** | **0.0000** | **2.2000e-004** | **0.0000** | **0.7005** | **0.7005** | **2.0000e-005** | **0.0000** | **0.7009** |

## 3.7 Architectural Coating - 2020

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Archit. Coating | 0.2203 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0224 | 0.1558 | 0.1694 | 2.7000e-004 | | 0.0103 | 0.0103 | | 0.0103 | 0.0103 | 0.0000 | 23.6176 | 23.6176 | 1.8300e-003 | 0.0000 | 23.6633 |
| **Total** | **0.2427** | **0.1558** | **0.1694** | **2.7000e-004** | | **0.0103** | **0.0103** | | **0.0103** | **0.0103** | **0.0000** | **23.6176** | **23.6176** | **1.8300e-003** | **0.0000** | **23.6633** |

## 3.7 Architectural Coating - 2020

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 4.4900e-003 | 3.3100e-003 | 0.0346 | 1.1000e-004 | 0.0113 | 7.0000e-005 | 0.0114 | 3.0100e-003 | 7.0000e-005 | 3.0700e-003 | 0.0000 | 9.6489 | 9.6489 | 2.3000e-004 | 0.0000 | 9.6546 |
| **Total** | **4.4900e-003** | **3.3100e-003** | **0.0346** | **1.1000e-004** | **0.0113** | **7.0000e-005** | **0.0114** | **3.0100e-003** | **7.0000e-005** | **3.0700e-003** | **0.0000** | **9.6489** | **9.6489** | **2.3000e-004** | **0.0000** | **9.6546** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Archit. Coating | 0.2203 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0224 | 0.1558 | 0.1694 | 2.7000e-004 | | 0.0103 | 0.0103 | | 0.0103 | 0.0103 | 0.0000 | 23.6176 | 23.6176 | 1.8300e-003 | 0.0000 | 23.6633 |
| **Total** | **0.2427** | **0.1558** | **0.1694** | **2.7000e-004** | | **0.0103** | **0.0103** | | **0.0103** | **0.0103** | **0.0000** | **23.6176** | **23.6176** | **1.8300e-003** | **0.0000** | **23.6633** |

## 3.7 Architectural Coating - 2020

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 4.4900e-003 | 3.3100e-003 | 0.0346 | 1.1000e-004 | 0.0113 | 7.0000e-005 | 0.0114 | 3.0100e-003 | 7.0000e-005 | 3.0700e-003 | 0.0000 | 9.6489 | 9.6489 | 2.3000e-004 | 0.0000 | 9.6546 |
| **Total** | **4.4900e-003** | **3.3100e-003** | **0.0346** | **1.1000e-004** | **0.0113** | **7.0000e-005** | **0.0114** | **3.0100e-003** | **7.0000e-005** | **3.0700e-003** | **0.0000** | **9.6489** | **9.6489** | **2.3000e-004** | **0.0000** | **9.6546** |

# 4.0 Operational Detail - Mobile

## 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 0.0596 | 0.4262 | 0.7115 | 2.7200e-003 | 0.2016 | 2.4100e-003 | 0.2040 | 0.0542 | 2.2700e-003 | 0.0565 | 0.0000 | 249.8272 | 249.8272 | 9.6600e-003 | 0.0000 | 250.0687 |
| Unmitigated | 0.0596 | 0.4262 | 0.7115 | 2.7200e-003 | 0.2016 | 2.4100e-003 | 0.2040 | 0.0542 | 2.2700e-003 | 0.0565 | 0.0000 | 249.8272 | 249.8272 | 9.6600e-003 | 0.0000 | 250.0687 |

## 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| Elementary School | 253.50 | 0.00 | 0.00 | 542,341 | 542,341 |
| Parking Lot | 0.00 | 0.00 | 0.00 | | |
| Other Asphalt Surfaces | 0.00 | 0.00 | 0.00 | | |
| Total | 253.50 | 0.00 | 0.00 | 542,341 | 542,341 |

## 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C-W | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| Elementary School | 14.70 | 6.60 | 6.60 | 65.00 | 30.00 | 5.00 | 63 | 25 | 12 |
| Parking Lot | 14.70 | 6.60 | 6.60 | 0.00 | 0.00 | 0.00 | 0 | 0 | 0 |
| Other Asphalt Surfaces | 14.70 | 6.60 | 6.60 | 0.00 | 0.00 | 0.00 | 0 | 0 | 0 |

## 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Elementary School | 0.494811 | 0.040252 | 0.220236 | 0.128508 | 0.023782 | 0.006284 | 0.029295 | 0.046215 | 0.001446 | 0.001205 | 0.005961 | 0.000773 | 0.001232 |
| Parking Lot | 0.494811 | 0.040252 | 0.220236 | 0.128508 | 0.023782 | 0.006284 | 0.029295 | 0.046215 | 0.001446 | 0.001205 | 0.005961 | 0.000773 | 0.001232 |
| Other Asphalt Surfaces | 0.494811 | 0.040252 | 0.220236 | 0.128508 | 0.023782 | 0.006284 | 0.029295 | 0.046215 | 0.001446 | 0.001205 | 0.005961 | 0.000773 | 0.001232 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Electricity Mitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 51.8325 | 51.8325 | 3.8100e-003 | 7.9000e-004 | 52.1627 |
| Electricity Unmitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 51.8325 | 51.8325 | 3.8100e-003 | 7.9000e-004 | 52.1627 |
| NaturalGas Mitigated | 2.4800e-003 | 0.0226 | 0.0190 | 1.4000e-004 | | 1.7200e-003 | 1.7200e-003 | | 1.7200e-003 | 1.7200e-003 | 0.0000 | 24.5855 | 24.5855 | 4.7000e-004 | 4.5000e-004 | 24.7316 |
| NaturalGas Unmitigated | 2.4800e-003 | 0.0226 | 0.0190 | 1.4000e-004 | | 1.7200e-003 | 1.7200e-003 | | 1.7200e-003 | 1.7200e-003 | 0.0000 | 24.5855 | 24.5855 | 4.7000e-004 | 4.5000e-004 | 24.7316 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Elementary School | 460716 | 2.4800e-003 | 0.0226 | 0.0190 | 1.4000e-004 | | 1.7200e-003 | 1.7200e-003 | | 1.7200e-003 | 1.7200e-003 | 0.0000 | 24.5855 | 24.5855 | 4.7000e-004 | 4.5000e-004 | 24.7316 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Parking Lot | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **2.4800e-003** | **0.0226** | **0.0190** | **1.4000e-004** | | **1.7200e-003** | **1.7200e-003** | | **1.7200e-003** | **1.7200e-003** | **0.0000** | **24.5855** | **24.5855** | **4.7000e-004** | **4.5000e-004** | **24.7316** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Elementary School | 460716 | 2.4800e-003 | 0.0226 | 0.0190 | 1.4000e-004 | | 1.7200e-003 | 1.7200e-003 | | 1.7200e-003 | 1.7200e-003 | 0.0000 | 24.5855 | 24.5855 | 4.7000e-004 | 4.5000e-004 | 24.7316 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Parking Lot | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **2.4800e-003** | **0.0226** | **0.0190** | **1.4000e-004** | | **1.7200e-003** | **1.7200e-003** | | **1.7200e-003** | **1.7200e-003** | **0.0000** | **24.5855** | **24.5855** | **4.7000e-004** | **4.5000e-004** | **24.7316** |

## 5.3 Energy by Land Use - Electricity

**Unmitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| Elementary School | 274386 | 49.1017 | 3.6100e-003 | 7.5000e-004 | 49.4145 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Parking Lot | 15260 | 2.7308 | 2.0000e-004 | 4.0000e-005 | 2.7482 |
| **Total** | | **51.8325** | **3.8100e-003** | **7.9000e-004** | **52.1627** |

**Mitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| Elementary School | 274386 | 49.1017 | 3.6100e-003 | 7.5000e-004 | 49.4145 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Parking Lot | 15260 | 2.7308 | 2.0000e-004 | 4.0000e-005 | 2.7482 |
| **Total** | | **51.8325** | **3.8100e-003** | **7.9000e-004** | **52.1627** |

## 6.0 Area Detail

## 6.1 Mitigation Measures Area

Use Low VOC Cleaning Supplies

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 0.2044 | 2.0000e-005 | 2.4800e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | 0.0000 | 4.8100e-003 | 4.8100e-003 | 1.0000e-005 | 0.0000 | 5.1300e-003 |
| Unmitigated | 0.2186 | 2.0000e-005 | 2.4800e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | 0.0000 | 4.8100e-003 | 4.8100e-003 | 1.0000e-005 | 0.0000 | 5.1300e-003 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 0.0236 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 0.1948 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 2.3000e-004 | 2.0000e-005 | 2.4800e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | 0.0000 | 4.8100e-003 | 4.8100e-003 | 1.0000e-005 | 0.0000 | 5.1300e-003 |
| **Total** | **0.2186** | **2.0000e-005** | **2.4800e-003** | **0.0000** | | **1.0000e-005** | **1.0000e-005** | | **1.0000e-005** | **1.0000e-005** | **0.0000** | **4.8100e-003** | **4.8100e-003** | **1.0000e-005** | **0.0000** | **5.1300e-003** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 0.0236 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 0.1806 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 2.3000e-004 | 2.0000e-005 | 2.4800e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | 0.0000 | 4.8100e-003 | 4.8100e-003 | 1.0000e-005 | 0.0000 | 5.1300e-003 |
| **Total** | **0.2044** | **2.0000e-005** | **2.4800e-003** | **0.0000** | | **1.0000e-005** | **1.0000e-005** | | **1.0000e-005** | **1.0000e-005** | **0.0000** | **4.8100e-003** | **4.8100e-003** | **1.0000e-005** | **0.0000** | **5.1300e-003** |

## 7.0 Water Detail

## 7.1 Mitigation Measures Water

Apply Water Conservation Strategy

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| Category | MT/yr | | | |
| Mitigated | 0.7048 | 8.2600e-003 | 2.0000e-004 | 0.9720 |
| Unmitigated | 0.9127 | 0.0103 | 2.5000e-004 | 1.2469 |

## 7.2 Water by Land Use

**Unmitigated**

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| Elementary School | 0.315151 / 0.810389 | 0.9127 | 0.0103 | 2.5000e-004 | 1.2469 |
| Other Asphalt Surfaces | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Parking Lot | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.9127** | **0.0103** | **2.5000e-004** | **1.2469** |

**Mitigated**

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| Elementary School | 0.252121 / 0.607792 | 0.7048 | 8.2600e-003 | 2.0000e-004 | 0.9720 |
| Other Asphalt Surfaces | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Parking Lot | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.7048** | **8.2600e-003** | **2.0000e-004** | **0.9720** |

# 8.0 Waste Detail

## 8.1 Mitigation Measures Waste

**Category/Year**

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| | MT/yr | | | |
| Mitigated | 4.8150 | 0.2846 | 0.0000 | 11.9288 |
| Unmitigated | 4.8150 | 0.2846 | 0.0000 | 11.9288 |

## 8.2 Waste by Land Use

**Unmitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| Elementary School | 23.72 | 4.8150 | 0.2846 | 0.0000 | 11.9288 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Parking Lot | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **4.8150** | **0.2846** | **0.0000** | **11.9288** |

## 8.2 Waste by Land Use

**Mitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| Elementary School | 23.72 | 4.8150 | 0.2846 | 0.0000 | 11.9288 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Parking Lot | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **4.8150** | **0.2846** | **0.0000** | **11.9288** |

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|
| Emergency Generator | 2 | 0.03 | 12 | 201 | 0.73 | Diesel |

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 10.1 Stationary Sources

**Unmitigated/Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Equipment Type | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Emergency Generator - Diesel (175 - 300 HP) | 3.9600e-003 | 0.0111 | 0.0101 | 2.0000e-005 | | 5.8000e-004 | 5.8000e-004 | | 5.8000e-004 | 5.8000e-004 | 0.0000 | 1.8370 | 1.8370 | 2.6000e-004 | 0.0000 | 1.8434 |
| **Total** | **3.9600e-003** | **0.0111** | **0.0101** | **2.0000e-005** | | **5.8000e-004** | **5.8000e-004** | | **5.8000e-004** | **5.8000e-004** | **0.0000** | **1.8370** | **1.8370** | **2.6000e-004** | **0.0000** | **1.8434** |

## 11.0 Vegetation

# United Auburn Indian Community School Project

**Placer County APCD Air District, Summer**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| Elementary School | 130.00 | Student | 45.00 | 48,650.00 | 0 |
| Parking Lot | 109.00 | Space | 1.45 | 43,600.00 | 0 |
| Other Asphalt Surfaces | 30.13 | 1000sqft | 0.69 | 30,125.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Rural | **Wind Speed (m/s)** | 2.2 | **Precipitation Freq (Days)** | 74 |
| **Climate Zone** | 2 | | | **Operational Year** | 2021 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 394.52 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

United Auburn Indian Community School Project - Placer County APCD Air District, Summer

Project Characteristics - CO2 Intensity adjusted for PG&E progress towards RPS

Land Use - Project Info

Construction Phase - Project Info

Trips and VMT - Per RAW

Demolition -

Grading - Applicant/RAW Information

Vehicle Trips - Based on Traffic Information for project

Area Mitigation -

Energy Mitigation -

Water Mitigation -

Stationary Sources - Emergency Generators and Fire Pumps -

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblConstructionPhase | NumDays | 50.00 | 25.00 |
| tblConstructionPhase | NumDays | 30.00 | 15.00 |
| tblConstructionPhase | NumDays | 75.00 | 66.00 |
| tblConstructionPhase | NumDays | 55.00 | 22.00 |
| tblConstructionPhase | NumDays | 740.00 | 198.00 |
| tblConstructionPhase | NumDays | 55.00 | 198.00 |
| tblConstructionPhase | PhaseEndDate | 8/9/2019 | 7/5/2019 |
| tblConstructionPhase | PhaseEndDate | 9/20/2019 | 7/26/2019 |
| tblConstructionPhase | PhaseEndDate | 1/3/2020 | 10/28/2019 |
| tblConstructionPhase | PhaseEndDate | 1/20/2023 | 11/27/2019 |
| tblConstructionPhase | PhaseEndDate | 11/4/2022 | 8/31/2020 |
| tblConstructionPhase | PhaseEndDate | 4/7/2023 | 9/15/2020 |
| tblConstructionPhase | PhaseStartDate | 8/10/2019 | 7/6/2019 |
| tblConstructionPhase | PhaseStartDate | 9/21/2019 | 7/27/2019 |

| | | | |
|---|---|---|---|
| tblConstructionPhase | PhaseStartDate | 11/5/2022 | 10/29/2019 |
| tblConstructionPhase | PhaseStartDate | 1/4/2020 | 11/28/2019 |
| tblConstructionPhase | PhaseStartDate | 1/21/2023 | 12/13/2019 |
| tblGrading | AcresOfGrading | 165.00 | 17.69 |
| tblGrading | MaterialExported | 0.00 | 1,400.00 |
| tblGrading | MaterialExported | 0.00 | 340.00 |
| tblLandUse | LandUseSquareFeet | 10,868.44 | 48,650.00 |
| tblLandUse | LotAcreage | 0.25 | 45.00 |
| tblLandUse | LotAcreage | 0.98 | 1.45 |
| tblProjectCharacteristics | CO2IntensityFactor | 641.35 | 394.52 |
| tblProjectCharacteristics | UrbanizationLevel | Urban | Rural |
| tblStationaryGeneratorsPumpsUse | HorsePowerValue | 0.00 | 201.00 |
| tblStationaryGeneratorsPumpsUse | HoursPerDay | 0.00 | 0.03 |
| tblStationaryGeneratorsPumpsUse | HoursPerYear | 0.00 | 12.00 |
| tblStationaryGeneratorsPumpsUse | NumberOfEquipment | 0.00 | 2.00 |
| tblTripsAndVMT | HaulingTripLength | 20.00 | 84.00 |
| tblTripsAndVMT | HaulingTripNumber | 43.00 | 42.00 |
| tblTripsAndVMT | HaulingTripNumber | 175.00 | 260.00 |
| tblVehicleTrips | WD_TR | 1.29 | 1.95 |

## 2.0 Emissions Summary

## 2.1 Overall Construction (Maximum Daily Emission)

### Unmitigated Construction

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2019 | 5.4399 | 57.9783 | 34.9484 | 0.0766 | 18.3477 | 2.4036 | 20.7430 | 10.0055 | 2.2120 | 12.2093 | 0.0000 | 7,650.3285 | 7,650.3285 | 1.9656 | 0.0000 | 7,699.4689 |
| 2020 | 5.1317 | 23.3195 | 21.7291 | 0.0431 | 0.9017 | 1.2421 | 2.1438 | 0.2419 | 1.1746 | 1.4165 | 0.0000 | 4,177.4380 | 4,177.4380 | 0.6909 | 0.0000 | 4,194.7103 |
| **Maximum** | **5.4399** | **57.9783** | **34.9484** | **0.0766** | **18.3477** | **2.4036** | **20.7430** | **10.0055** | **2.2120** | **12.2093** | **0.0000** | **7,650.3285** | **7,650.3285** | **1.9656** | **0.0000** | **7,699.4689** |

### Mitigated Construction

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2019 | 5.4399 | 57.9783 | 34.9484 | 0.0766 | 18.3477 | 2.4036 | 20.7430 | 10.0055 | 2.2120 | 12.2093 | 0.0000 | 7,650.3285 | 7,650.3285 | 1.9656 | 0.0000 | 7,699.4689 |
| 2020 | 5.1317 | 23.3195 | 21.7291 | 0.0431 | 0.9017 | 1.2421 | 2.1438 | 0.2419 | 1.1746 | 1.4165 | 0.0000 | 4,177.4380 | 4,177.4380 | 0.6909 | 0.0000 | 4,194.7103 |
| **Maximum** | **5.4399** | **57.9783** | **34.9484** | **0.0766** | **18.3477** | **2.4036** | **20.7430** | **10.0055** | **2.2120** | **12.2093** | **0.0000** | **7,650.3285** | **7,650.3285** | **1.9656** | **0.0000** | **7,699.4689** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 1.1990 | 2.5000e-004 | 0.0276 | 0.0000 | | 1.0000e-004 | 1.0000e-004 | | 1.0000e-004 | 1.0000e-004 | | 0.0589 | 0.0589 | 1.6000e-004 | | 0.0628 |
| Energy | 0.0136 | 0.1238 | 0.1040 | 7.4000e-004 | | 9.4000e-003 | 9.4000e-003 | | 9.4000e-003 | 9.4000e-003 | | 148.4982 | 148.4982 | 2.8500e-003 | 2.7200e-003 | 149.3806 |
| Mobile | 0.5473 | 3.1753 | 5.9008 | 0.0223 | 1.6208 | 0.0185 | 1.6393 | 0.4344 | 0.0174 | 0.4517 | | 2,255.9710 | 2,255.9710 | 0.0820 | | 2,258.0217 |
| Stationary | 0.0198 | 0.0553 | 0.0505 | 1.0000e-004 | | 2.9100e-003 | 2.9100e-003 | | 2.9100e-003 | 2.9100e-003 | | 10.1245 | 10.1245 | 1.4200e-003 | | 10.1600 |
| **Total** | **1.7796** | **3.3547** | **6.0828** | **0.0231** | **1.6208** | **0.0309** | **1.6517** | **0.4344** | **0.0298** | **0.4641** | | **2,414.6526** | **2,414.6526** | **0.0865** | **2.7200e-003** | **2,417.6252** |

## 2.2 Overall Operational

**Mitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 1.1211 | 2.5000e-004 | 0.0276 | 0.0000 | | 1.0000e-004 | 1.0000e-004 | | 1.0000e-004 | 1.0000e-004 | | 0.0589 | 0.0589 | 1.6000e-004 | | 0.0628 |
| Energy | 0.0136 | 0.1238 | 0.1040 | 7.4000e-004 | | 9.4000e-003 | 9.4000e-003 | | 9.4000e-003 | 9.4000e-003 | | 148.4982 | 148.4982 | 2.8500e-003 | 2.7200e-003 | 149.3806 |
| Mobile | 0.5473 | 3.1753 | 5.9008 | 0.0223 | 1.6208 | 0.0185 | 1.6393 | 0.4344 | 0.0174 | 0.4517 | | 2,255.9710 | 2,255.9710 | 0.0820 | | 2,258.0217 |
| Stationary | 0.0198 | 0.0553 | 0.0505 | 1.0000e-004 | | 2.9100e-003 | 2.9100e-003 | | 2.9100e-003 | 2.9100e-003 | | 10.1245 | 10.1245 | 1.4200e-003 | | 10.1600 |
| **Total** | **1.7018** | **3.3547** | **6.0828** | **0.0231** | **1.6208** | **0.0309** | **1.6517** | **0.4344** | **0.0298** | **0.4641** | | **2,414.6526** | **2,414.6526** | **0.0865** | **2.7200e-003** | **2,417.6252** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **4.37** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 3.0 Construction Detail

**Construction Phase**

United Auburn Indian Community School Project - Placer County APCD Air District, Summer

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Demolition | Demolition | 6/3/2019 | 7/5/2019 | 5 | 25 | |
| 2 | Site Preparation | Site Preparation | 7/6/2019 | 7/26/2019 | 5 | 15 | |
| 3 | Grading | Grading | 7/27/2019 | 10/28/2019 | 5 | 66 | |
| 4 | Building Construction | Building Construction | 11/28/2019 | 8/31/2020 | 5 | 198 | |
| 5 | Paving | Paving | 10/29/2019 | 11/27/2019 | 5 | 22 | |
| 6 | Architectural Coating | Architectural Coating | 12/13/2019 | 9/15/2020 | 5 | 198 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 17.692**

**Acres of Paving: 2.14**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 72,975; Non-Residential Outdoor: 24,325; Striped Parking Area: 4,424 (Architectural Coating – sqft)**

**<u>OffRoad Equipment</u>**

United Auburn Indian Community School Project - Placer County APCD Air District, Summer

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Demolition | Concrete/Industrial Saws | 1 | 8.00 | 81 | 0.73 |
| Demolition | Excavators | 3 | 8.00 | 158 | 0.38 |
| Demolition | Rubber Tired Dozers | 2 | 8.00 | 247 | 0.40 |
| Site Preparation | Rubber Tired Dozers | 3 | 8.00 | 247 | 0.40 |
| Site Preparation | Tractors/Loaders/Backhoes | 4 | 8.00 | 97 | 0.37 |
| Grading | Excavators | 2 | 8.00 | 158 | 0.38 |
| Grading | Graders | 1 | 8.00 | 187 | 0.41 |
| Grading | Rubber Tired Dozers | 1 | 8.00 | 247 | 0.40 |
| Grading | Scrapers | 2 | 8.00 | 367 | 0.48 |
| Grading | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Paving | Pavers | 2 | 8.00 | 130 | 0.42 |
| Paving | Paving Equipment | 2 | 8.00 | 132 | 0.36 |
| Paving | Rollers | 2 | 8.00 | 80 | 0.38 |
| Building Construction | Cranes | 1 | 7.00 | 231 | 0.29 |
| Building Construction | Forklifts | 3 | 8.00 | 89 | 0.20 |
| Building Construction | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Building Construction | Tractors/Loaders/Backhoes | 3 | 7.00 | 97 | 0.37 |
| Building Construction | Welders | 1 | 8.00 | 46 | 0.45 |
| Architectural Coating | Air Compressors | 1 | 6.00 | 78 | 0.48 |

**Trips and VMT**

United Auburn Indian Community School Project - Placer County APCD Air District, Summer

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Demolition | 6 | 15.00 | 0.00 | 52.00 | 16.80 | 6.60 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Site Preparation | 7 | 18.00 | 0.00 | 42.00 | 16.80 | 6.60 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Grading | 8 | 20.00 | 0.00 | 260.00 | 16.80 | 6.60 | 84.00 | LD_Mix | HDT_Mix | HHDT |
| Paving | 6 | 15.00 | 0.00 | 0.00 | 16.80 | 6.60 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Building Construction | 9 | 51.00 | 20.00 | 0.00 | 16.80 | 6.60 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Architectural Coating | 1 | 10.00 | 0.00 | 0.00 | 16.80 | 6.60 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

## 3.2 Demolition - 2019

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 0.4501 | 0.0000 | 0.4501 | 0.0681 | 0.0000 | 0.0681 | | | 0.0000 | | | 0.0000 |
| Off-Road | 3.5134 | 35.7830 | 22.0600 | 0.0388 | | 1.7949 | 1.7949 | | 1.6697 | 1.6697 | | 3,816.8994 | 3,816.8994 | 1.0618 | | 3,843.4451 |
| **Total** | **3.5134** | **35.7830** | **22.0600** | **0.0388** | **0.4501** | **1.7949** | **2.2450** | **0.0681** | **1.6697** | **1.7378** | | **3,816.8994** | **3,816.8994** | **1.0618** | | **3,843.4451** |

## 3.2 Demolition - 2019

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0185 | 0.6078 | 0.0956 | 1.7400e-003 | 0.0364 | 2.6000e-003 | 0.0390 | 9.9800e-003 | 2.4900e-003 | 0.0125 | | 182.0909 | 182.0909 | 6.0800e-003 | | 182.2428 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0859 | 0.0534 | 0.7208 | 1.9600e-003 | 0.1916 | 1.1900e-003 | 0.1928 | 0.0508 | 1.1000e-003 | 0.0519 | | 195.3553 | 195.3553 | 5.1500e-003 | | 195.4841 |
| **Total** | **0.1043** | **0.6612** | **0.8163** | **3.7000e-003** | **0.2280** | **3.7900e-003** | **0.2318** | **0.0608** | **3.5900e-003** | **0.0644** | | **377.4462** | **377.4462** | **0.0112** | | **377.7269** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 0.4501 | 0.0000 | 0.4501 | 0.0681 | 0.0000 | 0.0681 | | | 0.0000 | | | 0.0000 |
| Off-Road | 3.5134 | 35.7830 | 22.0600 | 0.0388 | | 1.7949 | 1.7949 | | 1.6697 | 1.6697 | 0.0000 | 3,816.8994 | 3,816.8994 | 1.0618 | | 3,843.4451 |
| **Total** | **3.5134** | **35.7830** | **22.0600** | **0.0388** | **0.4501** | **1.7949** | **2.2450** | **0.0681** | **1.6697** | **1.7378** | **0.0000** | **3,816.8994** | **3,816.8994** | **1.0618** | | **3,843.4451** |

## 3.2 Demolition - 2019

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0185 | 0.6078 | 0.0956 | 1.7400e-003 | 0.0364 | 2.6000e-003 | 0.0390 | 9.9800e-003 | 2.4900e-003 | 0.0125 | | 182.0909 | 182.0909 | 6.0800e-003 | | 182.2428 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0859 | 0.0534 | 0.7208 | 1.9600e-003 | 0.1916 | 1.1900e-003 | 0.1928 | 0.0508 | 1.1000e-003 | 0.0519 | | 195.3553 | 195.3553 | 5.1500e-003 | | 195.4841 |
| **Total** | **0.1043** | **0.6612** | **0.8163** | **3.7000e-003** | **0.2280** | **3.7900e-003** | **0.2318** | **0.0608** | **3.5900e-003** | **0.0644** | | **377.4462** | **377.4462** | **0.0112** | | **377.7269** |

## 3.3 Site Preparation - 2019

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 18.0688 | 0.0000 | 18.0688 | 9.9311 | 0.0000 | 9.9311 | | | 0.0000 | | | 0.0000 |
| Off-Road | 4.3350 | 45.5727 | 22.0630 | 0.0380 | | 2.3904 | 2.3904 | | 2.1991 | 2.1991 | | 3,766.4529 | 3,766.4529 | 1.1917 | | 3,796.2445 |
| **Total** | **4.3350** | **45.5727** | **22.0630** | **0.0380** | **18.0688** | **2.3904** | **20.4592** | **9.9311** | **2.1991** | **12.1302** | | **3,766.4529** | **3,766.4529** | **1.1917** | | **3,796.2445** |

## 3.3 Site Preparation - 2019

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0248 | 0.8182 | 0.1287 | 2.3400e-003 | 0.0490 | 3.5000e-003 | 0.0525 | 0.0134 | 3.3500e-003 | 0.0168 | | 245.1224 | 245.1224 | 8.1800e-003 | | 245.3268 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.1031 | 0.0640 | 0.8649 | 2.3500e-003 | 0.2299 | 1.4300e-003 | 0.2313 | 0.0610 | 1.3200e-003 | 0.0623 | | 234.4264 | 234.4264 | 6.1800e-003 | | 234.5810 |
| **Total** | **0.1279** | **0.8823** | **0.9936** | **4.6900e-003** | **0.2789** | **4.9300e-003** | **0.2838** | **0.0744** | **4.6700e-003** | **0.0791** | | **479.5488** | **479.5488** | **0.0144** | | **479.9078** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 18.0688 | 0.0000 | 18.0688 | 9.9311 | 0.0000 | 9.9311 | | | 0.0000 | | | 0.0000 |
| Off-Road | 4.3350 | 45.5727 | 22.0630 | 0.0380 | | 2.3904 | 2.3904 | | 2.1991 | 2.1991 | 0.0000 | 3,766.4529 | 3,766.4529 | 1.1917 | | 3,796.2445 |
| **Total** | **4.3350** | **45.5727** | **22.0630** | **0.0380** | **18.0688** | **2.3904** | **20.4592** | **9.9311** | **2.1991** | **12.1302** | **0.0000** | **3,766.4529** | **3,766.4529** | **1.1917** | | **3,796.2445** |

## 3.3 Site Preparation - 2019

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0248 | 0.8182 | 0.1287 | 2.3400e-003 | 0.0490 | 3.5000e-003 | 0.0525 | 0.0134 | 3.3500e-003 | 0.0168 | | 245.1224 | 245.1224 | 8.1800e-003 | | 245.3268 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.1031 | 0.0640 | 0.8649 | 2.3500e-003 | 0.2299 | 1.4300e-003 | 0.2313 | 0.0610 | 1.3200e-003 | 0.0623 | | 234.4264 | 234.4264 | 6.1800e-003 | | 234.5810 |
| **Total** | **0.1279** | **0.8823** | **0.9936** | **4.6900e-003** | **0.2789** | **4.9300e-003** | **0.2838** | **0.0744** | **4.6700e-003** | **0.0791** | | **479.5488** | **479.5488** | **0.0144** | | **479.9078** |

## 3.4 Grading - 2019

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 6.3088 | 0.0000 | 6.3088 | 3.3413 | 0.0000 | 3.3413 | | | 0.0000 | | | 0.0000 |
| Off-Road | 4.7389 | 54.5202 | 33.3768 | 0.0620 | | 2.3827 | 2.3827 | | 2.1920 | 2.1920 | | 6,140.0195 | 6,140.0195 | 1.9426 | | 6,188.5854 |
| **Total** | **4.7389** | **54.5202** | **33.3768** | **0.0620** | **6.3088** | **2.3827** | **8.6914** | **3.3413** | **2.1920** | **5.5333** | | **6,140.0195** | **6,140.0195** | **1.9426** | | **6,188.5854** |

## 3.4 Grading - 2019

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.1144 | 3.3869 | 0.6106 | 0.0119 | 0.2892 | 0.0193 | 0.3085 | 0.0793 | 0.0185 | 0.0977 | | 1,249.8352 | 1,249.8352 | 0.0161 | | 1,250.2379 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.1145 | 0.0712 | 0.9610 | 2.6200e-003 | 0.2555 | 1.5900e-003 | 0.2571 | 0.0678 | 1.4600e-003 | 0.0692 | | 260.4738 | 260.4738 | 6.8700e-003 | | 260.6455 |
| **Total** | **0.2289** | **3.4581** | **1.5716** | **0.0146** | **0.5447** | **0.0209** | **0.5656** | **0.1470** | **0.0199** | **0.1669** | | **1,510.3090** | **1,510.3090** | **0.0230** | | **1,510.8835** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 6.3088 | 0.0000 | 6.3088 | 3.3413 | 0.0000 | 3.3413 | | | 0.0000 | | | 0.0000 |
| Off-Road | 4.7389 | 54.5202 | 33.3768 | 0.0620 | | 2.3827 | 2.3827 | | 2.1920 | 2.1920 | 0.0000 | 6,140.0195 | 6,140.0195 | 1.9426 | | 6,188.5854 |
| **Total** | **4.7389** | **54.5202** | **33.3768** | **0.0620** | **6.3088** | **2.3827** | **8.6914** | **3.3413** | **2.1920** | **5.5333** | **0.0000** | **6,140.0195** | **6,140.0195** | **1.9426** | | **6,188.5854** |

## 3.4 Grading - 2019

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.1144 | 3.3869 | 0.6106 | 0.0119 | 0.2892 | 0.0193 | 0.3085 | 0.0793 | 0.0185 | 0.0977 | | 1,249.8352 | 1,249.8352 | 0.0161 | | 1,250.2379 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.1145 | 0.0712 | 0.9610 | 2.6200e-003 | 0.2555 | 1.5900e-003 | 0.2571 | 0.0678 | 1.4600e-003 | 0.0692 | | 260.4738 | 260.4738 | 6.8700e-003 | | 260.6455 |
| **Total** | **0.2289** | **3.4581** | **1.5716** | **0.0146** | **0.5447** | **0.0209** | **0.5656** | **0.1470** | **0.0199** | **0.1669** | | **1,510.3090** | **1,510.3090** | **0.0230** | | **1,510.8835** |

## 3.5 Building Construction - 2019

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 2.3612 | 21.0788 | 17.1638 | 0.0269 | | 1.2899 | 1.2899 | | 1.2127 | 1.2127 | | 2,591.5802 | 2,591.5802 | 0.6313 | | 2,607.3635 |
| **Total** | **2.3612** | **21.0788** | **17.1638** | **0.0269** | | **1.2899** | **1.2899** | | **1.2127** | **1.2127** | | **2,591.5802** | **2,591.5802** | **0.6313** | | **2,607.3635** |

## 3.5 Building Construction - 2019

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0818 | 2.4329 | 0.4641 | 5.5300e-003 | 0.1225 | 0.0141 | 0.1366 | 0.0353 | 0.0135 | 0.0488 | | 578.2601 | 578.2601 | 0.0303 | | 579.0164 |
| Worker | 0.2920 | 0.1814 | 2.4505 | 6.6700e-003 | 0.6514 | 4.0500e-003 | 0.6555 | 0.1728 | 3.7300e-003 | 0.1765 | | 664.2081 | 664.2081 | 0.0175 | | 664.6461 |
| **Total** | **0.3738** | **2.6144** | **2.9147** | **0.0122** | **0.7740** | **0.0181** | **0.7921** | **0.2080** | **0.0172** | **0.2252** | | **1,242.4683** | **1,242.4683** | **0.0478** | | **1,243.6625** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 2.3612 | 21.0788 | 17.1638 | 0.0269 | | 1.2899 | 1.2899 | | 1.2127 | 1.2127 | 0.0000 | 2,591.5802 | 2,591.5802 | 0.6313 | | 2,607.3635 |
| **Total** | **2.3612** | **21.0788** | **17.1638** | **0.0269** | | **1.2899** | **1.2899** | | **1.2127** | **1.2127** | **0.0000** | **2,591.5802** | **2,591.5802** | **0.6313** | | **2,607.3635** |

## 3.5 Building Construction - 2019

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0818 | 2.4329 | 0.4641 | 5.5300e-003 | 0.1225 | 0.0141 | 0.1366 | 0.0353 | 0.0135 | 0.0488 | | 578.2601 | 578.2601 | 0.0303 | | 579.0164 |
| Worker | 0.2920 | 0.1814 | 2.4505 | 6.6700e-003 | 0.6514 | 4.0500e-003 | 0.6555 | 0.1728 | 3.7300e-003 | 0.1765 | | 664.2081 | 664.2081 | 0.0175 | | 664.6461 |
| **Total** | **0.3738** | **2.6144** | **2.9147** | **0.0122** | **0.7740** | **0.0181** | **0.7921** | **0.2080** | **0.0172** | **0.2252** | | **1,242.4683** | **1,242.4683** | **0.0478** | | **1,243.6625** |

## 3.5 Building Construction - 2020

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 2.1198 | 19.1860 | 16.8485 | 0.0269 | | 1.1171 | 1.1171 | | 1.0503 | 1.0503 | | 2,553.0631 | 2,553.0631 | 0.6229 | | 2,568.6345 |
| **Total** | **2.1198** | **19.1860** | **16.8485** | **0.0269** | | **1.1171** | **1.1171** | | **1.0503** | **1.0503** | | **2,553.0631** | **2,553.0631** | **0.6229** | | **2,568.6345** |

## 3.5 Building Construction - 2020

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0680 | 2.2574 | 0.4076 | 5.4800e-003 | 0.1225 | 9.3800e-003 | 0.1319 | 0.0353 | 8.9700e-003 | 0.0443 | | 573.8728 | 573.8728 | 0.0279 | | 574.5703 |
| Worker | 0.2679 | 0.1607 | 2.2086 | 6.4500e-003 | 0.6514 | 3.9600e-003 | 0.6554 | 0.1728 | 3.6500e-003 | 0.1764 | | 642.9797 | 642.9797 | 0.0153 | | 643.3631 |
| **Total** | **0.3359** | **2.4181** | **2.6161** | **0.0119** | **0.7740** | **0.0133** | **0.7873** | **0.2080** | **0.0126** | **0.2207** | | **1,216.8524** | **1,216.8524** | **0.0432** | | **1,217.9334** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 2.1198 | 19.1860 | 16.8485 | 0.0269 | | 1.1171 | 1.1171 | | 1.0503 | 1.0503 | 0.0000 | 2,553.0631 | 2,553.0631 | 0.6229 | | 2,568.6345 |
| **Total** | **2.1198** | **19.1860** | **16.8485** | **0.0269** | | **1.1171** | **1.1171** | | **1.0503** | **1.0503** | **0.0000** | **2,553.0631** | **2,553.0631** | **0.6229** | | **2,568.6345** |

## 3.5 Building Construction - 2020

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0680 | 2.2574 | 0.4076 | 5.4800e-003 | 0.1225 | 9.3800e-003 | 0.1319 | 0.0353 | 8.9700e-003 | 0.0443 | | 573.8728 | 573.8728 | 0.0279 | | 574.5703 |
| Worker | 0.2679 | 0.1607 | 2.2086 | 6.4500e-003 | 0.6514 | 3.9600e-003 | 0.6554 | 0.1728 | 3.6500e-003 | 0.1764 | | 642.9797 | 642.9797 | 0.0153 | | 643.3631 |
| **Total** | **0.3359** | **2.4181** | **2.6161** | **0.0119** | **0.7740** | **0.0133** | **0.7873** | **0.2080** | **0.0126** | **0.2207** | | **1,216.8524** | **1,216.8524** | **0.0432** | | **1,217.9334** |

## 3.6 Paving - 2019

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.4544 | 15.2441 | 14.6648 | 0.0228 | | 0.8246 | 0.8246 | | 0.7586 | 0.7586 | | 2,257.0025 | 2,257.0025 | 0.7141 | | 2,274.8548 |
| Paving | 0.2549 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **1.7093** | **15.2441** | **14.6648** | **0.0228** | | **0.8246** | **0.8246** | | **0.7586** | **0.7586** | | **2,257.0025** | **2,257.0025** | **0.7141** | | **2,274.8548** |

## 3.6 Paving - 2019

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0859 | 0.0534 | 0.7208 | 1.9600e-003 | 0.1916 | 1.1900e-003 | 0.1928 | 0.0508 | 1.1000e-003 | 0.0519 | | 195.3553 | 195.3553 | 5.1500e-003 | | 195.4841 |
| **Total** | **0.0859** | **0.0534** | **0.7208** | **1.9600e-003** | **0.1916** | **1.1900e-003** | **0.1928** | **0.0508** | **1.1000e-003** | **0.0519** | | **195.3553** | **195.3553** | **5.1500e-003** | | **195.4841** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.4544 | 15.2441 | 14.6648 | 0.0228 | | 0.8246 | 0.8246 | | 0.7586 | 0.7586 | 0.0000 | 2,257.0025 | 2,257.0025 | 0.7141 | | 2,274.8548 |
| Paving | 0.2549 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **1.7093** | **15.2441** | **14.6648** | **0.0228** | | **0.8246** | **0.8246** | | **0.7586** | **0.7586** | **0.0000** | **2,257.0025** | **2,257.0025** | **0.7141** | | **2,274.8548** |

## 3.6 Paving - 2019

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0859 | 0.0534 | 0.7208 | 1.9600e-003 | 0.1916 | 1.1900e-003 | 0.1928 | 0.0508 | 1.1000e-003 | 0.0519 | | 195.3553 | 195.3553 | 5.1500e-003 | | 195.4841 |
| **Total** | **0.0859** | **0.0534** | **0.7208** | **1.9600e-003** | **0.1916** | **1.1900e-003** | **0.1928** | **0.0508** | **1.1000e-003** | **0.0519** | | **195.3553** | **195.3553** | **5.1500e-003** | | **195.4841** |

## 3.7 Architectural Coating - 2019

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Archit. Coating | 2.3813 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.2664 | 1.8354 | 1.8413 | 2.9700e-003 | | 0.1288 | 0.1288 | | 0.1288 | 0.1288 | | 281.4481 | 281.4481 | 0.0238 | | 282.0423 |
| **Total** | **2.6477** | **1.8354** | **1.8413** | **2.9700e-003** | | **0.1288** | **0.1288** | | **0.1288** | **0.1288** | | **281.4481** | **281.4481** | **0.0238** | | **282.0423** |

## 3.7 Architectural Coating - 2019

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0573 | 0.0356 | 0.4805 | 1.3100e-003 | 0.1277 | 7.9000e-004 | 0.1285 | 0.0339 | 7.3000e-004 | 0.0346 | | 130.2369 | 130.2369 | 3.4300e-003 | | 130.3228 |
| **Total** | **0.0573** | **0.0356** | **0.4805** | **1.3100e-003** | **0.1277** | **7.9000e-004** | **0.1285** | **0.0339** | **7.3000e-004** | **0.0346** | | **130.2369** | **130.2369** | **3.4300e-003** | | **130.3228** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Archit. Coating | 2.3813 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.2664 | 1.8354 | 1.8413 | 2.9700e-003 | | 0.1288 | 0.1288 | | 0.1288 | 0.1288 | 0.0000 | 281.4481 | 281.4481 | 0.0238 | | 282.0423 |
| **Total** | **2.6477** | **1.8354** | **1.8413** | **2.9700e-003** | | **0.1288** | **0.1288** | | **0.1288** | **0.1288** | **0.0000** | **281.4481** | **281.4481** | **0.0238** | | **282.0423** |

## 3.7 Architectural Coating - 2019

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0573 | 0.0356 | 0.4805 | 1.3100e-003 | 0.1277 | 7.9000e-004 | 0.1285 | 0.0339 | 7.3000e-004 | 0.0346 | | 130.2369 | 130.2369 | 3.4300e-003 | | 130.3228 |
| **Total** | **0.0573** | **0.0356** | **0.4805** | **1.3100e-003** | **0.1277** | **7.9000e-004** | **0.1285** | **0.0339** | **7.3000e-004** | **0.0346** | | **130.2369** | **130.2369** | **3.4300e-003** | | **130.3228** |

## 3.7 Architectural Coating - 2020

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Archit. Coating | 2.3813 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.2422 | 1.6838 | 1.8314 | 2.9700e-003 | | 0.1109 | 0.1109 | | 0.1109 | 0.1109 | | 281.4481 | 281.4481 | 0.0218 | | 281.9928 |
| **Total** | **2.6235** | **1.6838** | **1.8314** | **2.9700e-003** | | **0.1109** | **0.1109** | | **0.1109** | **0.1109** | | **281.4481** | **281.4481** | **0.0218** | | **281.9928** |

## 3.7 Architectural Coating - 2020

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0525 | 0.0315 | 0.4331 | 1.2700e-003 | 0.1277 | 7.8000e-004 | 0.1285 | 0.0339 | 7.2000e-004 | 0.0346 | | 126.0744 | 126.0744 | 3.0100e-003 | | 126.1496 |
| **Total** | **0.0525** | **0.0315** | **0.4331** | **1.2700e-003** | **0.1277** | **7.8000e-004** | **0.1285** | **0.0339** | **7.2000e-004** | **0.0346** | | **126.0744** | **126.0744** | **3.0100e-003** | | **126.1496** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Archit. Coating | 2.3813 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.2422 | 1.6838 | 1.8314 | 2.9700e-003 | | 0.1109 | 0.1109 | | 0.1109 | 0.1109 | 0.0000 | 281.4481 | 281.4481 | 0.0218 | | 281.9928 |
| **Total** | **2.6235** | **1.6838** | **1.8314** | **2.9700e-003** | | **0.1109** | **0.1109** | | **0.1109** | **0.1109** | **0.0000** | **281.4481** | **281.4481** | **0.0218** | | **281.9928** |

## 3.7 Architectural Coating - 2020

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0525 | 0.0315 | 0.4331 | 1.2700e-003 | 0.1277 | 7.8000e-004 | 0.1285 | 0.0339 | 7.2000e-004 | 0.0346 | | 126.0744 | 126.0744 | 3.0100e-003 | | 126.1496 |
| **Total** | **0.0525** | **0.0315** | **0.4331** | **1.2700e-003** | **0.1277** | **7.8000e-004** | **0.1285** | **0.0339** | **7.2000e-004** | **0.0346** | | **126.0744** | **126.0744** | **3.0100e-003** | | **126.1496** |

# 4.0 Operational Detail - Mobile

## 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 0.5473 | 3.1753 | 5.9008 | 0.0223 | 1.6208 | 0.0185 | 1.6393 | 0.4344 | 0.0174 | 0.4517 | | 2,255.9710 | 2,255.9710 | 0.0820 | | 2,258.0217 |
| Unmitigated | 0.5473 | 3.1753 | 5.9008 | 0.0223 | 1.6208 | 0.0185 | 1.6393 | 0.4344 | 0.0174 | 0.4517 | | 2,255.9710 | 2,255.9710 | 0.0820 | | 2,258.0217 |

## 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| Elementary School | 253.50 | 0.00 | 0.00 | 542,341 | 542,341 |
| Parking Lot | 0.00 | 0.00 | 0.00 | | |
| Other Asphalt Surfaces | 0.00 | 0.00 | 0.00 | | |
| Total | 253.50 | 0.00 | 0.00 | 542,341 | 542,341 |

## 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C-W | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| Elementary School | 14.70 | 6.60 | 6.60 | 65.00 | 30.00 | 5.00 | 63 | 25 | 12 |
| Parking Lot | 14.70 | 6.60 | 6.60 | 0.00 | 0.00 | 0.00 | 0 | 0 | 0 |
| Other Asphalt Surfaces | 14.70 | 6.60 | 6.60 | 0.00 | 0.00 | 0.00 | 0 | 0 | 0 |

## 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Elementary School | 0.494811 | 0.040252 | 0.220236 | 0.128508 | 0.023782 | 0.006284 | 0.029295 | 0.046215 | 0.001446 | 0.001205 | 0.005961 | 0.000773 | 0.001232 |
| Parking Lot | 0.494811 | 0.040252 | 0.220236 | 0.128508 | 0.023782 | 0.006284 | 0.029295 | 0.046215 | 0.001446 | 0.001205 | 0.005961 | 0.000773 | 0.001232 |
| Other Asphalt Surfaces | 0.494811 | 0.040252 | 0.220236 | 0.128508 | 0.023782 | 0.006284 | 0.029295 | 0.046215 | 0.001446 | 0.001205 | 0.005961 | 0.000773 | 0.001232 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| NaturalGas Mitigated | 0.0136 | 0.1238 | 0.1040 | 7.4000e-004 | | 9.4000e-003 | 9.4000e-003 | | 9.4000e-003 | 9.4000e-003 | | 148.4982 | 148.4982 | 2.8500e-003 | 2.7200e-003 | 149.3806 |
| NaturalGas Unmitigated | 0.0136 | 0.1238 | 0.1040 | 7.4000e-004 | | 9.4000e-003 | 9.4000e-003 | | 9.4000e-003 | 9.4000e-003 | | 148.4982 | 148.4982 | 2.8500e-003 | 2.7200e-003 | 149.3806 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| Elementary School | 1262.23 | 0.0136 | 0.1238 | 0.1040 | 7.4000e-004 | | 9.4000e-003 | 9.4000e-003 | | 9.4000e-003 | 9.4000e-003 | | 148.4982 | 148.4982 | 2.8500e-003 | 2.7200e-003 | 149.3806 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Parking Lot | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0136** | **0.1238** | **0.1040** | **7.4000e-004** | | **9.4000e-003** | **9.4000e-003** | | **9.4000e-003** | **9.4000e-003** | | **148.4982** | **148.4982** | **2.8500e-003** | **2.7200e-003** | **149.3806** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| Elementary School | 1.26223 | 0.0136 | 0.1238 | 0.1040 | 7.4000e-004 | | 9.4000e-003 | 9.4000e-003 | | 9.4000e-003 | 9.4000e-003 | | 148.4982 | 148.4982 | 2.8500e-003 | 2.7200e-003 | 149.3806 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Parking Lot | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0136** | **0.1238** | **0.1040** | **7.4000e-004** | | **9.4000e-003** | **9.4000e-003** | | **9.4000e-003** | **9.4000e-003** | | **148.4982** | **148.4982** | **2.8500e-003** | **2.7200e-003** | **149.3806** |

## 6.0 Area Detail

## 6.1 Mitigation Measures Area

Use Low VOC Cleaning Supplies

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 1.1211 | 2.5000e-004 | 0.0276 | 0.0000 | | 1.0000e-004 | 1.0000e-004 | | 1.0000e-004 | 1.0000e-004 | | 0.0589 | 0.0589 | 1.6000e-004 | | 0.0628 |
| Unmitigated | 1.1990 | 2.5000e-004 | 0.0276 | 0.0000 | | 1.0000e-004 | 1.0000e-004 | | 1.0000e-004 | 1.0000e-004 | | 0.0589 | 0.0589 | 1.6000e-004 | | 0.0628 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 0.1292 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 1.0672 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 2.5800e-003 | 2.5000e-004 | 0.0276 | 0.0000 | | 1.0000e-004 | 1.0000e-004 | | 1.0000e-004 | 1.0000e-004 | | 0.0589 | 0.0589 | 1.6000e-004 | | 0.0628 |
| **Total** | **1.1990** | **2.5000e-004** | **0.0276** | **0.0000** | | **1.0000e-004** | **1.0000e-004** | | **1.0000e-004** | **1.0000e-004** | | **0.0589** | **0.0589** | **1.6000e-004** | | **0.0628** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 0.1292 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 0.9894 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 2.5800e-003 | 2.5000e-004 | 0.0276 | 0.0000 | | 1.0000e-004 | 1.0000e-004 | | 1.0000e-004 | 1.0000e-004 | | 0.0589 | 0.0589 | 1.6000e-004 | | 0.0628 |
| **Total** | **1.1211** | **2.5000e-004** | **0.0276** | **0.0000** | | **1.0000e-004** | **1.0000e-004** | | **1.0000e-004** | **1.0000e-004** | | **0.0589** | **0.0589** | **1.6000e-004** | | **0.0628** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

Apply Water Conservation Strategy

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|
| Emergency Generator | 2 | 0.03 | 12 | 201 | 0.73 | Diesel |

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 10.1 Stationary Sources

**Unmitigated/Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Equipment Type | lb/day | | | | | | | | | | lb/day | | | | | |
| Emergency Generator - Diesel (175 - 300 HP) | 0.0198 | 0.0553 | 0.0505 | 1.0000e-004 | | 2.9100e-003 | 2.9100e-003 | | 2.9100e-003 | 2.9100e-003 | | 10.1245 | 10.1245 | 1.4200e-003 | | 10.1600 |
| **Total** | **0.0198** | **0.0553** | **0.0505** | **1.0000e-004** | | **2.9100e-003** | **2.9100e-003** | | **2.9100e-003** | **2.9100e-003** | | **10.1245** | **10.1245** | **1.4200e-003** | | **10.1600** |

## 11.0 Vegetation

# United Auburn Indian Community School Project

**Placer County APCD Air District, Winter**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| Elementary School | 130.00 | Student | 45.00 | 48,650.00 | 0 |
| Parking Lot | 109.00 | Space | 1.45 | 43,600.00 | 0 |
| Other Asphalt Surfaces | 30.13 | 1000sqft | 0.69 | 30,125.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Rural | **Wind Speed (m/s)** | 2.2 | **Precipitation Freq (Days)** | 74 |
| **Climate Zone** | 2 | | | **Operational Year** | 2021 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 394.52 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

United Auburn Indian Community School Project - Placer County APCD Air District, Winter

Project Characteristics - CO2 Intensity adjusted for PG&E progress towards RPS

Land Use - Project Info

Construction Phase - Project Info

Trips and VMT - Per RAW

Demolition -

Grading - Applicant/RAW Information

Vehicle Trips - Based on Traffic Information for project

Area Mitigation -

Energy Mitigation -

Water Mitigation -

Stationary Sources - Emergency Generators and Fire Pumps -

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblConstructionPhase | NumDays | 50.00 | 25.00 |
| tblConstructionPhase | NumDays | 30.00 | 15.00 |
| tblConstructionPhase | NumDays | 75.00 | 66.00 |
| tblConstructionPhase | NumDays | 55.00 | 22.00 |
| tblConstructionPhase | NumDays | 740.00 | 198.00 |
| tblConstructionPhase | NumDays | 55.00 | 198.00 |
| tblConstructionPhase | PhaseEndDate | 8/9/2019 | 7/5/2019 |
| tblConstructionPhase | PhaseEndDate | 9/20/2019 | 7/26/2019 |
| tblConstructionPhase | PhaseEndDate | 1/3/2020 | 10/28/2019 |
| tblConstructionPhase | PhaseEndDate | 1/20/2023 | 11/27/2019 |
| tblConstructionPhase | PhaseEndDate | 11/4/2022 | 8/31/2020 |
| tblConstructionPhase | PhaseEndDate | 4/7/2023 | 9/15/2020 |
| tblConstructionPhase | PhaseStartDate | 8/10/2019 | 7/6/2019 |
| tblConstructionPhase | PhaseStartDate | 9/21/2019 | 7/27/2019 |

| | | | |
|---|---|---|---|
| tblConstructionPhase | PhaseStartDate | 11/5/2022 | 10/29/2019 |
| tblConstructionPhase | PhaseStartDate | 1/4/2020 | 11/28/2019 |
| tblConstructionPhase | PhaseStartDate | 1/21/2023 | 12/13/2019 |
| tblGrading | AcresOfGrading | 165.00 | 17.69 |
| tblGrading | MaterialExported | 0.00 | 1,400.00 |
| tblGrading | MaterialExported | 0.00 | 340.00 |
| tblLandUse | LandUseSquareFeet | 10,868.44 | 48,650.00 |
| tblLandUse | LotAcreage | 0.25 | 45.00 |
| tblLandUse | LotAcreage | 0.98 | 1.45 |
| tblProjectCharacteristics | CO2IntensityFactor | 641.35 | 394.52 |
| tblProjectCharacteristics | UrbanizationLevel | Urban | Rural |
| tblStationaryGeneratorsPumpsUse | HorsePowerValue | 0.00 | 201.00 |
| tblStationaryGeneratorsPumpsUse | HoursPerDay | 0.00 | 0.03 |
| tblStationaryGeneratorsPumpsUse | HoursPerYear | 0.00 | 12.00 |
| tblStationaryGeneratorsPumpsUse | NumberOfEquipment | 0.00 | 2.00 |
| tblTripsAndVMT | HaulingTripLength | 20.00 | 84.00 |
| tblTripsAndVMT | HaulingTripNumber | 43.00 | 42.00 |
| tblTripsAndVMT | HaulingTripNumber | 175.00 | 260.00 |
| tblVehicleTrips | WD_TR | 1.29 | 1.95 |

## 2.0 Emissions Summary

## 2.1 Overall Construction (Maximum Daily Emission)

### Unmitigated Construction

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2019 | 5.4518 | 58.1875 | 34.8416 | 0.0762 | 18.3477 | 2.4037 | 20.7431 | 10.0055 | 2.2121 | 12.2094 | 0.0000 | 7,613.6504 | 7,613.6504 | 1.9662 | 0.0000 | 7,662.8062 |
| 2020 | 5.1428 | 23.3861 | 21.4559 | 0.0420 | 0.9017 | 1.2424 | 2.1441 | 0.2419 | 1.1749 | 1.4168 | 0.0000 | 4,071.7693 | 4,071.7693 | 0.6925 | 0.0000 | 4,089.0822 |
| **Maximum** | **5.4518** | **58.1875** | **34.8416** | **0.0762** | **18.3477** | **2.4037** | **20.7431** | **10.0055** | **2.2121** | **12.2094** | **0.0000** | **7,613.6504** | **7,613.6504** | **1.9662** | **0.0000** | **7,662.8062** |

### Mitigated Construction

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2019 | 5.4518 | 58.1875 | 34.8416 | 0.0762 | 18.3477 | 2.4037 | 20.7431 | 10.0055 | 2.2121 | 12.2094 | 0.0000 | 7,613.6504 | 7,613.6504 | 1.9662 | 0.0000 | 7,662.8062 |
| 2020 | 5.1428 | 23.3861 | 21.4559 | 0.0420 | 0.9017 | 1.2424 | 2.1441 | 0.2419 | 1.1749 | 1.4168 | 0.0000 | 4,071.7693 | 4,071.7693 | 0.6925 | 0.0000 | 4,089.0822 |
| **Maximum** | **5.4518** | **58.1875** | **34.8416** | **0.0762** | **18.3477** | **2.4037** | **20.7431** | **10.0055** | **2.2121** | **12.2094** | **0.0000** | **7,613.6504** | **7,613.6504** | **1.9662** | **0.0000** | **7,662.8062** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

United Auburn Indian Community School Project - Placer County APCD Air District, Winter

## 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 1.1990 | 2.5000e-004 | 0.0276 | 0.0000 | | 1.0000e-004 | 1.0000e-004 | | 1.0000e-004 | 1.0000e-004 | | 0.0589 | 0.0589 | 1.6000e-004 | | 0.0628 |
| Energy | 0.0136 | 0.1238 | 0.1040 | 7.4000e-004 | | 9.4000e-003 | 9.4000e-003 | | 9.4000e-003 | 9.4000e-003 | | 148.4982 | 148.4982 | 2.8500e-003 | 2.7200e-003 | 149.3806 |
| Mobile | 0.4459 | 3.3199 | 5.6768 | 0.0205 | 1.6208 | 0.0187 | 1.6396 | 0.4344 | 0.0176 | 0.4520 | | 2,074.9050 | 2,074.9050 | 0.0848 | | 2,077.0249 |
| Stationary | 0.0198 | 0.0553 | 0.0505 | 1.0000e-004 | | 2.9100e-003 | 2.9100e-003 | | 2.9100e-003 | 2.9100e-003 | | 10.1245 | 10.1245 | 1.4200e-003 | | 10.1600 |
| **Total** | **1.6783** | **3.4993** | **5.8587** | **0.0213** | **1.6208** | **0.0312** | **1.6520** | **0.4344** | **0.0300** | **0.4644** | | **2,233.5866** | **2,233.5866** | **0.0892** | **2.7200e-003** | **2,236.6283** |

## 2.2 Overall Operational

**Mitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 1.1211 | 2.5000e-004 | 0.0276 | 0.0000 | | 1.0000e-004 | 1.0000e-004 | | 1.0000e-004 | 1.0000e-004 | | 0.0589 | 0.0589 | 1.6000e-004 | | 0.0628 |
| Energy | 0.0136 | 0.1238 | 0.1040 | 7.4000e-004 | | 9.4000e-003 | 9.4000e-003 | | 9.4000e-003 | 9.4000e-003 | | 148.4982 | 148.4982 | 2.8500e-003 | 2.7200e-003 | 149.3806 |
| Mobile | 0.4459 | 3.3199 | 5.6768 | 0.0205 | 1.6208 | 0.0187 | 1.6396 | 0.4344 | 0.0176 | 0.4520 | | 2,074.9050 | 2,074.9050 | 0.0848 | | 2,077.0249 |
| Stationary | 0.0198 | 0.0553 | 0.0505 | 1.0000e-004 | | 2.9100e-003 | 2.9100e-003 | | 2.9100e-003 | 2.9100e-003 | | 10.1245 | 10.1245 | 1.4200e-003 | | 10.1600 |
| **Total** | **1.6005** | **3.4993** | **5.8587** | **0.0213** | **1.6208** | **0.0312** | **1.6520** | **0.4344** | **0.0300** | **0.4644** | | **2,233.5866** | **2,233.5866** | **0.0892** | **2.7200e-003** | **2,236.6283** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **4.64** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 3.0 Construction Detail

**Construction Phase**

United Auburn Indian Community School Project - Placer County APCD Air District, Winter

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Demolition | Demolition | 6/3/2019 | 7/5/2019 | 5 | 25 | |
| 2 | Site Preparation | Site Preparation | 7/6/2019 | 7/26/2019 | 5 | 15 | |
| 3 | Grading | Grading | 7/27/2019 | 10/28/2019 | 5 | 66 | |
| 4 | Building Construction | Building Construction | 11/28/2019 | 8/31/2020 | 5 | 198 | |
| 5 | Paving | Paving | 10/29/2019 | 11/27/2019 | 5 | 22 | |
| 6 | Architectural Coating | Architectural Coating | 12/13/2019 | 9/15/2020 | 5 | 198 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 17.692**

**Acres of Paving: 2.14**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 72,975; Non-Residential Outdoor: 24,325; Striped Parking Area: 4,424 (Architectural Coating – sqft)**

**<u>OffRoad Equipment</u>**

United Auburn Indian Community School Project - Placer County APCD Air District, Winter

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Demolition | Concrete/Industrial Saws | 1 | 8.00 | 81 | 0.73 |
| Demolition | Excavators | 3 | 8.00 | 158 | 0.38 |
| Demolition | Rubber Tired Dozers | 2 | 8.00 | 247 | 0.40 |
| Site Preparation | Rubber Tired Dozers | 3 | 8.00 | 247 | 0.40 |
| Site Preparation | Tractors/Loaders/Backhoes | 4 | 8.00 | 97 | 0.37 |
| Grading | Excavators | 2 | 8.00 | 158 | 0.38 |
| Grading | Graders | 1 | 8.00 | 187 | 0.41 |
| Grading | Rubber Tired Dozers | 1 | 8.00 | 247 | 0.40 |
| Grading | Scrapers | 2 | 8.00 | 367 | 0.48 |
| Grading | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Paving | Pavers | 2 | 8.00 | 130 | 0.42 |
| Paving | Paving Equipment | 2 | 8.00 | 132 | 0.36 |
| Paving | Rollers | 2 | 8.00 | 80 | 0.38 |
| Building Construction | Cranes | 1 | 7.00 | 231 | 0.29 |
| Building Construction | Forklifts | 3 | 8.00 | 89 | 0.20 |
| Building Construction | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Building Construction | Tractors/Loaders/Backhoes | 3 | 7.00 | 97 | 0.37 |
| Building Construction | Welders | 1 | 8.00 | 46 | 0.45 |
| Architectural Coating | Air Compressors | 1 | 6.00 | 78 | 0.48 |

**Trips and VMT**

United Auburn Indian Community School Project - Placer County APCD Air District, Winter

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Demolition | 6 | 15.00 | 0.00 | 52.00 | 16.80 | 6.60 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Site Preparation | 7 | 18.00 | 0.00 | 42.00 | 16.80 | 6.60 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Grading | 8 | 20.00 | 0.00 | 260.00 | 16.80 | 6.60 | 84.00 | LD_Mix | HDT_Mix | HHDT |
| Paving | 6 | 15.00 | 0.00 | 0.00 | 16.80 | 6.60 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Building Construction | 9 | 51.00 | 20.00 | 0.00 | 16.80 | 6.60 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Architectural Coating | 1 | 10.00 | 0.00 | 0.00 | 16.80 | 6.60 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

## 3.2 Demolition - 2019

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 0.4501 | 0.0000 | 0.4501 | 0.0681 | 0.0000 | 0.0681 | | | 0.0000 | | | 0.0000 |
| Off-Road | 3.5134 | 35.7830 | 22.0600 | 0.0388 | | 1.7949 | 1.7949 | | 1.6697 | 1.6697 | | 3,816.8994 | 3,816.8994 | 1.0618 | | 3,843.4451 |
| **Total** | **3.5134** | **35.7830** | **22.0600** | **0.0388** | **0.4501** | **1.7949** | **2.2450** | **0.0681** | **1.6697** | **1.7378** | | **3,816.8994** | **3,816.8994** | **1.0618** | | **3,843.4451** |

## 3.2 Demolition - 2019

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0192 | 0.6241 | 0.1088 | 1.7000e-003 | 0.0364 | 2.6700e-003 | 0.0391 | 9.9800e-003 | 2.5500e-003 | 0.0125 | | 177.9120 | 177.9120 | 6.8200e-003 | | 178.0825 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0876 | 0.0670 | 0.6264 | 1.7400e-003 | 0.1916 | 1.1900e-003 | 0.1928 | 0.0508 | 1.1000e-003 | 0.0519 | | 173.7827 | 173.7827 | 4.6100e-003 | | 173.8981 |
| **Total** | **0.1068** | **0.6911** | **0.7352** | **3.4400e-003** | **0.2280** | **3.8600e-003** | **0.2318** | **0.0608** | **3.6500e-003** | **0.0644** | | **351.6947** | **351.6947** | **0.0114** | | **351.9806** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 0.4501 | 0.0000 | 0.4501 | 0.0681 | 0.0000 | 0.0681 | | | 0.0000 | | | 0.0000 |
| Off-Road | 3.5134 | 35.7830 | 22.0600 | 0.0388 | | 1.7949 | 1.7949 | | 1.6697 | 1.6697 | 0.0000 | 3,816.8994 | 3,816.8994 | 1.0618 | | 3,843.4451 |
| **Total** | **3.5134** | **35.7830** | **22.0600** | **0.0388** | **0.4501** | **1.7949** | **2.2450** | **0.0681** | **1.6697** | **1.7378** | **0.0000** | **3,816.8994** | **3,816.8994** | **1.0618** | | **3,843.4451** |

## 3.2 Demolition - 2019

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0192 | 0.6241 | 0.1088 | 1.7000e-003 | 0.0364 | 2.6700e-003 | 0.0391 | 9.9800e-003 | 2.5500e-003 | 0.0125 | | 177.9120 | 177.9120 | 6.8200e-003 | | 178.0825 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0876 | 0.0670 | 0.6264 | 1.7400e-003 | 0.1916 | 1.1900e-003 | 0.1928 | 0.0508 | 1.1000e-003 | 0.0519 | | 173.7827 | 173.7827 | 4.6100e-003 | | 173.8981 |
| **Total** | **0.1068** | **0.6911** | **0.7352** | **3.4400e-003** | **0.2280** | **3.8600e-003** | **0.2318** | **0.0608** | **3.6500e-003** | **0.0644** | | **351.6947** | **351.6947** | **0.0114** | | **351.9806** |

## 3.3 Site Preparation - 2019

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 18.0688 | 0.0000 | 18.0688 | 9.9311 | 0.0000 | 9.9311 | | | 0.0000 | | | 0.0000 |
| Off-Road | 4.3350 | 45.5727 | 22.0630 | 0.0380 | | 2.3904 | 2.3904 | | 2.1991 | 2.1991 | | 3,766.4529 | 3,766.4529 | 1.1917 | | 3,796.2445 |
| **Total** | **4.3350** | **45.5727** | **22.0630** | **0.0380** | **18.0688** | **2.3904** | **20.4592** | **9.9311** | **2.1991** | **12.1302** | | **3,766.4529** | **3,766.4529** | **1.1917** | | **3,796.2445** |

## 3.3 Site Preparation - 2019

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0258 | 0.8402 | 0.1464 | 2.2900e-003 | 0.0490 | 3.5900e-003 | 0.0526 | 0.0134 | 3.4300e-003 | 0.0169 | | 239.4969 | 239.4969 | 9.1800e-003 | | 239.7265 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.1052 | 0.0804 | 0.7517 | 2.0900e-003 | 0.2299 | 1.4300e-003 | 0.2313 | 0.0610 | 1.3200e-003 | 0.0623 | | 208.5392 | 208.5392 | 5.5400e-003 | | 208.6777 |
| **Total** | **0.1310** | **0.9206** | **0.8981** | **4.3800e-003** | **0.2789** | **5.0200e-003** | **0.2839** | **0.0744** | **4.7500e-003** | **0.0792** | | **448.0361** | **448.0361** | **0.0147** | | **448.4041** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 18.0688 | 0.0000 | 18.0688 | 9.9311 | 0.0000 | 9.9311 | | | 0.0000 | | | 0.0000 |
| Off-Road | 4.3350 | 45.5727 | 22.0630 | 0.0380 | | 2.3904 | 2.3904 | | 2.1991 | 2.1991 | 0.0000 | 3,766.4529 | 3,766.4529 | 1.1917 | | 3,796.2445 |
| **Total** | **4.3350** | **45.5727** | **22.0630** | **0.0380** | **18.0688** | **2.3904** | **20.4592** | **9.9311** | **2.1991** | **12.1302** | **0.0000** | **3,766.4529** | **3,766.4529** | **1.1917** | | **3,796.2445** |

## 3.3 Site Preparation - 2019

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0258 | 0.8402 | 0.1464 | 2.2900e-003 | 0.0490 | 3.5900e-003 | 0.0526 | 0.0134 | 3.4300e-003 | 0.0169 | | 239.4969 | 239.4969 | 9.1800e-003 | | 239.7265 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.1052 | 0.0804 | 0.7517 | 2.0900e-003 | 0.2299 | 1.4300e-003 | 0.2313 | 0.0610 | 1.3200e-003 | 0.0623 | | 208.5392 | 208.5392 | 5.5400e-003 | | 208.6777 |
| **Total** | **0.1310** | **0.9206** | **0.8981** | **4.3800e-003** | **0.2789** | **5.0200e-003** | **0.2839** | **0.0744** | **4.7500e-003** | **0.0792** | | **448.0361** | **448.0361** | **0.0147** | | **448.4041** |

## 3.4 Grading - 2019

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 6.3088 | 0.0000 | 6.3088 | 3.3413 | 0.0000 | 3.3413 | | | 0.0000 | | | 0.0000 |
| Off-Road | 4.7389 | 54.5202 | 33.3768 | 0.0620 | | 2.3827 | 2.3827 | | 2.1920 | 2.1920 | | 6,140.0195 | 6,140.0195 | 1.9426 | | 6,188.5854 |
| **Total** | **4.7389** | **54.5202** | **33.3768** | **0.0620** | **6.3088** | **2.3827** | **8.6914** | **3.3413** | **2.1920** | **5.5333** | | **6,140.0195** | **6,140.0195** | **1.9426** | | **6,188.5854** |

## 3.4 Grading - 2019

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.1156 | 3.5780 | 0.6296 | 0.0119 | 0.2892 | 0.0194 | 0.3086 | 0.0793 | 0.0186 | 0.0979 | | 1,241.9206 | 1,241.9206 | 0.0174 | | 1,242.3567 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.1169 | 0.0893 | 0.8352 | 2.3300e-003 | 0.2555 | 1.5900e-003 | 0.2571 | 0.0678 | 1.4600e-003 | 0.0692 | | 231.7103 | 231.7103 | 6.1500e-003 | | 231.8641 |
| **Total** | **0.2325** | **3.6673** | **1.4648** | **0.0142** | **0.5447** | **0.0210** | **0.5657** | **0.1470** | **0.0201** | **0.1671** | | **1,473.6309** | **1,473.6309** | **0.0236** | | **1,474.2208** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 6.3088 | 0.0000 | 6.3088 | 3.3413 | 0.0000 | 3.3413 | | | 0.0000 | | | 0.0000 |
| Off-Road | 4.7389 | 54.5202 | 33.3768 | 0.0620 | | 2.3827 | 2.3827 | | 2.1920 | 2.1920 | 0.0000 | 6,140.0195 | 6,140.0195 | 1.9426 | | 6,188.5854 |
| **Total** | **4.7389** | **54.5202** | **33.3768** | **0.0620** | **6.3088** | **2.3827** | **8.6914** | **3.3413** | **2.1920** | **5.5333** | **0.0000** | **6,140.0195** | **6,140.0195** | **1.9426** | | **6,188.5854** |

## 3.4 Grading - 2019

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.1156 | 3.5780 | 0.6296 | 0.0119 | 0.2892 | 0.0194 | 0.3086 | 0.0793 | 0.0186 | 0.0979 | | 1,241.9206 | 1,241.9206 | 0.0174 | | 1,242.3567 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.1169 | 0.0893 | 0.8352 | 2.3300e-003 | 0.2555 | 1.5900e-003 | 0.2571 | 0.0678 | 1.4600e-003 | 0.0692 | | 231.7103 | 231.7103 | 6.1500e-003 | | 231.8641 |
| **Total** | **0.2325** | **3.6673** | **1.4648** | **0.0142** | **0.5447** | **0.0210** | **0.5657** | **0.1470** | **0.0201** | **0.1671** | | **1,473.6309** | **1,473.6309** | **0.0236** | | **1,474.2208** |

## 3.5 Building Construction - 2019

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 2.3612 | 21.0788 | 17.1638 | 0.0269 | | 1.2899 | 1.2899 | | 1.2127 | 1.2127 | | 2,591.5802 | 2,591.5802 | 0.6313 | | 2,607.3635 |
| **Total** | **2.3612** | **21.0788** | **17.1638** | **0.0269** | | **1.2899** | **1.2899** | | **1.2127** | **1.2127** | | **2,591.5802** | **2,591.5802** | **0.6313** | | **2,607.3635** |

## 3.5 Building Construction - 2019

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0865 | 2.4586 | 0.5650 | 5.3300e-003 | 0.1225 | 0.0145 | 0.1370 | 0.0353 | 0.0139 | 0.0491 | | 557.5969 | 557.5969 | 0.0341 | | 558.4504 |
| Worker | 0.2980 | 0.2278 | 2.1299 | 5.9300e-003 | 0.6514 | 4.0500e-003 | 0.6555 | 0.1728 | 3.7300e-003 | 0.1765 | | 590.8612 | 590.8612 | 0.0157 | | 591.2534 |
| **Total** | **0.3845** | **2.6864** | **2.6949** | **0.0113** | **0.7740** | **0.0185** | **0.7925** | **0.2080** | **0.0176** | **0.2256** | | **1,148.4581** | **1,148.4581** | **0.0498** | | **1,149.7038** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 2.3612 | 21.0788 | 17.1638 | 0.0269 | | 1.2899 | 1.2899 | | 1.2127 | 1.2127 | 0.0000 | 2,591.5802 | 2,591.5802 | 0.6313 | | 2,607.3635 |
| **Total** | **2.3612** | **21.0788** | **17.1638** | **0.0269** | | **1.2899** | **1.2899** | | **1.2127** | **1.2127** | **0.0000** | **2,591.5802** | **2,591.5802** | **0.6313** | | **2,607.3635** |

## 3.5 Building Construction - 2019

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0865 | 2.4586 | 0.5650 | 5.3300e-003 | 0.1225 | 0.0145 | 0.1370 | 0.0353 | 0.0139 | 0.0491 | | 557.5969 | 557.5969 | 0.0341 | | 558.4504 |
| Worker | 0.2980 | 0.2278 | 2.1299 | 5.9300e-003 | 0.6514 | 4.0500e-003 | 0.6555 | 0.1728 | 3.7300e-003 | 0.1765 | | 590.8612 | 590.8612 | 0.0157 | | 591.2534 |
| **Total** | **0.3845** | **2.6864** | **2.6949** | **0.0113** | **0.7740** | **0.0185** | **0.7925** | **0.2080** | **0.0176** | **0.2256** | | **1,148.4581** | **1,148.4581** | **0.0498** | | **1,149.7038** |

## 3.5 Building Construction - 2020

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 2.1198 | 19.1860 | 16.8485 | 0.0269 | | 1.1171 | 1.1171 | | 1.0503 | 1.0503 | | 2,553.0631 | 2,553.0631 | 0.6229 | | 2,568.6345 |
| **Total** | **2.1198** | **19.1860** | **16.8485** | **0.0269** | | **1.1171** | **1.1171** | | **1.0503** | **1.0503** | | **2,553.0631** | **2,553.0631** | **0.6229** | | **2,568.6345** |

## 3.5 Building Construction - 2020

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0723 | 2.2750 | 0.4986 | 5.2900e-003 | 0.1225 | 9.6600e-003 | 0.1322 | 0.0353 | 9.2400e-003 | 0.0445 | | 553.1708 | 553.1708 | 0.0316 | | 553.9605 |
| Worker | 0.2735 | 0.2016 | 1.9041 | 5.7400e-003 | 0.6514 | 3.9600e-003 | 0.6554 | 0.1728 | 3.6500e-003 | 0.1764 | | 571.9420 | 571.9420 | 0.0136 | | 572.2822 |
| **Total** | **0.3459** | **2.4767** | **2.4026** | **0.0110** | **0.7740** | **0.0136** | **0.7876** | **0.2080** | **0.0129** | **0.2209** | | **1,125.1128** | **1,125.1128** | **0.0452** | | **1,126.2427** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 2.1198 | 19.1860 | 16.8485 | 0.0269 | | 1.1171 | 1.1171 | | 1.0503 | 1.0503 | 0.0000 | 2,553.0631 | 2,553.0631 | 0.6229 | | 2,568.6345 |
| **Total** | **2.1198** | **19.1860** | **16.8485** | **0.0269** | | **1.1171** | **1.1171** | | **1.0503** | **1.0503** | **0.0000** | **2,553.0631** | **2,553.0631** | **0.6229** | | **2,568.6345** |

## 3.5 Building Construction - 2020

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0723 | 2.2750 | 0.4986 | 5.2900e-003 | 0.1225 | 9.6600e-003 | 0.1322 | 0.0353 | 9.2400e-003 | 0.0445 | | 553.1708 | 553.1708 | 0.0316 | | 553.9605 |
| Worker | 0.2735 | 0.2016 | 1.9041 | 5.7400e-003 | 0.6514 | 3.9600e-003 | 0.6554 | 0.1728 | 3.6500e-003 | 0.1764 | | 571.9420 | 571.9420 | 0.0136 | | 572.2822 |
| **Total** | **0.3459** | **2.4767** | **2.4026** | **0.0110** | **0.7740** | **0.0136** | **0.7876** | **0.2080** | **0.0129** | **0.2209** | | **1,125.1128** | **1,125.1128** | **0.0452** | | **1,126.2427** |

## 3.6 Paving - 2019

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.4544 | 15.2441 | 14.6648 | 0.0228 | | 0.8246 | 0.8246 | | 0.7586 | 0.7586 | | 2,257.0025 | 2,257.0025 | 0.7141 | | 2,274.8548 |
| Paving | 0.2549 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **1.7093** | **15.2441** | **14.6648** | **0.0228** | | **0.8246** | **0.8246** | | **0.7586** | **0.7586** | | **2,257.0025** | **2,257.0025** | **0.7141** | | **2,274.8548** |

## 3.6 Paving - 2019

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0876 | 0.0670 | 0.6264 | 1.7400e-003 | 0.1916 | 1.1900e-003 | 0.1928 | 0.0508 | 1.1000e-003 | 0.0519 | | 173.7827 | 173.7827 | 4.6100e-003 | | 173.8981 |
| **Total** | **0.0876** | **0.0670** | **0.6264** | **1.7400e-003** | **0.1916** | **1.1900e-003** | **0.1928** | **0.0508** | **1.1000e-003** | **0.0519** | | **173.7827** | **173.7827** | **4.6100e-003** | | **173.8981** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.4544 | 15.2441 | 14.6648 | 0.0228 | | 0.8246 | 0.8246 | | 0.7586 | 0.7586 | 0.0000 | 2,257.0025 | 2,257.0025 | 0.7141 | | 2,274.8548 |
| Paving | 0.2549 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **1.7093** | **15.2441** | **14.6648** | **0.0228** | | **0.8246** | **0.8246** | | **0.7586** | **0.7586** | **0.0000** | **2,257.0025** | **2,257.0025** | **0.7141** | | **2,274.8548** |

## 3.6 Paving - 2019

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0876 | 0.0670 | 0.6264 | 1.7400e-003 | 0.1916 | 1.1900e-003 | 0.1928 | 0.0508 | 1.1000e-003 | 0.0519 | | 173.7827 | 173.7827 | 4.6100e-003 | | 173.8981 |
| **Total** | **0.0876** | **0.0670** | **0.6264** | **1.7400e-003** | **0.1916** | **1.1900e-003** | **0.1928** | **0.0508** | **1.1000e-003** | **0.0519** | | **173.7827** | **173.7827** | **4.6100e-003** | | **173.8981** |

## 3.7 Architectural Coating - 2019

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Archit. Coating | 2.3813 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.2664 | 1.8354 | 1.8413 | 2.9700e-003 | | 0.1288 | 0.1288 | | 0.1288 | 0.1288 | | 281.4481 | 281.4481 | 0.0238 | | 282.0423 |
| **Total** | **2.6477** | **1.8354** | **1.8413** | **2.9700e-003** | | **0.1288** | **0.1288** | | **0.1288** | **0.1288** | | **281.4481** | **281.4481** | **0.0238** | | **282.0423** |

## 3.7 Architectural Coating - 2019

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0584 | 0.0447 | 0.4176 | 1.1600e-003 | 0.1277 | 7.9000e-004 | 0.1285 | 0.0339 | 7.3000e-004 | 0.0346 | | 115.8551 | 115.8551 | 3.0800e-003 | | 115.9320 |
| **Total** | **0.0584** | **0.0447** | **0.4176** | **1.1600e-003** | **0.1277** | **7.9000e-004** | **0.1285** | **0.0339** | **7.3000e-004** | **0.0346** | | **115.8551** | **115.8551** | **3.0800e-003** | | **115.9320** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Archit. Coating | 2.3813 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.2664 | 1.8354 | 1.8413 | 2.9700e-003 | | 0.1288 | 0.1288 | | 0.1288 | 0.1288 | 0.0000 | 281.4481 | 281.4481 | 0.0238 | | 282.0423 |
| **Total** | **2.6477** | **1.8354** | **1.8413** | **2.9700e-003** | | **0.1288** | **0.1288** | | **0.1288** | **0.1288** | **0.0000** | **281.4481** | **281.4481** | **0.0238** | | **282.0423** |

## 3.7 Architectural Coating - 2019

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0584 | 0.0447 | 0.4176 | 1.1600e-003 | 0.1277 | 7.9000e-004 | 0.1285 | 0.0339 | 7.3000e-004 | 0.0346 | | 115.8551 | 115.8551 | 3.0800e-003 | | 115.9320 |
| **Total** | **0.0584** | **0.0447** | **0.4176** | **1.1600e-003** | **0.1277** | **7.9000e-004** | **0.1285** | **0.0339** | **7.3000e-004** | **0.0346** | | **115.8551** | **115.8551** | **3.0800e-003** | | **115.9320** |

## 3.7 Architectural Coating - 2020

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Archit. Coating | 2.3813 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.2422 | 1.6838 | 1.8314 | 2.9700e-003 | | 0.1109 | 0.1109 | | 0.1109 | 0.1109 | | 281.4481 | 281.4481 | 0.0218 | | 281.9928 |
| **Total** | **2.6235** | **1.6838** | **1.8314** | **2.9700e-003** | | **0.1109** | **0.1109** | | **0.1109** | **0.1109** | | **281.4481** | **281.4481** | **0.0218** | | **281.9928** |

## 3.7 Architectural Coating - 2020

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0536 | 0.0395 | 0.3733 | 1.1300e-003 | 0.1277 | 7.8000e-004 | 0.1285 | 0.0339 | 7.2000e-004 | 0.0346 | | 112.1455 | 112.1455 | 2.6700e-003 | | 112.2122 |
| **Total** | **0.0536** | **0.0395** | **0.3733** | **1.1300e-003** | **0.1277** | **7.8000e-004** | **0.1285** | **0.0339** | **7.2000e-004** | **0.0346** | | **112.1455** | **112.1455** | **2.6700e-003** | | **112.2122** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Archit. Coating | 2.3813 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.2422 | 1.6838 | 1.8314 | 2.9700e-003 | | 0.1109 | 0.1109 | | 0.1109 | 0.1109 | 0.0000 | 281.4481 | 281.4481 | 0.0218 | | 281.9928 |
| **Total** | **2.6235** | **1.6838** | **1.8314** | **2.9700e-003** | | **0.1109** | **0.1109** | | **0.1109** | **0.1109** | **0.0000** | **281.4481** | **281.4481** | **0.0218** | | **281.9928** |

## 3.7 Architectural Coating - 2020

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0536 | 0.0395 | 0.3733 | 1.1300e-003 | 0.1277 | 7.8000e-004 | 0.1285 | 0.0339 | 7.2000e-004 | 0.0346 | | 112.1455 | 112.1455 | 2.6700e-003 | | 112.2122 |
| **Total** | **0.0536** | **0.0395** | **0.3733** | **1.1300e-003** | **0.1277** | **7.8000e-004** | **0.1285** | **0.0339** | **7.2000e-004** | **0.0346** | | **112.1455** | **112.1455** | **2.6700e-003** | | **112.2122** |

# 4.0 Operational Detail - Mobile

## 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 0.4459 | 3.3199 | 5.6768 | 0.0205 | 1.6208 | 0.0187 | 1.6396 | 0.4344 | 0.0176 | 0.4520 | | 2,074.9050 | 2,074.9050 | 0.0848 | | 2,077.0249 |
| Unmitigated | 0.4459 | 3.3199 | 5.6768 | 0.0205 | 1.6208 | 0.0187 | 1.6396 | 0.4344 | 0.0176 | 0.4520 | | 2,074.9050 | 2,074.9050 | 0.0848 | | 2,077.0249 |

## 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| Elementary School | 253.50 | 0.00 | 0.00 | 542,341 | 542,341 |
| Parking Lot | 0.00 | 0.00 | 0.00 | | |
| Other Asphalt Surfaces | 0.00 | 0.00 | 0.00 | | |
| Total | 253.50 | 0.00 | 0.00 | 542,341 | 542,341 |

## 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C-W | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| Elementary School | 14.70 | 6.60 | 6.60 | 65.00 | 30.00 | 5.00 | 63 | 25 | 12 |
| Parking Lot | 14.70 | 6.60 | 6.60 | 0.00 | 0.00 | 0.00 | 0 | 0 | 0 |
| Other Asphalt Surfaces | 14.70 | 6.60 | 6.60 | 0.00 | 0.00 | 0.00 | 0 | 0 | 0 |

## 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Elementary School | 0.494811 | 0.040252 | 0.220236 | 0.128508 | 0.023782 | 0.006284 | 0.029295 | 0.046215 | 0.001446 | 0.001205 | 0.005961 | 0.000773 | 0.001232 |
| Parking Lot | 0.494811 | 0.040252 | 0.220236 | 0.128508 | 0.023782 | 0.006284 | 0.029295 | 0.046215 | 0.001446 | 0.001205 | 0.005961 | 0.000773 | 0.001232 |
| Other Asphalt Surfaces | 0.494811 | 0.040252 | 0.220236 | 0.128508 | 0.023782 | 0.006284 | 0.029295 | 0.046215 | 0.001446 | 0.001205 | 0.005961 | 0.000773 | 0.001232 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| NaturalGas Mitigated | 0.0136 | 0.1238 | 0.1040 | 7.4000e-004 | | 9.4000e-003 | 9.4000e-003 | | 9.4000e-003 | 9.4000e-003 | | 148.4982 | 148.4982 | 2.8500e-003 | 2.7200e-003 | 149.3806 |
| NaturalGas Unmitigated | 0.0136 | 0.1238 | 0.1040 | 7.4000e-004 | | 9.4000e-003 | 9.4000e-003 | | 9.4000e-003 | 9.4000e-003 | | 148.4982 | 148.4982 | 2.8500e-003 | 2.7200e-003 | 149.3806 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| Elementary School | 1262.23 | 0.0136 | 0.1238 | 0.1040 | 7.4000e-004 | | 9.4000e-003 | 9.4000e-003 | | 9.4000e-003 | 9.4000e-003 | | 148.4982 | 148.4982 | 2.8500e-003 | 2.7200e-003 | 149.3806 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Parking Lot | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0136** | **0.1238** | **0.1040** | **7.4000e-004** | | **9.4000e-003** | **9.4000e-003** | | **9.4000e-003** | **9.4000e-003** | | **148.4982** | **148.4982** | **2.8500e-003** | **2.7200e-003** | **149.3806** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| Elementary School | 1.26223 | 0.0136 | 0.1238 | 0.1040 | 7.4000e-004 | | 9.4000e-003 | 9.4000e-003 | | 9.4000e-003 | 9.4000e-003 | | 148.4982 | 148.4982 | 2.8500e-003 | 2.7200e-003 | 149.3806 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Parking Lot | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0136** | **0.1238** | **0.1040** | **7.4000e-004** | | **9.4000e-003** | **9.4000e-003** | | **9.4000e-003** | **9.4000e-003** | | **148.4982** | **148.4982** | **2.8500e-003** | **2.7200e-003** | **149.3806** |

## 6.0 Area Detail

## 6.1 Mitigation Measures Area

Use Low VOC Cleaning Supplies

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 1.1211 | 2.5000e-004 | 0.0276 | 0.0000 | | 1.0000e-004 | 1.0000e-004 | | 1.0000e-004 | 1.0000e-004 | | 0.0589 | 0.0589 | 1.6000e-004 | | 0.0628 |
| Unmitigated | 1.1990 | 2.5000e-004 | 0.0276 | 0.0000 | | 1.0000e-004 | 1.0000e-004 | | 1.0000e-004 | 1.0000e-004 | | 0.0589 | 0.0589 | 1.6000e-004 | | 0.0628 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 0.1292 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 1.0672 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 2.5800e-003 | 2.5000e-004 | 0.0276 | 0.0000 | | 1.0000e-004 | 1.0000e-004 | | 1.0000e-004 | 1.0000e-004 | | 0.0589 | 0.0589 | 1.6000e-004 | | 0.0628 |
| **Total** | **1.1990** | **2.5000e-004** | **0.0276** | **0.0000** | | **1.0000e-004** | **1.0000e-004** | | **1.0000e-004** | **1.0000e-004** | | **0.0589** | **0.0589** | **1.6000e-004** | | **0.0628** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 0.1292 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 0.9894 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 2.5800e-003 | 2.5000e-004 | 0.0276 | 0.0000 | | 1.0000e-004 | 1.0000e-004 | | 1.0000e-004 | 1.0000e-004 | | 0.0589 | 0.0589 | 1.6000e-004 | | 0.0628 |
| **Total** | **1.1211** | **2.5000e-004** | **0.0276** | **0.0000** | | **1.0000e-004** | **1.0000e-004** | | **1.0000e-004** | **1.0000e-004** | | **0.0589** | **0.0589** | **1.6000e-004** | | **0.0628** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

Apply Water Conservation Strategy

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|
| Emergency Generator | 2 | 0.03 | 12 | 201 | 0.73 | Diesel |

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 10.1 Stationary Sources

**Unmitigated/Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Equipment Type | lb/day | | | | | | | | | | lb/day | | | | | |
| Emergency Generator - Diesel (175 - 300 HP) | 0.0198 | 0.0553 | 0.0505 | 1.0000e-004 | | 2.9100e-003 | 2.9100e-003 | | 2.9100e-003 | 2.9100e-003 | | 10.1245 | 10.1245 | 1.4200e-003 | | 10.1600 |
| **Total** | **0.0198** | **0.0553** | **0.0505** | **1.0000e-004** | | **2.9100e-003** | **2.9100e-003** | | **2.9100e-003** | **2.9100e-003** | | **10.1245** | **10.1245** | **1.4200e-003** | | **10.1600** |

## 11.0 Vegetation

# United Auburn Indian Community School Project

## Placer County APCD Air District, Mitigation Report

## Construction Mitigation Summary

| Phase | ROG | NOx | CO | SO2 | Exhaust PM10 | Exhaust PM2.5 | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Percent Reduction | | | | | | | | | | | | |
| Architectural Coating | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Building Construction | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Demolition | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grading | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Site Preparation | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

## OFFROAD Equipment Mitigation

| Equipment Type | Fuel Type | Tier | Number Mitigated | Total Number of Equipment | DPF | Oxidation Catalyst |
|---|---|---|---|---|---|---|
| Air Compressors | Diesel | No Change | 0 | 1 | No Change | 0.00 |
| Concrete/Industrial Saws | Diesel | No Change | 0 | 1 | No Change | 0.00 |
| Cranes | Diesel | No Change | 0 | 1 | No Change | 0.00 |
| Excavators | Diesel | No Change | 0 | 5 | No Change | 0.00 |
| Forklifts | Diesel | No Change | 0 | 3 | No Change | 0.00 |
| Generator Sets | Diesel | No Change | 0 | 1 | No Change | 0.00 |
| Graders | Diesel | No Change | 0 | 1 | No Change | 0.00 |
| Pavers | Diesel | No Change | 0 | 2 | No Change | 0.00 |
| Paving Equipment | Diesel | No Change | 0 | 2 | No Change | 0.00 |
| Rollers | Diesel | No Change | 0 | 2 | No Change | 0.00 |
| Rubber Tired Dozers | Diesel | No Change | 0 | 6 | No Change | 0.00 |
| Scrapers | Diesel | No Change | 0 | 2 | No Change | 0.00 |
| Tractors/Loaders/Backhoes | Diesel | No Change | 0 | 9 | No Change | 0.00 |
| Welders | Diesel | No Change | 0 | 1 | No Change | 0.00 |

| Equipment Type | ROG | NOx | CO | SO2 | Exhaust PM10 | Exhaust PM2.5 | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Unmitigated tons/yr | | | | | | Unmitigated mt/yr | | | | | |
| Air Compressors | 2.41300E-002 | 1.67680E-001 | 1.81380E-001 | 2.90000E-004 | 1.11000E-002 | 1.11000E-002 | 0.00000E+000 | 2.52772E+001 | 2.52772E+001 | 1.97000E-003 | 0.00000E+000 | 2.53264E+001 |
| Concrete/Industrial Saws | 5.77000E-003 | 4.48600E-002 | 4.62800E-002 | 8.00000E-005 | 2.87000E-003 | 2.87000E-003 | 0.00000E+000 | 6.72072E+000 | 6.72072E+000 | 4.70000E-004 | 0.00000E+000 | 6.73254E+000 |
| Cranes | 3.98100E-002 | 4.73500E-001 | 1.85110E-001 | 5.00000E-004 | 1.95900E-002 | 1.80300E-002 | 0.00000E+000 | 4.40307E+001 | 4.40307E+001 | 1.42000E-002 | 0.00000E+000 | 4.43858E+001 |
| Excavators | 2.69900E-002 | 2.77570E-001 | 3.37740E-001 | 5.30000E-004 | 1.33900E-002 | 1.23200E-002 | 0.00000E+000 | 4.79914E+001 | 4.79914E+001 | 1.51800E-002 | 0.00000E+000 | 4.83710E+001 |
| Forklifts | 4.33500E-002 | 3.90070E-001 | 3.51040E-001 | 4.50000E-004 | 2.92100E-002 | 2.68800E-002 | 0.00000E+000 | 3.99920E+001 | 3.99920E+001 | 1.29000E-002 | 0.00000E+000 | 4.03144E+001 |
| Generator Sets | 4.00500E-002 | 3.47970E-001 | 3.67060E-001 | 6.50000E-004 | 1.97800E-002 | 1.97800E-002 | 0.00000E+000 | 5.59555E+001 | 5.59555E+001 | 3.20000E-003 | 0.00000E+000 | 5.60355E+001 |
| Graders | 1.60600E-002 | 2.17130E-001 | 6.06600E-002 | 2.20000E-004 | 6.97000E-003 | 6.41000E-003 | 0.00000E+000 | 1.96875E+001 | 1.96875E+001 | 6.23000E-003 | 0.00000E+000 | 1.98432E+001 |
| Pavers | 6.33000E-003 | 6.87400E-002 | 6.38400E-002 | 1.00000E-004 | 3.37000E-003 | 3.10000E-003 | 0.00000E+000 | 9.29044E+000 | 9.29044E+000 | 2.94000E-003 | 0.00000E+000 | 9.36393E+000 |
| Paving Equipment | 4.68000E-003 | 4.96400E-002 | 5.55200E-002 | 9.00000E-005 | 2.46000E-003 | 2.27000E-003 | 0.00000E+000 | 8.04947E+000 | 8.04947E+000 | 2.55000E-003 | 0.00000E+000 | 8.11314E+000 |
| Rollers | 4.98000E-003 | 4.93000E-002 | 4.19600E-002 | 6.00000E-005 | 3.24000E-003 | 2.98000E-003 | 0.00000E+000 | 5.18279E+000 | 5.18279E+000 | 1.64000E-003 | 0.00000E+000 | 5.22378E+000 |
| Rubber Tired Dozers | 9.13300E-002 | 9.71990E-001 | 3.44870E-001 | 6.90000E-004 | 4.73900E-002 | 4.36000E-002 | 0.00000E+000 | 6.17403E+001 | 6.17403E+001 | 1.95300E-002 | 0.00000E+000 | 6.22286E+001 |
| Scrapers | 7.03100E-002 | 8.52310E-001 | 5.32050E-001 | 1.00000E-003 | 3.34000E-002 | 3.07200E-002 | 0.00000E+000 | 8.98002E+001 | 8.98002E+001 | 2.84100E-002 | 0.00000E+000 | 9.05105E+001 |
| Tractors/Loaders/Backhoes | 7.75300E-002 | 7.78780E-001 | 8.14220E-001 | 1.11000E-003 | 5.03000E-002 | 4.62700E-002 | 0.00000E+000 | 9.78849E+001 | 9.78849E+001 | 3.14100E-002 | 0.00000E+000 | 9.86701E+001 |
| Welders | 3.43800E-002 | 1.56200E-001 | 1.75420E-001 | 2.50000E-004 | 8.76000E-003 | 8.76000E-003 | 0.00000E+000 | 1.86338E+001 | 1.86338E+001 | 2.80000E-003 | 0.00000E+000 | 1.87038E+001 |

| Equipment Type | ROG | NOx | CO | SO2 | Exhaust PM10 | Exhaust PM2.5 | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mitigated tons/yr | | | | | | Mitigated mt/yr | | | | | |
| Air Compressors | 2.41300E-002 | 1.67680E-001 | 1.81370E-001 | 2.90000E-004 | 1.11000E-002 | 1.11000E-002 | 0.00000E+000 | 2.52772E+001 | 2.52772E+001 | 1.97000E-003 | 0.00000E+000 | 2.53264E+001 |
| Concrete/Industrial Saws | 5.77000E-003 | 4.48600E-002 | 4.62800E-002 | 8.00000E-005 | 2.87000E-003 | 2.87000E-003 | 0.00000E+000 | 6.72071E+000 | 6.72071E+000 | 4.70000E-004 | 0.00000E+000 | 6.73253E+000 |
| Cranes | 3.98100E-002 | 4.73500E-001 | 1.85110E-001 | 5.00000E-004 | 1.95900E-002 | 1.80300E-002 | 0.00000E+000 | 4.40307E+001 | 4.40307E+001 | 1.42000E-002 | 0.00000E+000 | 4.43857E+001 |
| Excavators | 2.69900E-002 | 2.77570E-001 | 3.37740E-001 | 5.30000E-004 | 1.33900E-002 | 1.23200E-002 | 0.00000E+000 | 4.79914E+001 | 4.79914E+001 | 1.51800E-002 | 0.00000E+000 | 4.83710E+001 |
| Forklifts | 4.33500E-002 | 3.90070E-001 | 3.51040E-001 | 4.50000E-004 | 2.92100E-002 | 2.68800E-002 | 0.00000E+000 | 3.99919E+001 | 3.99919E+001 | 1.29000E-002 | 0.00000E+000 | 4.03144E+001 |
| Generator Sets | 4.00500E-002 | 3.47970E-001 | 3.67060E-001 | 6.50000E-004 | 1.97800E-002 | 1.97800E-002 | 0.00000E+000 | 5.59555E+001 | 5.59555E+001 | 3.20000E-003 | 0.00000E+000 | 5.60354E+001 |
| Graders | 1.60600E-002 | 2.17130E-001 | 6.06600E-002 | 2.20000E-004 | 6.97000E-003 | 6.41000E-003 | 0.00000E+000 | 1.96874E+001 | 1.96874E+001 | 6.23000E-003 | 0.00000E+000 | 1.98432E+001 |
| Pavers | 6.33000E-003 | 6.87400E-002 | 6.38400E-002 | 1.00000E-004 | 3.37000E-003 | 3.10000E-003 | 0.00000E+000 | 9.29043E+000 | 9.29043E+000 | 2.94000E-003 | 0.00000E+000 | 9.36392E+000 |
| Paving Equipment | 4.68000E-003 | 4.96400E-002 | 5.55200E-002 | 9.00000E-005 | 2.46000E-003 | 2.27000E-003 | 0.00000E+000 | 8.04946E+000 | 8.04946E+000 | 2.55000E-003 | 0.00000E+000 | 8.11313E+000 |
| Rollers | 4.98000E-003 | 4.93000E-002 | 4.19600E-002 | 6.00000E-005 | 3.24000E-003 | 2.98000E-003 | 0.00000E+000 | 5.18278E+000 | 5.18278E+000 | 1.64000E-003 | 0.00000E+000 | 5.22377E+000 |
| Rubber Tired Dozers | 9.13300E-002 | 9.71990E-001 | 3.44870E-001 | 6.90000E-004 | 4.73900E-002 | 4.36000E-002 | 0.00000E+000 | 6.17402E+001 | 6.17402E+001 | 1.95300E-002 | 0.00000E+000 | 6.22285E+001 |
| Scrapers | 7.03100E-002 | 8.52310E-001 | 5.32050E-001 | 1.00000E-003 | 3.34000E-002 | 3.07200E-002 | 0.00000E+000 | 8.98001E+001 | 8.98001E+001 | 2.84100E-002 | 0.00000E+000 | 9.05104E+001 |
| Tractors/Loaders/Backhoes | 7.75300E-002 | 7.78780E-001 | 8.14220E-001 | 1.11000E-003 | 5.03000E-002 | 4.62700E-002 | 0.00000E+000 | 9.78848E+001 | 9.78848E+001 | 3.14100E-002 | 0.00000E+000 | 9.86699E+001 |
| Welders | 3.43800E-002 | 1.56200E-001 | 1.75420E-001 | 2.50000E-004 | 8.76000E-003 | 8.76000E-003 | 0.00000E+000 | 1.86338E+001 | 1.86338E+001 | 2.80000E-003 | 0.00000E+000 | 1.87038E+001 |

| Equipment Type | ROG | NOx | CO | SO2 | Exhaust PM10 | Exhaust PM2.5 | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Percent Reduction | | | | | | | | | | | | |
| Air Compressors | 0.00000E+000 | 0.00000E+000 | 5.51329E-005 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 1.18684E-006 | 1.18684E-006 | 0.00000E+000 | 0.00000E+000 | 1.18453E-006 |
| Concrete/Industrial Saws | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 1.48794E-006 | 1.48794E-006 | 0.00000E+000 | 0.00000E+000 | 1.48532E-006 |
| Cranes | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 1.13557E-006 | 1.13557E-006 | 0.00000E+000 | 0.00000E+000 | 1.12649E-006 |
| Excavators | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 1.25022E-006 | 1.25022E-006 | 0.00000E+000 | 0.00000E+000 | 1.24041E-006 |
| Forklifts | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 1.25025E-006 | 1.25025E-006 | 0.00000E+000 | 0.00000E+000 | 1.24025E-006 |
| Generator Sets | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 1.25099E-006 | 1.25099E-006 | 0.00000E+000 | 0.00000E+000 | 1.24921E-006 |
| Graders | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 1.52381E-006 | 1.52381E-006 | 0.00000E+000 | 0.00000E+000 | 1.00790E-006 |
| Pavers | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 1.07638E-006 | 1.07638E-006 | 0.00000E+000 | 0.00000E+000 | 1.06793E-006 |
| Paving Equipment | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 1.24232E-006 | 1.24232E-006 | 0.00000E+000 | 0.00000E+000 | 1.23257E-006 |
| Rollers | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 1.92946E-006 | 1.92946E-006 | 0.00000E+000 | 0.00000E+000 | 1.91432E-006 |
| Rubber Tired Dozers | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 1.29575E-006 | 1.29575E-006 | 0.00000E+000 | 0.00000E+000 | 1.12488E-006 |
| Scrapers | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 1.11358E-006 | 1.11358E-006 | 0.00000E+000 | 0.00000E+000 | 1.21533E-006 |
| Tractors/Loaders/Backhoes | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 1.22593E-006 | 1.22593E-006 | 0.00000E+000 | 0.00000E+000 | 1.21617E-006 |
| Welders | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 0.00000E+000 | 1.07332E-006 | 1.07332E-006 | 0.00000E+000 | 0.00000E+000 | 1.06930E-006 |

## Fugitive Dust Mitigation

| Yes/No | Mitigation Measure | Mitigation Input | | Mitigation Input | | Mitigation Input | |
|---|---|---|---|---|---|---|---|
| No | Soil Stabilizer for unpaved Roads | PM10 Reduction | | PM2.5 Reduction | | | |
| No | Replace Ground Cover of Area Disturbed | PM10 Reduction | | PM2.5 Reduction | | | |
| No | Water Exposed Area | PM10 Reduction | | PM2.5 Reduction | | Frequency (per day) | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| No | Unpaved Road Mitigation | Moisture Content % | | Vehicle Speed (mph) | 0.00 | | |
| No | Clean Paved Road | % PM Reduction | 0.00 | | | | |

| | | Unmitigated | | Mitigated | | Percent Reduction | |
|---|---|---|---|---|---|---|---|
| Phase | Source | PM10 | PM2.5 | PM10 | PM2.5 | PM10 | PM2.5 |
| Architectural Coating | Fugitive Dust | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Architectural Coating | Roads | 0.01 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 |
| Building Construction | Fugitive Dust | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Building Construction | Roads | 0.07 | 0.02 | 0.07 | 0.02 | 0.00 | 0.00 |
| Demolition | Fugitive Dust | 0.01 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 |
| Demolition | Roads | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grading | Fugitive Dust | 0.21 | 0.11 | 0.21 | 0.11 | 0.00 | 0.00 |
| Grading | Roads | 0.02 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 |
| Paving | Fugitive Dust | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving | Roads | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Site Preparation | Fugitive Dust | 0.14 | 0.07 | 0.14 | 0.07 | 0.00 | 0.00 |
| Site Preparation | Roads | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

## Operational Percent Reduction Summary

| Category | ROG | NOx | CO | SO2 | Exhaust PM10 | Exhaust PM2.5 | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Percent Reduction | | | | | | | | | | | | |
| Architectural Coating | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Consumer Products | 7.30 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Electricity | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hearth | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Landscaping | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Mobile | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Natural Gas | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Water Indoor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 19.99 | 23.12 | 22.78 | 20.04 | 20.00 | 22.05 |
| Water Outdoor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

## Operational Mobile Mitigation

Project Setting:

| Mitigation | Category | Measure | % Reduction | Input Value 1 | Input Value 2 | Input Value |
|---|---|---|---|---|---|---|
| No | Land Use | Increase Density | 0.00 | | | |
| No | Land Use | Increase Diversity | 0.11 | 0.33 | | |
| No | Land Use | Improve Walkability Design | 0.00 | | | |
| No | Land Use | Improve Destination Accessibility | 0.00 | | | |
| No | Land Use | Increase Transit Accessibility | 0.25 | | | |
| No | Land Use | Integrate Below Market Rate Housing | 0.00 | | | |
| | Land Use | Land Use SubTotal | 0.00 | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| No | Neighborhood Enhancements | Improve Pedestrian Network | | | | |
| No | Neighborhood Enhancements | Provide Traffic Calming Measures | | | | |
| No | Neighborhood Enhancements | Implement NEV Network | 0.00 | | | |
| | Neighborhood Enhancements | Neighborhood Enhancements Subtotal | 0.00 | | | |
| No | Parking Policy Pricing | Limit Parking Supply | 0.00 | | | |
| No | Parking Policy Pricing | Unbundle Parking Costs | 0.00 | | | |
| No | Parking Policy Pricing | On-street Market Pricing | 0.00 | | | |
| | Parking Policy Pricing | Parking Policy Pricing Subtotal | 0.00 | | | |
| No | Transit Improvements | Provide BRT System | 0.00 | | | |
| No | Transit Improvements | Expand Transit Network | 0.00 | | | |
| No | Transit Improvements | Increase Transit Frequency | 0.00 | | | |
| | Transit Improvements | Transit Improvements Subtotal | 0.00 | | | |
| | | Land Use and Site Enhancement Subtotal | 0.00 | | | |
| No | Commute | Implement Trip Reduction Program | | | | |
| No | Commute | Transit Subsidy | | | | |
| No | Commute | Implement Employee Parking "Cash Out" | | | | |
| No | Commute | Workplace Parking Charge | | | | |
| No | Commute | Encourage Telecommuting and Alternative Work Schedules | 0.00 | | | |
| No | Commute | Market Commute Trip Reduction Option | 0.00 | | | |
| No | Commute | Employee Vanpool/Shuttle | 0.00 | | 2.00 | |
| No | Commute | Provide Ride Sharing Program | | | | |
| | Commute | Commute Subtotal | 0.00 | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| No | School Trip | Implement School Bus Program | 0.00 | | | |
| | | Total VMT Reduction | 0.00 | | | |

## Area Mitigation

| Measure Implemented | Mitigation Measure | Input Value |
|---|---|---|
| No | Only Natural Gas Hearth | |
| No | No Hearth | |
| Yes | Use Low VOC Cleaning Supplies | |
| No | Use Low VOC Paint (Residential Interior) | 100.00 |
| No | Use Low VOC Paint (Residential Exterior) | 100.00 |
| No | Use Low VOC Paint (Non-residential Interior) | 100.00 |
| No | Use Low VOC Paint (Non-residential Exterior) | 100.00 |
| No | Use Low VOC Paint (Parking) | 100.00 |
| No | % Electric Lawnmower | 0.00 |
| No | % Electric Leafblower | 0.00 |
| No | % Electric Chainsaw | 0.00 |

## Energy Mitigation Measures

| Measure Implemented | Mitigation Measure | Input Value 1 | Input Value 2 |
|---|---|---|---|
| No | Exceed Title 24 | | |
| No | Install High Efficiency Lighting | | |
| No | On-site Renewable | | |

| Appliance Type | Land Use Subtype | % Improvement |
|---|---|---|
| ClothWasher | | 30.00 |
| DishWasher | | 15.00 |
| Fan | | 50.00 |
| Refrigerator | | 15.00 |

## Water Mitigation Measures

| Measure Implemented | Mitigation Measure | Input Value 1 | Input Value 2 |
|---|---|---|---|
| Yes | Apply Water Conservation on Strategy | 20.00 | 25.00 |
| No | Use Reclaimed Water | 0.00 | 0.00 |
| No | Use Grey Water | 0.00 | |
| No | Install low-flow bathroom faucet | 32.00 | |
| No | Install low-flow Kitchen faucet | 18.00 | |
| No | Install low-flow Toilet | 20.00 | |
| No | Install low-flow Shower | 20.00 | |
| No | Turf Reduction | 0.00 | |
| No | Use Water Efficient Irrigation Systems | 6.10 | |
| No | Water Efficient Landscape | 0.00 | 0.00 |

## Solid Waste Mitigation

| Mitigation Measures | Input Value |
|---|---|

| | |
|---|---|
| Institute Recycling and Composting Services<br>Percent Reduction in Waste Disposed | |

# Event Days Mobile Emissions Estimation

EMFAC2014 (v1.0.7) Emission Rates
Region Type: Air District
Region: Placer County APCD
Calendar Year: 2021
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HTSK and RUNLS, g/vehicle/day for IDLEX, RESTL and DIURN

| Region | CalYr | VehClass | MdlYr | Speed | Fuel | Population | VMT | Proportion of Total VMT | Trips | ROG_RUNEX | CO_RUNEX | NOx_RUNEX | CO2_RUNEX | PM10_RUNEX | PM2_5_RUNEX | SOx_RUNEX |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Placer Cou | 2021 | LDA | Aggregate | Aggregate | GAS | 125072.2 | 4606769.418 | 0.616480009 | 789701.4 | 0.010658354 | 0.610210728 | 0.054453173 | 263.1192704 | 0.001703703 | 0.001566545 | 0.00263642 |
| Placer Cou | 2021 | LDA | Aggregate | Aggregate | DSL | 1427.943 | 53615.83 | 0.007174895 | 8849.844 | 0.019921645 | 0.228825949 | 0.114043188 | 251.8151918 | 0.011707498 | 0.011201037 | 0.002403984 |
| Placer Cou | 2021 | LDA | Aggregate | Aggregate | ELEC | 3793.476 | 188941.7048 | 0.025284266 | 24661.5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Placer Cou | 2021 | LDT1 | Aggregate | Aggregate | GAS | 11361.3 | 393890.4722 | 0.052710605 | 68961.59 | 0.024062755 | 1.227084679 | 0.121478692 | 312.258052 | 0.002253394 | 0.002072255 | 0.003137158 |
| Placer Cou | 2021 | LDT1 | Aggregate | Aggregate | DSL | 20.41701 | 374.7138822 | 5.01444E-05 | 96.59625 | 0.157398025 | 0.897964777 | 0.974177206 | 346.9072704 | 0.116718796 | 0.111669593 | 0.003311792 |
| Placer Cou | 2021 | LDT1 | Aggregate | Aggregate | ELEC | 6.972473 | 223.6158018 | 2.99244E-05 | 42.73327 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Placer Cou | 2021 | LDT2 | Aggregate | Aggregate | GAS | 55657.9 | 2154466.694 | 0.288311727 | 350085.6 | 0.014590272 | 0.797562147 | 0.086204518 | 357.2511754 | 0.001635526 | 0.001503853 | 0.003579129 |
| Placer Cou | 2021 | LDT2 | Aggregate | Aggregate | DSL | 88.74399 | 3923.272224 | 0.000525014 | 567.9619 | 0.014622196 | 0.128109284 | 0.050501019 | 324.2063176 | 0.005276292 | 0.005048042 | 0.003095074 |
| Placer Cou | 2021 | MCY | Aggregate | Aggregate | GAS | 9106.55 | 58420.42379 | 0.007817848 | 18211.28 | 2.421418407 | 22.13723725 | 1.205462167 | 164.9707488 | 0.001918363 | 0.001801438 | 0.002080191 |
| Placer Cou | 2021 | MH | Aggregate | Aggregate | GAS | 1168.078 | 9120.133192 | 0.00122046 | 116.8545 | 0.121528953 | 3.652972978 | 0.637383808 | 1291.454257 | 0.002067385 | 0.001900884 | 0.012953474 |
| Placer Cou | 2021 | MH | Aggregate | Aggregate | DSL | 368.4969 | 2952.517158 | 0.000395107 | 36.84969 | 0.15313223 | 0.580551914 | 6.059536255 | 1061.222186 | 0.1656595 | 0.158493144 | 0.010131084 |
| | | | | | | | 7472698.795 | | | | | | | | | |

200 Total event attendees
2.5 people per vehicle
80 vehicles taken to event
160 total trips, accounting for in and out

160 Total Event Trips
160 Total estimated trips
*VMT per trip estimated based on CalEEMod 6.6 H-S

UAIC Event g/event

| VehClass | Proportion of total VMT from Class | Trips per class | VMT per Trip* | VMT per Event (mi/event) | ROG (g/event) | NOx (g/event) | CO2 (g/event) | PM10 (g/event) | PM2.5 (g/event) | CO (g/event) |
|---|---|---|---|---|---|---|---|---|---|---|
| LDA | 0.61648001 | 98.6368 | 6.6 | 651.002889 | 6.93861906 | 35.4491729 | 171291.405 | 1.10911555 | 1.01982501 | 397.248947 |
| LDA | 0.0071749 | 1.147983 | 6.6 | 7.57668923 | 0.15094012 | 0.8640698 | 1907.92545 | 0.08870407 | 0.08486677 | 1.7337431 |
| LDA | 0.02528427 | 4.045483 | 6.6 | 26.700185 | 0 | 0 | 0 | 0 | 0 | 0 |
| LDT1 | 0.0527106 | 8.433697 | 6.6 | 55.6623986 | 1.33939066 | 6.76179537 | 17381.0321 | 0.12542933 | 0.11534668 | 68.3024765 |
| LDT1 | 5.0144E-05 | 0.008023 | 6.6 | 0.05295247 | 0.00833461 | 0.05158509 | 18.3695969 | 0.00618055 | 0.00591318 | 0.04754945 |
| LDT1 | 2.9924E-05 | 0.004788 | 6.6 | 0.03160013 | 0 | 0 | 0 | 0 | 0 | 0 |
| LDT2 | 0.28831173 | 46.12988 | 6.6 | 304.457184 | 4.44211303 | 26.2455849 | 108767.687 | 0.4979476 | 0.45785873 | 242.823525 |
| LDT2 | 0.00052501 | 0.084002 | 6.6 | 0.55441489 | 0.00810676 | 0.02799852 | 179.744809 | 0.00292525 | 0.00279871 | 0.07102569 |
| MCY | 0.00781785 | 1.250856 | 6.6 | 8.25564755 | 19.9903769 | 9.95187079 | 1361.94036 | 0.01583733 | 0.01487204 | 182.757229 |
| MH | 0.00122046 | 0.195274 | 6.6 | 1.28880622 | 0.15662727 | 0.82146421 | 1664.43427 | 0.00266446 | 0.00244987 | 4.70797428 |
| MH | 0.00039511 | 0.063217 | 6.6 | 0.41723321 | 0.06389185 | 2.52823977 | 442.777141 | 0.06911865 | 0.0661286 | 0.24222554 |
| Total | | | | 1056 | 33.0984003 | 82.7017813 | 303015.316 | 1.9179228 | 1.7700596 | 897.934695 |

UAIC Event lbs/event

| VehClass | ROG (lbs/event) | NOx (lbs/event) | CO2 (lbs/event) | PM10 (lbs/event) | PM2.5 (lbs/event) | CO (lbs/event) |
|---|---|---|---|---|---|---|
| LDA | 0.01529702 | 0.07815196 | 377.632458 | 0.00244518 | 0.00224833 | 0.87578297 |
| LDA | 0.00033277 | 0.00190495 | 4.20625061 | 0.00019556 | 0.0001871 | 0.00382224 |
| LDA | 0 | 0 | 0 | 0 | 0 | 0 |
| LDT1 | 0.00295285 | 0.01490719 | 38.3185711 | 0.00027652 | 0.0002543 | 0.15058101 |
| LDT1 | 1.8375E-05 | 0.00011373 | 0.04049798 | 1.3626E-05 | 1.3036E-05 | 0.00010483 |
| LDT1 | 0 | 0 | 0 | 0 | 0 | 0 |
| LDT2 | 0.00979317 | 0.05786154 | 239.791417 | 0.00109779 | 0.0010094 | 0.5353336 |
| LDT2 | 1.7872E-05 | 6.1726E-05 | 0.396269 | 6.4491E-06 | 6.1701E-06 | 0.00015658 |
| MCY | 0.04407118 | 0.02194009 | 3.00256095 | 3.4915E-05 | 3.2787E-05 | 0.40291024 |
| MH | 0.0003453 | 0.00181102 | 3.66944509 | 5.8741E-06 | 5.401E-06 | 0.01037929 |
| MH | 0.00014086 | 0.00557381 | 0.97615534 | 0.00015238 | 0.00014579 | 0.00053402 |
| Total | 0.0729694 | 0.182326 | 668.033625 | 0.00422829 | 0.00390231 | 1.97960479 |

| VehClass | CO2 (MT/event) |
|---|---|
| LDA | 0.00037763 |
| LDA | 4.2063E-06 |
| LDA | 0 |
| LDT1 | 3.8319E-05 |
| LDT1 | 4.0498E-08 |
| LDT1 | 0 |
| LDT2 | 0.00023979 |
| LDT2 | 3.9627E-07 |
| MCY | 3.0026E-06 |
| MH | 3.6694E-06 |
| MH | 9.7616E-07 |
| Total | 0.00066803 |

0.00066803 Total CO2 per Event
0.0020041 Total Co2 per year

100 Total event attendees
2.5 people per vehicle
40 vehicles taken to event
80 total trips, accounting for in and out

80 Total Event Trips
80 Total estimated trips
*VMT per trip estimated based on CalEEMod 6.6 H-S

UAIC Event g/event

| VehClass | Proportion of total VMT from Class | Trips per class | VMT per Trip* | VMT per Event (mi/event) | ROG (g/event) | NOx (g/event) | CO2 (g/event) | PM10 (g/event) | PM2.5 (g/event) | CO (g/event) |
|---|---|---|---|---|---|---|---|---|---|---|
| LDA | 0.61648001 | 49.3184 | 6.6 | 325.501445 | 3.46930953 | 17.7245865 | 85645.7026 | 0.55455778 | 0.5099125 | 198.624474 |
| LDA | 0.0071749 | 0.573992 | 6.6 | 3.78834461 | 0.07547006 | 0.4320349 | 953.962726 | 0.04435204 | 0.04243339 | 0.86687155 |
| LDA | 0.02528427 | 2.022741 | 6.6 | 13.3500925 | 0 | 0 | 0 | 0 | 0 | 0 |
| LDT1 | 0.0527106 | 4.216848 | 6.6 | 27.8311993 | 0.66969533 | 3.38089769 | 8690.51607 | 0.06271467 | 0.05767334 | 34.1512382 |
| LDT1 | 5.0144E-05 | 0.004012 | 6.6 | 0.02647624 | 0.00416731 | 0.02579254 | 9.18479844 | 0.00309027 | 0.00295659 | 0.02377473 |
| LDT1 | 2.9924E-05 | 0.002394 | 6.6 | 0.01580007 | 0 | 0 | 0 | 0 | 0 | 0 |
| LDT2 | 0.28831173 | 23.06494 | 6.6 | 152.228592 | 2.22105652 | 13.1227924 | 54383.8434 | 0.2489738 | 0.22892937 | 121.411763 |
| LDT2 | 0.00052501 | 0.042001 | 6.6 | 0.27720744 | 0.00405338 | 0.01399926 | 89.8724047 | 0.00146263 | 0.00139935 | 0.03551285 |
| MCY | 0.00781785 | 0.625428 | 6.6 | 4.12782378 | 9.99518847 | 4.9759354 | 680.970179 | 0.00791866 | 0.00743602 | 91.3786143 |
| MH | 0.00122046 | 0.097637 | 6.6 | 0.64440311 | 0.07831364 | 0.41073211 | 832.217136 | 0.00133223 | 0.00122494 | 2.35398714 |
| MH | 0.00039511 | 0.031609 | 6.6 | 0.20861661 | 0.03194593 | 1.26411989 | 221.388571 | 0.03455932 | 0.0330643 | 0.12111277 |
| Total | | | | 528 | 16.5492002 | 41.3508907 | 151507.658 | 0.9589614 | 0.8850298 | 448.967348 |

UAIC Event lbs/event

| VehClass | ROG (lbs/event) | NOx (lbs/event) | CO2 (lbs/event) | PM10 (lbs/event) | PM2.5 (lbs/event) | CO (lbs/event) |
|---|---|---|---|---|---|---|
| LDA | 0.00764851 | 0.03907598 | 188.816229 | 0.00122259 | 0.00112416 | 0.43789149 |
| LDA | 0.00016638 | 0.00095247 | 2.1031253 | 9.7779E-05 | 9.3549E-05 | 0.00191112 |
| LDA | 0 | 0 | 0 | 0 | 0 | 0 |
| LDT1 | 0.00147642 | 0.00745359 | 19.1592855 | 0.00013826 | 0.00012715 | 0.0752905 |
| LDT1 | 9.1873E-06 | 5.6863E-05 | 0.02024899 | 6.8129E-06 | 6.5182E-06 | 5.2414E-05 |
| LDT1 | 0 | 0 | 0 | 0 | 0 | 0 |
| LDT2 | 0.00489659 | 0.02893077 | 119.895709 | 0.00054889 | 0.0005047 | 0.2676668 |
| LDT2 | 8.9362E-06 | 3.0863E-05 | 0.1981345 | 3.2245E-06 | 3.085E-06 | 7.8292E-05 |
| MCY | 0.02203559 | 0.01097005 | 1.50128048 | 1.7458E-05 | 1.6394E-05 | 0.20145512 |
| MH | 0.00017265 | 0.00090551 | 1.83472254 | 2.9371E-06 | 2.7005E-06 | 0.00518965 |
| MH | 7.0429E-05 | 0.0027869 | 0.48807767 | 7.619E-05 | 7.2894E-05 | 0.00026701 |
| Total | 0.0364847 | 0.091163 | 334.016813 | 0.00211415 | 0.00195115 | 0.98980239 |

| VehClass | CO2 (MT/event) |
|---|---|
| LDA | 0.00018882 |
| LDA | 2.1031E-06 |
| LDA | 0 |
| LDT1 | 1.9159E-05 |
| LDT1 | 2.0249E-08 |
| LDT1 | 0 |
| LDT2 | 0.0001199 |
| LDT2 | 1.9813E-07 |
| MCY | 1.5013E-06 |
| MH | 1.8347E-06 |
| MH | 4.8808E-07 |
| Total | 0.00033402 |

0.00033402 Total CO2 per event
0.0020041 Toal CO2 per year

35 Total event attendees
2.5 people per vehicle
14 vehicles taken to event
28 total trips, accounting for in and out

28 Total Event Trips
28 Total estimated trips
*VMT per trip estimated based on CalEEMod 6.6 H-S

UAIC Event g/event

| VehClass | Proportion of total VMT from Class | Trips per class | VMT per Trip* | VMT per Event (mi/event) | ROG (g/event) | NOx (g/event) | CO2 (g/event) | PM10 (g/event) | PM2.5 (g/event) | CO (g/event) |
|---|---|---|---|---|---|---|---|---|---|---|
| LDA | 0.61648001 | 17.26144 | 6.6 | 113.925506 | 1.21425833 | 6.20360526 | 29975.9959 | 0.19409522 | 0.17846938 | 69.5185658 |
| LDA | 0.0071749 | 0.200897 | 6.6 | 1.32592062 | 0.02641452 | 0.15121221 | 333.886954 | 0.01552321 | 0.01485169 | 0.30340504 |
| LDA | 0.02528427 | 0.707959 | 6.6 | 4.67253238 | 0 | 0 | 0 | 0 | 0 | 0 |
| LDT1 | 0.0527106 | 1.475897 | 6.6 | 9.74091975 | 0.23439336 | 1.18331419 | 3041.68063 | 0.02195013 | 0.02018567 | 11.9529334 |
| LDT1 | 5.0144E-05 | 0.001404 | 6.6 | 0.00926668 | 0.00145856 | 0.00902739 | 3.21467945 | 0.0010816 | 0.00103481 | 0.00832115 |
| LDT1 | 2.9924E-05 | 0.000838 | 6.6 | 0.00553002 | 0 | 0 | 0 | 0 | 0 | 0 |
| LDT2 | 0.28831173 | 8.072728 | 6.6 | 53.2800071 | 0.77736978 | 4.59297735 | 19034.3452 | 0.08714083 | 0.08012528 | 42.4941169 |
| LDT2 | 0.00052501 | 0.0147 | 6.6 | 0.09702261 | 0.00141868 | 0.00489974 | 31.4553417 | 0.00051192 | 0.00048977 | 0.0124295 |
| MCY | 0.00781785 | 0.2189 | 6.6 | 1.44473832 | 3.49831597 | 1.74157739 | 238.339563 | 0.00277153 | 0.00260261 | 31.982515 |
| MH | 0.00122046 | 0.034173 | 6.6 | 0.22554109 | 0.02740977 | 0.14375624 | 291.275998 | 0.00046628 | 0.00042873 | 0.8238955 |
| MH | 0.00039511 | 0.011063 | 6.6 | 0.07301581 | 0.01118107 | 0.44244196 | 77.4859997 | 0.01209576 | 0.01157251 | 0.04238947 |
| Total | | | | 184.8 | 5.79222005 | 14.4728117 | 53027.6803 | 0.33563649 | 0.30976043 | 157.138572 |

UAIC Event lbs/event

| VehClass | ROG (lbs/event) | NOx (lbs/event) | CO2 (lbs/event) | PM10 (lbs/event) | PM2.5 (lbs/event) | CO (lbs/event) |
|---|---|---|---|---|---|---|
| LDA | 0.00267698 | 0.01367659 | 66.0856801 | 0.00042791 | 0.00039346 | 0.15326202 |
| LDA | 5.8234E-05 | 0.00033337 | 0.73609386 | 3.4223E-05 | 3.2742E-05 | 0.00066889 |
| LDA | 0 | 0 | 0 | 0 | 0 | 0 |
| LDT1 | 0.00051675 | 0.00260876 | 6.70574994 | 4.8392E-05 | 4.4502E-05 | 0.02635168 |
| LDT1 | 3.2156E-06 | 1.9902E-05 | 0.00708715 | 2.3845E-06 | 2.2814E-06 | 1.8345E-05 |
| LDT1 | 0 | 0 | 0 | 0 | 0 | 0 |
| LDT2 | 0.0017138 | 0.01012577 | 41.9634981 | 0.00019211 | 0.00017665 | 0.09368338 |
| LDT2 | 3.1277E-06 | 1.0802E-05 | 0.06934708 | 1.1286E-06 | 1.0798E-06 | 2.7402E-05 |
| MCY | 0.00771246 | 0.00383952 | 0.52544817 | 6.1102E-06 | 5.7378E-06 | 0.07050929 |
| MH | 6.0428E-05 | 0.00031693 | 0.64215289 | 1.028E-06 | 9.4518E-07 | 0.00181638 |
| MH | 2.465E-05 | 0.00097542 | 0.17082718 | 2.6667E-05 | 2.5513E-05 | 9.3453E-05 |
| Total | 0.01276964 | 0.03190705 | 116.905884 | 0.00073995 | 0.0006829 | 0.34643084 |

| VehClass | CO2 (MT/event) |
|---|---|
| LDA | 6.6086E-05 |
| LDA | 7.3609E-07 |
| LDA | 0 |
| LDT1 | 6.7057E-06 |
| LDT1 | 7.0871E-09 |
| LDT1 | 0 |
| LDT2 | 4.1963E-05 |
| LDT2 | 6.9347E-08 |
| MCY | 5.2545E-07 |
| MH | 6.4215E-07 |
| MH | 1.7083E-07 |
| Total | 0.00011691 |

0.00011691 Total CO2 per event
0.00046762 Toal CO2 per year

# APPENDIX E

# UAIC TRIBAL SCHOOL PROJECT

## Revised Biological Resources Study Report

Prepared for
United Auburn Indian Community (UAIC)

July 2018

ESA

# UAIC TRIBAL SCHOOL PROJECT

## Revised Biological Resources Study Report

Prepared for
United Auburn Indian Community (UAIC)

July 2018

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# EXECUTIVE SUMMARY

Environmental Science Associates (ESA) conducted a biological survey within the approximately 43-acre United Auburn Indian Community (UAIC) Tribal School property (study area), located in Placer County, California. The applicant proposes to construct a pre-K through eighth grade school, Adult Education Center, Tribal Cultural Center, and other site improvements. The purpose of this report is to assess the suitability of the study area to support special-status species and sensitive habitat types, to provide recommendations for regulatory permitting or further analysis that may be required, and to recommend conservation measures to avoid or minimize potential impacts to special-status species and sensitive habitat types.

The following habitat types occur within the study area: annual grassland, interior live oak, valley foothill riparian, urban, lacustrine, seasonal wetland, riverine, and drainage ditch. Of these, only annual grassland, interior live oak, valley foothill riparian, lacustrine, seasonal wetland, and riverine are considered natural communities. The majority of impacts associated with the proposed project would occur within the annual grassland and urban habitat types.

Potentially jurisdictional wetlands and other waters of the U.S. include lacustrine, seasonal wetland, drainage ditch and riverine. The project will be required to obtain permits from regulatory agencies for pond and riparian vegetation enhancement activities, and for impacts to a ditch in the southwestern corner of the property and a seasonal wetland in the south-central portion of the study area (Section 404 Clean Water Act Nationwide permit, Section 401 Water Quality Certification, Section 1600 Lake and Streambed Alteration Agreement).

The study area provides suitable habitat for special-status plants, including the state-endangered Boggs Lake hedge-hyssop (*Gratiola heterosepala*). The study area also provides suitable habitat for non-listed special-status plant species including Ahart's dwarf rush (*Juncus leiospermus* var. *ahartii*), big scale balsamroot (*Balsamorhiza macrolepis* var. *macrolepis*), and dwarf downingia (*Downingia pusilla*). However, rare plant surveys conducted during the blooming period for these species failed to detect them within the study area.

The study area provides suitable nesting habitat for listed and non-listed migratory birds and other birds of prey, including Swainson's hawk (*Buteo swainsoni*), white-tailed kite (*Elanus leucurus*), purple martin (*Progne subis*), grasshopper sparrow (*Melospiza melodia*), and burrowing owl (*Athene cunicularia*). In addition, pallid bat (*Antrozous pallidus*), American badger, and western pond turtle (*Actinemys marmorata*) have the potential to occur within the study area. With the implementation of protective measures, including conducting preconstruction surveys, impacts would be reduced to less-than-significant levels for these species.

Several trees may be removed that are protected by the Placer County ordinance. However, with implementation of conservation measures for trees to be removed (e.g., revegetation), and protective measures for trees to remain (e.g., establishing avoidance areas to reduce soil compaction), impacts would be reduced to less-than-significant levels.

# CHAPTER 1
# Introduction

## 1.1 Background and Purpose

This Biological Resources Study Report (report) was prepared for the approximately 43-acre UAIC Tribal School property (study area), located in Placer County, California. The purpose of this report is to assess the suitability of the study area to support special-status species and sensitive habitat types, to provide recommendations for regulatory permitting or further analysis that may be required, and to recommend conservation measures to avoid or minimize potential impacts to special-status species and sensitive habitat types.

## 1.2 Project Description

The UAIC Tribal School would be a pre-K through 8th grade school designed to serve approximately 100 UAIC students with 35 staff members. The campus would also include a Tribal Education Center as well as a Tribal Cultural Center. The Tribal Education Center would provide recreational and continuing education classes for adult tribal members during the week as well as tutoring services and supplemental classes to home schooled and high school age tribal members. Approximately four staff members would be dedicated to the operation of the facility. The Tribal Cultural Center would include gallery and exhibit spaces, artifact archives, storage, and administrative spaces. Access to the Cultural Center would initially be limited to UAIC members, but the tribe may invite researchers, community groups, tribal groups, and school groups by appointment. Site improvements would include a small (non-regulation) lighted ballfield, two dedicated play areas for the students, a nature trail, improvements to the existing pond, vehicular access, and parking areas. Nature trails would include native plant enhancement and would span riverine habitat with bridges to avoid impacts. The project work would also include remediation of arsenic-laden soils located in the southcentral portion of the study area, which may extend into a portion of the seasonal wetland.

The enhancements to the existing irrigation pond would create an outdoor learning environment for the UAIC community. A trail would encircle the pond and provide access to a pier/pavilion that would afford educational opportunities at the water's edge and in the pond. The aforementioned pond enhancements include draining the pond, removing invasive species, regrading the edges to support native aquatic plantings, and potentially relocating the existing PCWA pond supply line in the southwest corner to the north to increase water movement. Prior to draining the pond, the existing fish and other animals would be removed and provided a protected, temporary home, or relocated in coordination with California Department of Fish and Wildlife. While the pond is empty, the contractor plans to use the pond as a sediment basin for the

duration of the Phase 1 construction. Water from the PCWA supply line would be temporarily turned off or diverted to the existing outfall while the pond is being used as a sediment basin. Once the sediment basin is no longer necessary for construction activities, the pond would be dredged, regraded, have an aeration system installed, planted around the edges with aquatic vegetation, then filled with water.

## 1.3 Property Location

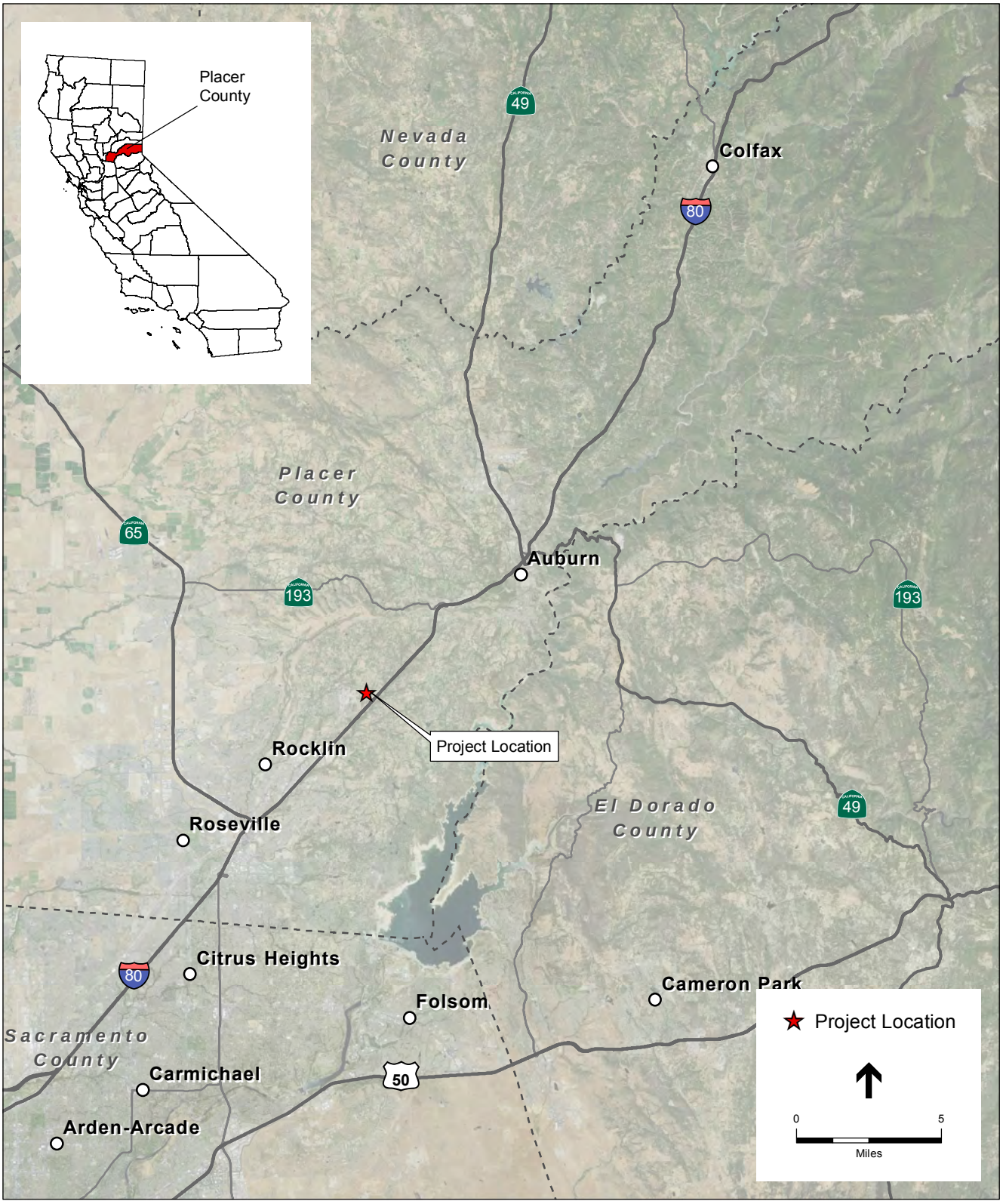
The study area is located in an unincorporated area of Placer County, California (**Figure 1-1**) that is south of Taylor Road, west of Tumble Lane, north of Interstate 80, and east of Orchard Park Court. The study area's Assessor Parcel Number (APN) is 043-013-010, located in Section 3 of Township 11 North, Range 7 East of the Rocklin, California U.S. Geological Survey (USGS) 7.5-minute series quadrangle (USGS, 1967-1981). The approximate centroid of the study area is 38º 50' 06.17" North, 121º 10' 34.81" West. Elevation within the study area ranges from 420 feet in the southeast to 495 feet in the northwest.

## 1.4 Regulatory Context

Biological resources in the study area may fall under the jurisdiction of various regulatory agencies and be subject to their regulations. In general, the greatest legal protections are provided for plant and wildlife species that are formally listed under the Federal Endangered Species Act (FESA) or California Endangered Species Act (CESA). The following regulations and agencies are commonly associated with projects that have the potential to affect biological resources:

- Federal Endangered Species Act
- Migratory Bird Treaty Act
- Bald and Golden Eagle Protection Act
- Clean Water Act, Section 404
- California Endangered Species Act
- Fish and Game Code Section 3503
- Native Plant Protection Act
- Lake or Streambed Alteration Program
- Porter Cologne Water Quality Act
- CEQA Guidelines Section 15380

These regulations are presented and discussed in full in **Appendix A**, *Regulatory Context*.




SOURCE: NAIP, 2014; ESRI, 2012; ESA, 2016

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**Figure 1-1**
Project Location

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# CHAPTER 2
# Methods

## 2.1 Study Area Definition

Use of the term "study area" in this report refers to the entire property boundary (APN 043-013-010) (**Figure 2-1**).

## 2.2 Survey Methodology

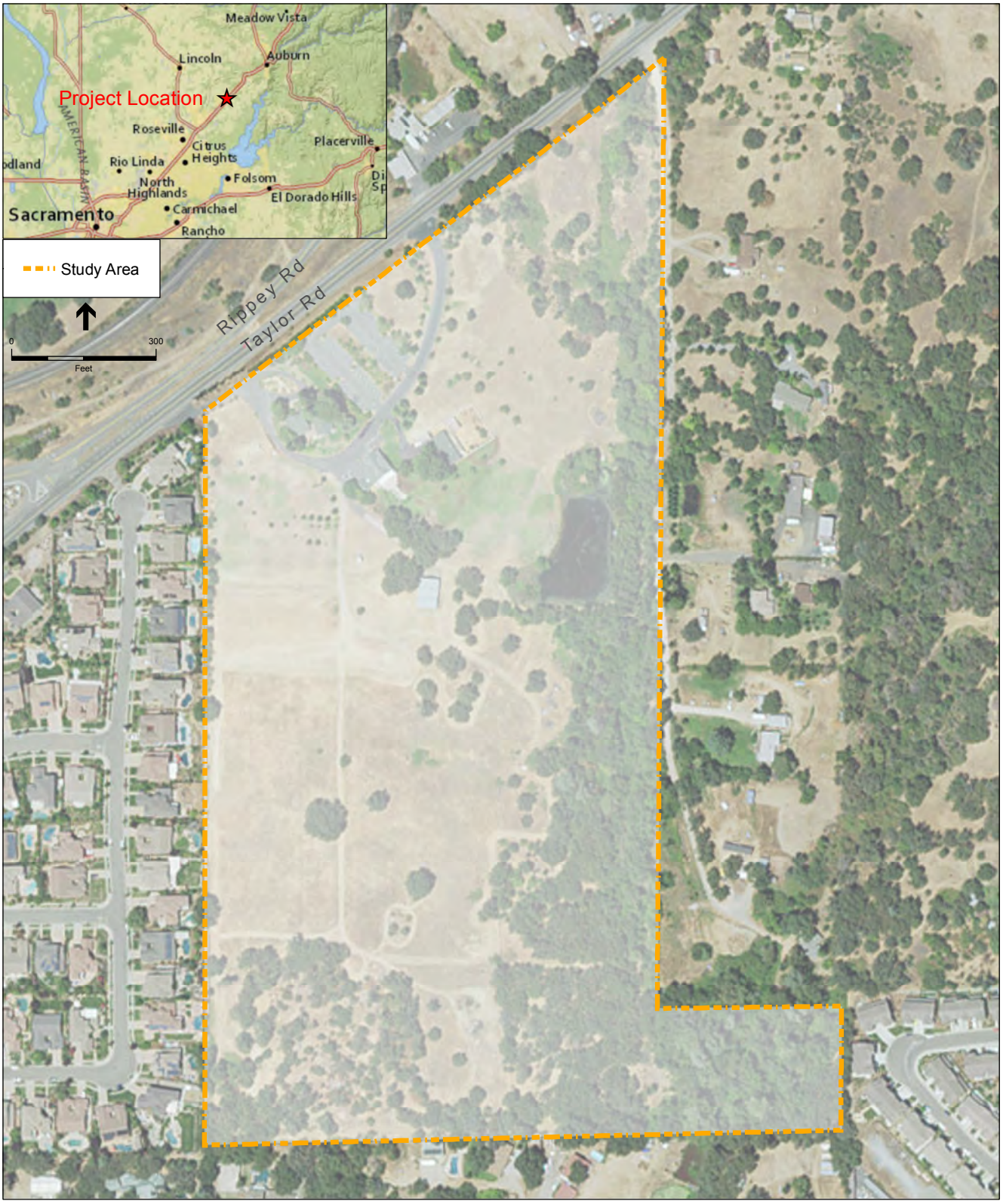
### 2.2.1 Survey Dates and Surveying Personnel

ESA Senior Biologist Josh Boldt and Biologist Sarah Cannon conducted biological and arborist surveys within the study area on November 30, 2016 and December 1, 2016. Survey conditions were good, with temperatures in the mid to high 50's (Fahrenheit) and cloudy to sunny. The majority of the survey areas were accessible by foot, excluding the eastern boundary where Himalayan blackberry (*Rubus armeniacus*) thickets preclude access. A wetland delineation was conducted within the study area by ESA Senior Biologist Josh Boldt on March 9, 2017 and a rare plant survey was conducted by ESA senior biologist Kelly Bayne on April 3, 2018.

### 2.2.2 Habitat and Vegetation Surveys

The biological survey consisted of conducting a botanical inventory, evaluating vegetative communities, mapping wetlands and waterways, and documenting habitat for special-status species with the potential to occur within the study area. Vegetation communities and aquatic features were characterized and mapped in the field using aerial photography. The boundaries of vegetation communities and wetlands were subsequently digitized using Geographic Information System (GIS) software in the State Plane coordinate system (NAD 83) with units as "survey feet."

The wetland delineation used the "Routine Determination Method" as described in the 1987 Corps of Engineers Wetland Delineation Manual (Environmental Laboratory, 1987), hereafter called the "1987 Manual." The 1987 Manual was used in conjunction with the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0) (USACE, 2008), hereafter called the "Arid West Supplement." For areas where the 1987 Manual and the Arid West Supplement differ, the Arid West Supplement was followed. Presence or absence of positive indicators for wetland vegetation, soils, and hydrology was assessed per the 1987 Manual and Arid West Supplement guidelines. The delineation has not yet been verified by the U.S. Army Corps of Engineers.




SOURCE: ESA, 2016

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**Figure 2-1**

Aerial Photograph and the Study Area

The arborist survey consisted of mapping tree locations and documenting their diameters at breast height, distances of the furthest canopy diameters, and health conditions. Trees were recorded using a handheld Geographic Positioning System (GPS) and exported into GIS software. The results of the arborist survey are summarized herein and discussed in detail under a separate report (ESA, 2017).

## 2.3 Review of Background Information

No existing biological survey data was available for the study area and no such information was identified for surrounding parcels.

Prior to performing focused vegetation and wildlife surveys, ESA reviewed publicly available data and subscription-based biological resource data. In part, field surveys provided confirmation of the general accuracy of publicly available data. Data sources that assisted in this analysis included:

- Topographic maps (Rocklin and surrounding 8 quadrangles);
- Historic and current aerial imagery (Figure 2-1);
- Soil maps from the National Resources Conservation Service (NRCS);
- California Wildlife Habitat Relationships (CWHR) database;
- The CDFW California Natural Diversity Database (CNDDB) list of plant and wildlife species documented on the Rocklin and 8 surrounding quadrangles (CDFW, 2018);
- The California Native Plant Society (CNPS) online database of plant species documented on the Rocklin and 8 surrounding quadrangles (CNPS, 2018); and
- A U.S. Fish and Wildlife Service (USFWS) list of species that may occur in the vicinity of the study area (USFWS, 2018).

The USFWS, CDFW, and CNPS lists are provided in **Appendix B**. The CNDDB and CNPS lists include special status species documented on the following nine quadrangles:

| | | |
|---|---|---|
| Lincoln | Gold Hill | Auburn |
| Roseville | Rocklin | Pilot Hill |
| Citrus Heights | Folsom | Clarksville |

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# CHAPTER 3
# Environmental Setting

This chapter provides the environmental baseline for soil types, habitat types, and wetlands within the study area.

## 3.1 Soil Types

The Natural Resources Conservation Service (NRCS) has mapped two soil units within the study area (**Figure 3-1**). General characteristics associated with these soil types are described below (USDA, NRCS, 2016).

### 3.1.1 (106) Andregg Coarse Sandy Loam, 2 to 9 Percent Slopes

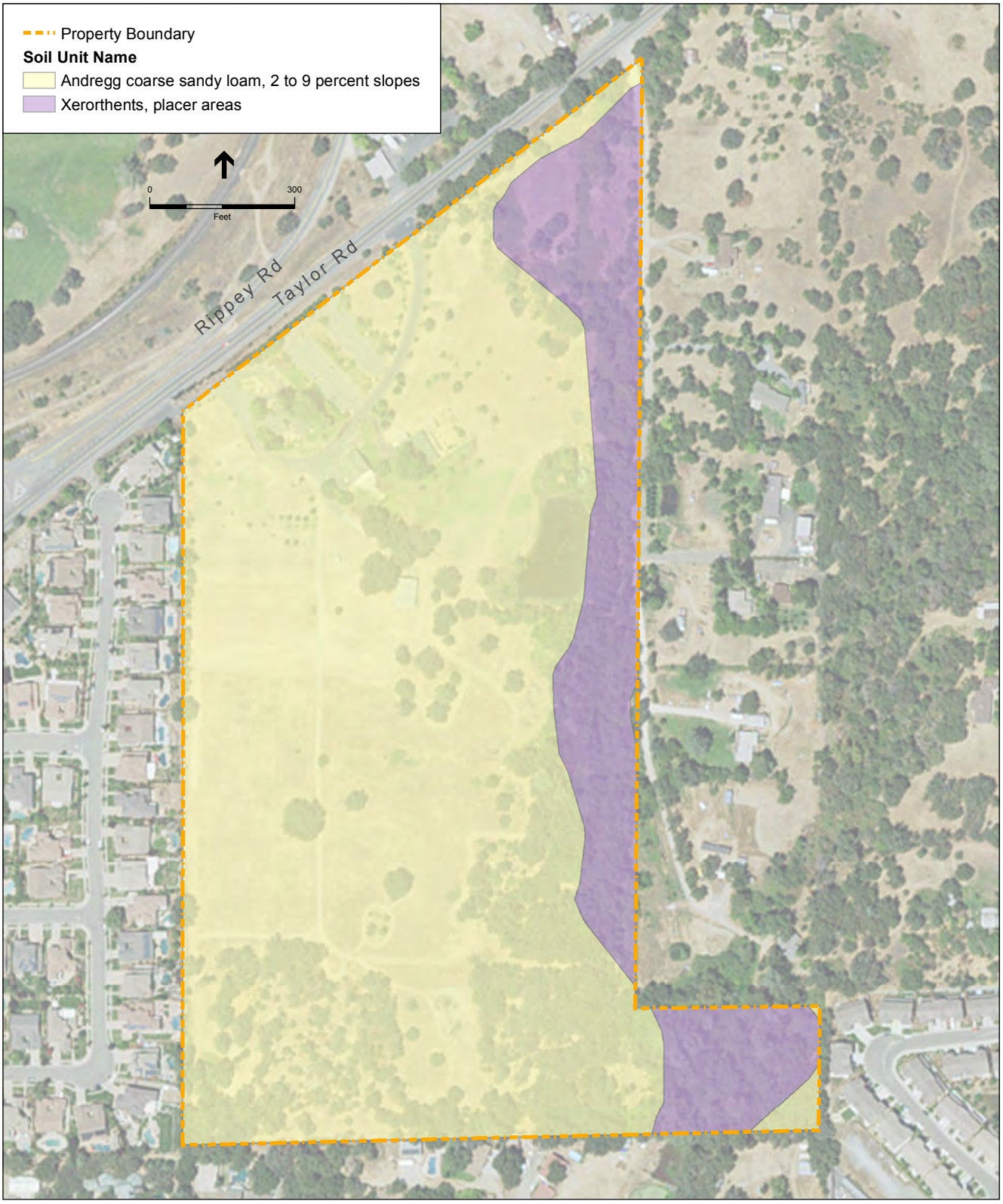
This soil unit occurs on hills with parent material comprised of residuum weathered from granite. This is a well-drained soil with a low available water storage comprised of about 3.5 inches. The typical profile is comprised of coarse sandy loam from 0 to 29 inches and weathered bedrock from 29 to 33 inches. The hydric soils list for Placer County identifies an unnamed component found in drainageways of this soil type as hydric (USDA, NRCS, 2015).

### 3.1.2 (197) Xerorthents, Placer Areas

This soil unit has a parent material comprised of mine spoil or earthy fill. This is a well-drained soil with a low available water storage comprised of about 3.5 inches. The typical profile is variable from 0 to 60 inches. The hydric soils list for Placer County identifies an unnamed component found in drainageways of this soil type as hydric (USDA, NRCS, 2015).

## 3.2 Natural Communities

Natural communities are assemblages of plant species that occur together in the same area and are defined by species composition and relative abundance. The natural community classification presented herein is based on field observations and the Placer County Wildlife Habitat Relationships Classification of Habitat and Land Cover Types in the Phase I Natural Conservation Plan/Habitat Conservation Plan Planning Areas (Placer County Planning Department, 2004).




SOURCE: NRCS, 2016; ESA, 2016

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**Figure 3-1**
Soil Types

The following habitat types occur within the study area: annual grassland, interior live oak, valley foothill riparian, urban, lacustrine, seasonal wetland, riverine, and drainage ditch. **Table 1** provides a summary of the habitat types by acreages. Habitat types within the study area are presented in **Figure 3-2**. Commonly occurring wildlife are identified for each of the habitat types.

**TABLE 1.**
**HABITAT TYPES BY ACREAGES**

| Habitat Type | Acreage[1] |
|---|---|
| Annual Grassland | 20.69 |
| Urban | 3.45 |
| Interior Live Oak | 10.56 |
| Valley Foothill Riparian[3] | 6.74 |
| Seasonal Wetland[2] | 0.12 |
| Lacustrine[2] | 1.08 |
| Riverine[2] | 0.17 |
| Drainage Ditch[2] | 0.02 |
| | **42.83** |

NOTES:
1 GIS calculations may not reflect exact acreage of study area due to rounding
2 Potentially jurisdictional wetlands or other waters of the U.S include seasonal wetland, lacustrine (pond), riverine, and a portion of the drainage ditch on the project site.
3 Potentially protected under Section 1600 of State Fish and Game Code

## 3.2.1 Annual Grassland

Annual grassland is the largest habitat type within the study area. Dominant vegetation within this habitat type includes slender wild oat (*Avena barbata*), soft chess (*Bromus hordaceous*), ripgut grass (*Bromus. diandrus*), winter vetch (*Vicia villosa*), and broadleaf filaree (*Erodium botrys*). Isolated interior live oak (*Quercus wislizeni*), valley oak (*Quercus lobata*), and ornamental landscape trees occur within the annual grassland. A complete list of plant species identified during surveys is provided in **Appendix C**.

Commonly occurring wildlife associated with the annual grassland habitat includes mule deer (*Odocoileus hemionus*), coyote (*Canis latrans*), California ground squirrel (*Otospermophilus beecheyi*), and black-tailed jackrabbit (*Lepus californicus*).

## 3.2.2 Interior Live Oak

Interior live oak occurs within the northeastern and southern portions of the study area. The majority of overstory vegetation includes interior live oak, with valley oak, blue oak (*Quercus douglasii*), and California buckeye (*Aesculus californicus*) interspersed throughout. Dominant understory vegetation includes Himalayan blackberry (*Rubus armeniacus*), western poison oak (*Toxicodendron diversilobum*), soft chess, rip-gut brome, and wild oat.

Commonly occurring wildlife associated with the interior live oak habitat includes brown-headed cowbird (*Molothrus ater*), American goldfinch (*Spinus tristis*), porcupine (*Erethizon dorsatum*), and western spotted skunk (*Spilogale gracilis*).

### 3.2.3 Valley Foothill Riparian

Valley foothill riparian occurs within the eastern portion of the study area. Dominant overstory vegetation includes Fremont cottonwood (*Populus fremontii* ssp. *fremontii*), willow (*Salix* sp.), and big-leaf maple (*Acer macrophyllum*). Dominant understory vegetation includes Himalayan blackberry, cattail (*Typha* sp.), grape (*Vitis* sp.), and duckweed (*Lemna* sp.).

Commonly occurring wildlife associated with the valley foothill riparian habitat includes California vole (*Microtus californicus*), black-headed grosbeak (*Pheucticus melanocephalus*), lesser goldfinch (*Spinus psaltria*), and American goldfinch.

### 3.2.4 Urban

Urban areas occur within the northwestern portion of the study area. Urban areas include a residential dwelling and associated outbuilding, graded driveways, and ornamental landscaping. Ornamental landscape trees include coast redwood (*Sequoia sempervirens*), ornamental cedar (*Cedrus* sp.), white mulberry (*Morus alba*), citrus (*Citrus* sp.), and plum (*Pyrus* sp.).

Commonly occurring wildlife associated with the urban areas includes cedar waxwing (*Bombycilla cedrorum*), California towhee (*Melozone crissalis*), golden-crowned sparrow (*Zonotrichia atricapilla*), and house wren (*Troglodytes aedon*).

### 3.2.5 Lacustrine

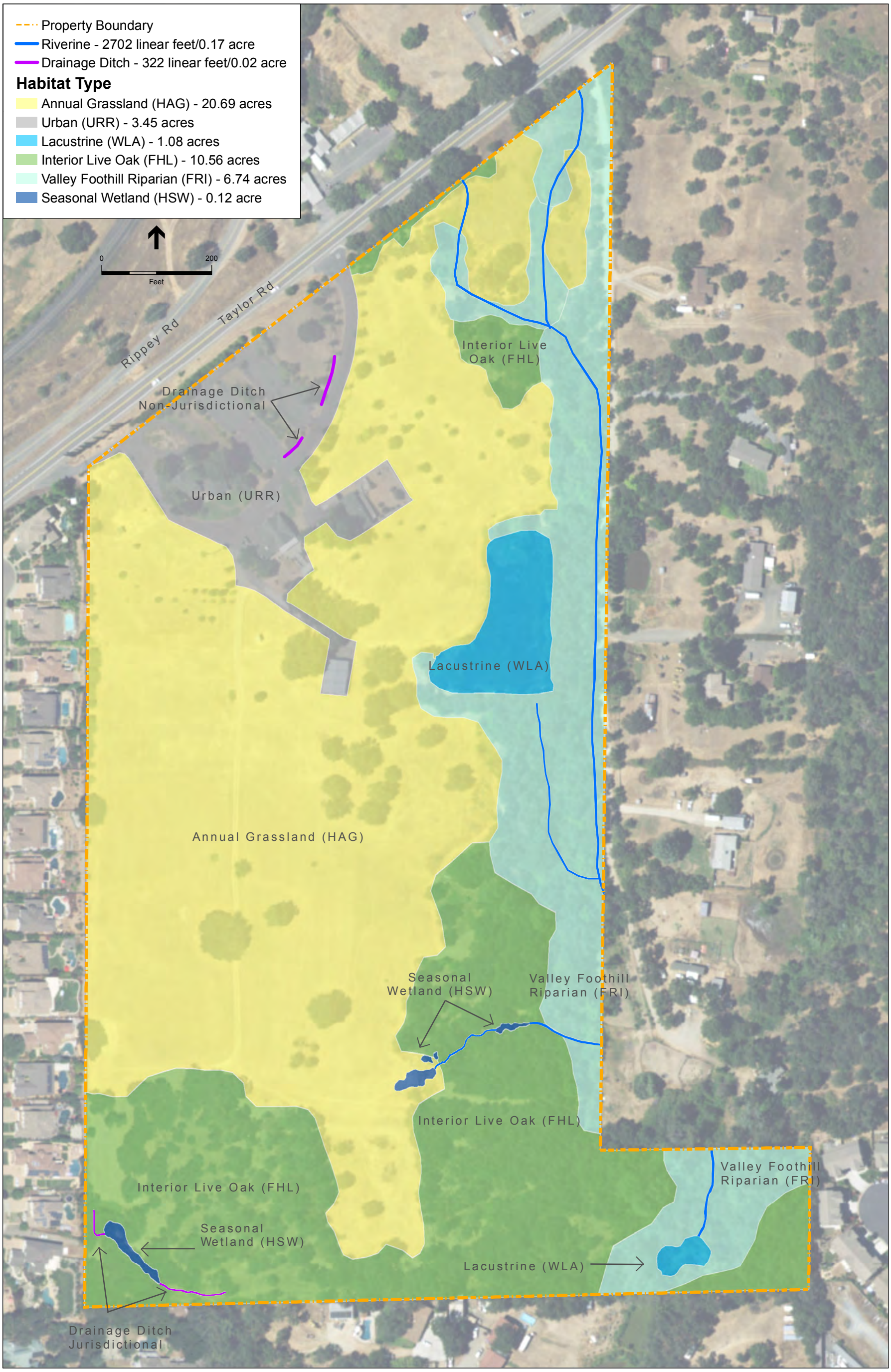
Lacustrine ponds occur within two areas of the study area: the northeast and the southeast. Dominant vegetation within the lacustrine ponds includes duckweed (*Lemna* sp.) and Himalayan blackberry. Dominant vegetation along the banks of the lacustrine ponds includes those identified under the valley foothill riparian habitat type.

Commonly occurring wildlife associated with the lacustrine ponds includes red-winged blackbird (*Agelaius phoeniceus*), barn swallow (*Hirundo rustica*), mallard (*Anas platyrhynchos*), and wood duck (*Aix sponsa*).

### 3.2.6 Seasonal Wetland

Seasonal wetlands occur within the southern portion of the study area. Dominant vegetation includes iris leaved rush (*Juncus xiphioides*), curly dock (*Rumex crispus*), and buttercup (*Ranunculus muricatus*).

Commonly occurring wildlife associated with seasonal wetlands includes common yellowthroat (*Geothlypis trichas*), California toad (*Anaxyrus boreas halophylus*), Sierran tree frog (*Pseudacris sierra*), and common garter snake (*Thamnophis sirtalis*).




SOURCE: ESA, 2017

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**Figure 3-2**
Habitat Types

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### 3.2.7 Riverine

Riverine drainages occur in the eastern and southeastern portions of the study area. Dominant vegetation along the banks of the riverine drainages includes those identified within the valley foothill riparian habitat type. Commonly occurring wildlife associated with riverine drainages includes black phoebe (*Sayornis nigricans*), belted kingfisher (*Megaceryle alcyon*), and beaver (*Castor canadensis*).

### 3.2.8 Drainage Ditch

Two drainage ditches occur within the study area. One drainage ditch is located within the northern portion of the study area and is a manmade cobble-lined feature that lacks vegetation and lacks a defined bed and bank. The other drainage ditch occurs within the southwestern portion of the study area. This drainage ditch is a manmade feature constructed to direct flow to a seasonal wetland. Dominant vegetation is similar to the species identified for annual grassland. No commonly occurring wildlife species are associated with the drainage ditches.

## 3.3 Potential Waters of the U.S.

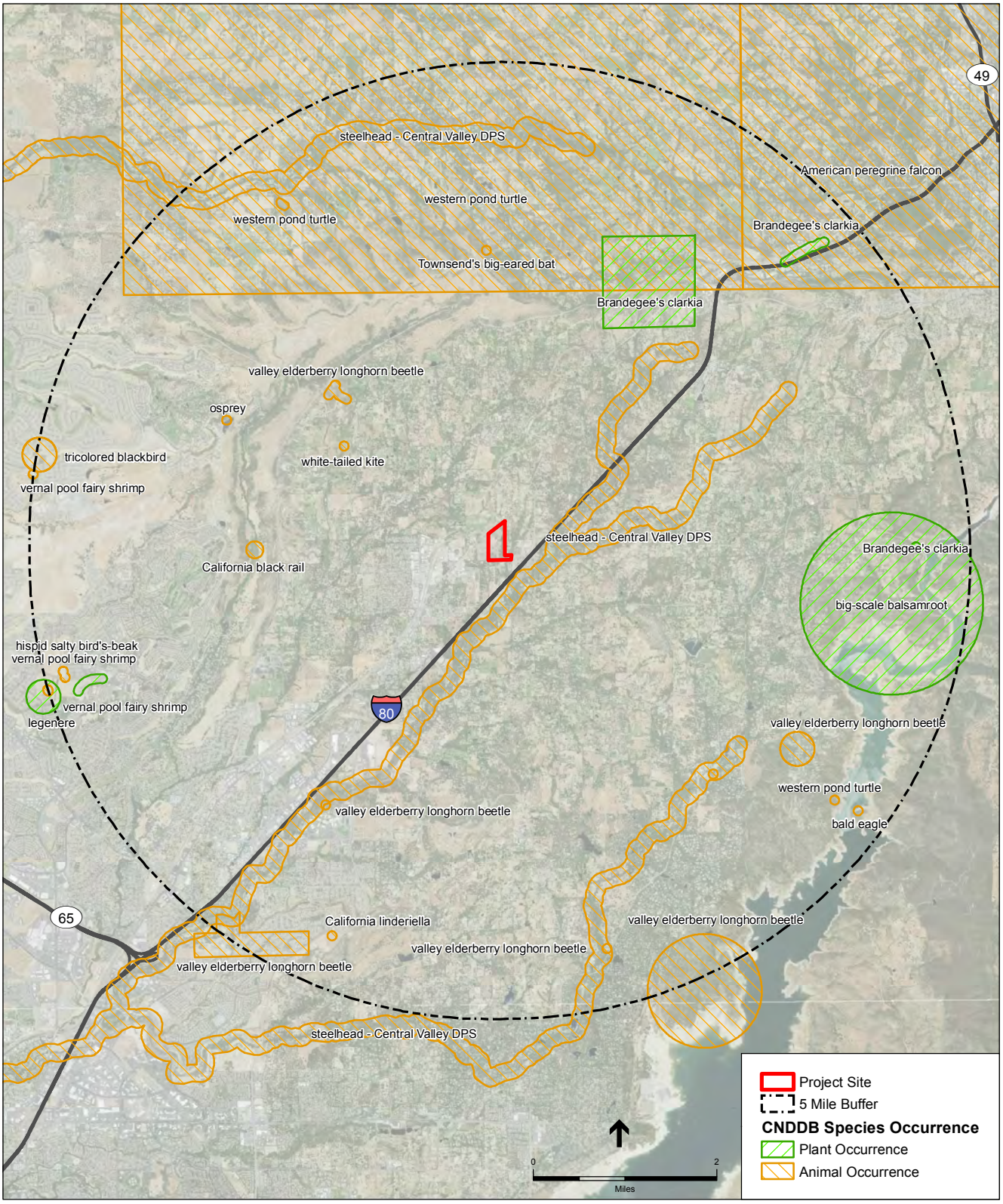
The following potentially jurisdictional wetlands and waters of the U.S. occur within the study area: lacustrine ponds, riverine drainages, drainage ditch and seasonal wetland. These areas are depicted on habitat map (Figure 3-2). The U.S. Army Corps of Engineers (Corps) verified a delineation for the study area that includes 0.173 acres of ephemeral drainage, 0.006 acres of drainage ditch, 0.121 acres of seasonal wetland, and 1.077 acres of pond (lacustrine) (Corps, 2017). The drainage ditch in the northwest portion of the study area is not considered a waters of the U.S.

## 3.4 Special-Status Species

Several species known to occur on or in the vicinity of study area are protected pursuant to federal and/or State endangered species laws, or have been designated as Species of Special Concern by CDFW. In addition, Section 15380(b) of the *CEQA Guidelines* provides a definition of rare, endangered, or threatened species that are not included in any listing.[1] Species recognized under these terms are collectively referred to as “special-status species.”

Special-status species considered for this analysis are based on the CNDDB, CNPS, and USFWS lists. A map of CNDDB special-status species occurrences within 5 miles of the study area is provided in **Figure 3-3**. A comprehensive list of special-status plant and wildlife species that were considered in the analysis is provided in Appendix B. The list includes the common and scientific names for each species, regulatory status (federal, State, local, CNPS), habitat descriptions, and a discussion of the potential for occurrence on the study area. Species which are not likely to occur or have the potential to occur are discussed further below.

[1] For example, vascular plants listed as rare or endangered or as List 1 or 2 by the California Native Plant Society (CNPS) are considered to meet Section 15380(b) requirements.




SOURCE: CDFW, December 2016

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**Figure 3-3**

CNDDB 5 Mile Radius Map

The proposed project description includes temporary or permanent relocation of fish within the pond during construction and enhancement activities. It should be noted that the fish in the irrigation pond are common species including mosquitofish and largemouth bass. These species are not considered special-status and thus are not discussed further.

## 3.4.1 Federal and State-Listed Plants

### Boggs Lake Hedge-Hyssop (*Gratiola heterosepala*)

Boggs Lake hedge hyssop is State listed as endangered and has a California Rare Plant Rank (CRPR) of 1B.

Boggs Lake hedge hyssop is an annual herb found on clay soils in vernal pools and along the lake margins of marshes and swamps from 33 to 7,792 feet (10 to 2,375 meters). The blooming period is from April through August. The lacustrine pond within the study area provides marginally suitable habitat for this species. Because the biological survey was conducted outside of the evident and identifiable period for Boggs Lake hedge-hyssop, the species could potentially be present within the study area and not have been detected. This species was not observed during the rare plant survey of the study area. Based on these results, this species has a low potential to occur within the study area.

## 3.4.2 Non-Listed Special-Status Plants

As described in Chapter 2, a rare plant survey was conducted in all suitable habitat in April 2018.

### Ahart's Dwarf Rush (*Juncus leiospermus* var. *ahartii*)

Ahart's dwarf rush has a California Rare Plant Rank (CRPR) of 1B.

Ahart's dwarf rush is an annual herb found on mesic soils in valley and foothill grassland from 98 to 328 feet (30 to 100 meters). The blooming period is from March through May. The annual grassland within the study area provides habitat for Ahart's dwarf rush. Because the biological survey was conducted outside of the evident and identifiable period for Ahart's dwarf rush, the species could potentially be present within the study area and not have been detected. This species was not observed during the rare plant survey of the study area. Based on these results, this species has a low potential to occur within the study area.

### Big Scale Balsamroot (*Balsamorhiza macrolepis* var. *macrolepis*)

Big-scale balsamroot has a California Rare Plant Rank (CRPR) of 1B.

Big-scale balsamroot is a perennial herb sometimes found on serpentinite soils in chaparral, cismontane woodland, and valley and foothill grassland from 295 to 5,102 feet (90 to 1,555 meters). The blooming period is from March through June. The annual grassland and foothill hardwood within the study area provide habitat for this species. Because the biological survey was conducted outside of the evident and identifiable period for big-scale balsamroot, the species could potentially be present within the study area and not have been detected. This

species was not observed during the rare plant survey of the study area. Based on these results, this species has a low potential to occur within the study area.

### Dwarf Downingia (*Downingia pusilla*)

Dwarf downingia has a California Rare Plant Rank (CRPR) of 2.

Dwarf downingia is an annual herb found occasionally in mesic areas within valley and foothill grassland and vernal pools from 3 to 1,460 feet (1 to 445 meters). The blooming period for this species is from March through May. The annual grassland within the study area provides habitat for this species. Because the biological survey was conducted outside of the evident and identifiable period for dwarf downingia, the species could potentially be present within the study area and not have been detected. This species was not observed during the rare plant survey of the study area. Based on these results, this species has a low potential to occur within the study area.

## 3.4.3 Federal and State Listed Wildlife

### California Red-Legged Frog (*Rana draytonii*)

California red-legged frogs are a federally listed threatened species and California species of special concern.

California red-legged frog (CRLF) inhabits ponds, slow-moving creeks, and streams with deep pools that are lined with dense emergent marsh or shrubby riparian vegetation. Submerged root masses and undercut banks are important habitat features for this species. Breeding sites include pools and backwaters within streams and creeks, ponds, marshes, springs, sag ponds, dune ponds, lagoons, and artificial impoundments including stock ponds (USFWS, 2011). CRLF breed between November and March. Embryos hatch six to 14 days after fertilization and larvae require 3.5 to 7 months to attain metamorphosis. CRLF may have been extirpated from the floor of the Central Valley prior to the 1960s (USFWS, 2002). All of the extant records for CRLF in the Sierra Nevada range are over 800 feet (pers. comm., Jennings 2013). Below this elevation, aquatic habitat generally supports stronger populations of non-native predators associated with warm water habitats such as American bullfrogs (*Lithobates catesbeiana*), Centrarchid fish (pers. comm., Jennings 2013), bass (*Micropterus* sp.), and mosquitofish (*Gambusia affinis*) (USFWS, 2017b). CRLF are mostly found in seasonal aquatic habitat rather than in permanent waters because predators including bass, bullfrogs, and mosquitofish are unable to survive once the aquatic features dry up. The study area occurs between approximately 420 and 495 feet, outside of the extant range of the species.

There are no CNDDB occurrences within five miles of the study area. The nearest occurrence is approximately eight miles southeast of the study area along a small drainage feeding directly into the east side of Folsom Lake (Occurrence Number 814) (CDFW, 2016), however, the validity of this record is highly questionable due to the low elevation (approximately 500 feet above MSL), the proximity to urban development and to Folsom Lake, and the abundant non-native predators that it supports (pers. comm., Jennings 2013). The record states that a juvenile frog was sighted on a small footbridge crossing a drainage leading into Folsom Lake from an adjacent residential development. This frog was most likely a juvenile bullfrog, which, to the untrained eye, can be

easily confused with a juvenile CRLF (pers. comm., Jennings 2013). Even if this were a valid record, this location is separated from the study area by a number of impassible barriers including major roadways and urban development. The nearest valid CNDDB occurrences (Occurrence Numbers 1284 and 1317) are over 20 miles northeast of the study area in the vicinity of Georgetown at over 2,200 feet above MSL. These occurrences state that CRLF was observed in a series of small pools/wet areas in a drainage stream channel. This location corresponds to the nearest Critical Habitat Unit (PLA-1) as well.

The lacustrine pond is comprised of water year-round and is routinely stocked with largemouth bass (*Micropterus salmoides*) and mosquitofish which prey on CRLF. Although the lacustrine pond and riverine drainages provide marginal habitat, the pond is a permanent water source that supports multiple species that prey on CLRF and the study area occurs outside of the known extant geographic and elevation ranges for this species. For these reasons, this species is not likely to occur within the study area.

## Swainson's Hawk (*Buteo swainsoni*)

Swainson's hawk is a state listed threatened species.

The Swainson's hawk population that nests in the Central Valley winters primarily in Mexico, while the population that nests in the interior portions of North America winters in South America (Bradbury et al., in prep.). Swainson's hawks arrive in the Central Valley between March and early April to establish breeding territories. Breeding occurs from late March to late August, peaking in late May through July (Zeiner et al., 1990). In the Central Valley, Swainson's hawks nest in isolated trees, small groves, or large woodlands next to open grasslands or agricultural fields. This species typically nests near riparian areas; however, it has been known to nest in urban areas as well. Nest locations are usually in close proximity to suitable foraging habitats, which include fallow fields, annual grasslands, irrigated pastures, alfalfa and other hay crops, and low-growing row crops. Swainson's hawks leave their breeding grounds to return to their wintering grounds in late August or early September (Bloom and De Water, 1994).

There are no CNDDB records for this species within five miles of the study area. There are four CNDDB records for this species between five and ten miles of the study area. These occurrence numbers are (791, 2115, 1485, and 2662). None of these occurrences were documented within the last 5 years. The trees along the riverine drainage within the valley foothill riparian provide nesting habitat for this species. The annual grassland within the study area provide foraging habitat for this species. Although this species was not observed during the biological survey, the biological survey was conducted outside of the nesting season. The generally accepted nesting season for this species extends from March 1 through August 31. This species has the potential to nest and forage within the study area.

## White-Tailed Kite (*Elanus leucurus*)

While not listed, the white-tailed kite is a state fully protected species under Fish and Game Code, meaning that this species "....may not be taken or possessed at any time and no provision of this

code or any other law shall be construed to authorize the issuance of permits or licenses to take any fully protected" species, although take may be authorized for necessary scientific research.

White-tailed kite is a medium sized raptor that is a yearlong resident in coastal and valley lowlands in California. White-tailed kite breed from February to October, peaking from May to August (Zeiner et al., 1990). This species nests near the top of dense oaks, willows, or other large trees. The trees within the annual grassland, valley foothill riparian, and interior live oak provide nesting habitat for this species. No white-tailed kites were observed during the biological survey, however, the survey was conducted outside of the generally accepted nesting season. The generally accepted nesting season extends from February 1 through August 31. This species has the potential to nest within the study area during the nesting season.

## 3.4.4 Non-Listed Special Status Wildlife

### Western Pond Turtle (*Actinemys marmorata*)

Western pond turtle is a California species of special concern.

Western pond turtles are found in ponds, lakes, rivers, streams, creeks, marshes, and irrigation ditches with suitable basking sites (Californiaherps, 2018). Suitable aquatic habitat typically has a muddy or rocky bottom and has emergent aquatic vegetation for cover (Stebbins, 2003). Western pond turtles nest and overwinter in areas of sparse vegetation comprised of grassland and forbs with less than ten percent slopes, less than 492 feet (150 meters) from aquatic habitat (Rosenberg et al., 2009). The lacustrine ponds and riverine drainages provide aquatic habitat and the surrounding annual grassland provides upland habitat. This species was not observed within the study area during the biological survey. This species has the potential to occur within the study area.

### Burrowing Owl (*Athene cunicularia*)

Burrowing owl is a California species of special concern.

Burrowing owl is a small ground-dwelling owl that occurs in western North America from Canada to Mexico and east to Texas and Louisiana. Although burrowing owls are migratory in certain areas of their range, these owls are predominantly non-migratory in California. Burrowing owls generally inhabit gently-sloping areas, characterized by low, sparse vegetation (Poulin et al., 2011). The breeding season for burrowing owls extends from March to August, peaking in April and May (Zeiner et al., 1990). Burrowing owls nest in burrows in the ground, often in old ground squirrel burrows. Burrowing owl is also known to use artificial burrows including pipes, culverts, and nest boxes. The culverts associated with the drainage ditch within the developed area and the annual grassland provide habitat for this species, however, very few potential burrow sites that could be utilized by burrowing owl are present within the study area. No burrowing owl or their sign were observed during the biological survey. This species has the potential to nest or winter within the study area.

### Purple Martin (*Progne subis*)

Purple martin is a California species of special concern.

Purple martin nests in snags, tree cavities, crevices in rocks, and abandoned woodpecker holes in the vicinity of water. This species forages over fields, water, and marshes. The trees within the annual grassland, valley foothill riparian, and interior live oak provide nesting habitat for this species. No purple martin were observed during the biological survey, however, the survey was conducted outside of the generally accepted nesting season. The generally accepted nesting season extends from February 1 through August 31. This species has the potential to nest within the study area during the nesting season.

## Grasshopper Sparrow (*Melospiza melodia*)

Grasshopper sparrow is a California species of special concern.

Grasshopper sparrow habitat consists of moderately open grasslands and prairies with patchy bare ground. No grasshopper sparrows were observed during the biological survey, however, the survey was conducted outside of the generally accepted nesting season. The generally accepted nesting season extends from February 1 through August 31. This species has the potential to nest within the study area during the nesting season.

## American Badger (*Taxidea taxus*)

American badger is a California species of special concern.

American badgers are found in dry, open habitats including grassland and open woodland. Suitable burrowing habitat requires dry, sandy soil. Breeding occurs in summer and early fall, with young being born from March to April. The annual grassland provides habitat for this species, however, very few potential burrow sites that could be utilized by this species were observed during the biological survey. No American badgers were observed during the biological survey. This species has the potential to occur within the study area.

## Pallid Bat (*Antrozous pallidus*)

Pallid bat is a California species of special concern.

Pallid bat occurs throughout California except in parts of the high Sierra and the northwestern corner of the state (Zeiner et al., 1990b). The pallid bat inhabits a variety of habitats, such as grasslands, shrublands, woodlands, and forests; however, it is most abundant in open, dry habitats with rocky areas for roosting. Pallid bats roost alone, in small groups, or gregariously (WBWG, 2005). Roosts include caves, crevices in rocky outcrops and cliffs, mines, trees, and various man-made structures (e.g., bridges, barns, porches), and generally have unobstructed entrances/exists and are high above the ground, warm, and inaccessible to terrestrial predators. Year-to-year and night-to-night roost reuse is common; however, bats may switch day roosts on a daily and seasonal basis. The trees and structures within the annual grassland, valley foothill riparian, and interior live oak provide roosting habitat for this species. No pallid bats were observed during the biological survey. This species has the potential to occur within the study area.

## 3.5 Wildlife Movement Corridors

Wildlife movement corridors link together areas of suitable wildlife habitat that are otherwise separated by rugged terrain, changes in vegetation, or by areas of human disturbance or urban development. Topography and other natural factors in combination with urbanization can fragment or separate large open-space areas. The fragmentation of natural habitat can create isolated "islands" of vegetation and habitat that may not provide sufficient area to accommodate sustainable populations and can adversely impact genetic and species diversity. The retention of wildlife movement corridors ameliorates the effects of such fragmentation by allowing animals to move between remaining habitats, which in turn allows depleted populations to be replenished. Such movement may also promote genetic exchange between separated populations.

The study area is not part of major or local wildlife corridor/travel routes because it does not connect two or more larger areas of natural habitat. Additionally, the study area is surrounded by residential development, including residential development to the west; Tumble Lane followed by low density residential development to the east; Taylor Road followed by low density residential to the north; and low density residential followed by Interstate 80 to the south.

## 3.6 Critical Habitat for Listed Fish and Wildlife Species

The USFWS defines the term critical habitat in the federal Endangered Species Act as a specific geographic area(s) that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection. The study area is not within designated critical habitat for any listed plant or wildlife species.

## 3.7 Protected Trees

A tree survey area was developed for the site which is inclusive of areas which could potentially be disturbed by the project and/or where trees would be removed. An additional 50-foot buffer was added and surveyed where trees were accessible. Riparian areas on the eastern portion of the site and most of the oak woodland on the southern portion of the site would be avoided; these areas were not surveyed unless they fall within 50 feet of the tree survey area and were accessible. A total of 416 trees occur within the tree survey area (Environmental Science Associates, 2017). Of these, 270 are native trees and 146 are non-native and ornamental trees. Non-native and ornamental trees are not considered protected under the Placer County Tree Ordinance.

# CHAPTER 4
# Impacts and Recommendations

## 4.1 Proposed Project

The term "impact area" refers to the maximum area of disturbance associated with the construction of the proposed project. This area includes pond enhancement activities.

## 4.2 Habitat Impacts

The proposed project would impact a total of approximately 15.531 acres within the study area. **Table 2** summarizes the acreages of impacts by habitat type. Impacts to habitat types as a result of the proposed project are provided in **Figure 4-1**.

**TABLE 2.**
**PROJECT IMPACTS BY HABITAT TYPE**

| Habitat Type | Impact (Acreage[1]) |
|---|---|
| Annual Grassland | 10.25 |
| Urban | 3.36 |
| Interior Live Oak | 0.51 |
| Valley Foothill Riparian | 0.42 |
| Seasonal Wetland | 0.01 |
| Lacustrine | 0.97 |
| Riverine[2] | -- |
| Drainage Ditch | 0.011 |
| **Total** | **15.531** |

NOTES:
1 GIS calculations may not reflect exact acreage of study area due to rounding.
2 Bridge construction would span over the riverine habitat to avoid impacts within the proposed impact area.

## 4.3 Impacts to Sensitive Biological Resources

The following discussion describes the potential effects to sensitive biological resources as a result of project development and provides recommended conservation measures (CMs) to protect these resources. With implementation of the following conservation measures, impacts to sensitive biological resources would be less than significant.

### 4.3.1 Potential Waters of the U.S. and Sensitive Natural Communities

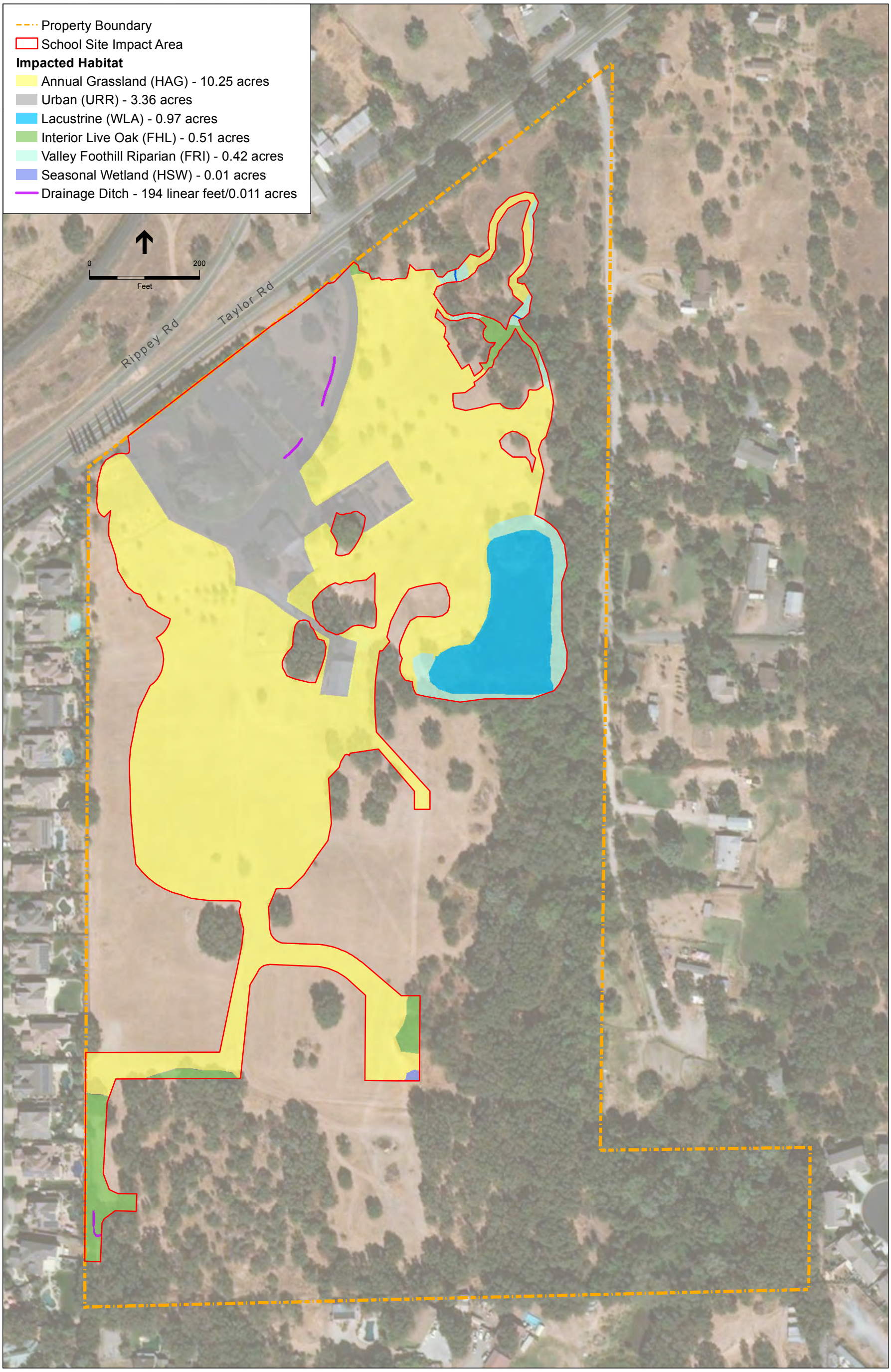
The following potentially jurisdictional wetlands and waters of the U.S. occur within the study area: lacustrine pond, riverine drainage, drainage ditch and seasonal wetland. In addition, these resources, as well as the valley foothill riparian habitat, would be considered natural communities of special concern under CEQA and subject to protection under Section 1600 of Fish and Game Code. The project would fill 0.011 acres of potentially jurisdictional drainage ditch in the southwestern portion of the property for the construction of a service access road. The drainage ditch in the northern portion of the property may be impacted by parking improvements; however, this feature is not considered sensitive or jurisdictional. The project would impact 0.42 acres of valley foothill riparian habitat subject to CDFW 1600 jurisdiction for the trail where the footbridge would span the banks of the riverine habitat. The project would also impact 0.01 acres of seasonal wetland in the south-central portion of the property. In addition, the project would temporarily impact 0.97 acres of the potentially jurisdictional lacustrine pond for vegetation enhancement through draining and grading. Following vegetation enhancement, the overall acreage of waters of the U.S. associated with the lacustrine pond would be the same or greater.

Impacts to these features would require the project to obtain permits from regulatory agencies for pond enhancement activities (Section 404 Clean Water Act Nationwide permit, Section 401 Water Quality Certification, Section 1600 Lake and Streambed Alteration Agreement), for impacts to riparian habitat from trail construction (Section 1600 Lake and Streambed Alteration Agreement), and for impacts to a ditch in the southwestern corner of the property from construction of a service road (Section 404 Clean Water Act Nationwide permit, Section 401 Water Quality Certification, Section 1600 Lake and Streambed Alteration Agreement). The remaining features and sensitive habitat would be avoided.

> **CM-1:** High visibility and silt fencing should be erected at the edge of construction/ maintenance footprint if work is anticipated to occur within 50 feet of potentially jurisdictional features and riparian areas which are proposed for avoidance. A biological monitor should be present during the fence installation and during any initial grading or vegetation clearing activities within 50 feet of potentially jurisdictional features and riparian areas which are proposed for avoidance.

### 4.3.2 Special-Status Plants

As noted in Section 3, suitable habitat for special status plants occurs within the study area, including areas that could be affected by development of the proposed project. However, based on the results of the rare plant survey conducted in April 2018, it is unlikely that any of these species occur in the study area. Therefore, no conservation measures are necessary.




SOURCE: USDA, 2016; RSC Engineering, 2018; ESA, 2018

UAIC Tribal School . 150225

**Figure 4-1**
Impact Map

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### 4.3.3 California Red-Legged Frog

Although the lacustrine pond and riverine drainages provide marginal habitat, the pond is a permanent water source that supports multiple species that prey on CLRF and the study area occurs outside of the known extant geographic and elevation ranges for this species. The study area is surrounded by residential development and paved roads, is 250 feet below the lowest known extant elevation range inhabited by CRLF, and there are no known CNDDB occurrences for CRLF within 20 miles of the study area. For these reasons, this species is not likely to occur within the study area. This species is not likely to occur onsite and thus no mitigation would be required.

### 4.3.4 Swainson's Hawk Foraging Habitat

The CDFW considers five or more vacant acres within ten miles of an active nest within the last five years to be significant foraging habitat for Swainson's hawk, the conversion of which to urban uses is considered a significant impact, in accordance with the *Staff Report Regarding Mitigation for Impacts to Swainson's Hawk in the Central Valley of California* (CDFW, 1994; Staff Report). The Staff Report states that foraging habitat loss of five or more acres on projects located greater than five miles but less than ten miles of an active nest tree documented within the last five years shall be mitigated at a 0.5:1 ratio. Although there are records documented with nests within ten miles of the study area, none were documented within the last five years. Therefore, no mitigation for loss of annual grassland would be required.

### 4.3.5 Swainson's Hawk Nesting Habitat

The trees within the study area provide nesting habitat for Swainson's hawk, including trees that may be removed as a result of project construction activities.

> **CM-5:** If any trees are anticipated for removal, they should be removed outside of the nesting season (September 16 through February 28). Should this not be possible, prior to the commencement of construction and/or maintenance activities during the nesting season for Swainson's hawk (between March 1 and September 15), a qualified biologist should conduct a minimum of one protocol-level pre-construction survey during the recommended survey periods for the nesting season that coincides with the commencement of construction activities, in accordance with the Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley (Swainson's Hawk Technical Advisory Committee 2000). The biologist should conduct surveys for nesting Swainson's hawk within 0.25 miles of the study area where legally permitted. The biologist will use binoculars to visually determine whether Swainson's hawk nests occur within the 0.25-mile survey area if access is denied on adjacent properties. If no active Swainson's hawk nests are identified on or within 0.25 miles of the study area within the recommended survey periods, a letter report summarizing the survey results should be submitted to the project proponent within 30 days following the final survey, and no further avoidance and minimization measures for nesting habitat are recommended.

**CM-6:** If active Swainson's hawk nests are found within 0.25 miles of construction and/or maintenance activities, the biologist should contact the project proponent and the CDFW within one day following the preconstruction survey to report the findings. For the purposes of this avoidance and minimization requirement, construction activities are defined to include heavy equipment operation associated with construction (use of cranes or draglines, new rock crushing activities) or other project-related activities that could cause nest abandonment or forced fledging within 0.25 miles of a nest site between March 1 and September 15. Should an active nest be present within 0.25 miles of construction areas, then the CDFW should be consulted to establish an appropriate noise buffer, develop take avoidance measures, determine whether high visibility construction fencing should be erected around the buffer zone, and implement a monitoring and reporting program prior to any construction activities occurring within 0.25 miles of the nest. Should the biologist determine that the construction activities are disturbing the nest, the biologist would halt construction activities until the CDFW is consulted. The construction activities should not commence until the CDFW determines that construction activities would not result in abandonment of the nest site. Should the biologist determine that the nest has not been disturbed during construction activities within the buffer zone, then a letter report summarizing the survey results should be submitted to the project proponent and the CDFW within 30 days following the final monitoring event, and no further avoidance and minimization measures for nesting habitat are recommended.

### 4.3.6 Burrowing Owl

The annual grassland within the study area provides nesting and wintering habitat for burrowing owl, although very few potential burrow sites that could be utilized by this species were observed and there are no CNDDB records documented for this species within five miles of the study area.

**CM-7:** Due to the low likelihood of presence, a single take avoidance survey should be conducted between 14 days and 30 days prior to commencement of construction and/or maintenance activities, in accordance with **Appendix D** of the 2012 CDFW Staff Report on Burrowing Owl Mitigation (2012 Staff Report) (CDFW, 2012). The survey area should include an approximately 500-foot (150-meter) buffer around suitable grassland habitats, where access is permitted. If the survey is negative, then a letter report documenting the results of the survey should be provided to the project proponent for their records, and no additional protective measures are recommended.

**CM-8:** If active burrows are observed within 500 feet of the study area, an impact assessment should be prepared and submitted to the CDFW, in accordance with the 2012 Staff Report. If it is determined that project activities may result in impacts to nesting, occupied, and satellite burrows and/or burrowing owl habitat, the project proponent should delay commencement of construction activities until the biologist determines that the burrowing owls have fledged and the burrow is no longer occupied. If this is infeasible, the project proponent should consult with the CDFW and develop a detailed mitigation plan such that the habitat acreage, number of burrows, and burrowing owls impacted are replaced. The mitigation plan should be based on the requirements set forth

in Appendix A of the 2012 Staff Report. No construction can commence until the CDFW has approved the mitigation plan.

### 4.3.7 Western Pond Turtle

As noted previously, suitable habitat for western pond turtle exists within the pond and riverine features in the study area.

**CM-9:** A worker education and awareness program should be provided to all on-site personnel by a qualified biologist before the commencement of materials staging or ground disturbing activities. The biologist should explain to construction workers how best to avoid impacts to western pond turtle and should include topics on species identification, life history, descriptions, and habitat requirements during various life stages. Handouts, illustrations, photographs, and project mapping showing areas where minimization and avoidance measures can be included as part of this education program. The crew members should sign a sign-in sheet documenting that they received the training.

**CM-10:** All vegetation removal, pond draining, and initial grading activities associated with construction and maintenance activities should be conducted under the supervision of a qualified biologist. Should any western pond turtles be detected in the vicinity of the project footprint, the biological monitor would relocate any western pond turtles found within the construction footprint to suitable habitat away from the construction zone, but within the study area. A letter report documenting the biological monitoring should be submitted to the client within 14 days following the final monitoring event.

### 4.3.8 Nesting Birds including White-Tailed Kite, Purple Martin, and Grasshopper Sparrow

Migratory birds and other birds of prey, protected under 50 CFR 10 of the MBTA and/or Section 3503 of the California Fish and Game Code, including white-tailed kite, purple martin, and grasshopper sparrow have the potential to nest within the study area, including areas that would be impacted by project construction.

**CM-11:** Vegetation clearing operations, including pruning or removal of trees and shrubs, should be completed between September 1 and February 14, if feasible. If vegetation removal begins during the nesting season (February 15 to August 31), a qualified biologist should conduct a preconstruction survey prior to vegetation removal. The pre-construction survey should be conducted within 14 days prior to commencement of ground-disturbing activities. If the pre-construction survey shows that there is no evidence of active nests, then no additional measures are recommended. If construction does not commence within 14 days of the pre-construction survey, or halts for more than 14 days, an additional pre-construction survey is recommended.

**CM-12:** If any active nests are located within the study area, an appropriate buffer zone should be established around the nests, as determined by the project biologist. The biologist should mark the buffer zone with construction tape or pin flags and maintain the

buffer zone until the end of breeding season or the young have successfully fledged. Buffer zones are typically 100 feet for migratory bird nests and 250 feet for a raptor nest. If active nests are found within the project footprint, a qualified biologist should monitor nests weekly during construction to evaluate potential nesting disturbance by construction activities. Guidance from the CDFW is recommended if establishing the typical buffer zone is impractical.

### 4.3.9 American Badger

The annual grasslands and woodlands provide potential breeding and foraging habitat for this species, including areas that would be impacted by project construction. The following conservation measures are recommended.

**CM-13:** A qualified biologist should conduct a preconstruction survey for American badger within 14 days prior to the start of ground disturbance. If no American badgers or their burrows are observed, then a letter report documenting the results of the survey should be provided to the applicant for their records, and no additional measures are recommended. If construction does not commence within 14 days of the preconstruction survey, or halts for more than 14 days, a new survey is recommended.

**CM-14:** If American badgers or their dens are found, additional avoidance measures are recommended including having a qualified biologist conduct a preconstruction survey within 24 hours prior to commencement of construction and/or maintenance activities, performing a worker awareness training to all construction workers, and being present within the study area during grading activities for the purpose of temporarily halting construction activities until the biologist determines that the badger has left the construction footprint on its own accord.

### 4.3.10 Pallid Bat

Trees and manmade structures within the area proposed for development have the potential to support day roosts or maternities for pallid bat. Therefore, the following conservation measures are recommended.

**CM-15:** Prior to the removal of suitable trees (larger than 24 inches in DSH) or demolition of existing buildings, a qualified biologist should conduct a pre-construction survey for special-status bats within 14 days prior to the start of their removal. If no special-status bats are observed roosting, then a letter report documenting the results of the survey should be provided to the applicant for their records, and no additional measures are recommended. If tree removal does not commence within 14 days of the pre-construction survey, or halts for more than 14 days, a new survey is recommended.

**CM-16:** If bats are found in trees or structures proposed for removal, a minimum 10-foot avoidance buffer should be established around the roost/maternity until it is no longer occupied. High visibility construction fencing should be installed around the buffer and should remain in place until the tree or structure is no longer occupied by bats. The trees

or structures should not be removed until a biologist has determined that the roost is no longer occupied by the bats.

### 4.3.11 Protected Trees

Of the 416 trees within the study area, a total of 104 trees are proposed for removal of which 35 trees are protected under the Placer County Tree Ordinance (Lake Flato, 2017). Several additional trees are exempt from the Placer County Tree Ordinance as they are in poor health or below 6 inches DBH. The following conservation measures are recommended to ensure consistency with local requirements and protection of native trees outside of the development area:

**CM-17:** Protected trees proposed for removal should be replaced based on a minimum inch for inch replacement consistent with the Placer County Tree Ordinance. The applicant currently proposes to remove protected trees with a total DBH of 648 inches and replace them with native trees onsite with a total DBH of 806.75 inches. This is greater than the requirement identified within the Placer County Tree Ordinance.

**CM-18:** Prior to commencement of construction activities, tree protection fencing should be placed around all protected trees proposed to be preserved onsite. The fencing should be installed a minimum of one foot beyond the driplines of the protected trees and should remain intact until construction has been completed. Fencing may include, but is not limited to, chain link fencing or high visibility construction fencing.

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# CHAPTER 5
# References and Report Preparation

## 5.1 References


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# Appendix A
## Regulatory Context

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# Federal

## U.S. Fish and Wildlife Service

The U.S. Fish and Wildlife Service (USFWS) administers the Federal Endangered Species Act (FESA) (16 U.S. Code [USC] 153 et seq.), the Migratory Bird Treaty Act (MBTA) (16 USC 703–711), and the Bald and Golden Eagle Protection Act (16 USC 668). These regulations are described below.

**Federal Endangered Species Act.** Under the FESA, the Secretary of the Interior and the Secretary of Commerce have joint authority to list a species as threatened or endangered (16 USC § 1533(c)). Two federal agencies oversee the FESA: the USFWS has jurisdiction over plants, wildlife, and resident fish, while the National Marine Fisheries Service (NMFS) has jurisdiction over anadromous fish and marine fish and mammals. Section 7 of the FESA mandates that federal agencies consult with the USFWS and NMFS to ensure that federal agency actions do not jeopardize the continued existence of a listed species or destroy or adversely modify critical habitat for listed species. The FESA prohibits the "take"[2] of any fish or wildlife species listed as threatened or endangered, including the destruction of habitat that could hinder species recovery.

Section 10 requires the issuance of an "incidental take" permit before any public or private action may be taken that could take an endangered or threatened species. The permit requires preparation and implementation of a habitat conservation plan (HCP) that would offset the take of individuals that may occur, incidental to implementation of a proposed project, by providing for the protection of the affected species.

Pursuant to the requirements of the FESA, a federal agency reviewing a project within its jurisdiction must determine whether any federally listed threatened or endangered species may be present in the project area and whether the proposed project will have a potentially significant impact on such species. In addition, the agency is required to determine whether the proposed action is likely to jeopardize the continued existence of any species proposed to be listed under FESA or result in the destruction or adverse modification of critical habitat proposed to be designated for such species (16 USC § 1536(3), (4)). No federal actions apply to the proposed SMZC GUP project.

**Critical Habitat.** The USFWS designates critical habitat for listed species under FESA. Critical habitat designations are specific areas within the geographic region that are occupied by a listed species that are determined to be critical to its survival and recovery in accordance with FESA. Federal entities issuing permits or acting as a lead agency must show that their actions do not negatively affect the critical habitat to the extent that it impedes the recovery of the species. The SMZC is not within designated critical habitat.

[2] Take is defined as harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, collecting, or attempting to engage in any such conduct.

**Protection of Nesting Birds - Migratory Bird Treaty Act.** The MBTA (16 United States Code § 703 Supp. I, 1989) generally prohibits the killing, possessing, or trading of migratory birds, bird parts, eggs, and nests, except as provided by the statute.

**Bald and Golden Eagle Protection Act.** The Bald and Golden Eagle Protection Act, enforced by the USFWS, makes it illegal to import, export, take (which includes molest or disturb), sell, purchase, or barter any bald eagle (*Haliaeetus leucocephalus*) or golden eagle (*Aquila chrysaetos*) or parts thereof.

### U.S. Army Corps of Engineers

**Clean Water Act, Section 404.** The U.S. Army Corps of Engineers (Corps) administers Section 404 of the Clean Water Act (CWA). Section 404 regulates activities in wetlands and "other waters of the United States." Wetlands are a subset of "waters of the United States" that are defined in the Code of Federal Regulations (CFR) (33 CFR 328.3[a]; 40 CFR 230.3[s]) as:

1. All waters that are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters that are subject to the ebb and flow of the tide.

2. All interstate waters including interstate wetlands. (Wetlands are defined by the federal government [33 CFR 328.3(b), 1991] as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances support, a prevalence of vegetation typically adapted for life in saturated soil conditions).

3. All other waters—such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds—the use, degradation, or destruction of which could affect interstate or foreign commerce. This includes any waters with the following current or potential uses:
   - That are or could be used by interstate or foreign travelers for recreational or other purposes,
   - From which fish or shellfish are or could be taken and sold in interstate or foreign commerce, or
   - That are used or could be used for industrial purposes by industries in interstate commerce.

4. All impoundments of waters otherwise defined as waters of the United States under the definition.

5. Tributaries of waters identified in paragraphs (1) through (4).

6. Territorial seas.

7. Wetlands next to waters identified in paragraphs (1) through (6).

8. Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for

> the purposes of the Clean Water Act, the final authority regarding the Clean Water Act jurisdiction remains with the U. S. Environmental Protection Agency (328.3[a][8] added 58 CFR 45035, August 25, 1993).

Regulatory waters under the jurisdiction of the Corps do not occur in the Study Area and would not be affected by proposed activities.

## *State*

### California Department of Fish and Wildlife

The California Department of Fish and Wildlife (CDFW), formerly identified as the California Department of Fish and Game, administers a number of laws and programs designed to protect fish and wildlife resources under the Fish and Game Code (FGC), such as the California Endangered Species Act (FGC Section 2050, et seq.), Fully Protected Species (FGC Section 3511), Native Plant Protection Act (FGC Sections 1900 to 1913) and Lake or Streambed Alteration Agreement Program (FGC Sections 1600 to 1616). These regulations are described below.

**California Endangered Species Act.** In 1984, the State of California implemented the California Endangered Species Act (CESA) which prohibits the take of State-listed endangered and threatened species; although, habitat destruction is not included in the State's definition of take. Section 2090 requires State agencies to comply with endangered species protection and recovery and to promote conservation of these species. The CDFW administers the act and authorizes take through California Fish and Game Code Section 2081 agreements (except for designated "fully protected species," see below). Unlike its federal counterpart, CESA protections apply to candidate species that have been petitioned for listing.

Regarding listed rare and endangered plant species, CESA defers to the California Native Plant Protection Act (see below).

**Fish and Game Code Section 3503.** California Fish and Game Code Section 3503.5 provides that it is unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds-of-prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto. Construction activities that result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment and/or reproductive failure are considered a "take" by CDFW. Any loss of eggs, nests, or young or any activities resulting in nest abandonment would constitute a significant project impact.

**Native Plant Protection Act.** California Fish and Game Code Section 1900–1913, also known as the Native Plant Protection Act, is intended to preserve, protect, and enhance endangered or rare native plants in California. The act directs CDFW to establish criteria for determining what native plants are rare or endangered. Under Section 1901, a species is endangered when its prospects for survival and reproduction are in immediate jeopardy from one or more cause. A species is rare when, although not threatened with immediate extinction, it is in such small numbers throughout its range that it may become endangered. The act also directs the California Fish and Game

Commission to adopt regulations governing the taking, possessing, propagation, or sale of any endangered or rare native plant.

Vascular plants that are identified as rare by the CNPS, but which may have no designated status or protection under federal or State endangered species legislation, are defined as follows:

- **List 1A:** Plants Presumed Extinct.
- **List 1B:** Plants Rare, Threatened, or Endangered in California and elsewhere.
- **List 2:** Plants Rare, Threatened, or Endangered in California, but more numerous elsewhere.
- **List 3:** Plants about Which More Information is Needed – A Review List.
- **List 4:** Plants of Limited Distribution – A Watch List.

In general, plants appearing on CNPS List 1A, 1B, or 2 are considered to meet the criteria of CEQA Guidelines Section 15380 and effects to these species are considered "significant" in this EIR. Additionally, plants listed on CNPS List 1A, 1B or 2 meet the definition of Section 1901, Chapter 10 (Native Plant Protection Act) and Sections 2062 and 2067 (California Endangered Species Act) of the California Fish and Game Code.

**Lake or Streambed Alteration Program**. The CDFW regulates activities that would interfere with the natural flow of, or substantially alter, the channel, bed, or bank of a lake, river, or stream. Section 1602 of the California Fish and Game Code requires notification of the CDFW for lake or stream alteration activities. If, after notification is complete, the CDFW determines that the activity may substantially adversely affect an existing fish and wildlife resource, the CDFW has authority to issue a Streambed Alteration Agreement under Section 1603 of the California Fish and Game Code. Requirements to protect the integrity of biological resources and water quality are often conditions of Streambed Alteration Agreements. These may include avoidance or minimization of heavy equipment use within stream zones, limitations on work periods to avoid impacts to wildlife and fisheries resources, and measures to restore degraded sites or compensate for permanent habitat losses.

**Species of Special Concern.** CDFW maintains lists for candidate-endangered species and candidate-threatened species. California candidate species are afforded the same level of protection as listed species. California also designates species of special concern, which are species of limited distribution, declining populations, diminishing habitat, or unusual scientific, recreational, or educational value. These species do not have the same legal protection as listed species or fully protected species, but may be added to official lists in the future. CDFW intends the species of special concern list to be a management tool for consideration in future land use decisions. The *Special Plants* list can be found online at: http://www.dfg.ca.gov/biogeodata/cnddb.pdfs.spplants.pdf; and the *Special Animals* list may be found online at: http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/spanimals.pdf.

### State Water Resources Control Board

**Porter Cologne Water Quality Act.** The State Water Resources Control Board (SWRCB), through its nine Regional Water Quality Control Boards (RWQCB), regulates waters of the State

through the California Clean Water Act (i.e., Porter-Cologne Act). If the Corps determines wetlands or other waters to be isolated waters and not subject to regulation under the federal CWA, the RWQCB may choose to exert jurisdiction over these waters under the Porter-Cologne Act as waters of the State.

### CEQA Guidelines Section 15380

Although threatened and endangered species are protected by specific federal and State statutes, CEQA Guidelines Section 15380(b) provides that a species not listed on the federal or State list of protected species may be considered rare or endangered if the species can be shown to meet certain specific criteria. These criteria have been modeled after the definition of FESA and the section of Fish and Game Code discussing rare or endangered plants or animals. This section was included in the CEQA Guidelines primarily for situations in which a public agency is reviewing a project that may have a significant effect on a candidate species that has not yet been listed by CDFW or USFWS. CEQA provides the ability to protect species from potential project impacts until the respective agencies have the opportunity to designate the species protection.

CEQA also specifies the protection of other locally or regionally significant resources, including natural communities or habitats. Although natural communities do not presently have legal protection, CEQA requires an assessment of such communities and potential project impacts. Natural communities that are identified as sensitive in the CNDDB are considered by CDFW to be significant resources and fall under the CEQA Guidelines for addressing impacts. Local planning documents such as general and area plans often identify natural communities.

### Placer County Tree Ordinance

The Placer County Tree Preservation Ordinance (Placer County Code §12.16) regulates protected trees. Protected trees are defined as any native tree with a trunk six inches or greater in diameter at breast height (DBH) or a multi-trunk tree 10 inches or greater within 50 feet of any development activity (i.e., proposed structures, driveways, cuts/fills, underground utilities, etc.). Gray pine (*Pinus sabiniana*) and certain plants which are more commonly found as “brush”, such as manzanita, are not considered to be a tree in this article regardless of size (Ord. 5041-B §§ 1, 2, 2000; prior code §§ 36.210—36.282). Tree removal is exempt if an arborist determines that the tree is dead, dying, or is in a hazardous condition presenting immediate danger to health and property.

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# Appendix B

## Agency Lists and Special-Status Species Considered in the Study Area

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**TABLE B-1**
**SPECIAL-STATUS SPECIES CONSIDERED IN THE STUDY AREA**

| Common Name<br>*Scientific Name* | Status (Federal/State/ CRPR) | Habitat Requirements | Identification/ Survey Period | Potential to Occur |
|---|---|---|---|---|
| Plants | | | | |
| Ahart's dwarf rush<br>*Juncus leiospermus* var. *ahartii* | --/--/1B | Annual herb found in mesic areas in valley and foothill grassland from 30 to 229 meters. | Blooming period: April – August. | **Low**; while the annual grassland within the study area provides habitat for this species, surveys conducted during the blooming period did not detect this species. |
| Big-scale balsamroot<br>*Balsamorhiza macrolepis* var. *macrolepis* | --/--/1B | Perennial herb found in chaparral, cismontane woodland, and valley and foothill grassland, sometimes in serpentinite soils, from 90 to 1,555 meters. | Blooming period: March – June. | **Low**; while the annual grassland and interior live oak within the study area provide habitat for this species, surveys conducted during the blooming period did not detect this species. |
| Boggs Lake hedge-hyssop<br>*Gratiola heterosepala* | --/CE/1B | Annual herb found on clay soils around the lake margins of marshes and swamps and in vernal pools from 10 to 2,375 meters. | Blooming period: April – August. | **Low**; while the lacustrine ponds within the study area provide habitat for this species, surveys conducted during the blooming period did not detect this species. |
| Chaparral sedge<br>*Carex xerophyla* | --/--/1B | Perennial herb found on serpentinite, gabbroic substrate in chaparral, cismontane woodland, and lower montane coniferous forest from 440 to 770 meters. | Blooming period: March – June | **None**; the study area does not contain the soils required for this species. |
| Dwarf downingia<br>*Downingia pusilla* | --/--/2 | Annual herb found occasionally in mesic areas within valley and foothill grassland and vernal pools from 1 to 445 meters. | Blooming period: March – May. | **Low**; while the annual grassland within the study area provides habitat for this species, surveys conducted during the blooming period did not detect this species. |
| El Dorado bedstraw<br>*Galium californicum* ssp. *sierrae* | FE/CR/1B | Perennial herb found on gabbroic substrate in chaparral, cismontane woodland, and lower montane coniferous forest from 100 to 585 meters. | Blooming period: May – June. | **None**; the study area does not contain the soils required for this species. |
| El Dorado mule ears<br>*Wyethia reticulata* | --/--/1B | Perennial herb found on clay or gabbroic substrate within chaparral, cismontane woodland, and lower montane coniferous forest from 185 to 630 meters. | Blooming period: April – August. | **None**; the study area does not contain the soils required for this species. |
| Hisbid bird's beak<br>*Chloropyron molle* ssp. *hispidum* | --/--/1B | Annual hemiparasitic herb usually found on alkaline substrate in meadows and seeps, playas, and valley and foothill grassland from 1 to 155 meters. | Blooming period: June - September | **None**; the study area does not contain the alkaline substate required for this species. |
| Jepson's onion<br>*Allium jepsonii* | --/--/1B | Perennial bulbiferous herb found on serpentine or volcanic soils in chaparral, lower montane coniferous forest, and cismontane woodland from 300 to 1,320 meters. | Blooming period: April – August. | **None**; the study area does not contain the soils required for this species. |
| Layne's butterweed (=ragwort)<br>*Packera layneae* | FT/CR/1B | Perennial herb found on serpentine or gabbroic, rocky substrate in cismontane woodland or chaparral from 200 to 1,085 meters. | Blooming period: April – August. | **None**; the study area does not contain the soils required for this species. |

**TABLE B-1**
**SPECIAL-STATUS SPECIES CONSIDERED IN THE STUDY AREA**

| Common Name<br>*Scientific Name* | Status (Federal/State/ CRPR) | Habitat Requirements | Identification/ Survey Period | Potential to Occur |
|---|---|---|---|---|
| Plants (cont.) | | | | |
| Legenere<br>*Legenere limosa* | --/CT/1B | Annual herb found in vernal pools from 1 to 880 meters. | Blooming period: April – June. | **None**; the study area does not provide habitat for this species. |
| Oval-leaved viburnum<br>*Viburnum ellipticum* | --/--/2B | Perennial deciduous shrub found in chaparral, cismontane woodland, and lower montane coniferous forest from 215 to 1,400 meters. | Blooming period: May – June | **None**; while the interior live oak provides habitat, the study area occurs outside of the known elevation range for this species. |
| Pincushion navarretia<br>*Navarretia myersii* | --/--/1B | Annual herb found in vernal pools, which are often acidic, from 20 to 330 meters. | Blooming period: April – May. | **None**; the study area does not provide habitat for this species. |
| Pine Hill ceanothus<br>*Ceanothus roderickii* | FE/CR/1B | Perennial evergreen shrub found on serpentinite or gabbroic substrate in chaparral or cismontane woodland from 245 to 1,090 meters. | Blooming period: April – June. | **None**; the study area does not contain the soils required for this species. |
| Pine Hill flannelbush<br>*Fremontodendron decumbens* | FE/CR/--/1B | Perennial evergreen shrub found in chaparral and cismontane woodland on rocky gabbroic or serpentinite soils from 425 to 760 meters. | Blooming period: April – July | **None**; the study area does not contain the soils required for this species. |
| Red Hills soaproot<br>*Chlorogalum grandiflorum* | --/--/1B | Perennial bulbiferous herb found in chaparral, cismontane woodland, or lower montane coniferous forest on gabbro or serpentine soils from 245 to 1,240 meters. | Blooming period: May – June. | **None**; the study area does not contain the soils required for this species. |
| Sacramento orcutt grass<br>*Orcuttia viscida* | FE/CE/1B | Annual herb found in vernal pools from 30 to 100 meters. | Blooming period: April – September. | **None**; the study area does not provide habitat for this species. |
| Sanford's arrowhead<br>*Sagittaria sanfordii* | --/--/1B | Perennial rhizomatous herb found in marshes and swamps in assorted shallow freshwater areas from 0 to 650 meters. | Blooming period: May – October. | **None**; the study area does not provide habitat for this species. |
| Stebbins' morning glory<br>*Calystegia stebbinsii* | FE/CE/1B | Perennial rhizomatous herb found occasionally in openings of chaparral and cismontane woodland on gabbro or serpentinite soils from 185 to 1,090 meters. | Blooming period: April – July. | **None**; the study area does not contain the soils required for this species. |

**TABLE B-1**
**SPECIAL-STATUS SPECIES CONSIDERED IN THE STUDY AREA**

| Common Name<br>*Scientific Name* | Status (Federal/State/ CRPR) | Habitat Requirements | Identification/ Survey Period | Potential to Occur |
|---|---|---|---|---|
| Wildlife | | | | |
| Invertebrates | | | | |
| Valley elderberry longhorn beetle<br>*Desmocerus californicus dimorphus* | FT/--/-- | Blue elderberry shrubs usually associated with riparian areas. | Adults emerge in spring until June. Exit holes visible year – round. | **None**; the study area does not contain any suitable elderberry shrubs. |
| Vernal pool fairy shrimp<br>*Branchinecta lynchi* | FT/--/-- | Vernal pools, swales, and ephemeral freshwater habitat. | USFWS protocol-level wet-season sampling and/or dry season cyst identification. | **None**; the study area does not provide habitat for this species. |
| Amphibians/Reptiles | | | | |
| California red-legged frog<br>*Rana draytonii* | FT/CSC/-- | Requires a permanent water source and is typically found along quiet, slow-moving streams, ponds, or marsh communities with emergent vegetation. Believed extirpated from the Central Valley floor since 1960s. | Aquatic surveys of breeding sites between January and September. Optimally after April 15. | **Low**; the lacustrine ponds and riverine drainage within the study area provide marginal habitat for this species, although the study area occurs outside of the known extant geographic and elevation ranges for this species. See text for a more detailed discussion. |
| Foothill yellow-legged frog<br>*Rana boylii* | --/CCT/-- | Inhabits partially shaded, rocky streams with perennial flow at low to moderate elevations, in areas of chaparral, open woodland, and forest. Elevation range extends from sea level to around 7,000 feet (2,130 meters). | Surveys of breeding sites between April - June | **None**; the drainages within the study area are not perennial, therefore, the study area does not provide habitat for this species.. |
| Giant garter snake<br>*Thamnophis gigas* | FT/CT/-- | Found in agricultural wetlands and other wetlands such as irrigation and drainage canals, low gradient streams, marshes, ponds, sloughs, small lakes, and their associated uplands. Upland habitat should have burrows or other soil crevices suitable for snakes to reside during their dormancy period (November – mid March). This species is known from Sacramento, Sutter, Butte, Colusa, and Glenn counties. | Active outside of dormancy period November-mid March | **None**; the study area occurs outside of the known geographic range for this species. |
| Western pond turtle<br>*Emys marmorata* | --/CSC/-- | Agricultural wetlands and other wetlands such as irrigation and drainage canals, low gradient streams, marshes, ponds, sloughs, small lakes, and their associated uplands. | Active outside of dormancy period November – February | **Medium**; the lacustrine ponds and riverine drainage within the study area provide aquatic habitat and the annual grassland provides upland and nesting habitat for this species. |
| Western spadefoot<br>*Spea hammondii* | --/CSC/-- | Found in open grasslands and woodlands. Requires vernal pools or seasonal wetlands for breeding. | Year – round | **None**; the study area does not provide habitat for this species. |

**TABLE B-1**
**SPECIAL-STATUS SPECIES CONSIDERED IN THE STUDY AREA**

| Common Name<br>*Scientific Name* | Status (Federal/State/ CRPR) | Habitat Requirements | Identification/ Survey Period | Potential to Occur |
|---|---|---|---|---|
| Wildlife (cont.) | | | | |
| Fish | | | | |
| Central Valley steelhead<br>*Oncorhynchus mykiss* | FT/--/-- | Inhabits rivers and streams tributary to the Sacramento-San Joaquin Rivers and Delta ecosystems. | Spawn in winter and spring. | **None**; the study area and areas immediately downstream do not provide habitat for this species. |
| Delta smelt<br>*Hypomesus transpacificus* | FT/CE/-- | Found in shallow fresh or brackish water tributary to the Delta ecosystem/spawns in freshwater sloughs and channel edge waters. | Spawn December – July. Present year – round in the Delta. | **None**; the study area does not provide habitat for this species. |
| Birds | | | | |
| American peregrine falcon<br>*Falco peregrinus anatum* | --/CFP/-- | Nests on man-made structures and cliffs in woodland, forest, and coastal habitats. Known in California from Alameda, Butte, Calaveras, Humboldt, Los Angeles, Mendocino, Napa, San Benito, San Diego, San Mateo, Santa Clara, Santa Cruz, Shasta, Siskiyou, Solano, Tehama, and Tuolumne counties. | Year – round<br>(some migrate) | **None**; the study area occurs outside of the known extant geographic range for this species. |
| Bald eagle<br>*Haliaeetus leucocephalus* | FD/CFP and CE/-- | Breeding habitat most commonly includes areas within 2.5 miles (4.0 kilometers) of coastal areas, bays, rivers, lakes, and reservoirs. Nests usually are in tall trees or on pinnacles or cliffs near water. | Winter | **None**; the study area does not provide nesting habitat for this species. |
| Bank swallow<br>*Riparia riparia* | --/CT/-- | Nests in riverbanks and forages over riparian areas and adjacent uplands. | April – July | **None**; the study area does not provide nesting habitat for this species. |
| Burrowing owl<br>*Athene cunicularia* | --/CSC/--<br>(burrowing sites and some wintering sites) | Nests in burrows in the ground, often in old ground squirrel burrows or badger, within open dry grassland and desert habitat. The burrows are found in dry, level, open terrain, including prairie, plains, desert, and grassland with low height vegetation for foraging and available perches, such as fences, utility poles, posts, or raised rodent mounds. | Year – round/Breeding season surveys between March and August. | **Low**; the culverts associated with the drainage ditch within the developed area and the annual grassland within the study area provide habitat for this species, however, very few burrows that could be occupied by this species. |
| California black rail<br>*Laterallus jamaicensis coturniculus* | --/CT/-- | Saltwater, brackish, and freshwater marshes. This species is known from Alameda, Butte, Contra Costa, Imperial, Los Angeles, Marin, Napa, Nevada, Orange, Placer, Sacramento, San Bernardino, San Diego, San Francisco, San Joaquin, San Luis Obispo, San Mateo, Santa Clara, Santa Cruz, Solano, Sonoma, Sutter, and Yuba counties, in California. | Year – round | **None**; the study area does not provide habitat for this species. |

**TABLE B-1**
**SPECIAL-STATUS SPECIES CONSIDERED IN THE STUDY AREA**

| Common Name<br>*Scientific Name* | Status (Federal/State/ CRPR) | Habitat Requirements | Identification/ Survey Period | Potential to Occur |
|---|---|---|---|---|
| Wildlife (cont.) | | | | |
| Birds (cont.) | | | | |
| Golden eagle<br>*Aquila chrysaetos* | --/CFP/--<br>(nesting and wintering) | Open and semi-open areas up to 12,000 feet in elevation. Builds stick nests on cliffs, in trees, or on man-made structures. | Year – round | **None**; the study area does not provide habitat for this species. |
| Grasshopper sparrow<br>*Ammodramus savannarum* | --/CSC/-- | Frequents dense, dry, or well drained grassland, especially native grassland. Nests at base of overhanging clump of grass. | April – July | **Low**; the annual grassland within the study area provides habitat for this species. |
| Song sparrow<br>*Melospiza melodia* | --/CSC | Nests on the ground and in marshes. Inhabits grassland, chaparral, orchard, woodland, wetland, riparian, ands scrub-shrub. In California this species is known from Alameda, Contra Costa, Marin, Napa, Sacramento, San Mateo, Santa Clara, Solano, Sonoma, and Stanislaus counties. | February - September | **None**; although the annual grassland, interior live oak, and valley foothill riparian provide habitat, the study area occurs outside of the known geographic range for this species. |
| Purple martin<br>*Progne subis* | --/CSC/-- | Often nests in tall, old trees near bodies of water in woodland and conifer habitats. Feed in open areas near water and nest in tree cavities. | Year – round | **Low**; the trees within the annual grassland, interior live oak, and valley foothill riparian within the study area provide habitat for this species. |
| Swainson's hawk<br>*Buteo swainsoni* | --/CT/-- | Nest peripherally to valley riparian systems lone trees or groves of trees in agricultural fields. Valley oak, Fremont cottonwood, walnut, and large willow trees, ranging in height from 41 to 82 feet, are the most commonly used nest trees in the Central Valley. This species is known from Alameda, Butte, Colusa, Contra Costa, Fresno, Glenn, Inyo, Kern, Kings, Lassen, Los Angeles, Madera, Merced, Modoc, Mono, Napa, Placer, Plumas, Sacramento, San Bernardino, San Joaquin, San Luis Obispo, Siskiyou, Solano, Stanislaus, Sutter, Tehama, Tulare, Yolo, and Yuba counties. | March – October | **Medium**; the trees along the riverine drainage within the valley foothill riparian provide nesting habitat and the annual grassland provides foraging habitat for this species. |
| Tricolored blackbird<br>*Agelaius tricolor* | --/CCT/--<br>(nesting colony) | Nests in dense blackberry, cattail, tules, bulrushes, sedges, willow, or wild rose within freshwater marshes. Nests in large colonies of at least 50 pairs (up to thousands of individuals). | Year – round | **None**; although the valley foothill riparian provides habitat, the extent of the habitat is not large enough to support colonial nesting colonies. |
| White-tailed kite<br>*Elanus leucurus* | --/CFP/--<br>(nesting) | Nests in isolated trees or woodland areas with suitable open foraging habitat. | February 15 – August 31 | **High**; the interior live oak, valley foothill riparian, and isolated trees within the annual grassland provide breeding habitat for this species.<br>Two CNDDB occurrences are documented within 5 miles of the study area. One of the occurrences is documented within the study area (CDFW 2015). |

**TABLE B-1**
**SPECIAL-STATUS SPECIES CONSIDERED IN THE STUDY AREA**

| Common Name<br>*Scientific Name* | Status (Federal/State/ CRPR) | Habitat Requirements | Identification/ Survey Period | Potential to Occur |
|---|---|---|---|---|
| Wildlife (cont.) | | | | |
| Mammals | | | | |
| American badger<br>*Taxidea taxus* | --/CSC/-- | Found in a variety of grasslands, shrubslands, and open woodlands throughout California. | Year – round | **Low**; the annual grassland within the study area provides habitat, however, very few burrows that could be utilized by this species are present within the study area. |
| Pallid bat<br>*Antrozous pallidus* | --/CSC/-- | Most abundant in oak woodland, savannah, and riparian habitats. Roosts in crevices and hollows in trees, rocks, cliffs, bridges, and buildings. | Year – round | **Low**; the interior live oak, valley foothill riparian, and isolated trees within the annual grassland provide breeding habitat for this species. |
| Townsend's big-eared bat<br>*Corynorhinus townsendii* | --/CCT and CSC/-- | Found in all habitats except for subalpine and alpine habitats. Roosts in caves, mines, tunnels with minimal disturbance, abandoned open buildings and other human-made structures. | Year-round | **None**; the study area does not provide roosting habitat for this species. |

Status Codes

| Federally-Listed Species: | California State Ranked Species: | CNPS* Rank Categories: |
|---|---|---|
| FE = federal endangered | CE = California state endangered | 1A = plants presumed extinct in California |
| FT = federal threatened | CT = California state threatened | 1B = plants rare, threatened, or endangered in California and elsewhere |
| FC = candidate | CR = California state rare | 2 = plants rare, threatened, or endangered in California, but common elsewhere |
| PT = proposed threatened | CSC = California species of special Concern | 3 = plants about which we need more information |
| FPD = proposed for delisting | CCT = California state threatened candidate | 4 = plants of limited distribution |
| FD = delisted | CFP = California fully protected | |

SOURCES: CDFW, 2018; CNPS, 2018; USFWS, 2018

CALIFORNIA DEPARTMENT OF FISH and WILDLIFE RareFind

**Query Summary:**
Quad IS (Rocklin (3812172) OR Lincoln (3812183) OR Gold Hill (3812182) OR Auburn (3812181) OR Roseville (3812173) OR Pilot Hill (3812171) OR Citrus Heights (3812163) OR Folsom (3812162) OR Clarksville (3812161))

Print Close

**CNDDB Element Query Results**

| Scientific Name | Common Name | Taxonomic Group | Element Code | Total Occs | Returned Occs | Federal Status | State Status | Global Rank | State Rank | CA Rare Plant Rank | Other Status | Habitats |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Accipiter cooperii | Cooper's hawk | Birds | ABNKC12040 | 115 | 1 | None | None | G5 | S4 | null | CDFW_WL-Watch List, IUCN_LC-Least Concern | Cismontane woodland, Riparian forest, Riparian woodland, Upper montane coniferous forest |
| Agelaius tricolor | tricolored blackbird | Birds | ABPBXB0020 | 951 | 25 | None | Candidate Endangered | G2G3 | S1S2 | null | BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_EN-Endangered, NABCI_RWL-Red Watch List, USFWS_BCC-Birds of Conservation Concern | Freshwater marsh, Marsh & swamp, Swamp, Wetland |
| Alkali Meadow | Alkali Meadow | Herbaceous | CTT45310CA | 8 | 1 | None | None | G3 | S2.1 | null | null | Meadow & seep, Wetland |
| Alkali Seep | Alkali Seep | Herbaceous | CTT45320CA | 10 | 1 | None | None | G3 | S2.1 | null | null | Meadow & seep, Wetland |
| Allium jepsonii | Jepson's onion | Monocots | PMLIL022V0 | 27 | 1 | None | None | G2 | S2 | 1B.2 | BLM_S-Sensitive, USFS_S-Sensitive | Chaparral, Cismontane woodland, Lower montane coniferous forest, Ultramafic |
| Ammodramus savannarum | grasshopper sparrow | Birds | ABPBXA0020 | 25 | 1 | None | None | G5 | S3 | null | CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern | Valley & foothill grassland |
| Ammonitella yatesii | tight coin (=Yates' snail) | Mollusks | IMGASB0010 | 6 | 1 | None | None | G1 | S1 | null | IUCN_VU-Vulnerable | Limestone |
| Andrena blennospermatis | Blennosperma vernal pool andrenid bee | Insects | IIHYM35030 | 15 | 1 | None | None | G2 | S2 | null | null | Vernal pool |
| Andrena subapasta | An andrenid bee | Insects | IIHYM35210 | 5 | 4 | None | None | G1G2 | S1S2 | null | null | null |
| Antrozous pallidus | pallid bat | Mammals | AMACC10010 | 415 | 1 | None | None | G5 | S3 | null | BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFS_S-Sensitive, WBWG_H-High Priority | Chaparral, Coastal scrub, Desert wash, Great Basin grassland, Great Basin scrub, Mojavean desert scrub, Riparian woodland, Sonoran desert scrub, Upper montane coniferous forest, Valley & foothill grassland |
| Aquila chrysaetos | golden eagle | Birds | ABNKC22010 | 320 | 2 | None | None | G5 | S3 | null | BLM_S-Sensitive, CDF_S-Sensitive, CDFW_FP-Fully Protected, CDFW_WL-Watch List, IUCN_LC-Least Concern, USFWS_BCC-Birds of Conservation Concern | Broadleaved upland forest, Cismontane woodland, Coastal prairie, Great Basin grassland, Great Basin scrub, Lower montane coniferous forest, Pinon & juniper woodlands, Upper montane coniferous forest, Valley & foothill grassland |
| Ardea alba | great egret | Birds | ABNGA04040 | 43 | 2 | None | None | G5 | S4 | null | CDF_S-Sensitive, IUCN_LC-Least Concern | Brackish marsh, Estuary, Freshwater marsh, Marsh & swamp, Riparian forest, Wetland |
| Ardea herodias | great blue heron | Birds | ABNGA04010 | 154 | 6 | None | None | G5 | S4 | null | CDF_S-Sensitive, IUCN_LC-Least Concern | Brackish marsh, Estuary, Freshwater marsh, Marsh & swamp, Riparian forest, Wetland |
| Athene cunicularia | burrowing owl | Birds | ABNSB10010 | 1971 | 6 | None | None | G4 | S3 | null | BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFWS_BCC-Birds of Conservation Concern | Coastal prairie, Coastal scrub, Great Basin grassland, Great Basin scrub, Mojavean desert scrub, Sonoran desert scrub, Valley & foothill grassland |
| Balsamorhiza macrolepis | big-scale balsamroot | Dicots | PDAST11061 | 50 | 3 | None | None | G2 | S2 | 1B.2 | BLM_S-Sensitive, USFS_S-Sensitive | Chaparral, Cismontane woodland, Ultramafic, Valley & foothill grassland |
| Banksula californica | Alabaster Cave harvestman | Arachnids | ILARA14020 | 1 | 1 | None | None | GH | SH | null | null | Limestone |
| Banksula galilei | Galile's cave harvestman | Arachnids | ILARA14040 | 1 | 1 | None | None | G1 | S1 | null | null | Limestone |
| Bombus morrisoni | Morrison bumble bee | Insects | IIHYM24460 | 85 | 1 | None | None | G4G5 | S1S2 | null | IUCN_VU-Vulnerable | null |
| Bombus occidentalis | western bumble bee | Insects | IIHYM24250 | 282 | 1 | None | None | G2G3 | S1 | null | USFS_S-Sensitive, XERCES_IM-Imperiled | null |
| Branchinecta lynchi | vernal pool fairy shrimp | Crustaceans | ICBRA03030 | 766 | 48 | Threatened | None | G3 | S3 | null | IUCN_VU-Vulnerable | Valley & foothill grassland, Vernal pool, Wetland |
| Buteo swainsoni | Swainson's hawk | Birds | ABNKC19070 | 2460 | 8 | None | Threatened | G5 | S3 | null | BLM_S-Sensitive, IUCN_LC-Least Concern, USFWS_BCC-Birds of Conservation Concern | Great Basin grassland, Riparian forest, Riparian woodland, Valley & foothill grassland |
| Calystegia stebbinsii | Stebbins' morning-glory | Dicots | PDCON040H0 | 15 | 1 | Endangered | Endangered | G1 | S1 | 1B.1 | SB_RSABG-Rancho Santa Ana Botanic Garden | Chaparral, Cismontane woodland, Ultramafic |
| Carex xerophila | chaparral sedge | Monocots | PMCYP03M60 | 15 | 1 | None | None | G2 | S2 | 1B.2 | null | Chaparral, Cismontane woodland, Lower montane coniferous forest, Ultramafic |
| Ceanothus roderickii | Pine Hill ceanothus | Dicots | PDRHA04190 | 8 | 4 | Endangered | Rare | G1 | S1 | 1B.1 | SB_RSABG-Rancho Santa Ana Botanic Garden | Chaparral, Cismontane woodland, Ultramafic |
| Chlorogalum grandiflorum | Red Hills soaproot | Monocots | PMLIL0G020 | 127 | 3 | None | None | G3 | S3 | 1B.2 | BLM_S-Sensitive | Chaparral, Cismontane woodland, Lower montane coniferous forest, Ultramafic |
| Chloropyron molle ssp. hispidum | hispid salty bird's-beak | Dicots | PDSCR0J0D1 | 35 | 1 | None | None | G2T1 | S1 | 1B.1 | BLM_S-Sensitive | Alkali playa, Meadow & seep, Wetland |
| Clarkia biloba ssp. brandegeeae | Brandegee's clarkia | Dicots | PDONA05053 | 89 | 16 | None | None | G4G5T4 | S4 | 4.2 | BLM_S-Sensitive | Chaparral, Cismontane woodland, Lower montane coniferous forest |
| Corynorhinus townsendii | Townsend's big-eared bat | Mammals | AMACC08010 | 626 | 3 | None | None | G3G4 | S2 | null | BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFS_S-Sensitive, WBWG_H-High Priority | Broadleaved upland forest, Chaparral, Chenopod scrub, Great Basin grassland, Great Basin scrub, Joshua tree woodland, Lower montane coniferous forest, Meadow & seep, Mojavean desert scrub, Riparian forest, Riparian woodland, Sonoran desert scrub, Sonoran thorn woodland, Upper montane coniferous forest, Valley & foothill grassland |
| Cosumnoperla hypocrena | Cosumnes stripetail | Insects | IIPLE23020 | 12 | 5 | None | None | G2 | S2 | null | null | Aquatic |
| Crocanthemum suffrutescens | Bisbee Peak rush-rose | Dicots | PDCIS020F0 | 31 | 9 | None | None | G2?Q | S2? | 3.2 | null | Chaparral, Ione formation, Ultramafic |
| Desmocerus californicus dimorphus | valley elderberry longhorn beetle | Insects | IICOL48011 | 271 | 19 | Threatened | None | G3T2 | S2 | null | null | Riparian scrub |
| Downingia pusilla | dwarf downingia | Dicots | PDCAM060C0 | 126 | 15 | None | None | GU | S2 | 2B.2 | null | Valley & foothill grassland, Vernal pool, Wetland |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Elanus leucurus | white-tailed kite | Birds | ABNKC06010 | 175 | 10 | None | None | G5 | S3S4 | null | BLM_S-Sensitive, CDFW_FP-Fully Protected, IUCN_LC-Least Concern | Cismontane woodland, Marsh & swamp, Riparian woodland, Valley & foothill grassland, Wetland |
| Emys marmorata | western pond turtle | Reptiles | ARAAD02030 | 1344 | 10 | None | None | G3G4 | S3 | null | BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_VU-Vulnerable, USFS_S-Sensitive | Aquatic, Artificial flowing waters, Klamath/North coast flowing waters, Klamath/North coast standing waters, Marsh & swamp, Sacramento/San Joaquin flowing waters, Sacramento/San Joaquin standing waters, South coast flowing waters, South coast standing waters, Wetland |
| Erethizon dorsatum | North American porcupine | Mammals | AMAFJ01010 | 508 | 1 | None | None | G5 | S3 | null | IUCN_LC-Least Concern | Broadleaved upland forest, Cismontane woodland, Closed-cone coniferous forest, Lower montane coniferous forest, North coast coniferous forest, Upper montane coniferous forest |
| Falco columbarius | merlin | Birds | ABNKD06030 | 36 | 1 | None | None | G5 | S3S4 | null | CDFW_WL-Watch List, IUCN_LC-Least Concern | Estuary, Great Basin grassland, Valley & foothill grassland |
| Falco peregrinus anatum | American peregrine falcon | Birds | ABNKD06071 | 57 | 1 | Delisted | Delisted | G4T4 | S3S4 | null | CDF_S-Sensitive, CDFW_FP-Fully Protected, USFWS_BCC-Birds of Conservation Concern | null |
| Fremontodendron decumbens | Pine Hill flannelbush | Dicots | PDSTE03030 | 12 | 3 | Endangered | Rare | G1 | S1 | 1B.2 | SB_RSABG-Rancho Santa Ana Botanic Garden, SB_UCBBG-UC Berkeley Botanical Garden | Chaparral, Cismontane woodland, Ultramafic |
| Fritillaria agrestis | stinkbells | Monocots | PMLIL0V010 | 32 | 2 | None | None | G3 | S3 | 4.2 | null | Chaparral, Cismontane woodland, Pinon & juniper woodlands, Ultramafic, Valley & foothill grassland |
| Fritillaria eastwoodiae | Butte County fritillary | Monocots | PMLIL0V060 | 235 | 1 | None | None | G3Q | S3 | 3.2 | USFS_S-Sensitive | Chaparral, Cismontane woodland, Lower montane coniferous forest, Ultramafic |
| Galium californicum ssp. sierrae | El Dorado bedstraw | Dicots | PDRUB0N0E7 | 16 | 4 | Endangered | Rare | G5T1 | S1 | 1B.2 | SB_RSABG-Rancho Santa Ana Botanic Garden | Chaparral, Cismontane woodland, Lower montane coniferous forest, Ultramafic |
| Gratiola heterosepala | Boggs Lake hedge-hyssop | Dicots | PDSCR0R060 | 99 | 3 | None | Endangered | G2 | S2 | 1B.2 | BLM_S-Sensitive | Freshwater marsh, Marsh & swamp, Vernal pool, Wetland |
| Haliaeetus leucocephalus | bald eagle | Birds | ABNKC10010 | 327 | 4 | Delisted | Endangered | G5 | S3 | null | BLM_S-Sensitive, CDF_S-Sensitive, CDFW_FP-Fully Protected, IUCN_LC-Least Concern, USFS_S-Sensitive, USFWS_BCC-Birds of Conservation Concern | Lower montane coniferous forest, Oldgrowth |
| Hydrochara ricksecker i | Ricksecker's water scavenger beetle | Insects | IICOL5V010 | 13 | 2 | None | None | G2? | S2? | null | null | Aquatic, Sacramento/San Joaquin flowing waters, Sacramento/San Joaquin standing waters |
| Juncus leiospermus var. ahartii | Ahart's dwarf rush | Monocots | PMJUN011L1 | 13 | 1 | None | None | G2T1 | S1 | 1B.2 | null | Valley & foothill grassland |
| Juncus leiospermus var. leiospermus | Red Bluff dwarf rush | Monocots | PMJUN011L2 | 62 | 1 | None | None | G2T2 | S2 | 1B.1 | BLM_S-Sensitive, USFS_S-Sensitive | Chaparral, Cismontane woodland, Meadow & seep, Valley & foothill grassland, Vernal pool, Wetland |
| Lasionycteris noctivagans | silver-haired bat | Mammals | AMACC02010 | 139 | 2 | None | None | G5 | S3S4 | null | IUCN_LC-Least Concern, WBWG_M-Medium Priority | Lower montane coniferous forest, Oldgrowth, Riparian forest |
| Laterallus jamaicensis coturniculus | California black rail | Birds | ABNME03041 | 303 | 4 | None | Threatened | G3G4T1 | S1 | null | BLM_S-Sensitive, CDFW_FP-Fully Protected, IUCN_NT-Near Threatened, NABCI_RWL-Red Watch List, USFWS_BCC-Birds of Conservation Concern | Brackish marsh, Freshwater marsh, Marsh & swamp, Salt marsh, Wetland |
| Lathyrus sulphureus var. argillaceus | dubious pea | Dicots | PDFAB25101 | 7 | 1 | None | None | G5T1T2 | S1S2 | 3 | null | Cismontane woodland, Lower montane coniferous forest, Upper montane coniferous forest |
| Legenere limosa | legenere | Dicots | PDCAM0C010 | 83 | 4 | None | None | G2 | S2 | 1B.1 | BLM_S-Sensitive | Vernal pool, Wetland |
| Lepidurus packardi | vernal pool tadpole shrimp | Crustaceans | ICBRA10010 | 324 | 3 | Endangered | None | G4 | S3S4 | null | IUCN_EN-Endangered | Valley & foothill grassland, Vernal pool, Wetland |
| Linderiella occidentalis | California linderiella | Crustaceans | ICBRA06010 | 434 | 31 | None | None | G2G3 | S2S3 | null | IUCN_NT-Near Threatened | Vernal pool |
| Melospiza melodia | song sparrow ("Modesto" population) | Birds | ABPBXA3010 | 92 | 1 | None | None | G5 | S3? | null | CDFW_SSC-Species of Special Concern | null |
| Navarretia myersii ssp. myersii | pincushion navarretia | Dicots | PDPLM0C0X1 | 14 | 2 | None | None | G2T2 | S2 | 1B.1 | null | Vernal pool, Wetland |
| Northern Hardpan Vernal Pool | Northern Hardpan Vernal Pool | Herbaceous | CTT44110CA | 126 | 7 | None | None | G3 | S3.1 | null | null | Vernal pool, Wetland |
| Northern Volcanic Mud Flow Vernal Pool | Northern Volcanic Mud Flow Vernal Pool | Herbaceous | CTT44132CA | 7 | 5 | None | None | G1 | S1.1 | null | null | Vernal pool, Wetland |
| Oncorhynchus mykiss irideus pop. 11 | steelhead - Central Valley DPS | Fish | AFCHA0209K | 31 | 3 | Threatened | None | G5T2Q | S2 | null | AFS_TH-Threatened | Aquatic, Sacramento/San Joaquin flowing waters |
| Orcuttia viscida | Sacramento Orcutt grass | Monocots | PMPOA4G070 | 12 | 3 | Endangered | Endangered | G1 | S1 | 1B.1 | null | Vernal pool, Wetland |
| Packera layneae | Layne's ragwort | Dicots | PDAST8H1V0 | 45 | 10 | Threatened | Rare | G2 | S2 | 1B.2 | SB_RSABG-Rancho Santa Ana Botanic Garden | Chaparral, Cismontane woodland, Ultramafic |
| Pandion haliaetus | osprey | Birds | ABNKC01010 | 500 | 1 | None | None | G5 | S4 | null | CDF_S-Sensitive, CDFW_WL-Watch List, IUCN_LC-Least Concern | Riparian forest |
| Phalacrocorax auritus | double-crested cormorant | Birds | ABNFD01020 | 39 | 1 | None | None | G5 | S4 | null | CDFW_WL-Watch List, IUCN_LC-Least Concern | Riparian forest, Riparian scrub, Riparian woodland |
| Progne subis | purple martin | Birds | ABPAU01010 | 71 | 1 | None | None | G5 | S3 | null | CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern | Broadleaved upland forest, Lower montane coniferous forest |
| Rana boylii | foothill yellow-legged frog | Amphibians | AAABH01050 | 1885 | 2 | None | Candidate Threatened | G3 | S3 | null | BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_NT-Near Threatened, USFS_S-Sensitive | Aquatic, Chaparral, Cismontane woodland, Coastal scrub, Klamath/North coast flowing waters, Lower montane coniferous forest, Meadow & seep, Riparian forest, Riparian woodland, Sacramento/San Joaquin flowing waters |
| Rana draytonii | California red-legged frog | Amphibians | AAABH01022 | 1497 | 1 | Threatened | None | G2G3 | S2S3 | null | CDFW_SSC-Species of Special Concern, IUCN_VU-Vulnerable | Aquatic, Artificial flowing waters, Artificial standing waters, Freshwater marsh, Marsh & swamp, Riparian forest, Riparian scrub, Riparian woodland, Sacramento/San Joaquin flowing waters, Sacramento/San Joaquin standing waters, South coast flowing waters, South coast standing waters, Wetland |
| Riparia riparia | bank swallow | Birds | ABPAU08010 | 297 | 2 | None | Threatened | G5 | S2 | null | BLM_S-Sensitive, IUCN_LC-Least Concern | Riparian scrub, Riparian woodland |
| Sagittaria sanfordii | Sanford's arrowhead | Monocots | PMALI040Q0 | 126 | 4 | None | None | G3 | S3 | 1B.2 | BLM_S-Sensitive | Marsh & swamp, Wetland |
| Spea hammondii | western spadefoot | Amphibians | AAABF02020 | 463 | 5 | None | None | G3 | S3 | null | BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_NT-Near Threatened | Cismontane woodland, Coastal scrub, Valley & foothill grassland, Vernal pool, Wetland |
| Taxidea taxus | American badger | Mammals | AMAJF04010 | 559 | 1 | None | None | G5 | S3 | null | CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern | Alkali marsh, Alkali playa, Alpine, Alpine dwarf scrub, Bog & fen, Brackish marsh, Broadleaved upland forest, Chaparral, Chenopod scrub, Cismontane woodland, Closed-cone coniferous forest, Coastal bluff scrub, Coastal dunes, Coastal prairie, Coastal scrub, Desert dunes, Desert wash, Freshwater marsh, Great Basin grassland, Great Basin scrub, Interior dunes, Ione formation, Joshua tree woodland, Limestone, Lower montane coniferous |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | forest, Marsh & swamp, Meadow & seep, Mojavean desert scrub, Montane dwarf scrub, North coast coniferous forest, Oldgrowth, Pavement plain, Redwood, Riparian forest, Riparian scrub, Riparian woodland, Salt marsh, Sonoran desert scrub, Sonoran thorn woodland, Ultramafic, Upper montane coniferous forest, Upper Sonoran scrub, Valley & foothill grassland |
| Valley Needlegrass Grassland | Valley Needlegrass Grassland | Herbaceous | CTT42110CA | 45 | 1 | None | None | G3 | S3.1 | null | null | Valley & foothill grassland |
| Viburnum ellipticum | oval-leaved viburnum | Dicots | PDCPR07080 | 38 | 2 | None | None | G4G5 | S3? | 2B.3 | null | Chaparral, Cismontane woodland, Lower montane coniferous forest |
| Wyethia reticulata | El Dorado County mule ears | Dicots | PDAST9X0D0 | 25 | 13 | None | None | G2 | S2 | 1B.2 | BLM_S-Sensitive, SB_RSABG-Rancho Santa Ana Botanic Garden | Chaparral, Cismontane woodland, Lower montane coniferous forest, Ultramafic |

CNPS California Native Plant Society Inventory of Rare and Endangered Plants

## Plant List

**31** matches found. *Click on scientific name for details*

**Search Criteria**

Found in Quads 3812183, 3812182, 3812181, 3812173, 3812172, 3812171, 3812163 3812162 and 3812161;

Modify Search Criteria Export to Excel Modify Columns Modify Sort Display Photos

| Scientific Name | Common Name | Family | Lifeform | Blooming Period | CA Rare Plant Rank | State Rank | Global Rank |
|---|---|---|---|---|---|---|---|
| Allium jepsonii | Jepson's onion | Alliaceae | perennial bulbiferous herb | Apr-Aug | 1B.2 | S2 | G2 |
| Allium sanbornii var. sanbornii | Sanborn's onion | Alliaceae | perennial bulbiferous herb | May-Sep | 4.2 | S3S4 | G4T3T4 |
| Balsamorhiza macrolepis | big-scale balsamroot | Asteraceae | perennial herb | Mar-Jun | 1B.2 | S2 | G2 |
| Calandrinia breweri | Brewer's calandrinia | Montiaceae | annual herb | (Jan)Mar-Jun | 4.2 | S4 | G4 |
| Calystegia stebbinsii | Stebbins' morning-glory | Convolvulaceae | perennial rhizomatous herb | Apr-Jul | 1B.1 | S1 | G1 |
| Carex xerophila | chaparral sedge | Cyperaceae | perennial herb | Mar-Jun | 1B.2 | S2 | G2 |
| Ceanothus roderickii | Pine Hill ceanothus | Rhamnaceae | perennial evergreen shrub | Apr-Jun | 1B.1 | S1 | G1 |
| Chlorogalum grandiflorum | Red Hills soaproot | Agavaceae | perennial bulbiferous herb | May-Jun | 1B.2 | S3 | G3 |
| Chloropyron molle ssp. hispidum | hispid bird's-beak | Orobanchaceae | annual herb (hemiparasitic) | Jun-Sep | 1B.1 | S1 | G2T1 |
| Clarkia biloba ssp. brandegeeae | Brandegee's clarkia | Onagraceae | annual herb | May-Jul | 4.2 | S4 | G4G5T4 |
| Claytonia parviflora ssp. grandiflora | streambank spring beauty | Montiaceae | annual herb | Feb-May | 4.2 | S3 | G5T3 |
| Crocanthemum suffrutescens | Bisbee Peak rush-rose | Cistaceae | perennial evergreen shrub | Apr-Aug | 3.2 | S2? | G2?Q |
| Downingia pusilla | dwarf downingia | Campanulaceae | annual herb | Mar-May | 2B.2 | S2 | GU |
| Eriophyllum jepsonii | Jepson's woolly sunflower | Asteraceae | perennial herb | Apr-Jun | 4.3 | S3 | G3 |
| Fremontodendron decumbens | Pine Hill flannelbush | Malvaceae | perennial evergreen shrub | Apr-Jul | 1B.2 | S1 | G1 |
| Fritillaria agrestis | stinkbells | Liliaceae | perennial bulbiferous herb | Mar-Jun | 4.2 | S3 | G3 |
| Fritillaria eastwoodiae | Butte County fritillary | Liliaceae | perennial bulbiferous herb | Mar-Jun | 3.2 | S3 | G3Q |
| Galium californicum ssp. sierrae | El Dorado bedstraw | Rubiaceae | perennial herb | May-Jun | 1B.2 | S1 | G5T1 |
| Gratiola heterosepala | Boggs Lake hedge-hyssop | Plantaginaceae | annual herb | Apr-Aug | 1B.2 | S2 | G2 |
| Juncus leiospermus var. ahartii | Ahart's dwarf rush | Juncaceae | annual herb | Mar-May | 1B.2 | S1 | G2T1 |
| Juncus leiospermus var. leiospermus | Red Bluff dwarf rush | Juncaceae | annual herb | Mar-Jun | 1B.1 | S2 | G2T2 |
| Lathyrus sulphureus var. argillaceus | dubious pea | Fabaceae | perennial herb | Apr-May | 3 | S1S2 | G5T1T2 |
| Legenere limosa | legenere | Campanulaceae | annual herb | Apr-Jun | 1B.1 | S2 | G2 |
| Lilium humboldtii ssp. humboldtii | Humboldt lily | Liliaceae | perennial bulbiferous herb | May-Jul(Aug) | 4.2 | S3 | G4T3 |
| Navarretia myersii ssp. myersii | pincushion navarretia | Polemoniaceae | annual herb | Apr-May | 1B.1 | S2 | G2T2 |
| Navarretia nigelliformis ssp. nigelliformis | adobe navarretia | Polemoniaceae | annual herb | Apr-Jun | 4.2 | S3 | G4T3 |
| Orcuttia viscida | Sacramento Orcutt grass | Poaceae | annual herb | Apr-Jul(Sep) | 1B.1 | S1 | G1 |
| Packera layneae | Layne's ragwort | Asteraceae | perennial herb | Apr-Aug | 1B.2 | S2 | G2 |
| Sagittaria sanfordii | Sanford's arrowhead | Alismataceae | perennial rhizomatous herb (emergent) | May-Oct(Nov) | 1B.2 | S3 | G3 |
| Viburnum ellipticum | oval-leaved viburnum | Adoxaceae | perennial deciduous shrub | May-Jun | 2B.3 | S3? | G4G5 |
| Wyethia reticulata | El Dorado County mule ears | Asteraceae | perennial herb | Apr-Aug | 1B.2 | S2 | G2 |

**Suggested Citation**

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**Questions and Comments**
rareplants@cnps.org

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# United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Phone: (916) 414-6600 Fax: (916) 414-6713


In Reply Refer To: June 05, 2018
Consultation Code: 08ESMF00-2018-SLI-2277
Event Code: 08ESMF00-2018-E-06667
Project Name: UAIC Taylor Road School

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, under the jurisdiction of the U.S. Fish and Wildlife Service (Service) that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

Please follow the link below to see if your proposed project has the potential to affect other species or their habitats under the jurisdiction of the National Marine Fisheries Service:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

# Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

# Project Summary

Consultation Code: 08ESMF00-2018-SLI-2277

Event Code: 08ESMF00-2018-E-06667

Project Name: UAIC Taylor Road School

Project Type: DEVELOPMENT

Project Description: Tribal School

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/38.83564466843292N121.1762744876728W

Counties: Placer, CA

# Endangered Species Act Species

There is a total of 6 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

## Reptiles

| NAME | STATUS |
|---|---|
| Giant Garter Snake Thamnophis gigas<br>No critical habitat has been designated for this species.<br>Species profile: https://ecos.fws.gov/ecp/species/4482 | Threatened |

## Amphibians

| NAME | STATUS |
|---|---|
| California Red-legged Frog Rana draytonii<br>There is final critical habitat for this species. Your location is outside the critical habitat.<br>Species profile: https://ecos.fws.gov/ecp/species/2891 | Threatened |

## Fishes

| NAME | STATUS |
|---|---|
| Delta Smelt Hypomesus transpacificus<br>There is final critical habitat for this species. Your location is outside the critical habitat.<br>Species profile: https://ecos.fws.gov/ecp/species/321 | Threatened |

## Insects

| NAME | STATUS |
|---|---|
| Valley Elderberry Longhorn Beetle Desmocerus californicus dimorphus<br>There is final critical habitat for this species. Your location is outside the critical habitat.<br>Species profile: https://ecos.fws.gov/ecp/species/7850<br>Habitat assessment guidelines:<br>https://ecos.fws.gov/ipac/guideline/assessment/population/436/office/11420.pdf | Threatened |

## Crustaceans

| NAME | STATUS |
|---|---|
| Vernal Pool Fairy Shrimp Branchinecta lynchi<br>There is final critical habitat for this species. Your location is outside the critical habitat.<br>Species profile: https://ecos.fws.gov/ecp/species/498 | Threatened |
| Vernal Pool Tadpole Shrimp Lepidurus packardi<br>There is final critical habitat for this species. Your location is outside the critical habitat.<br>Species profile: https://ecos.fws.gov/ecp/species/2246 | Endangered |

## Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

# Appendix C

## Plant Species Observed During Biological Survey

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**TABLE C-1**
**PLANT SPECIES OBSERVED IN THE STUDY AREA**

| Family | Scientific Name | Common Name | * |
|---|---|---|---|
| **Agavaceae** | *Chlorogalum* sp. | Soap plant, amole | N |
| **Anacardiaceae** | *Toxicodendron diversilobum* | Western poison oak | N |
| **Apiaceae** | *Daucus* sp. | Daucus | -- |
| **Araceae** | *Lemna* sp. | Duckweed | N |
| **Araliaceae** | *Hedera helix* | English ivy | I |
| **Arecaceae** | *Washingtonia robusta* | Mexican fan palm | I |
| **Asteraceae** | *Centaurea solstitialis* | Yellow star-thistle | I |
| **Betulaceae** | *Alnus* sp. | Alder | -- |
| **Boraginaceae** | *Plagiobothrys* sp. | Popcornflower | N |
| **Cupressaceae** | *Calocedrus decurrens* | Incense cedar | N |
| **Cupressaceae** | *Sequoia sempervirens* | Coast redwood | N |
| **Fabaceae** | *Robinia pseudoacacia* | Black locust | I |
| **Fabaceae** | *Trifolium* sp. | Clover | -- |
| **Fabaceae** | *Vicia villosa* | Hairy vetch, winter vetch | I |
| **Fagaceae** | *Quercus douglasii* | Blue oak | N |
| **Fagaceae** | *Quercus lobata* | Valley oak, roble | N |
| **Fagaceae** | *Quercus wislizeni* | Interior live oak | N |
| **Geraniaceae** | *Erodium botrys* | Storksbill, filaree | I |
| **Geraniaceae** | *Geranium molle* | Cranesbill, geranium | I |
| **Juglandaceae** | *Juglans* sp. | Walnut | -- |
| **Juncaceae** | *Juncus xiphioides* | Iris-leaved rush | N |
| **Montiaceae** | *Claytonia perfoliata* | Miner's lettuce | N |
| **Moraceae** | *Morus alba* | White mulberry | I |
| **Poaceae** | *Avena barbata* | Slender wild oat | I |
| **Poaceae** | *Bromus diandrus* | Ripgut grass | I |
| **Poaceae** | *Bromus hordeaceus* | Soft chess | I |
| **Polygonaceae** | *Rumex crispus* | Curly dock | I |
| **Ranunculaceae** | *Ranunculus muricatus* | Buttercup | I |
| **Ranunculaceae** | *Ranunculus* sp. | Buttercup | -- |
| **Rosaceae** | *Heteromeles arbutifolia* | Christmas berry, toyon | N |
| **Rosaceae** | *Pyrus* sp. | Pear | I |
| **Rosaceae** | *Rubus armeniacus* | Himalayan blackberry | I |
| **Salicaceae** | *Populus fremontii* ssp. *fremontii* | Alamo or Fremont cottonwood | N |
| **Salicaceae** | *Salix gooddingii* | Goodding's black willow | N |
| **Salicaceae** | *Salix* sp. | Willow | -- |
| **Sapindaceae** | *Acer macrophyllum* | Big-leaf maple | N |

**TABLE C-1**
**PLANT SPECIES OBSERVED IN THE STUDY AREA**

| Family | Scientific Name | Common Name | * |
|---|---|---|---|
| **Sapindaceae** | *Aesculus californica* | California buckeye | N |
| **Simaroubaceae** | *Ailanthus altissima* | Tree of heaven | I |
| **Typhaceae** | *Typha* sp. | Cattail | -- |
| **Vitaceae** | *Vitis* sp. | Grape | -- |

NOTES:
*N=Native; I=Invasive; -- = Unknown

# APPENDIX F

# UAIC TRIBAL SCHOOL PROJECT

## Revised Arborist Report

Prepared for
United Auburn Indian Community (UAIC)

October 2017

ESA

# UAIC TRIBAL SCHOOL PROJECT

## Revised Arborist Report

Prepared for
United Auburn Indian Community (UAIC)

October 2017

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# UAIC TRIBAL SCHOOL PROJECT

Revised Arborist Report

## Introduction

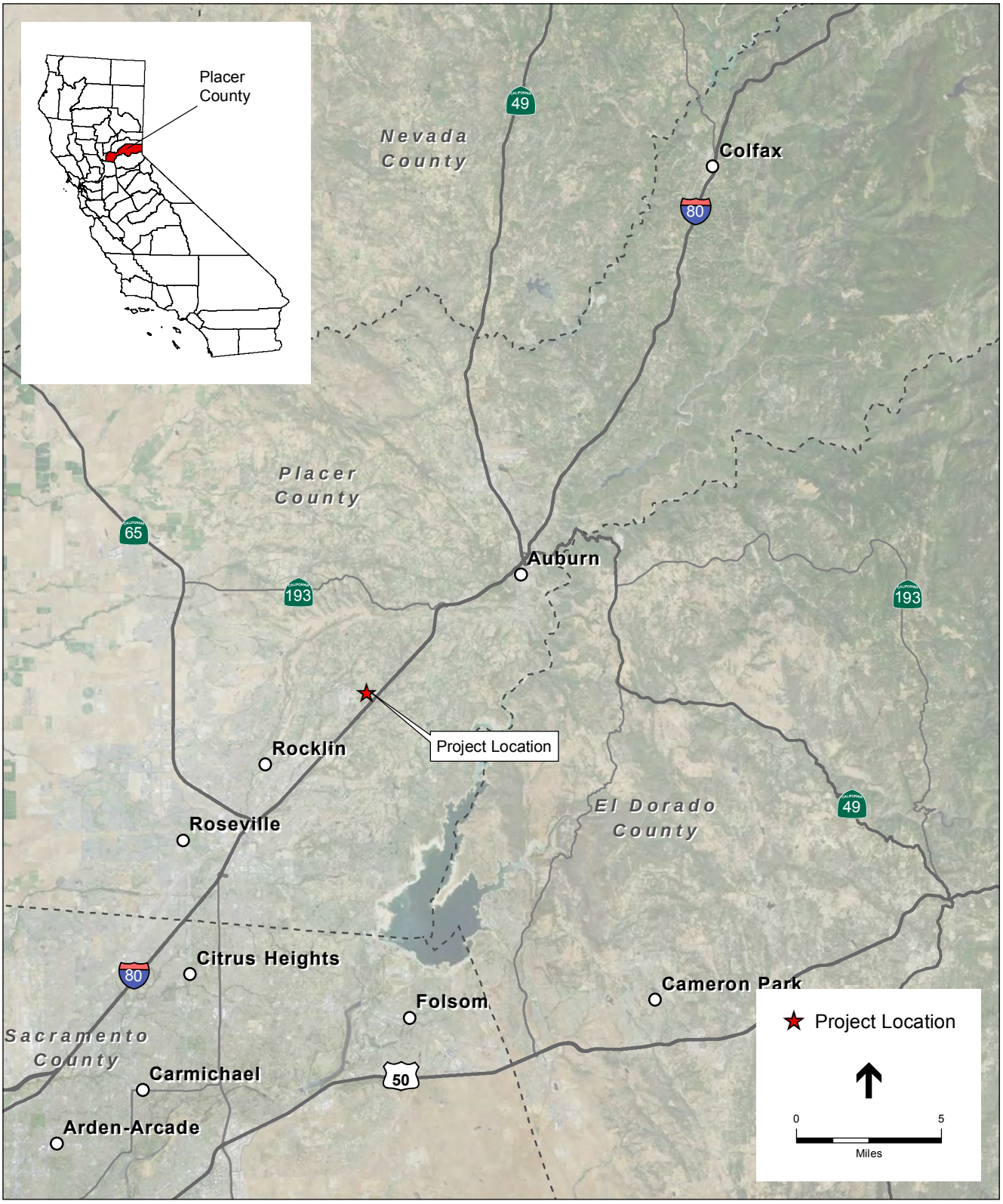
Environmental Science Associates (ESA) was contracted by the United Auburn Indian Community (UAIC) to perform a tree survey and prepare an arborist report for the UAIC Tribal School project located in Placer County, California.

## Project Description

The UAIC Tribal School would be a pre-K through 8th grade school designed to serve approximately 100 UAIC students with 35 staff members. The campus would also include a Tribal Education Center as well as a Tribal Cultural Center. The Tribal Education Center would provide recreational and continuing education classes for adult tribal members during the week as well as tutoring services and supplemental classes to home schooled and high school age tribal members. Approximately four staff members would be dedicated to the operation of the facility. The Tribal Cultural Center would include gallery and exhibit spaces, artifact archives, storage, and administrative spaces. Access to the Cultural Center would initially be limited to UAIC members, but the tribe may invite researchers, community groups, tribal groups, and school groups by appointment. Site improvements would include a small (non-regulation) lighted ballfield, two dedicated play areas for the students, a nature trail, improvements to the existing pond, vehicular access, and parking areas.

## Property Location

The subject property is located in an unincorporated area of Placer County, California and identified as Assessor Parcel Number (APN): 043-013-010 (**Figures 1** and **2**). The subject property is located south of Taylor Road, west of Tumble Lane, north of Interstate 80, and east of Orchard Park Court. The subject property occurs on Section 3 of Township 11 North, Range 7 East of the Rocklin, California U.S. Geological Survey (USGS) 7.5-minute series quadrangle (USGS, 1967-1981). The approximate centroid of the subject property is 38º 50’ 06.17” North, 121º 10’ 34.81” West. Elevation within the subject property ranges from 420 feet in the southeast to 495 feet in the northwest.




SOURCE: NAIP, 2014; ESRI, 2012; ESA, 2016

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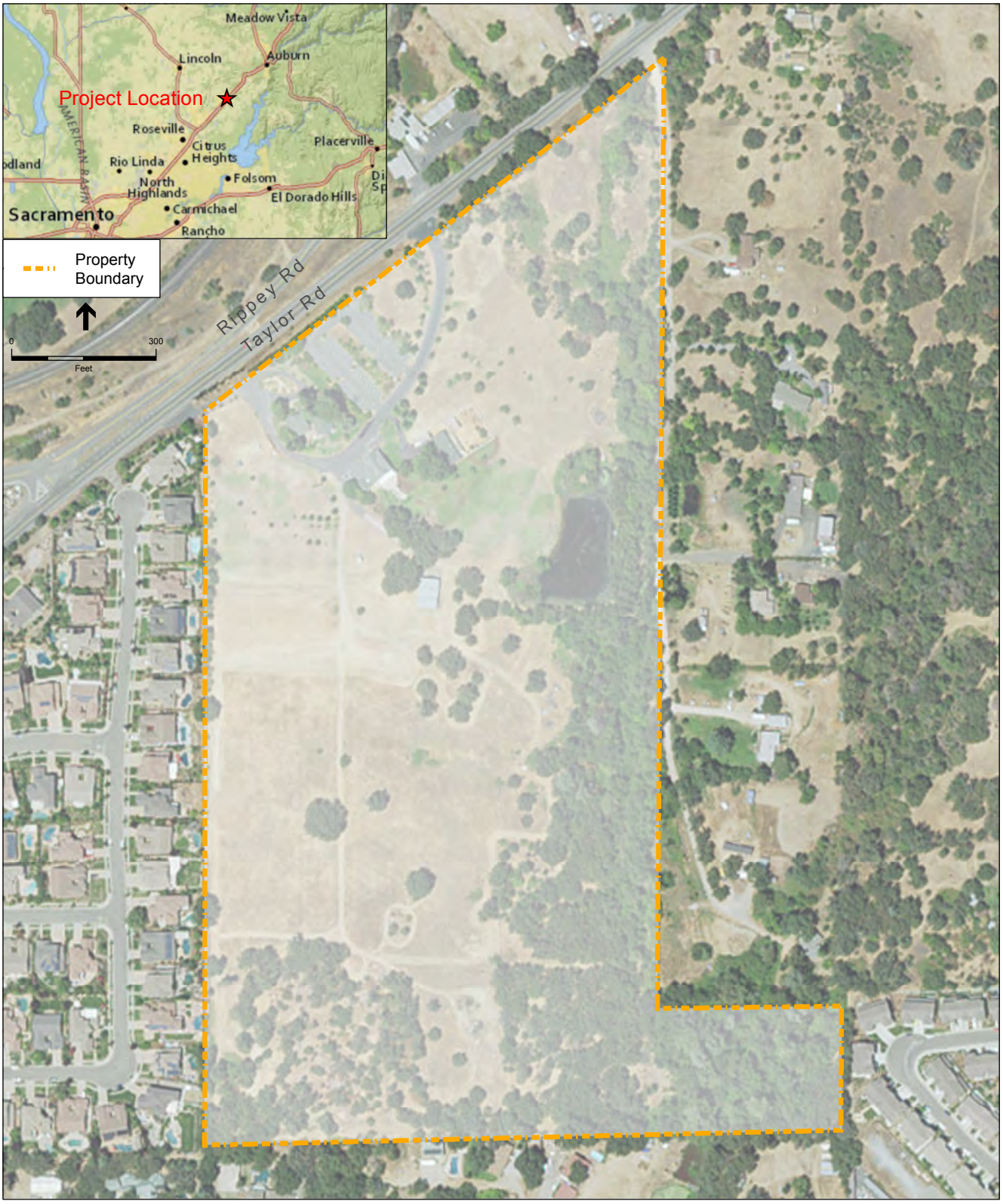
**Figure 1**
Project Location




SOURCE: ESA, 2016

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**Figure 2**

Aerial Photograph of the Subject Property

# Regulatory Setting

The Placer County Tree Preservation Ordinance (Placer County Code §12.16) regulates protected trees. Protected trees are defined as any native tree with a trunk 6 inches or greater in diameter at breast height (DBH) or a multi-trunk tree 10 inches or greater within 50 feet of any development activity (i.e., proposed structures, driveways, cuts/fills, underground utilities, etc.). Gray pine (*Pinus sabiniana*) and certain plants which are more commonly found as "brush", such as manzanita, are not considered to be a tree in this article regardless of size (Ord. 5041-B §§ 1, 2, 2000; prior code §§ 36.210—36.282).

# Methodology

## Tree Survey

The tree survey was conducted by International Society of Arboriculture Certified Arborist Joshua Boldt (Certification # WE-7069A) and biologist Sarah Cannon on November 30 and December 1, 2016. Trees were surveyed according to standard professional practices.

A tree survey area (shown on **Figures 3a** through **3e**) was developed for the site which is inclusive of areas which could potentially be disturbed by the proposed project and/or where trees would be removed. An additional 50-foot buffer was added and surveyed where trees were accessible. Riparian areas on the eastern portion of the site and most of the oak woodland on the southern portion of the site would be avoided; these areas were not surveyed unless they fall within 50 feet of the tree survey area and were accessible.

Survey methods consisted of identifying, measuring, assessing, and tagging all accessible trees within the tree survey area that had a minimum stem diameter at breast height (DBH) of four inches. Trees were tagged with aluminum tags with identification numbers where possible; trees that were located on private properties or otherwise inaccessible were not tagged. All tree location data was collected with a Global Positioning System (GPS). Information collected included the species of the tree, DBH (measured at 4.5 feet from the base of the tree), radius of the dripline (measured at the largest radius), the general condition of the tree and its components (root collar, trunk, limbs, and foliage), the general structural health of the tree, and its overall vigor ("Condition"). The "Condition" of the tree is defined as follows:

**Excellent:** Tree is without any visible deficiencies. Tree is in excellent health and is structurally sound, with little evidence of dieback and good overall annual growth. The tree shows no sign of disease, decay, or mistletoe infestation. The tree has a balanced branching structure.

**Good:** Tree has no major deficiencies but may have minor defects such as minor dieback or overcrowding. Tree is in good health and is structurally sound. Minor defects are not detrimental to overall health of tree.

**Fair:** Tree has no major deficiencies but many minor defects. Tree is in average health and may have some structural deficiencies such as decay and numerous dead limbs.

Overall health and integrity of the tree is not adversely affected at present, but the tree may have limited growth, and unbalanced or asymmetrical form. Deficiencies may be detrimental to long-term health of tree.

**Poor:** Tree has major deficiencies that are detrimental to health of tree, including major decay in the trunk or main limbs, extensive dieback, sparse foliage, extreme overcrowding, and unbalanced or asymmetrical form.

Trees may be ascribed a condition that falls between the described major categories (i.e. "Good to Fair"). These trees have elements of both categories.

# Results

## Tree Survey

The results of the data collected during tree surveys performed by ESA are presented in **Figures 3a** through **3e**, **Table 1**, and **Appendix A**. Information provided in Table 1 includes a summary of the native and non-native tree species observed in the survey area. Figures 3a through 3e present all of the trees measuring four inches DBH or greater identified during the field survey.

**TABLE 1**
**SUMMARY OF TREES IN THE STUDY AREA**

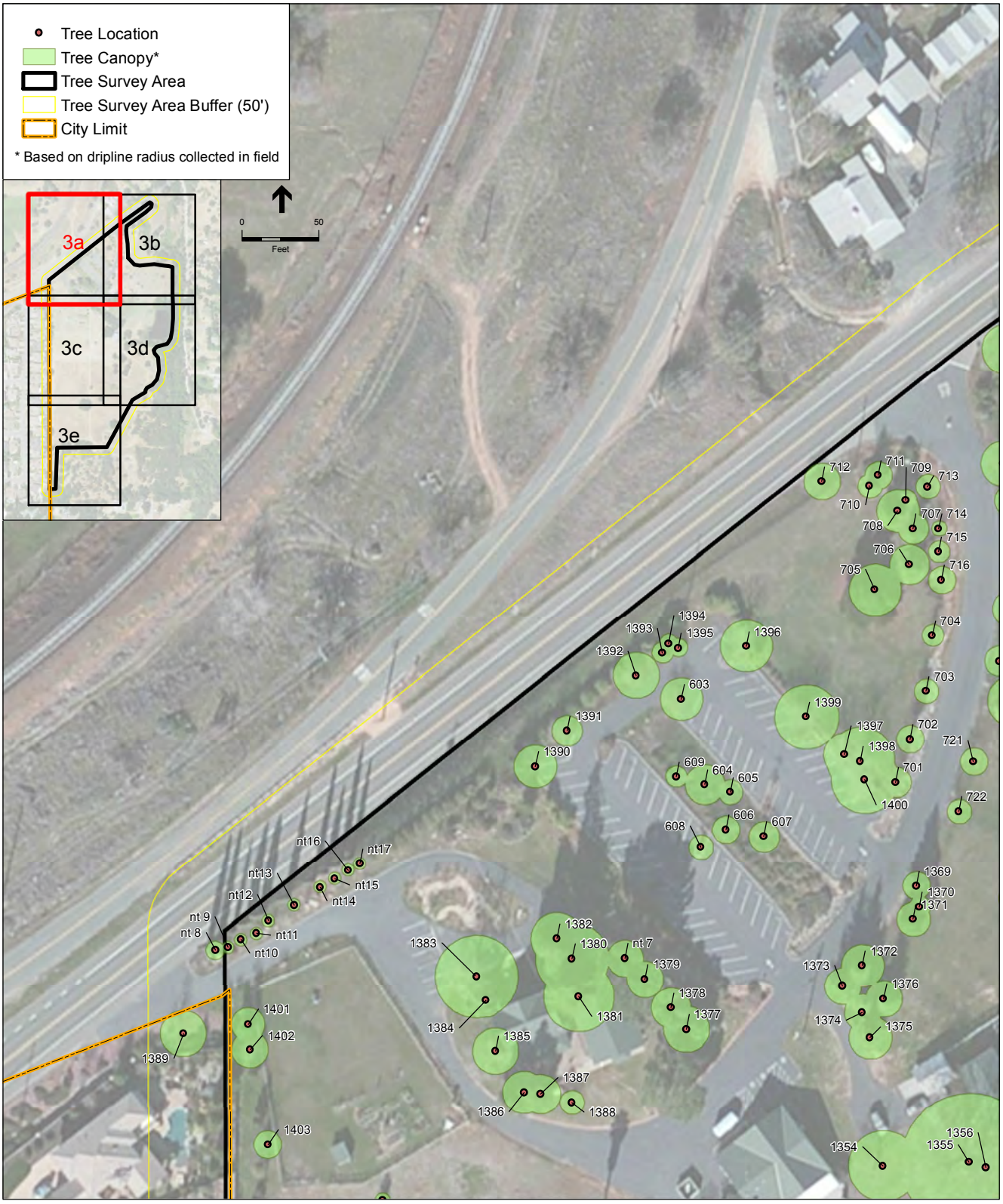
| Tree Species | Current Totals | Native/Non-native |
|---|---|---|
| Native Trees | | |
| Interior live oak | 168 | Native |
| Valley oak | 86 | Native |
| Fremont cottonwood | 6 | Native |
| Arroyo willow | 3 | Native |
| California buckeye | 3 | Native |
| Blue oak | 2 | Native |
| Goodding's black willow | 1 | Native |
| Alder | 1 | Native |
| **Total Native Trees** | **270** | |
| Non-Native and Ornamental Trees | | |
| Chinese tallow | 24 | Ornamental |
| Coast redwood* | 23 | Ornamental |
| Plum | 13 | Ornamental |
| Incense cedar* | 11 | Ornamental |
| Ornamental maple | 11 | Ornamental |
| Walnut | 11 | Ornamental |
| Juniper | 10 | Ornamental |
| Black locust | 9 | Non-Native |

**TABLE 1**
**SUMMARY OF TREES IN THE STUDY AREA**

| Tree Species | Current Totals | Native/Non-native |
|---|---|---|
| Non-Native and Ornamental Trees (cont.) | | |
| Ornamental cedar | 6 | Ornamental |
| American sycamore | 3 | Ornamental |
| Tree of heaven | 2 | Non-native |
| White mulberry | 2 | Ornamental |
| Pecan | 2 | Ornamental |
| Olive | 2 | Ornamental |
| Ornamental pine | 2 | Ornamental |
| Almond | 2 | Ornamental |
| Mexican fan palm | 1 | Ornamental |
| Citrus | 1 | Ornamental |
| Douglas-fir* | 1 | Ornamental |
| Camphor tree | 1 | Ornamental |
| Glossy privet | 1 | Ornamental |
| Southern magnolia | 1 | Ornamental |
| Bronze loquat | 1 | Ornamental |
| Pomegranate | 1 | Ornamental |
| Ornamental oak | 2 | Ornamental |
| Unknown ornamental | 7 | Ornamental |
| **Total Non-Native and Ornamental Trees** | **150** | |

* These species are native to California, but not to the Loomis area

SOURCE: ESA, 2017.




SOURCE: ESA, 2016

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**Figure 3a**

Tree Survey

SOURCE: ESA, 2016

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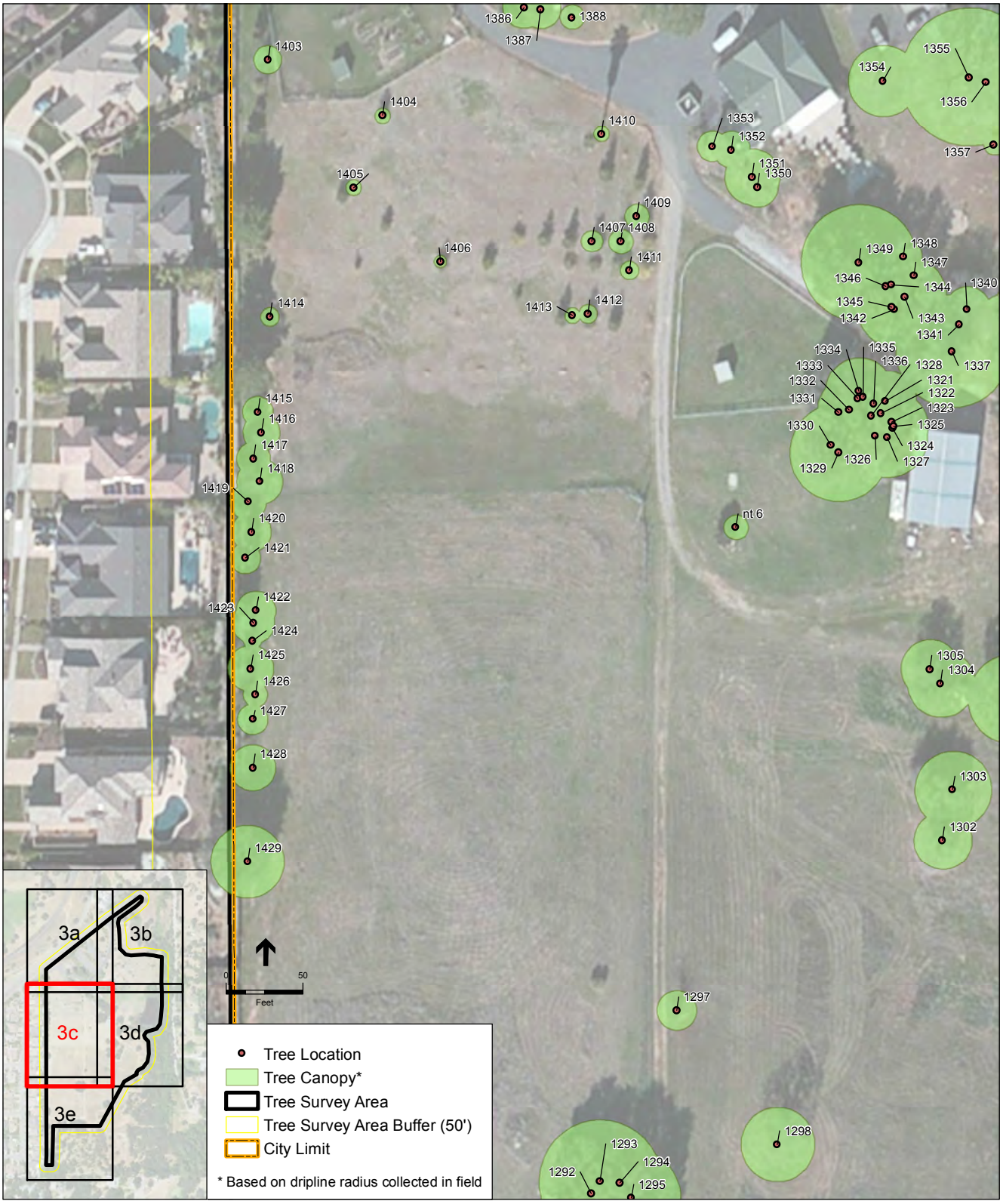
**Figure 3b**

Tree Survey




SOURCE: ESA, 2016

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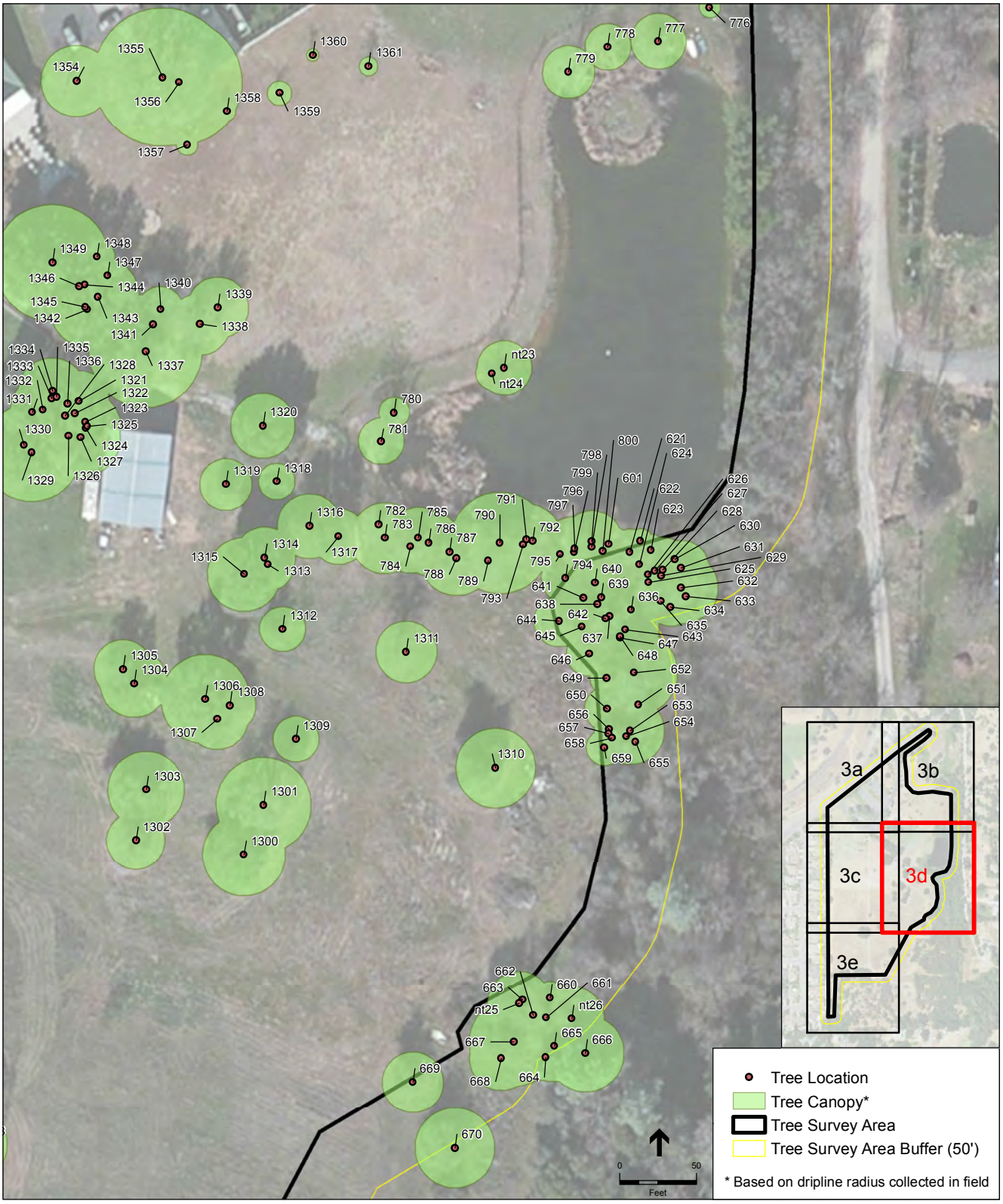
**Figure 3c**

Tree Survey




SOURCE: ESA, 2016

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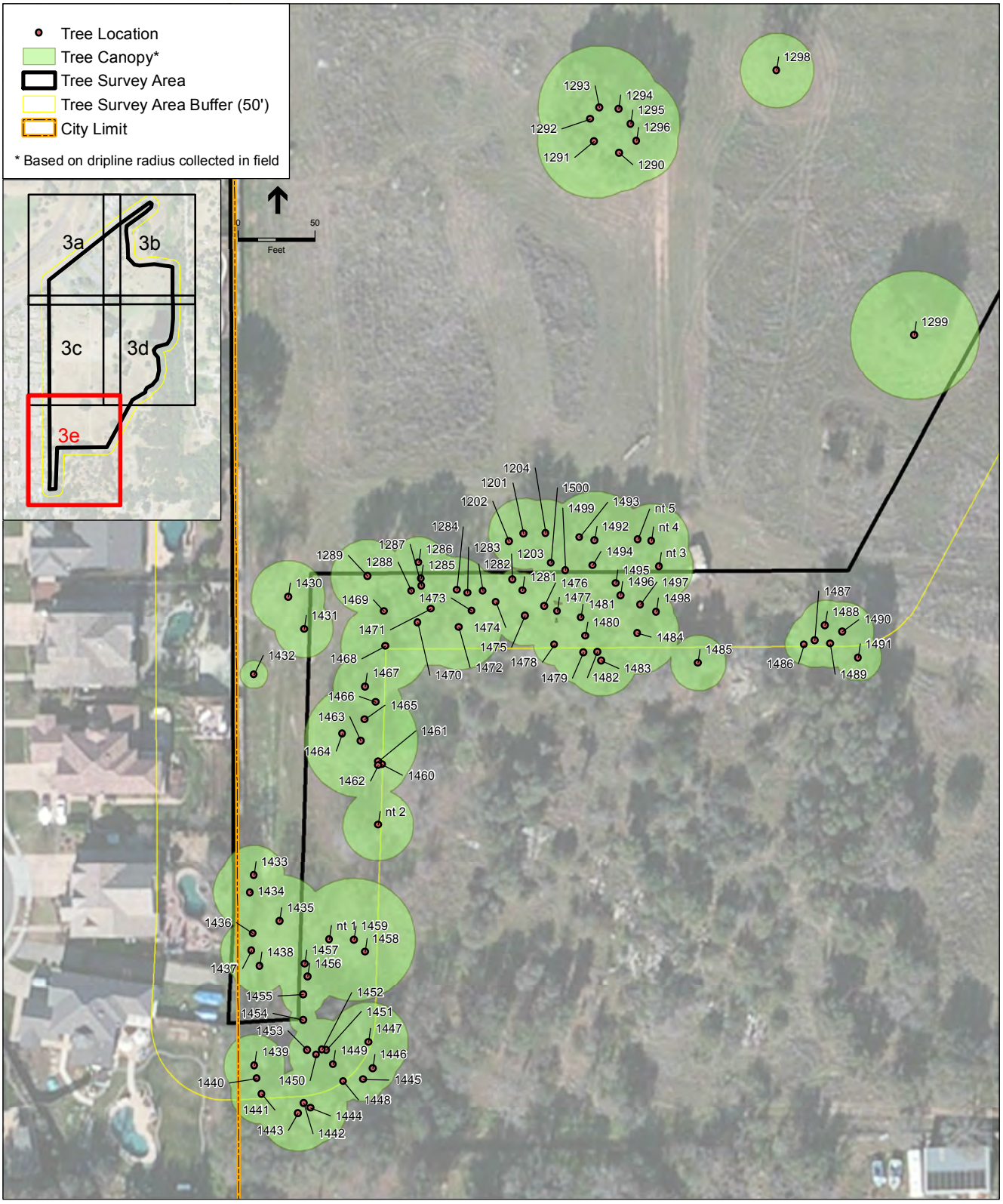
**Figure 3d**

Tree Survey




SOURCE: ESA, 2016

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**Figure 3e**

Tree Survey

# Impact Assessment

Implementation of the proposed project would result in the removal of 104 trees total. Of the 104 impacted trees, 23 are native species. Results of the impact assessment are presented in **Figure 4** and **Table 2**.

**TABLE 2**
**TREES TO BE REMOVED**

| Tree ID[1] | Scientific Name | Common Name | Total DBH (inches) |
|---|---|---|---|
| 602 | *Juglans* sp. | walnut | 10 |
| 603 | *Prunus* sp | plum | 23 |
| 604 | Unknown ornamental | Unknown ornamental | 6 |
| 605 | *Quercus* sp. | ornamental oak | 10 |
| 606 | Unknown ornamental | Unknown ornamental | 18 |
| 607 | *Prunus* sp. | plum | 6 |
| 608 | *Prunus* sp. | plum | 4 |
| 609 | *Prunus* sp. | plum | 12 |
| 701 | *Acer* sp. | ornamental maple | 8 |
| 702 | *Acer* sp. | ornamental maple | 8 |
| 703 | *Acer* sp. | ornamental maple | 6 |
| 704 | *Acer* sp. | ornamental maple | 5 |
| 705 | *Pinus* sp. | ornamental pine | 28 |
| 706 | *Calocedrus decurrens* | incense cedar | 10 |
| 707 | *Calocedrus decurrens* | incense cedar | 10 |
| 708 | *Calocedrus decurrens* | incense cedar | 10 |
| 709 | *Calocedrus decurrens* | incense cedar | 7 |
| 710 | *Calocedrus decurrens* | incense cedar | 8 |
| 711 | *Quercus* sp. | ornamental oak | 12 |
| 712 | *Triadica sebifera* | Chinese tallow | 6 |
| 713 | *Triadica sebifera* | Chinese tallow | 5 |
| 714 | *Acer* sp. | ornamental maple | 5 |
| 715 | *Populus fremontii* | Fremont cottonwood | 5 |
| 716 | *Acer* sp. | ornamental maple | 6 |
| 717 | *Acer* sp. | ornamental maple | 6 |
| 718 | *Acer* sp. | ornamental maple | 7 |
| 719 | *Acer* sp. | ornamental maple | 8 |
| 720 | *Quercus wislizeni* | interior live oak | 21 |
| 721 | *Acer* sp. | ornamental maple | 6 |
| 722 | *Acer* sp. | ornamental maple | 7 |
| 723 | *Juglans* sp. | walnut | 14 |
| 724 | *Triadica sebifera* | Chinese tallow | 6 |

**TABLE 2**
**TREES TO BE REMOVED**

| Tree ID[1] | Scientific Name | Common Name | Total DBH (inches) |
|---|---|---|---|
| 725 | *Quercus lobata* | valley oak | 20 |
| 726 | *Salix lasiolepis* | arroyo willow | 25 |
| 727 | *Prunus* sp. | plum | 6 |
| 1297 | *Triadica sebifera* | Chinese tallow | 30 |
| 1304 | *Quercus wislizeni* | interior live oak | 28 |
| 1305 | *Quercus wislizeni* | interior live oak | 35 |
| 1315 | *Quercus wislizeni* | interior live oak | 42 |
| 1319 | *Quercus wislizeni* | interior live oak | 17 |
| 1349 | *Quercus wislizeni* | interior live oak | 65 |
| 1350 | *Ailanthus altissima* | tree of heaven | 17 |
| 1351 | *Morus alba* | white mulberry | 14 |
| 1352 | Unknown ornamental | Unknown ornamental | 24 |
| 1353 | *Morus alba* | white mulberry | 18 |
| 1354 | *Cinnamomum camphora* | camphor tree | 14 |
| 1359 | *Juglans* sp. | walnut | 9 |
| 1360 | *Juglans* sp. | walnut | 9 |
| 1361 | *Juglans* sp. | walnut | 7 |
| 1362 | *Juglans* sp. | walnut | 10 |
| 1363 | *Juglans* sp. | walnut | 10 |
| 1364 | *Juglans* sp. | walnut | 9 |
| 1365 | *Prunus dulcis* | almond | 8 |
| 1366 | *Prunus dulcis* | almond | 7 |
| 1367 | Unknown ornamental | Unknown ornamental | 14 |
| 1368 | Unknown ornamental | Unknown ornamental | 12 |
| 1372 | *Cedrus* sp. | ornamental cedar | 18 |
| 1373 | *Cedrus* sp. | ornamental cedar | 15 |
| 1374 | *Cedrus* sp. | ornamental cedar | 12 |
| 1375 | *Cedrus* sp. | ornamental cedar | 16 |
| 1376 | *Cedrus* sp. | ornamental cedar | 13 |
| 1377 | *Olea europaea* | olive | 29 |
| 1378 | *Olea europaea* | olive | 41 |
| 1379 | *Pinus* sp. | ornamental pine | 37 |
| 1380 | *Calocedrus decurrens* | incense cedar | 28 |
| 1381 | *Cedrus* sp. | ornamental cedar | 29 |
| 1382 | *Magnolia grandiflora* | southern magnolia | 15 |
| 1383 | *Platanus occidentalis* | American sycamore | 18 |
| 1385 | *Platanus occidentalis* | American sycamore | 16 |
| 1386 | *Calocedrus decurrens* | incense cedar | 27 |

**TABLE 2**
**TREES TO BE REMOVED**

| Tree ID[1] | Scientific Name | Common Name | Total DBH (inches) |
|---|---|---|---|
| 1387 | *Calocedrus decurrens* | incense cedar | 28 |
| 1388 | *Punica granatum* | pomegranate | 22 |
| 1390 | *Ailanthus altissima* | tree of heaven | 21 |
| 1391 | *Triadica sebifera* | Chinese tallow | 9 |
| 1392 | *Triadica sebifera* | Chinese tallow | 10 |
| 1393 | *Sequoia sempervirens* | coast redwood | 11 |
| 1394 | *Sequoia sempervirens* | coast redwood | 8 |
| 1395 | *Sequoia sempervirens* | coast redwood | 10 |
| 1396 | *Populus fremontii* | Fremont cottonwood | 16 |
| 1397 | *Salix lasiolepis* | arroyo willow | 19 |
| 1398 | *Populus fremontii* | Fremont cottonwood | 14 |
| 1399 | *Populus fremontii* | Fremont cottonwood | 14 |
| 1400 | *Populus fremontii* | Fremont cottonwood | 11 |
| 1404 | *Sequoia sempervirens* | coast redwood | 7 |
| 1405 | *Sequoia sempervirens* | coast redwood | 8 |
| 1406 | *Sequoia sempervirens* | coast redwood | 7 |
| 1407 | *Sequoia sempervirens* | coast redwood | 9 |
| 1408 | *Sequoia sempervirens* | coast redwood | 9 |
| 1409 | *Sequoia sempervirens* | coast redwood | 11 |
| 1410 | *Washingtonia robusta* | Mexican fan palm | 15 |
| 1411 | *Sequoia sempervirens* | coast redwood | 10 |
| 1412 | *Sequoia sempervirens* | coast redwood | 13 |
| 1413 | *Sequoia sempervirens* | coast redwood | 9 |
| 1430 | *Quercus wislizeni* | interior live oak | 24 |
| 1431 | *Quercus wislizeni* | interior live oak | 17 |
| 1432 | *Quercus wislizeni* | interior live oak | 8 |
| 1433 | *Quercus wislizeni* | interior live oak | 24 |
| 1434 | *Quercus wislizeni* | interior live oak | 21 |
| 1435 | *Quercus wislizeni* | interior live oak | 19 |
| 1436 | *Quercus wislizeni* | interior live oak | 11 |
| 1437 | *Quercus wislizeni* | interior live oak | 19 |
| 1438 | *Quercus wislizeni* | interior live oak | 17 |
| NT6 | *Pseudotsuga menziesii* | Douglas-fir | 13 |
| NT7 | *Ligustrum lucidum* | glossy privet | 11 |

NOTES:

[1] Tree IDs beginning with “NO TAG” were not tagged with a metal ID tag in the field due to inaccessibility.

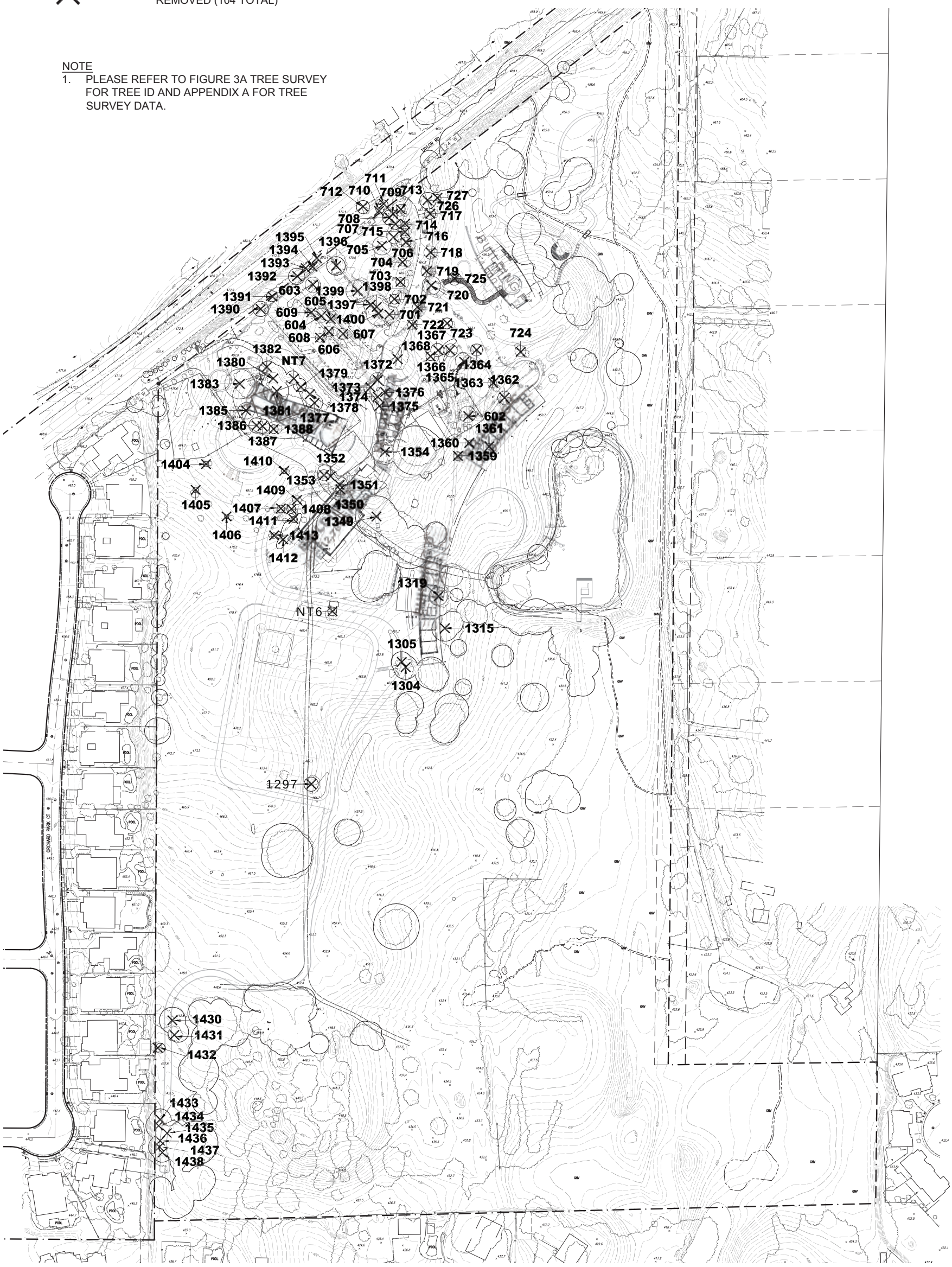
SOURCE: ESA, 2017

LEGEND

#### TREES PROPOSED TO BE REMOVED (104 TOTAL)

NOTE

1. PLEASE REFER TO FIGURE 3A TREE SURVEY FOR TREE ID AND APPENDIX A FOR TREE SURVEY DATA.




SOURCE: Lake | Flato Architects Inc., 2017

UAIC Tribal School . 150225

**Figure 4**

Tree Impact Map

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# Appendix A
## Tree Survey Data

# APPENDIX A
# TREE SURVEY DATA

| Tree ID[1] | Scientific Name | Common Name | DBH[2] (inches) | Total DBH (inches) | Dripline Radius[3] (feet) | Condition[4] |
|---|---|---|---|---|---|---|
| 1401 | *Sequoia sempervirens* | coast redwood | 13 | 13 | 11 | Good |
| 1402 | *Robinia pseudoacacia* | black locust | 6 | 6 | 12 | Fair-Poor |
| 1403 | *Robinia pseudoacacia* | black locust | 12 | 12 | 9 | Good-Fair |
| 1404 | *Sequoia sempervirens* | coast redwood | 7 | 7 | 5 | Poor |
| 1405 | *Sequoia sempervirens* | coast redwood | 8 | 8 | 5 | Good |
| 1406 | *Sequoia sempervirens* | coast redwood | 7 | 7 | 4 | Poor |
| 1407 | *Sequoia sempervirens* | coast redwood | 9 | 9 | 7 | Good |
| 1408 | *Sequoia sempervirens* | coast redwood | 9 | 9 | 8 | Fair |
| 1409 | *Sequoia sempervirens* | coast redwood | 11 | 11 | 8 | Fair |
| 1410 | *Washingtonia robusta* | Mexican fan palm | 15 | 15 | 5 | Good |
| 1411 | *Citrus* sp. | citrus | 8 | 8 | 6 | Poor |
| 1412 | *Sequoia sempervirens* | coast redwood | 9 | 9 | 6 | Poor |
| 1413 | *Sequoia sempervirens* | coast redwood | 9 | 9 | 5 | Poor |
| 1414 | *Sequoia sempervirens* | coast redwood | 10 | 10 | 6 | Poor |
| 1415 | *Sequoia sempervirens* | coast redwood | 13 | 13 | 10 | Good-Fair |
| 1416 | *Robinia pseudoacacia* | black locust | 7 | 7 | 12 | Fair |
| 1417 | *Sequoia sempervirens* | coast redwood | 14 | 14 | 11 | Fair |
| 1418 | *Robinia pseudoacacia* | black locust | 9 | 9 | 15 | Fair-Poor |
| 1419 | *Sequoia sempervirens* | coast redwood | 13 | 13 | 12 | Fair |
| 1420 | *Robinia pseudoacacia* | black locust | 6 | 6 | 13 | Poor |
| 1421 | *Sequoia sempervirens* | coast redwood | 12 | 12 | 10 | Good-Fair |
| 1422 | *Sequoia sempervirens* | coast redwood | 12 | 12 | 13 | Good-Fair |
| 1423 | *Robinia pseudoacacia* | black locust | 5, 7 | 11 | 14 | Fair |
| 1424 | *Sequoia sempervirens* | coast redwood | 7 | 7 | 6 | Poor |
| 1425 | *Robinia pseudoacacia* | black locust | 10 | 10 | 15 | Fair |
| 1426 | *Sequoia sempervirens* | coast redwood | 9 | 9 | 8 | Good-Fair |
| 1427 | *Robinia pseudoacacia* | black locust | 9 | 9 | 10 | Poor |
| 1428 | *Robinia pseudoacacia* | black locust | 7 | 7 | 15 | Fair |
| 1429 | *Quercus wislizeni* | interior live oak | 34 | 34 | 24 | Good |
| 1430 | *Quercus wislizeni* | interior live oak | 24 | 24 | 24 | Good-Fair |
| 1431 | *Quercus wislizeni* | interior live oak | 17 | 17 | 19 | Good |
| 1432 | *Quercus wislizeni* | interior live oak | 8 | 8 | 9 | Good |

# APPENDIX A
# TREE SURVEY DATA

| Tree ID[1] | Scientific Name | Common Name | DBH[2] (inches) | Total DBH (inches) | Dripline Radius[3] (feet) | Condition[4] |
|---|---|---|---|---|---|---|
| 1433 | *Quercus wislizeni* | interior live oak | 24 | 24 | 20 | Good |
| 1434 | *Quercus wislizeni* | interior live oak | 21 | 21 | 24 | Good |
| 1435 | *Quercus wislizeni* | interior live oak | 19 | 19 | 30 | Good |
| 1436 | *Quercus wislizeni* | interior live oak | 11 | 11 | 12 | Good-Fair |
| 1437 | *Quercus wislizeni* | interior live oak | 11, 8 | 19 | 20 | Fair |
| 1438 | *Quercus wislizeni* | interior live oak | 17 | 17 | 18 | Good-Fair |
| 1439 | *Quercus wislizeni* | interior live oak | 18, 10, 12 | 40 | 20 | Good |
| 1440 | *Quercus wislizeni* | interior live oak | 17, 10 | 27 | 18 | Good |
| 1441 | *Quercus wislizeni* | interior live oak | 8, 14, 11 | 33 | 20 | Good |
| 1442 | *Quercus wislizeni* | interior live oak | 12, 10 | 21 | 23 | Good-Fair |
| 1443 | *Quercus wislizeni* | interior live oak | 10, 7 | 17 | 25 | Good |
| 1444 | *Quercus wislizeni* | interior live oak | 23 | 23 | 24 | Good |
| 1445 | *Quercus douglasii* | blue oak | 15, 8 | 23 | 14 | Good-Fair |
| 1446 | *Quercus wislizeni* | interior live oak | 8, 6 | 14 | 15 | Good-Fair |
| 1447 | *Quercus lobata* | valley oak | 10, 7, 6, 5, 4 | 32 | 26 | Good-Fair |
| 1448 | *Quercus lobata* | valley oak | 10, 6 | 16 | 13 | Good-Fair |
| 1449 | *Quercus wislizeni* | interior live oak | 8 | 8 | 11 | Fair |
| 1450 | *Quercus wislizeni* | interior live oak | 16, 6 | 22 | 18 | Good-Fair |
| 1451 | *Quercus lobata* | valley oak | 8 | 8 | 10 | Fair |
| 1452 | *Quercus wislizeni* | interior live oak | 9, 4 | 13 | 20 | Fair-Poor |
| 1453 | *Quercus wislizeni* | interior live oak | 5, 5 | 11 | 12 | Good-Fair |
| 1454 | *Quercus wislizeni* | interior live oak | 8, 9 | 17 | 9 | Good-Fair |
| 1455 | *Quercus lobata* | valley oak | 14 | 14 | 14 | Fair |
| 1456 | *Quercus lobata* | valley oak | 9, 4 | 13 | 19 | Good-Fair |
| 1457 | *Quercus lobata* | valley oak | 4 | 4 | 21 | Good |
| 1458 | *Quercus wislizeni* | interior live oak | 6 | 6 | 10 | Fair |
| 1459 | *Quercus lobata* | valley oak | 16, 24 | 40 | 40 | Good |
| NO TAG 1 | *Salix gooddingii* | Goodding's black willow | 6, 8, 6 | 20 | 24 | Good-Fair |
| NO TAG 2 | *Quercus lobata* | valley oak | 22 | 22 | 23 | Good |
| 1460 | *Quercus lobata* | valley oak | 11 | 11 | 16 | Good |
| 1461 | *Quercus lobata* | valley oak | 10 | 10 | 20 | Good |
| 1462 | *Quercus wislizeni* | interior live oak | 11, 9 | 20 | 19 | Fair |

# APPENDIX A
# TREE SURVEY DATA

| Tree ID[1] | Scientific Name | Common Name | DBH[2] (inches) | Total DBH (inches) | Dripline Radius[3] (feet) | Condition[4] |
|---|---|---|---|---|---|---|
| 1463 | *Quercus wislizeni* | interior live oak | 23 | 23 | 37 | Fair |
| 1464 | *Quercus wislizeni* | interior live oak | 7, 6 | 13 | 12 | Fair-Poor |
| 1465 | *Quercus lobata* | valley oak | 8 | 8 | 14 | Good-Fair |
| 1466 | *Quercus wislizeni* | interior live oak | 5 | 5 | 17 | Fair-Poor |
| 1467 | *Quercus wislizeni* | interior live oak | 18, 7 | 25 | 21 | Fair |
| 1468 | *Quercus wislizeni* | interior live oak | 14, 12, 9 | 35 | 29 | Fair |
| 1469 | *Quercus lobata* | valley oak | 8 | 8 | 16 | Fair |
| 1470 | *Quercus wislizeni* | interior live oak | 13, 7 | 20 | 20 | Fair-Poor |
| 1471 | *Quercus wislizeni* | interior live oak | 6, 7, 14, 14, 9 | 50 | 37 | Fair |
| 1472 | *Quercus wislizeni* | interior live oak | 14, 11 | 25 | 28 | Good-Fair |
| 1473 | *Quercus wislizeni* | interior live oak | 9, 2 | 11 | 18 | Fair-Poor |
| 1474 | *Quercus wislizeni* | interior live oak | 12 | 12 | 19 | Good-Fair |
| 1475 | *Quercus wislizeni* | interior live oak | 13, 6 | 19 | 20 | Good-Fair |
| 1476 | *Quercus wislizeni* | interior live oak | 7 | 7 | 7 | Fair |
| 1477 | *Quercus wislizeni* | interior live oak | 11 | 11 | 5 | Fair |
| 1478 | *Quercus wislizeni* | interior live oak | 9, 9 | 18 | 14 | Good-Fair |
| 1479 | *Quercus wislizeni* | interior live oak | 7, 6 | 13 | 21 | Poor |
| 1480 | *Quercus wislizeni* | interior live oak | 9, 8 | 17 | 16 | Fair |
| 1481 | *Quercus wislizeni* | interior live oak | 11 | 11 | 16 | Good-Fair |
| 1482 | *Quercus wislizeni* | interior live oak | 8, 9 | 17 | 21 | Poor |
| 1483 | *Quercus wislizeni* | interior live oak | 9, 13 | 22 | 23 | Good-Fair |
| 1484 | *Quercus wislizeni* | interior live oak | 12, 10, 10, 9, 8, 13, 8 | 69 | 27 | Good-Fair |
| 1485 | *Quercus wislizeni* | interior live oak | 11, 14, 10, 8 | 43 | 18 | Good |
| 1486 | *Quercus wislizeni* | interior live oak | 10 | 10 | 13 | Good |
| 1487 | *Quercus wislizeni* | interior live oak | 12 | 12 | 18 | Good |
| 1488 | *Quercus wislizeni* | interior live oak | 11 | 11 | 17 | Good-Fair |
| 1489 | *Quercus wislizeni* | interior live oak | 14 | 14 | 16 | Good-Fair |
| 1490 | *Quercus wislizeni* | interior live oak | 10 | 10 | 20 | Good-Fair |
| 1491 | *Quercus wislizeni* | interior live oak | 16 | 16 | 15 | Good-Fair |
| NO TAG 3 | *Quercus wislizeni* | interior live oak | 16 | 16 | 22 | Fair |
| NO TAG 4 | *Quercus wislizeni* | interior live oak | 12, 7 | 19 | 24 | Fair |
| NO TAG 5 | *Quercus wislizeni* | interior live oak | 8, 13, 12, 10 | 43 | 19 | Fair |

# APPENDIX A
# TREE SURVEY DATA

| Tree ID[1] | Scientific Name | Common Name | DBH[2] (inches) | Total DBH (inches) | Dripline Radius[3] (feet) | Condition[4] |
|---|---|---|---|---|---|---|
| 1492 | *Quercus wislizeni* | interior live oak | 10, 11, 8, 7, 5, 4 | 44 | 32 | Good |
| 1493 | *Quercus wislizeni* | interior live oak | 4, 4, 4, 4, 4, 3 | 22 | 17 | Fair |
| 1494 | *Quercus wislizeni* | interior live oak | 7 | 7 | 16 | Poor (dead) |
| 1495 | *Quercus wislizeni* | interior live oak | 8, 9, 13, 6 | 36 | 33 | Good-Fair |
| 1496 | *Quercus wislizeni* | interior live oak | 9 | 9 | 17 | Fair |
| 1497 | *Quercus wislizeni* | interior live oak | 9, 6 | 15 | 11 | Poor |
| 1498 | *Quercus wislizeni* | interior live oak | 7 | 7 | 11 | Poor |
| 1499 | *Quercus wislizeni* | interior live oak | 6, 9, 7, 7 | 29 | 21 | Fair |
| 1500 | *Quercus wislizeni* | interior live oak | 8, 6, 5, 7, 7, 4 | 38 | 13 | Fair |
| 1204 | *Quercus wislizeni* | interior live oak | 12, 12, 7, 11 | 42 | 22 | Good-Fair |
| 1201 | *Quercus lobata* | valley oak | 16 | 16 | 23 | Good-Fair |
| 1202 | *Quercus wislizeni* | interior live oak | 8 | 8 | 9 | Fair |
| 1203 | *Quercus wislizeni* | interior live oak | 13 | 13 | 7 | Fair-Poor |
| 1281 | *Quercus wislizeni* | interior live oak | 7 | 7 | 12 | Fair |
| 1282 | *Quercus wislizeni* | interior live oak | 6 | 6 | 13 | Fair-Poor |
| 1283 | *Quercus wislizeni* | interior live oak | 15, 8 | 24 | 14 | Fair |
| 1284 | *Quercus wislizeni* | interior live oak | 9, 5 | 14 | 22 | Fair |
| 1285 | *Quercus wislizeni* | interior live oak | 14 | 14 | 23 | Fair |
| 1286 | *Quercus wislizeni* | interior live oak | 7, 7, 4 | 18 | 17 | Fair-Poor |
| 1287 | *Quercus wislizeni* | interior live oak | 9 | 9 | 10 | Fair |
| 1288 | *Quercus wislizeni* | interior live oak | 10, 16 | 26 | 21 | Fair |
| 1289 | *Quercus wislizeni* | interior live oak | 13, 10, 7, 4, 15 | 49 | 24 | Good-Fair |
| 1290 | *Quercus wislizeni* | interior live oak | 12, 11, 11 | 33 | 25 | Good |
| 1291 | *Quercus wislizeni* | interior live oak | 12, 12, 11, 10, 11 | 55 | 37 | Good |
| 1292 | *Quercus wislizeni* | interior live oak | 11, 9, 9, 10 | 38 | 27 | Good-Fair |
| 1293 | *Quercus wislizeni* | interior live oak | 11, 5, 9, 9, 11 | 45 | 40 | Good-Fair |
| 1294 | *Quercus wislizeni* | interior live oak | 13, 7, 5 | 25 | 28 | Fair |
| 1295 | *Quercus wislizeni* | interior live oak | 13, 12, 13, 12, 10 | 60 | 32 | Good-Fair |
| 1296 | *Quercus wislizeni* | interior live oak | 10, 6, 10, 16 | 42 | 27 | Good-Fair |
| 1297 | *Triadica sebifera* | Chinese tallow | 7, 7, 5, 6, 6 | 30 | 13 | Fair |
| 1298 | *Quercus lobata* | valley oak | 21 | 21 | 24 | Fair |
| 1299 | *Quercus lobata* | valley oak | 28 | 28 | 42 | Fair |

# APPENDIX A
# TREE SURVEY DATA

| Tree ID[1] | Scientific Name | Common Name | DBH[2] (inches) | Total DBH (inches) | Dripline Radius[3] (feet) | Condition[4] |
|---|---|---|---|---|---|---|
| 1300 | *Quercus wislizeni* | interior live oak | 19, 13, 13 | 46 | 27 | Fair |
| 1301 | *Quercus lobata* | valley oak | 22 | 22 | 31 | Good |
| 1302 | *Quercus lobata* | valley oak | 18 | 18 | 19 | Good |
| 1303 | *Quercus lobata* | valley oak | 25 | 25 | 25 | Fair |
| 1304 | *Quercus wislizeni* | interior live oak | 14, 7, 7 | 28 | 22 | Fair |
| 1305 | *Quercus wislizeni* | interior live oak | 17, 10, 8 | 35 | 19 | Good |
| 1306 | *Quercus wislizeni* | interior live oak | 12, 12, 17, 10 | 52 | 29 | Good |
| 1307 | *Quercus wislizeni* | interior live oak | 11, 10 | 21 | 20 | Good |
| 1308 | *Quercus wislizeni* | interior live oak | 9, 8 | 17 | 17 | Good |
| 1309 | *Quercus wislizeni* | interior live oak | 10, 9, 9, 7, 7, 6, 5, 5, 5 | 63 | 15 | Fair |
| 1310 | *Quercus wislizeni* | interior live oak | 20, 14, 17 | 51 | 26 | Good |
| 1311 | *Quercus wislizeni* | interior live oak | 20 | 20 | 20 | Good |
| 1312 | *Quercus wislizeni* | interior live oak | 13 | 13 | 15 | Good |
| 1313 | *Quercus wislizeni* | interior live oak | 19 | 19 | 17 | Fair |
| 1314 | *Quercus wislizeni* | interior live oak | 11, 6, 12 | 30 | 20 | Good-Fair |
| 1315 | *Quercus wislizeni* | interior live oak | 11, 16, 15 | 42 | 24 | Good-Fair |
| 1316 | *Quercus wislizeni* | interior live oak | 6, 10, 8, 8, 4 | 36 | 21 | Good |
| 1317 | *Quercus wislizeni* | interior live oak | 14, 13 | 27 | 18 | Good |
| 1318 | *Quercus wislizeni* | interior live oak | 7, 4, 3, 6, 8 | 28 | 12 | Good |
| 1319 | *Quercus wislizeni* | interior live oak | 7, 9 | 17 | 17 | Good |
| 1320 | *Quercus wislizeni* | interior live oak | 15, 15, 20 | 50 | 21 | Good |
| 1321 | *Quercus wislizeni* | interior live oak | 11, 12 | 23 | 20 | Good-Fair |
| 1322 | *Quercus douglasii* | blue oak | 8 | 8 | 11 | Fair |
| 1323 | *Quercus wislizeni* | interior live oak | 5, 4 | 9 | 5 | Fair |
| 1324 | *Quercus wislizeni* | interior live oak | 11, 5 | 15 | 14 | Fair |
| 1325 | *Quercus wislizeni* | interior live oak | 11, 7, 11 | 29 | 22 | Good-Fair |
| 1326 | *Quercus wislizeni* | interior live oak | 11, 7, 6 | 24 | 19 | Fair-Poor |
| 1327 | *Quercus wislizeni* | interior live oak | 9, 11 | 20 | 26 | Good-Fair |
| 1328 | *Quercus wislizeni* | interior live oak | 5, 5 | 10 | 12 | Fair |
| 1329 | *Quercus wislizeni* | interior live oak | 10, 7, 10, 12, 15, 6 | 60 | 32 | Good-Fair |
| 1330 | *Quercus wislizeni* | interior live oak | 5, 5 | 10 | 8 | Fair |
| 1331 | *Quercus wislizeni* | interior live oak | 8 | 8 | 7 | Poor |

# APPENDIX A
# TREE SURVEY DATA

| Tree ID[1] | Scientific Name | Common Name | DBH[2] (inches) | Total DBH (inches) | Dripline Radius[3] (feet) | Condition[4] |
|---|---|---|---|---|---|---|
| 1332 | *Quercus wislizeni* | interior live oak | 9, 9, 9, 16 | 42 | 21 | Fair |
| 1333 | *Quercus wislizeni* | interior live oak | 8 | 8 | 6 | Fair-Poor |
| 1334 | *Quercus wislizeni* | interior live oak | 13, 10 | 23 | 22 | Good-Fair |
| 1335 | *Quercus wislizeni* | interior live oak | 7, 4, 5 | 17 | 15 | Good |
| 1336 | *Quercus wislizeni* | interior live oak | 7, 8, 6, 9 | 29 | 17 | Good-Fair |
| NO TAG 6 | *Pseudotsuga menziesii* | Douglas-fir | 13 | 13 | 8 | Good |
| 1337 | *Quercus wislizeni* | interior live oak | 25 | 25 | 37 | Fair |
| 1338 | *Quercus wislizeni* | interior live oak | 16 | 16 | 20 | Good-Fair |
| 1339 | *Quercus wislizeni* | interior live oak | 13, 10 | 24 | 20 | Good-Fair |
| 1340 | *Quercus wislizeni* | interior live oak | 12, 13 | 25 | 15 | Good-Fair |
| 1341 | *Quercus wislizeni* | interior live oak | 4, 7, 3 | 14 | 15 | Fair |
| 1342 | *Quercus wislizeni* | interior live oak | 12, 8, 7 | 27 | 24 | Fair |
| 1343 | *Quercus wislizeni* | interior live oak | 13, 10 | 24 | 27 | Fair |
| 1344 | *Quercus wislizeni* | interior live oak | 5, 14, 10 | 29 | 18 | Fair |
| 1345 | *Quercus wislizeni* | interior live oak | 8 | 8 | 8 | Fair-Poor |
| 1346 | *Quercus wislizeni* | interior live oak | 10 | 10 | 7 | Fair-Poor |
| 1347 | *Quercus wislizeni* | interior live oak | 10, 6 | 16 | 10 | Fair |
| 1348 | *Quercus wislizeni* | interior live oak | 7 | 7 | 12 | Fair |
| 1349 | *Quercus wislizeni* | interior live oak | 22, 22, 9, 11 | 65 | 38 | Good |
| 1350 | *Ailanthus altissima* | tree of heaven | 10, 6 | 17 | 13 | Fair |
| 1351 | *Morus alba* | white mulberry | 14 | 14 | 18 | Good |
| 1352 | Unknown ornamental | Unknown ornamental | 6, 4, 7, 7 | 24 | 12 | Good |
| 1353 | *Morus alba* | white mulberry | 18 | 18 | 10 | Good |
| 1354 | *Cinnamomum camphora* | camphor tree | 14 | 14 | 23 | Good |
| 1355 | *Carya illinoiensis* | pecan | 32 | 32 | 45 | Good |
| 1356 | *Carya illinoiensis* | pecan | 34 | 34 | 41 | Good |
| 1357 | *Juglans* sp. | walnut | 7 | 7 | 7 | Poor |
| 1358 | *Juglans* sp. | walnut | 6 | 6 | 6 | Fair |
| 1359 | *Juglans* sp. | walnut | 9 | 9 | 8 | Poor |
| 1360 | *Juglans* sp. | walnut | 9 | 9 | 4 | Poor |
| 1361 | *Juglans* sp. | walnut | 7 | 7 | 6 | Poor |
| 1362 | *Juglans* sp. | walnut | 10 | 10 | 12 | Fair-Poor |

# APPENDIX A
# TREE SURVEY DATA

| Tree ID[1] | Scientific Name | Common Name | DBH[2] (inches) | Total DBH (inches) | Dripline Radius[3] (feet) | Condition[4] |
|---|---|---|---|---|---|---|
| 1363 | *Juglans* sp. | walnut | 10 | 10 | 8 | Fair-Poor |
| 1364 | *Juglans* sp. | walnut | 9 | 9 | 11 | Poor |
| 1365 | *Prunus dulcis* | almond | 8 | 8 | 14 | Fair |
| 1366 | *Prunus dulcis* | almond | 7 | 7 | 12 | Fair |
| 1367 | Unknown ornamental | Unknown ornamental | 14 | 14 | 12 | Fair |
| 1368 | Unknown ornamental | Unknown ornamental | 12 | 12 | 8 | Fair-Poor |
| 1369 | *Sequoia sempervirens* | coast redwood | 9 | 9 | 9 | Good-Fair |
| 1370 | *Sequoia sempervirens* | coast redwood | 14 | 14 | 7 | Good |
| 1371 | *Sequoia sempervirens* | coast redwood | 17 | 17 | 11 | Good |
| 1372 | *Cedrus* sp. | ornamental cedar | 18 | 18 | 14 | Good |
| 1373 | *Cedrus* sp. | ornamental cedar | 15 | 15 | 12 | Good |
| 1374 | *Cedrus* sp. | ornamental cedar | 12 | 12 | 12 | Good |
| 1375 | *Cedrus* sp. | ornamental cedar | 16 | 16 | 14 | Good-Fair |
| 1376 | *Cedrus* sp. | ornamental cedar | 13 | 13 | 12 | Good |
| 1377 | *Olea europaea* | olive | 14, 15 | 29 | 15 | Good |
| 1378 | *Olea europaea* | olive | 16, 7, 10, 8 | 41 | 13 | Good |
| 1379 | *Pinus* sp. | ornamental pine | 37 | 37 | 12 | Excellent-Good |
| NO TAG 7 | *Ligustrum lucidum* | glossy privet | 11 | 11 | 12 | Good |
| 1380 | *Calocedrus decurrens* | incense cedar | 28 | 28 | 24 | Excellent-Good |
| 1381 | *Cedrus* sp. | ornamental cedar | 29 | 29 | 23 | Excellent-Good |
| 1382 | *Magnolia grandiflora* | southern magnolia | 15 | 15 | 17 | Excellent-Good |
| 1383 | *Platanus occidentalis* | American sycamore | 18 | 18 | 27 | Excellent-Good |
| 1384 | *Eriobotrya deflexa* | bronze loquat | 10 | 10 | 11 | Excellent-Good |
| 1385 | *Platanus occidentalis* | American sycamore | 16 | 16 | 15 | Excellent-Good |
| 1386 | *Calocedrus decurrens* | incense cedar | 27 | 27 | 14 | Good |
| 1387 | *Calocedrus decurrens* | incense cedar | 28 | 28 | 13 | Good |
| 1388 | *Punica granatum* | pomegranate | 6, 5, 5, 5 | 22 | 8 | Fair |
| 1389 | *Platanus occidentalis* | American sycamore | 11 | 11 | 15 | Excellent-Good |
| NO TAG 8 | *Juniperus scopulorum* | juniper | 6 | 6 | 6 | Excellent-Good |
| NO TAG 9 | *Juniperus scopulorum* | juniper | 6 | 6 | 4 | Good |
| NO TAG 10 | *Juniperus scopulorum* | juniper | 6 | 6 | 4 | Good |
| NO TAG 11 | *Juniperus scopulorum* | juniper | 6 | 6 | 4 | Good |

# APPENDIX A
# TREE SURVEY DATA

| Tree ID[1] | Scientific Name | Common Name | DBH[2] (inches) | Total DBH (inches) | Dripline Radius[3] (feet) | Condition[4] |
|---|---|---|---|---|---|---|
| NO TAG 12 | *Juniperus scopulorum* | juniper | 6 | 6 | 4 | Good |
| NO TAG 13 | *Juniperus scopulorum* | juniper | 6 | 6 | 4 | Good |
| NO TAG 14 | *Juniperus scopulorum* | juniper | 6 | 6 | 4 | Good |
| NO TAG 15 | *Juniperus scopulorum* | juniper | 6 | 6 | 4 | Good |
| NO TAG 16 | *Juniperus scopulorum* | juniper | 6 | 6 | 4 | Good |
| NO TAG 17 | *Juniperus scopulorum* | juniper | 6 | 6 | 4 | Good |
| 1390 | *Ailanthus altissima* | tree of heaven | 6, 6, 9 | 21 | 14 | Poor |
| 1391 | *Triadica sebifera* | Chinese tallow | 9 | 9 | 10 | Good |
| 1392 | *Triadica sebifera* | Chinese tallow | 10 | 10 | 15 | Good |
| 1393 | *Sequoia sempervirens* | coast redwood | 11 | 11 | 7 | Poor |
| 1394 | *Sequoia sempervirens* | coast redwood | 8 | 8 | 5 | Fair |
| 1395 | *Sequoia sempervirens* | coast redwood | 10 | 10 | 6 | Poor |
| 1396 | *Populus fremontii* | Fremont cottonwood | 16 | 16 | 17 | Fair |
| 1399 | *Salix lasiolepis* | arroyo willow | 9, 10 | 19 | 21 | Good-Fair |
| 1397 | *Populus fremontii* | Fremont cottonwood | 8, 6 | 14 | 14 | Fair |
| 1398 | *Populus fremontii* | Fremont cottonwood | 14 | 14 | 22 | Fair |
| 1400 | *Populus fremontii* | Fremont cottonwood | 11 | 11 | 22 | Fair |
| 701 | *Acer* sp. | ornamental maple | 8 | 8 | 10 | Good-Fair |
| 702 | *Acer* sp. | ornamental maple | 8 | 8 | 9 | Good-Fair |
| 703 | *Acer* sp. | ornamental maple | 6 | 6 | 8 | Poor |
| 704 | *Acer* sp. | ornamental maple | 5 | 5 | 7 | Fair |
| 705 | *Pinus* sp. | ornamental pine | 28 | 28 | 7 | Fair |
| 706 | *Calocedrus decurrens* | incense cedar | 10 | 10 | 13 | Good |
| 707 | *Calocedrus decurrens* | incense cedar | 10 | 10 | 10 | Good |
| 708 | *Calocedrus decurrens* | incense cedar | 10 | 10 | 14 | Good |
| 709 | *Calocedrus decurrens* | incense cedar | 7 | 7 | 7 | Good |
| 710 | *Calocedrus decurrens* | incense cedar | 8 | 8 | 8 | Good |
| 711 | *Quercus* sp. | ornamental oak | 4, 4, 4 | 12 | 9 | Good |
| 712 | *Triadica sebifera* | Chinese tallow | 6 | 6 | 12 | Good |
| 713 | *Triadica sebifera* | Chinese tallow | 5 | 5 | 8 | Fair |
| 714 | *Acer* sp. | ornamental maple | 5 | 5 | 5 | Poor |
| 715 | *Populus fremontii* | Fremont cottonwood | 5 | 5 | 7 | Fair |

# APPENDIX A
# TREE SURVEY DATA

| Tree ID[1] | Scientific Name | Common Name | DBH[2] (inches) | Total DBH (inches) | Dripline Radius[3] (feet) | Condition[4] |
|---|---|---|---|---|---|---|
| 716 | *Acer* sp. | ornamental maple | 6 | 6 | 9 | Fair |
| 717 | *Acer* sp. | ornamental maple | 6 | 6 | 10 | Poor |
| 718 | *Acer* sp. | ornamental maple | 7 | 7 | 12 | Poor |
| 719 | *Acer* sp. | ornamental maple | 8 | 8 | 10 | Fair |
| 720 | *Quercus wislizeni* | interior live oak | 11, 10 | 21 | 17 | Good |
| 721 | *Acer* sp. | ornamental maple | 6 | 6 | 9 | Fair-Poor |
| 722 | *Acer* sp. | ornamental maple | 7 | 7 | 8 | Fair-Poor |
| 723 | *Juglans* sp. | walnut | 8, 6 | 14 | 10 | Poor |
| 724 | *Triadica sebifera* | Chinese tallow | 6 | 6 | 10 | Fair |
| 725 | *Quercus lobata* | valley oak | 10, 10 | 20 | 12 | Fair |
| 726 | *Salix lasiolepis* | arroyo willow | 8, 7, 6, 5 | 25 | 15 | Poor |
| 727 | *Prunus* sp. | plum | 6 | 6 | 7 | Fair |
| 728 | *Calocedrus decurrens* | incense cedar | 9 | 9 | 11 | Good-Fair |
| 729 | *Calocedrus decurrens* | incense cedar | 11 | 11 | 8 | Good |
| 730 | *Quercus lobata* | valley oak | 21 | 21 | 30 | Good-Fair |
| 731 | *Calocedrus decurrens* | incense cedar | 9 | 9 | 9 | Good-Fair |
| 732 | *Quercus wislizeni* | interior live oak | 6 | 6 | 7 | Fair |
| 733 | *Quercus lobata* | valley oak | 11, 6 | 18 | 17 | Fair |
| 734 | *Quercus lobata* | valley oak | 13 | 13 | 22 | Fair |
| 735 | *Quercus wislizeni* | interior live oak | 16 | 16 | 32 | Fair |
| 736 | *Quercus wislizeni* | interior live oak | 12 | 12 | 27 | Fair |
| 737 | *Quercus lobata* | valley oak | 4 | 4 | 7 | Fair |
| 738 | *Quercus wislizeni* | interior live oak | 8, 13, 18 | 39 | 33 | Fair |
| 739 | *Quercus lobata* | valley oak | 4 | 4 | 7 | Fair |
| 740 | *Quercus lobata* | valley oak | 11, 12 | 23 | 23 | Fair-Poor |
| 741 | *Quercus lobata* | valley oak | 21 | 21 | 34 | Fair |
| 742 | *Quercus lobata* | valley oak | 11, 6 | 18 | 7 | Good |
| 743 | *Quercus lobata* | valley oak | 24, 16 | 40 | 27 | Good-Fair |
| 744 | *Quercus lobata* | valley oak | 18 | 18 | 28 | Good-Fair |
| 745 | *Quercus wislizeni* | interior live oak | 14, 17 | 31 | 30 | Fair |
| 746 | *Quercus wislizeni* | interior live oak | 12, 14, 11, 14 | 52 | 42 | Good-Fair |
| 747 | *Quercus lobata* | valley oak | 27 | 27 | 45 | Good-Fair |

# APPENDIX A
# TREE SURVEY DATA

| Tree ID[1] | Scientific Name | Common Name | DBH[2] (inches) | Total DBH (inches) | Dripline Radius[3] (feet) | Condition[4] |
|---|---|---|---|---|---|---|
| 748 | *Quercus wislizeni* | interior live oak | 18, 7 | 25 | 31 | Fair |
| 749 | *Quercus wislizeni* | interior live oak | 24 | 24 | 47 | Fair |
| 750 | *Quercus wislizeni* | interior live oak | 27, 19, 26, 9, 9 | 90 | 52 | Good-Fair |
| 751 | *Alnus* sp. | alder | 6, 4 | 10 | 7 | Fair |
| 752 | *Quercus wislizeni* | interior live oak | 6, 4, 5, 6 | 22 | 11 | Good |
| 753 | *Quercus lobata* | valley oak | 38 | 38 | 19 | Fair |
| 754 | *Quercus wislizeni* | interior live oak | 3, 3, 3, 4 | 12 | 9 | Good |
| 755 | *Quercus lobata* | valley oak | 10, 8 | 18 | 15 | Good-Fair |
| 756 | *Quercus wislizeni* | interior live oak | 4, 3, 3, 4 | 13 | 9 | Good |
| 757 | *Quercus lobata* | valley oak | 4 | 4 | 8 | Good |
| 758 | *Quercus lobata* | valley oak | 18 | 18 | 27 | Good |
| 759 | *Quercus lobata* | valley oak | 12, 13 | 25 | 19 | Fair |
| 760 | *Quercus lobata* | valley oak | 6, 5, 9 | 20 | 13 | Fair |
| 761 | *Quercus lobata* | valley oak | 8 | 8 | 17 | Fair |
| 762 | *Quercus lobata* | valley oak | 20 | 20 | 25 | Good |
| 763 | Unknown ornamental | Unknown ornamental | 6 | 6 | 9 | Good |
| 764 | *Quercus lobata* | valley oak | 25 | 25 | 31 | Excellent-Good |
| 765 | *Quercus lobata* | valley oak | 16 | 16 | 23 | Good |
| 766 | *Quercus lobata* | valley oak | 13 | 13 | 18 | Fair |
| 767 | *Quercus wislizeni* | interior live oak | 14 | 14 | 20 | Poor |
| 768 | *Quercus lobata* | valley oak | 10 | 10 | 19 | Fair |
| 769 | *Quercus lobata* | valley oak | 13, 13 | 26 | 18 | Good |
| 770 | *Quercus lobata* | valley oak | 9 | 9 | 9 | Fair |
| 771 | *Quercus wislizeni* | interior live oak | 4, 5, 5, 6, 12, 11, 16 | 59 | 24 | Good |
| 772 | *Aesculus californicus* | California buckeye | 6 | 6 | 21 | Good |
| 773 | *Aesculus californicus* | California buckeye | 8 | 8 | 19 | Good |
| NO TAG 18 | *Quercus lobata* | valley oak | 10 | 10 | 8 | Good-Fair |
| NO TAG 19 | *Quercus lobata* | valley oak | 8 | 8 | 7 | Fair |
| NO TAG 20 | *Quercus lobata* | valley oak | 5 | 5 | 5 | Fair |
| NO TAG 21 | *Quercus lobata* | valley oak | 12 | 12 | 13 | Fair |
| NO TAG 22 | *Quercus lobata* | valley oak | 24 | 24 | 32 | Good |
| 774 | *Quercus lobata* | valley oak | 6, 6, 7, 6, 5, 6 | 36 | 13 | Fair |

# APPENDIX A
# TREE SURVEY DATA

| Tree ID[1] | Scientific Name | Common Name | DBH[2] (inches) | Total DBH (inches) | Dripline Radius[3] (feet) | Condition[4] |
|---|---|---|---|---|---|---|
| 775 | *Quercus lobata* | valley oak | 4, 6 | 10 | 20 | Fair |
| 776 | *Quercus lobata* | valley oak | 6 | 6 | 7 | Fair |
| 777 | *Salix lasiolepis* | arroyo willow | 20 | 20 | 18 | Good |
| 778 | *Triadica sebifera* | Chinese tallow | 10 | 10 | 15 | Good |
| 779 | *Populus fremontii* | Fremont cottonwood | 16 | 16 | 17 | Good |
| NO TAG 23 | *Triadica sebifera* | Chinese tallow | 8, 5, 5 | 18 | 18 | Good |
| NO TAG 24 | *Triadica sebifera* | Chinese tallow | 11 | 11 | 11 | Good |
| 780 | *Quercus lobata* | valley oak | 15, 10, 8 | 32 | 10 | Good |
| 781 | *Triadica sebifera* | Chinese tallow | 13, 6, 5, 5 | 29 | 15 | Good |
| 782 | *Quercus lobata* | valley oak | 11 | 11 | 12 | Fair |
| 783 | *Quercus lobata* | valley oak | 11 | 11 | 23 | Fair |
| 784 | *Quercus lobata* | valley oak | 8 | 8 | 17 | Fair |
| 785 | *Triadica sebifera* | Chinese tallow | 8, 4 | 11 | 20 | Good-Fair |
| 786 | *Quercus wislizeni* | interior live oak | 10 | 10 | 21 | Good |
| 787 | *Quercus lobata* | valley oak | 9, 8 | 17 | 20 | Good |
| 788 | *Triadica sebifera* | Chinese tallow | 8, 9, 9 | 26 | 24 | Good-Fair |
| 789 | *Quercus lobata* | valley oak | 12 | 12 | 16 | Good-Fair |
| 790 | *Quercus wislizeni* | interior live oak | 14 | 14 | 33 | Good |
| 791 | *Quercus wislizeni* | interior live oak | 10 | 10 | 23 | Good |
| 792 | *Quercus lobata* | valley oak | 8 | 8 | 15 | Good |
| 793 | *Juglans* sp. | walnut | 8, 4, 7 | 19 | 21 | Good |
| 794 | *Quercus lobata* | valley oak | 11 | 11 | 16 | Fair |
| 795 | *Quercus wislizeni* | interior live oak | 7, 3 | 10 | 12 | Fair |
| 796 | *Quercus lobata* | valley oak | 11 | 11 | 23 | Good-Fair |
| 797 | *Quercus wislizeni* | interior live oak | 5 | 5 | 7 | Fair |
| 798 | *Quercus wislizeni* | interior live oak | 5 | 5 | 5 | Fair |
| 799 | *Quercus wislizeni* | interior live oak | 11 | 11 | 20 | Good |
| 800 | *Prunus* sp. | plum | 6 | 6 | 17 | Fair |
| 601 | *Quercus wislizeni* | interior live oak | 6 | 6 | 13 | Good-Fair |
| 602 | *Juglans* sp. | walnut | 10 | 10 | 15 | Poor |
| 603 | *Prunus* sp. | plum | 4, 3, 7, 4, 6 | 23 | 14 | Fair |
| 604 | Unknown ornamental | Unknown ornamental | 6 | 6 | 13 | Fair |

# APPENDIX A
# TREE SURVEY DATA

| Tree ID[1] | Scientific Name | Common Name | DBH[2] (inches) | Total DBH (inches) | Dripline Radius[3] (feet) | Condition[4] |
|---|---|---|---|---|---|---|
| 605 | *Quercus* sp. | ornamental oak | 4, 4, 2 | 10 | 8 | Good-Fair |
| 606 | Unknown ornamental | Unknown ornamental | 4, 5, 4, 4, 3 | 18 | 9 | Fair-Poor |
| 607 | *Prunus* sp. | plum | 6 | 6 | 10 | Poor |
| 608 | *Prunus* sp. | plum | 4 | 4 | 8 | Fair-Poor |
| 609 | *Prunus* sp. | plum | 4, 3, 5 | 12 | 7 | Fair-Poor |
| 610 | *Aesculus californicus* | California buckeye | 6, 6, 7, 6, 5, 5, 4, 5, 5, 4, 7, 3, 7, 4 | 75 | 33 | Good |
| 611 | *Quercus lobata* | valley oak | 11 | 11 | 22 | Excellent |
| 612 | *Quercus lobata* | valley oak | 10, 5, 11 | 25 | 23 | Good-Fair |
| 613 | *Quercus wislizeni* | interior live oak | 19 | 19 | 38 | Good |
| 614 | *Quercus wislizeni* | interior live oak | 12, 14 | 26 | 32 | Good-Fair |
| 615 | *Quercus wislizeni* | interior live oak | 8, 3 | 11 | 17 | Fair |
| 616 | *Quercus wislizeni* | interior live oak | 17 | 17 | 26 | Good-Fair |
| 617 | *Quercus wislizeni* | interior live oak | 15, 8, 8 | 31 | 25 | Good-Fair |
| 618 | *Quercus lobata* | valley oak | 10, 10 | 20 | 13 | Good |
| 619 | *Quercus lobata* | valley oak | 18 | 18 | 19 | Fair |
| 620 | *Quercus wislizeni* | interior live oak | 5 | 5 | 8 | Good-Fair |
| 621 | *Prunus* sp. | plum | 14 | 14 | 15 | Fair |
| 622 | *Quercus wislizeni* | interior live oak | 7 | 7 | 8 | Fair |
| 623 | *Quercus wislizeni* | interior live oak | 6 | 6 | 10 | Fair |
| 624 | *Triadica sebifera* | Chinese tallow | 6 | 6 | 13 | Good-Fair |
| 625 | *Prunus* sp. | plum | 5 | 5 | 7 | Fair |
| 626 | *Triadica sebifera* | Chinese tallow | 5 | 5 | 9 | Good-Fair |
| 627 | *Quercus lobata* | valley oak | 15 | 15 | 20 | Good-Fair |
| 628 | *Quercus lobata* | valley oak | 14 | 14 | 21 | Good-Fair |
| 629 | *Triadica sebifera* | Chinese tallow | 6 | 6 | 6 | Fair |
| 630 | *Triadica sebifera* | Chinese tallow | 8 | 8 | 8 | Fair |
| 631 | *Triadica sebifera* | Chinese tallow | 10, 3, 5 | 18 | 18 | Good-Fair |
| 632 | *Quercus lobata* | valley oak | 20, 7 | 26 | 24 | Fair |
| 633 | *Triadica sebifera* | Chinese tallow | 6 | 6 | 12 | Fair |
| 634 | *Prunus* sp. | plum | 8 | 8 | 13 | Fair |
| 635 | *Quercus lobata* | valley oak | 6 | 6 | 15 | Fair |
| 636 | *Quercus lobata* | valley oak | 8 | 8 | 17 | Good |

# APPENDIX A
# TREE SURVEY DATA

| Tree ID[1] | Scientific Name | Common Name | DBH[2] (inches) | Total DBH (inches) | Dripline Radius[3] (feet) | Condition[4] |
|---|---|---|---|---|---|---|
| 637 | *Prunus* sp. | plum | 6, 8 | 14 | 10 | Fair |
| 638 | *Quercus wislizeni* | interior live oak | 6 | 6 | 7 | Fair-Poor |
| 639 | *Quercus lobata* | valley oak | 7 | 7 | 8 | Fair |
| 640 | *Prunus* sp. | plum | 14 | 14 | 19 | Fair |
| 641 | *Prunus* sp. | plum | 10 | 10 | 13 | Fair |
| 642 | *Triadica sebifera* | Chinese tallow | 6, 11 | 17 | 14 | Fair |
| 643 | *Quercus lobata* | valley oak | 16 | 16 | 22 | Fair-Poor |
| 644 | *Triadica sebifera* | Chinese tallow | 11, 5 | 16 | 17 | Fair |
| 645 | *Triadica sebifera* | Chinese tallow | 11 | 11 | 12 | Fair |
| 646 | *Triadica sebifera* | Chinese tallow | 10 | 10 | 15 | Fair |
| 647 | *Triadica sebifera* | Chinese tallow | 7 | 7 | 17 | Good-Fair |
| 648 | *Quercus wislizeni* | interior live oak | 10, 7 | 16 | 18 | Fair |
| 649 | Unknown ornamental | Unknown ornamental | 4, 2 | 6 | 11 | Fair |
| 650 | *Quercus lobata* | valley oak | 11 | 11 | 15 | Good-Fair |
| 651 | *Prunus* sp. | plum | 5 | 5 | 7 | Fair-Poor |
| 652 | *Quercus lobata* | valley oak | 15, 11 | 26 | 28 | Good |
| 653 | *Quercus lobata* | valley oak | 13 | 13 | 22 | Good-Fair |
| 654 | *Quercus lobata* | valley oak | 6 | 6 | 8 | Fair |
| 655 | *Quercus lobata* | valley oak | 8 | 8 | 14 | Fair |
| 656 | *Quercus lobata* | valley oak | 11 | 11 | 10 | Fair |
| 657 | *Quercus lobata* | valley oak | 5 | 5 | 7 | Fair |
| 658 | *Quercus lobata* | valley oak | 5 | 5 | 5 | Fair |
| 659 | *Quercus lobata* | valley oak | 11 | 11 | 12 | Fair |
| 660 | *Quercus lobata* | valley oak | 9 | 9 | 11 | Fair |
| 661 | *Quercus lobata* | valley oak | 10 | 10 | 7 | Fair |
| 662 | *Quercus lobata* | valley oak | 10, 5 | 15 | 15 | Fair |
| 663 | *Quercus wislizeni* | interior live oak | 9 | 9 | 12 | Fair |
| NO TAG 25 | *Quercus wislizeni* | interior live oak | 10, 14, 5 | 29 | 21 | Fair |
| 664 | *Quercus lobata* | valley oak | 10 | 10 | 15 | Fair |
| 665 | *Triadica sebifera* | Chinese tallow | 4, 7 | 11 | 23 | Fair |
| NO TAG 26 | *Quercus lobata* | valley oak | 12, 10 | 22 | 21 | Fair |
| 666 | *Quercus wislizeni* | interior live oak | 15, 11 | 26 | 25 | Fair-Poor |

# APPENDIX A
# TREE SURVEY DATA

| Tree ID[1] | Scientific Name | Common Name | DBH[2] (inches) | Total DBH (inches) | Dripline Radius[3] (feet) | Condition[4] |
|---|---|---|---|---|---|---|
| 667 | *Quercus wislizeni* | interior live oak | 12 | 12 | 29 | Fair-Good |
| 668 | *Quercus wislizeni* | interior live oak | 25 | 25 | 21 | Fair |
| 669 | *Quercus wislizeni* | interior live oak | 6, 9, 7, 9, 6 | 36 | 20 | Good |
| 670 | *Quercus wislizeni* | interior live oak | 16, 14 | 30 | 26 | Good-Fair |

NOTES:

1 Tree IDs beginning with “NO TAG” were not tagged with a metal ID tag in the field due to inaccessibility.

2 DBH (diameter at breast height), the diameter of a tree measured at 4.5 feet above ground level on the high side of the tree, unless otherwise noted. Trees with multiple trunks and DBH measurements are separated by a comma).

3 Measured at the largest radius of the dripline of a tree.

4 General health of the tree including root collar, trunk, limbs, foliage, structure, and general vigor.

SOURCE: ESA 2017

# APPENDIX G

# UAIC TRIBAL SCHOOL PROJECT

## Aquatic Resources Delineation Report

Prepared for
United Auburn Indian Community (UAIC)

April 2017

ESA

# UAIC TRIBAL SCHOOL PROJECT

## Aquatic Resources Delineation Report

Prepared for
United Auburn Indian Community (UAIC)

April 2017

2600 Capitol Avenue
Suite 200
Sacramento, CA 95816
916.564.4500
www.esassoc.com

| | |
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# CHAPTER 1
# Introduction

This report has been prepared to document the results and conclusions of an aquatic resources delineation field survey conducted for the United Auburn Indian Community (UAIC) Tribal School (Project) study area in March 2017. The study area includes approximately 42.8 acres of land located in an unincorporated area of Placer County, California (**Figures 1** through **3**), adjacent to the Town of Loomis. On behalf of the UAIC, Environmental Science Associates (ESA) investigated the extent of potentially jurisdictional wetlands and other waters of the United States (U.S.) subject to regulation under Section 404 of the Clean Water Act (CWA).

The study concludes that there are 1.311 acres of potentially jurisdictional waters of the U.S in the study area. These include:

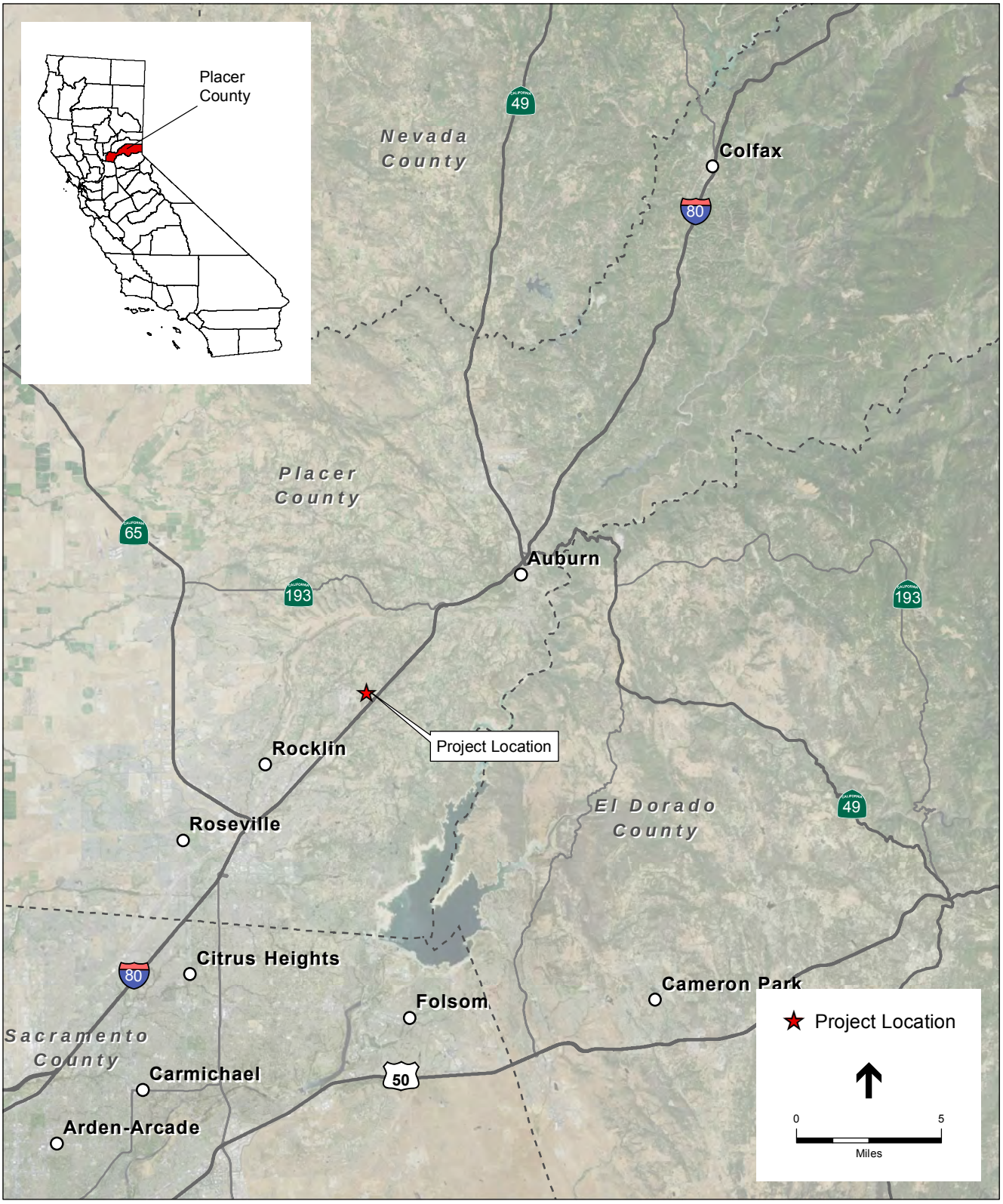
- 0.061 acre of seasonal wetland;
- 0.173 acre of ephemeral drainage; and
- 1.077 acres of pond.

This report documents the wetland and other waters of the U.S. boundary delineation using field data and the best professional judgment of ESA investigators. All conclusions presented should be considered preliminary and subject to change pending official review and verification in writing by the U.S. Army Corps of Engineers (USACE).

## 1.1 Responsible Parties

The property owner and applicant is:

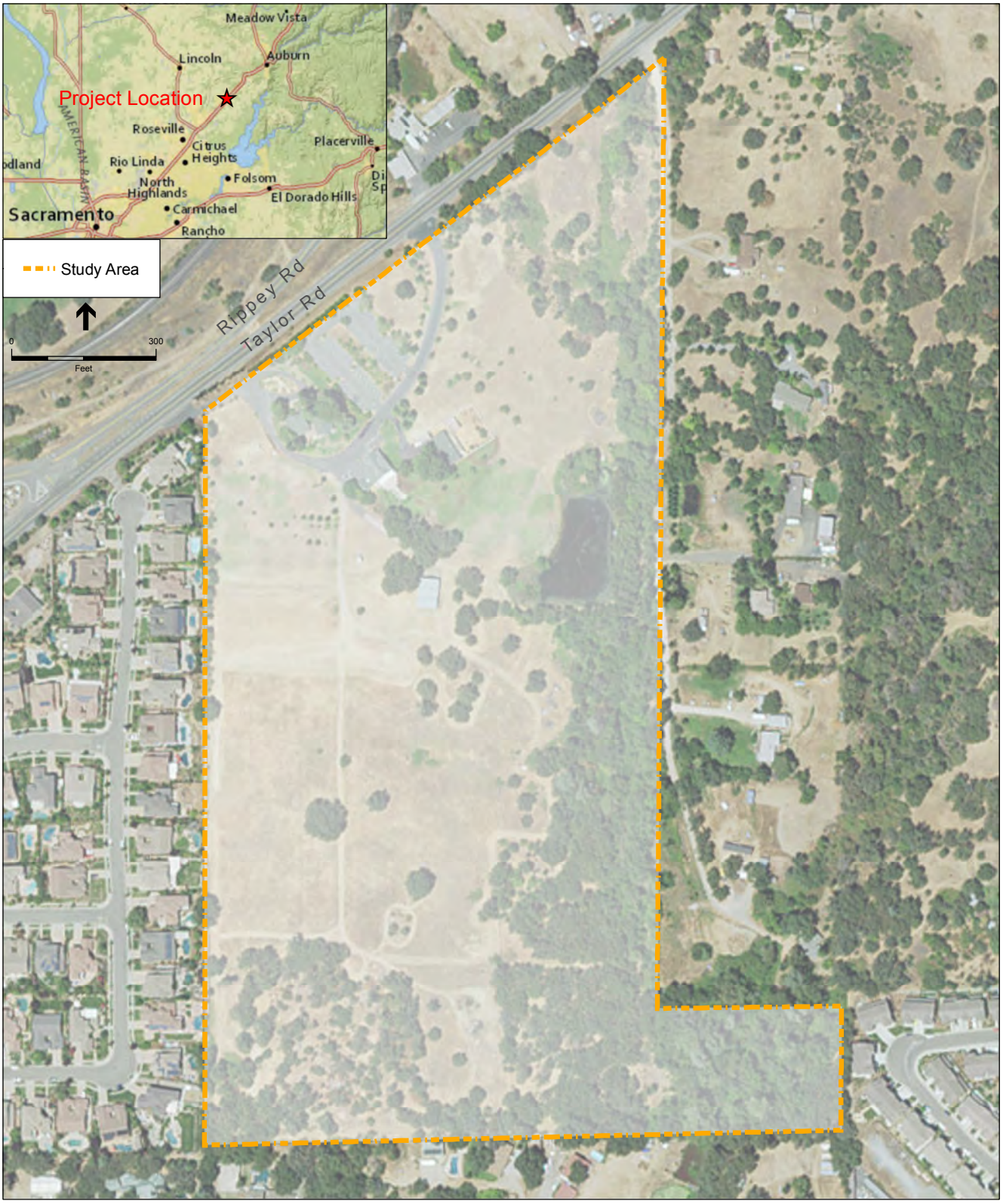
Brian Guth, Interim Tribal Administrator
United Auburn Indian Community
10720 Indian Hill Road
Auburn, CA 95603
(530) 883-2375
bguth@auburnrancheria.com




SOURCE: NAIP, 2014; ESRI, 2012; ESA, 2016

UAIC Tribal School . 150225

**Figure 1**
Project Location

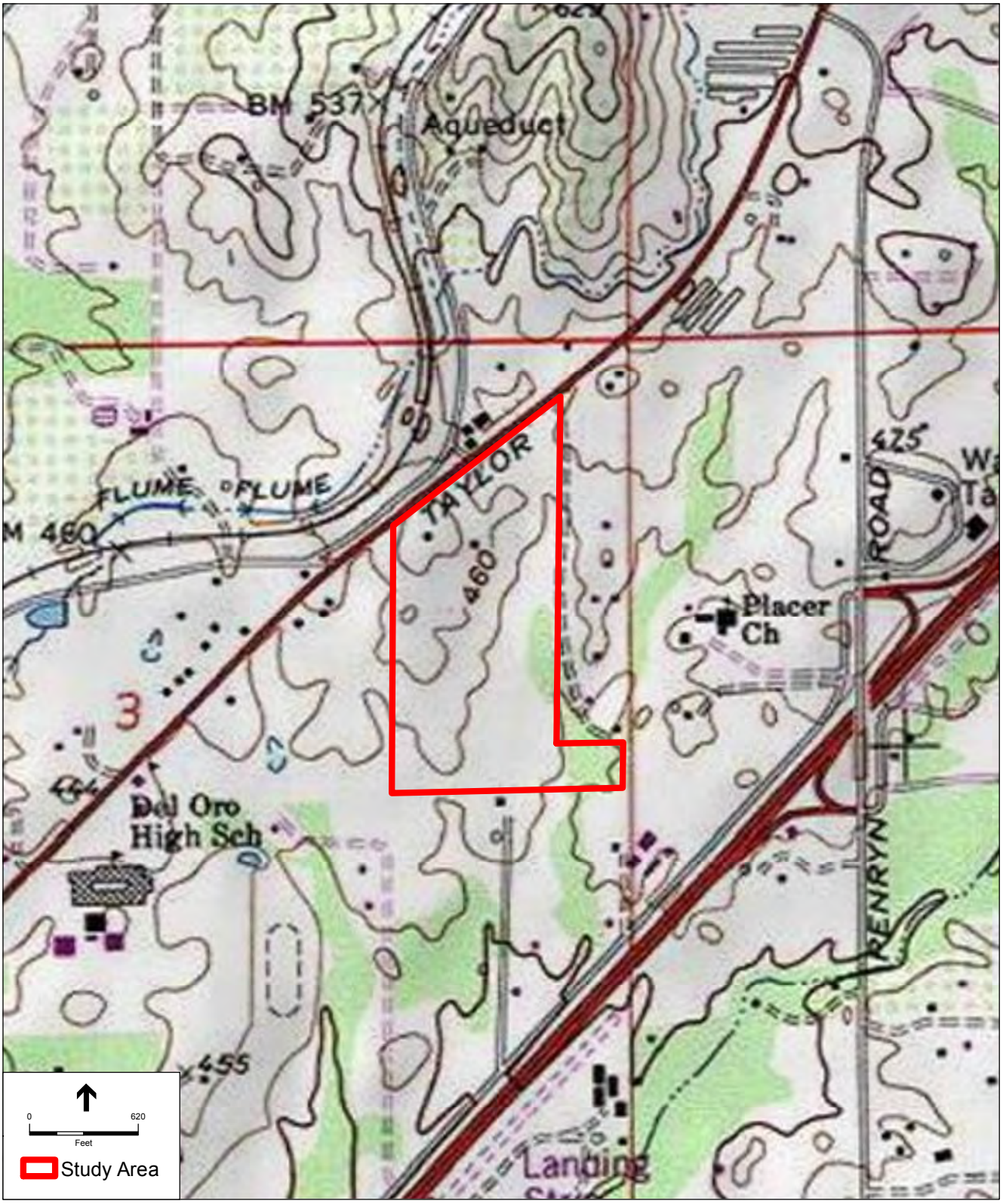



SOURCE: ESA, 2016

UAIC Tribal School . 150225

**Figure 2**

Study Area




SOURCE: USGS

UAIC Tribal School . 150225

**Figure 3**

Study Area

Rocklin Quadrangle Topographic Map: Township 11N; Range 07E; Sections 3

The point of contact for regulatory permitting is:

Joshua Boldt, Senior Technical Associate
Environmental Science Associates
2600 Capitol Avenue, Suite 200
Sacramento, CA 95816
(916) 564-4500
jboldt@esassoc.com

## 1.2 Directions to Site

Directions to the site from Sacramento:

- Take I-80 E
- Take exit 112 for Penryn Road
- Turn left onto Penryn Road
- Turn left onto Taylor Road for 0.6 miles. Arrive at 3141 Taylor Road.

## 1.3 Purpose

The purpose of this investigation is to describe and delineate all potential wetlands and other waters of the U.S. within the study area that may be subject to Section 404 of the Clean Water Act. Information from this report may be used in preparing permit applications for future actions proposed in the study area. This report is intended to be reviewed by the USACE to verify their jurisdiction over wetlands and other waters of the U.S. in the study area.

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# CHAPTER 2
# Setting

## 2.1 Study Area

As described above, the study area is located in an unincorporated area of Placer County, California, adjacent to the Town of Loomis. The study area's Assessor Parcel Number (APN) is 043-013-010, and it is located south of Taylor Road, west of Tumble Lane, north of Interstate 80, and east of Orchard Park Court. This location corresponds to Section 3 of Township 11 North, Range 7 East of the Rocklin, California U.S. Geological Survey (USGS) 7.5-minute series quadrangle. The approximate centroid of the study area is 38º 50' 06.17" North, 121º 10' 34.81" West. The study area is approximately 42.8 acres in size.

The study area lies just beyond the easternmost reach of the Great Valley and is located within the lowest elevations of the Sierra Nevada Foothills. Regional natural plant communities surrounding the study area include those that are prevalent to the lower Sierra Nevada Foothills such as mixed oak/foothill pine woodlands and annual grasslands. Elevations with the study area range from 420 feet in the southeast to 495 feet in the northwest. The climate is temperate with mean annual precipitation of 34.39 inches and mean annual temperatures ranging from a high of 72.4 to a low of 48.3 degrees Fahrenheit (Western Regional Climate Center, 2017). The wetland delineation was conducted within the study area by ESA biologist Joshua Boldt on March 9, 2017. According to the National Weather Service, daily temperatures for that date ranged from a low of 46 to a high of 74 degrees Fahrenheit. 0.16 inches of rain had fallen in the Sacramento area the previous seven days. The most recent significant rainfall event in the area prior to the site visit occurred on February 20, 2017, when 1.69 inches of rain fell (National Weather Service, 2017).

Land use immediately surrounding the study area is characterized by low to medium density residential. The northern portion of the study area is developed with various buildings, parking areas, and roads. The property appears to have first been developed in 1906 as a home and orchard. By 1966 the orchard was mostly gone and the property was primarily undeveloped land. By 1984, the current buildings on the property, as well as the large pond, were developed. The property was used as a bed and breakfast until 2008. A dirt road allows access to the southern portion of the study area. Topography throughout the study area is gently sloped, with drainage generally flowing to the south and east.

## 2.2 Soils

The *Custom Soil Resource Report for Placer County, California, Western Part* (NRCS, 2017a; included as **Appendix A**) and the soil map for the study area (**Figure 4**) shows two soil units

occurring within the study area (**Table 1**). Both of the soil units present within the study area are listed on the national hydric soils list for Placer County, California (NRCS, 2017b). A brief description of each soil unit is provided below.

- **Andregg Coarse Sandy Loam, 2 to 9 percent slopes.** This soil unit occurs on hills with parent material comprised of residuum weathered from granite. This is a well-drained soil with a low available water storage comprised of about 3.5 inches. The typical profile is comprised of coarse sandy loam from 0 to 29 inches and weathered bedrock from 29 to 33 inches. The hydric soils list for Placer County identifies an unnamed component found in drainageways of this soil type as hydric (NRCS, 2017b).
- **Xerothents, Placer Areas.** This soil unit has a parent material comprised of mine spoil or earthy fill. This is a well-drained soil with a low available water storage comprised of about 3.5 inches. The typical profile is variable from 0 to 60 inches. The hydric soils list for Placer County identifies an unnamed component found in drainageways of this soil type as hydric (NRCS, 2017b).

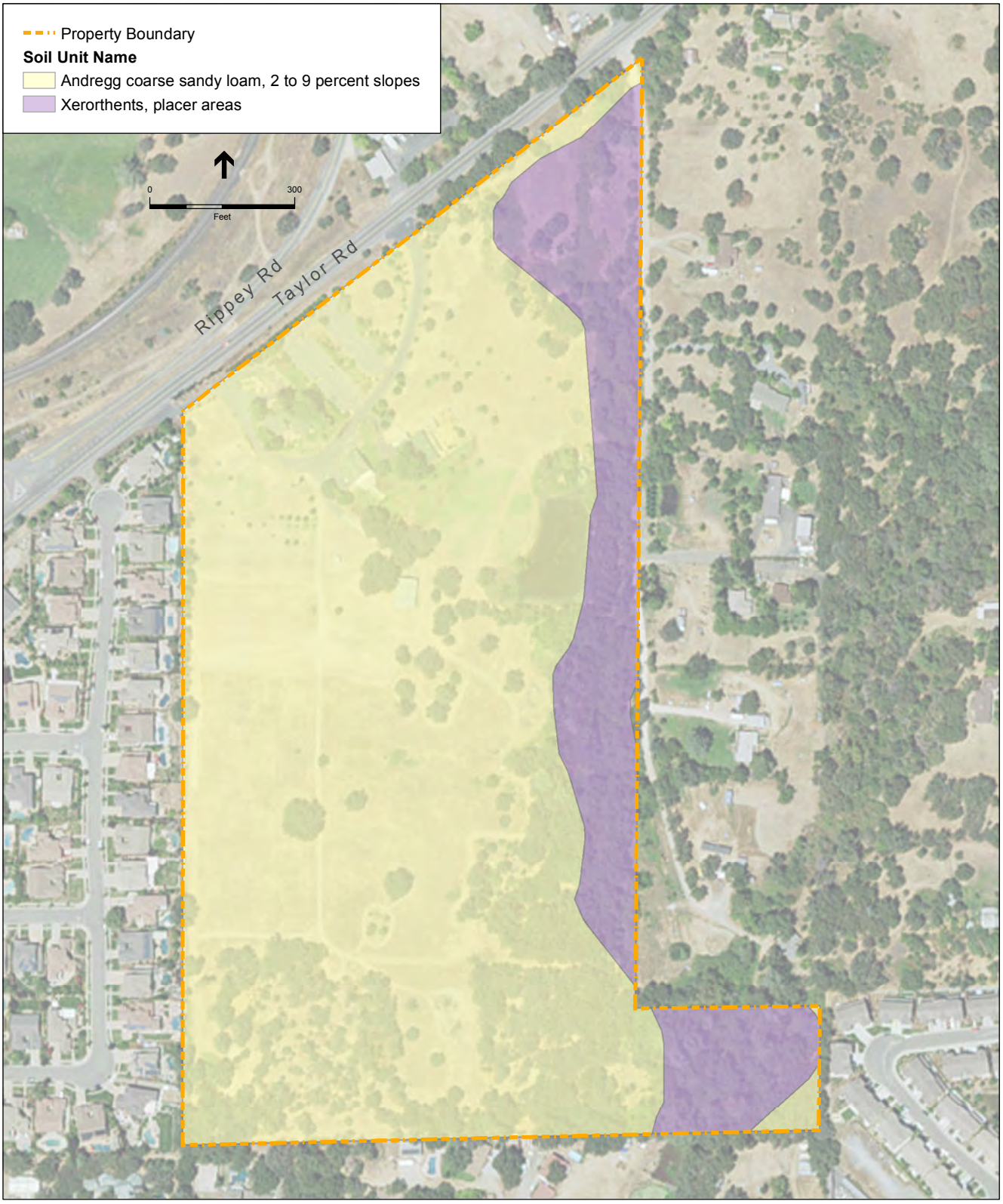
**TABLE 1.**
**STUDY AREA SOIL UNITS**

| Soil Map Unit Name | Hydric Status | Landforms |
|---|---|---|
| 106: Anderson coarse sandy loam, 2 to 9 percent slopes | Non-hydric component with hydric inclusions | Drainageways |
| 197: Xerothents, placer areas | Non-hydric component with hydric inclusions | Drainageways |

SOURCE: NRCS, 2017a,b

## 2.3 Hydrology

Topography throughout the study area is gently sloped, generally draining south and east. A large pond is located along the eastern boundary of the site, and a smaller pond is found in the southeast corner of the study area. Both of these ponds appear to be man-made. Drainage of the study area occurs through surface channels, surface sheet flow, and percolation. Irrigation water from adjacent properties to the west drain to the southwestern portion of the study area, and then drains to a closed depressional area on private property south of the study area, where surface flows likely infiltrate into the ground. The northern and eastern part of the study area receives flows from parcels north of the study area, which eventually drains south and east to an unnamed channel that flows parallel to the eastern boundary of the study area. Eventually this unnamed channel flows south under Interstate 80 to Secret Ravine Creek, a perennial channel, approximately 0.4 mile south of the study area. Secret Ravine Creek flows southwest to Dry Creek, which eventually drains to the Natomas East Main Drainage Canal. This canal drains to the Sacramento River just north of its confluence with the American River near downtown Sacramento. The Sacramento River is considered a traditional navigable water of the United States (TNW) from its mouth to Keswick Dam north of Redding. Potentially jurisdictional features in the study area have a surface hydrological connection to the Sacramento River.




SOURCE: NRCS, 2016; ESA, 2016

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**Figure 4**

Soil Types

## 2.4 Vegetation/Habitat Types

Vegetation communities are assemblages of plant species that occur together in the same area and are defined by species composition and relative abundance. The vegetation community classification presented herein is based on field observations and the Placer County Wildlife Habitat Relationships Classification of Habitat and Land Cover Types in the Phase I Natural Conservation Plan/Habitat Conservation Plan Planning Areas (Placer County Planning Department, 2004). The following habitat types occur within the study area: annual grassland, interior live oak, valley foothill riparian, urban, lacustrine, seasonal wetland, riverine, and drainage ditch.

### *Annual Grassland*

Annual grassland is the largest habitat type within the study area. Dominant vegetation within this habitat type includes slender wild oat (*Avena barbata*), soft chess (*Bromus hordaceous*), ripgut grass (*Bromus. diandrus*), barleys (*Hordeum* spp.), rat-tail fescue (*Festuca myuros*), soap plant (*Chlorogalum pomeridium* var. *pomeridium*), winter vetch (*Vicia villosa*), and broadleaf filaree (*Erodium botrys*). Isolated interior live oak (*Quercus wislizeni*), valley oak (*Quercus lobata*), and ornamental landscape trees occur within the annual grassland.

### *Interior Live Oak*

Interior live oak occurs within the northeastern and southern portions of the study area. The dominant species in the overstory is interior live oak, with valley oak, blue oak (*Quercus douglasii*), and California buckeye (*Aesculus californicus*) interspersed throughout. Dominant understory vegetation includes Himalayan blackberry (*Rubus armeniacus*), western poison oak (*Toxicodendron diversilobum*), soft chess, rip-gut brome, and wild oat.

### *Valley Foothill Riparian*

Valley foothill riparian occurs in association with an ephemeral channel in the eastern portion of the study area. Dominant overstory vegetation includes Fremont cottonwood (*Populus fremontii* subsp. *fremontii*), willow (*Salix* sp.), and big-leaf maple (*Acer macrophyllum*). Dominant understory vegetation includes Himalayan blackberry, western poison oak, California wild grape (*Vitis californica*), and annual grasses.

### *Urban*

Urban areas occur within the northwestern portion of the study area. Urban areas include a residential dwelling and associated outbuilding, graded driveways, and ornamental landscaping. Ornamental landscape trees include coast redwood (*Sequoia sempervirens*), ornamental cedar (*Cedrus* sp.), white mulberry (*Morus alba*), citrus (*Citrus* sp.), and plum (*Pyrus* sp.).

### *Lacustrine*

Lacustrine ponds occur within two areas of the study area: along the eastern boundary and in the southeast corner. Dominant vegetation within the lacustrine ponds includes broadleaf cattail

(*Typha latifolia*), duckweed (*Lemna* sp.) and Himalayan blackberry. Dominant vegetation along the banks of the lacustrine ponds includes those identified under the valley foothill riparian habitat type.

### *Seasonal Wetland*

Seasonal wetlands are freshwater wetlands that support ponded or saturated soil conditions during winter and spring and are mostly dry through the summer and fall. Vegetation is characterized by both annual and perennial species including native and non-native grasses and forbs. Plant species found within seasonal wetlands are adapted to withstand short periods of inundation. Seasonal wetland plants typically initiate growth as aquatic or semi-aquatic plants and transition to a dry-land environment as the wetland dries. Seasonal wetlands are colonized by low-growing, hardy perennials that tolerate disturbance and annuals that tolerate seasonal soil saturation. Upland grasses and forbs often establish after wetland species desiccate and features become dry. Within the study area, five small seasonal wetlands occur in topographic micro-depressions in the southern section of the study area, surrounded by non-native annual grasslands or interior live oak woodland. Associated wetland plant species identified within these features include Italian rye grass (*Festuca perennis*), Lemmon's canary grass (*Phalaris lemmonii*), iris leaved rush (*Juncus xiphioides*), umbrella sedge (*Cyperus eragrostis*), curly dock (*Rumex crispus*), miner's lettuce (*Claytonia perfoliata* subsp. *perfoliata*), and spiny-fruit buttercup (*Ranunculus muricatus*).

### *Riverine*

Riverine drainages occur in the eastern portion of the study area. Dominant vegetation along the banks of the riverine drainages includes those identified within the valley foothill riparian or interior live oak habitat types.

### *Drainage Ditch/Drainage Swale*

Two small man-made drainage ditches occur in the southwestern corner of the study area. These ditches drain adjacent residential properties. The upper ditch eventually flows to a seasonal wetland, and the lower ditch flows out of the seasonal wetland to a culvert along the southern boundary of the study area. This culvert drains south off the site to a closed depressional area on private property south of the study area, where surface flows likely infiltrate into the ground. These ditches are unvegetated and dirt lined. An additional drainage swale occurs within the urban area and drains the parking lot and roadways. This drainage swale is a manmade cobble-lined feature that lacks vegetation.

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# CHAPTER 3
# Methodology

## 3.1 Regulatory Setting

The federal government defines "Waters of the United States" in 33 CFR (Code of Federal Regulations) 328.3 as:

1. All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
2. All interstate waters including interstate wetlands;
3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:
    a. Which are or could be used by interstate or foreign travelers for recreational or other purposes; or
    b. From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
    c. Which are used or could be used for industrial purpose by industries in interstate commerce;
4. All impoundments of waters otherwise defined as waters of the United States under the definition;
5. Tributaries of the above waters;
6. The territorial seas;
7. Wetlands adjacent to the above waters (other than waters that are themselves wetlands). Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 CFR 123.11(m) which also meet the criteria of this definition) are not waters of the United States.
8. Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the CWA, the final authority regarding CWA jurisdiction remains with the U.S. Environmental Protection Agency (EPA).

The term "wetlands" means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Under normal

circumstances, the definition of wetlands requires three wetland identification parameters be present: wetland hydrology, hydric soils, and hydrophytic vegetation. Examples of wetlands may include freshwater marsh, seasonal wetlands, and vernal pool complexes that are adjacent to perennial waters of the U.S.

"Other waters of the U.S." refers to those hydric features that are regulated by the CWA but are not wetlands (33 CFR 328.4). To be considered jurisdictional, these features must exhibit a defined bed and bank and an ordinary high water mark. The term "ordinary high water mark" refers to that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. Examples of other waters of the U.S. may include rivers, creeks, ponds, and lakes.

In January 2001, the U.S. Supreme Court issued a decision in the case of the *Solid Waste Agency of Northern Cook County (SWANCC) v. U.S. Army Corps of Engineers* that altered the USACE regulatory authority over wetlands that are isolated from navigable waters.[1] On June 5, 2007, the EPA and the USACE released guidance on the definitions of jurisdictional waters of the U.S. in response to *Rapanos v. United States* and *Carabell v. United States*. According to this guidance the USACE and the EPA will take jurisdiction over the following waters:

1. Traditional navigable waters, which is defined as all waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
2. Wetlands adjacent to traditional navigable waters; including adjacent wetlands that do not have a continuous surface connection to traditional navigable waters;
3. Non-navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-round or have continuous flow at least seasonally (e.g., typically three months);
4. Wetlands adjacent to non-navigable tributaries as defined above; that have a continuous surface connection to such tributaries (e.g. they are not separated by uplands, a berm, dike, or similar feature).

The EPA and the USACE decide jurisdiction over the following waters, based on a fact-specific analysis to determine if there is a significant nexus, as defined below, to a traditional navigable water (TNW):

1. Non-navigable tributaries that are not relatively permanent;

[1] Since the SWANCC decision, waters covered solely by this definition by virtue of their use as habitat by migratory birds are no longer considered "waters of the U.S." The Supreme Court's opinion did not specifically address what other connections with interstate commerce might support the assertion of CWA jurisdiction over "nonnavigable, isolated, intrastate waters" under this definition, and USACE is recommending case-by-case consideration. A factor that may be relevant to this consideration includes, but is not limited to, the following: Jurisdiction of isolated, intrastate, and nonnavigable waters may be possible if their use, degradation, or destruction could affect other "waters of the U.S.," thus establishing a significant nexus between the water in question and other "waters of the U.S." (USACE and EPA, 2001).

2. Wetlands adjacent to non-navigable tributaries that are not relatively permanent;
3. Wetlands adjacent to but that do not directly abut a relatively permanent non-navigable tributary.

The EPA and the USACE generally do not assert jurisdiction over the following features:

1. Swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent, or short duration flow);
2. Ditches (including roadside ditches) excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water.

The EPA and the USACE have defined the significant nexus standard as follows:

1. A significant nexus analysis assesses the flow characteristics and functions of the tributary itself and the functions performed by all wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of downstream traditional navigable waters;
2. Significant nexus includes consideration of hydrologic and ecologic factors including:
    a. Volume, duration, and frequency of flow, including consideration of certain physical characteristics of the tributary,
    b. Proximity to the traditional navigable water,
    c. Size of the watershed,
    d. Average annual rainfall,
    e. Average annual winter snow pack,
    f. Potential of tributaries to carry pollutants and flood waters to traditional navigable waters,
    g. Provision of aquatic habitat that supports a traditional navigable water,
    h. Potential of wetlands to trap and filter pollutants or store flood waters, and
    i. Maintenance of water quality in traditional navigable waters.

The USACE and EPA provided further clarification on the definitions of jurisdictional waters of the U.S. in response to *Rapanos* in the *U.S. Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook* (USACE and EPA, 2007). This guidance states that:

- Certain geographical features (e.g., ditches, canals) that transport relatively permanent (continuous at least seasonal) flow directly into TNWs or between two (or more) waters of the U.S., including wetlands, are jurisdictional waters under the CWA.
- Certain geographical features (e.g., swales, ditches, pipes) may contribute to a surface hydrologic connection where the features:
    – replace or relocate a water of the U.S., or
    – connect a water of the U.S. to another water of the U.S., or
    – provide relatively permanent flow to a water of the U.S.

The scope of waters of the U.S. does not include all waters. EPA and the USACE previously have described in preambles to CWA regulations waters that the agencies generally do not consider to be waters of the U.S. The categories of waters generally not waters of the U.S. include:

- Wet areas that are not tributaries or open waters and do not meet the regulatory definition of wetlands.
- Waterbodies excluded from coverage under the CWA by existing regulations.
- Waters that lack a significant nexus when one is required for jurisdiction.
- Artificially irrigated areas which would revert to upland if the irrigation ceased.
- Artificial lakes and ponds created by excavating and/or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing.
- Artificial reflecting pools or swimming pools excavated in uplands.
- Small ornamental bodies of water created by excavating and/or diking dry land to retain water primarily for aesthetic reasons.
- Water-filled depressions created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand, or gravel, unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the U.S.
- Groundwater drained through subsurface drainage systems.
- Erosional features (gullies and rills), and swales and ditches that are not tributaries or wetlands.

## 3.2 Pre-field Review

Prior to conducting the field investigation, the following background tasks were performed:

- Review of Rocklin, California USGS 7.5-minute topographic quadrangle map;
- Review of color aerial photography for vegetative, topographic, and hydrographic signatures;
- Review of the *Custom Soil Resource Report for Placer County, California, Western Part* (NRCS, 2017a), for information about soils and geomorphology;
- Review of the National Hydric Soils List for Placer County, California (NRCS, 2017b) to determine if any soils mapped within the study area are considered hydric at the level of soil series; and
- Review of the National Wetlands Inventory (U.S Fish and Wildlife Service [USFWS], 2017)

## 3.3 Field Survey Methods

The wetland delineation was conducted within the study area by ESA biologist Joshua Boldt on March 9, 2017. The delineation used the “Routine Determination Method” as described in the

*1987 Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory, 1987), hereafter called the "1987 Manual." The 1987 Manual was used in conjunction with the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (USACE, 2008), hereafter called the "Arid West Supplement." For areas where the 1987 Manual and the Arid West Supplement differ, the Arid West Supplement was followed.

Three positive parameters must normally be present for an area to be considered a wetland: 1) a dominance of wetland vegetation, 2) presence of hydric soils, and 3) presence of wetland hydrology. Presence or absence of positive indicators for wetland vegetation, soils, and hydrology was assessed per the 1987 Manual and Arid West Supplement guidelines. Data points were taken within suspected wetland and a paired point taken (where acceptable) in nearby uplands. Data points were recorded on Arid West wetland delineation forms, which are provided as **Appendix B**.

At each data point, a visual assessment of the dominant plant species within a 6-foot radius was made. Dominant species were assessed using the recommended "50/20" rule per the Arid West Supplement. Plants were identified to species using *The Jepson Manual: Vascular Plants of California, second edition* (Baldwin et al., 2012). The *Arid West 2016 Regional Wetland Plant List* (Lichvar et al., 2016) was used to determine the wetland indicator status of all plants. A list of plant species observed in the study area is provided in **Appendix C**. Soils at each data point were characterized by color, texture, organic matter accumulation, and the presence or absence of hydric soil indicators. Color was described using Munsell soil color charts (Kollmorgen Instruments Corporation, 1990). Presence of wetland hydrology was determined as each data point by presence of one or more of the primary and/or secondary indicators, per guidance of the Arid West Supplement.

## 3.4 Mapping and Acreage Calculations

All features, including sample points, wetland boundaries, and channel courses were recorded using a Global Positioning System (GPS) unit (Trimble GeoXT) with real-time differential correction and an instrument-rated mapping accuracy of +/- 1 meter. Boundaries of wetlands were demarcated in the field using GPS by walking the margin of the wetland and taking points at set intervals.

In the office, data from sample points and wetland boundaries were downloaded from the GPS unit and mapped using GIS software on an overlay of both topography and geo-referenced aerial photography. GPS-determined wetland boundaries and data points were visually confirmed. Acreage of wetland and waters of the U.S. polygons, and the length of linear features were determined using ArcGIS.

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# CHAPTER 4
# Results

## 4.1 Results

The wetland delineation identified 1.311 acres of potentially jurisdictional wetlands within the 42.8-acre study area that are expected to be subject to regulation under Section 404 of the CWA. Aquatic community and habitat were classified using the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al., 1979). Details of the potentially jurisdictional aquatic resources within the study area are presented in **Table 2** and described below. **Figure 5** shows the location and extent of the potentially jurisdictional features within the study area. The Aquatic Resources Spreadsheet is provided in **Appendix D**. Study area photographs are provided in **Appendix E**.

**TABLE 2.**
**POTENTIALLY JURISDICTIONAL WETLANDS AND OTHER WATERS OF THE U.S.**

| Map ID | Water Type – Cowardin Classification | Total Acres |
|---|---|---|
| Wetlands | | |
| SW-2 | Seasonal Wetland – Palustrine Emergent Wetland (Seasonally Flooded) | 0.040 |
| SW-3 | Seasonal Wetland – Palustrine Emergent Wetland (Seasonally Flooded) | 0.005 |
| SW-4 | Seasonal Wetland – Palustrine Emergent Wetland (Seasonally Flooded) | 0.002 |
| SW-5 | Seasonal Wetland – Palustrine Emergent Wetland (Seasonally Flooded) | 0.014 |
| | **Wetland Subtotal:** | **0.061** |
| Other Waters of the U.S. | | |
| ED-1 | Ephemeral Drainage – Riverine Intermittent | 0.012 |
| ED-2 | Ephemeral Drainage – Riverine Intermittent | 0.005 |
| ED-3 | Ephemeral Drainage – Riverine Intermittent | 0.009 |
| ED-4 | Ephemeral Drainage – Riverine Intermittent | 0.099 |
| ED-5 | Ephemeral Drainage – Riverine Intermittent | 0.031 |
| ED-6 | Ephemeral Drainage – Riverine Intermittent | 0.017 |
| Pond 1 | Pond – Lacustrine Limnetic | 0.973 |
| Pond 2 | Pond – Lacustrine Limnetic | 0.104 |
| | **Other Waters Subtotal:** | **1.250** |
| | **Total Area of Jurisdictional Features:** | **1.311** |

SOURCE: ESA, 2017

### 4.1.1 Potentially Jurisdictional Features

#### Seasonal Wetland/Palustrine Emergent Wetland (Seasonally Flooded)

Based upon observations or inferences of wetland hydrology, soils, and vegetation, four seasonal wetlands were noted onsite in the southern portion of the study area totaling approximately 0.061 acre. Seasonal wetlands are ephemeral wetlands that pond water or remain saturated for extended periods during a portion of the year, often throughout the wet season, then dry up in spring or early summer. The seasonal wetlands within the study area are classified as "palustrine emergent wetland (seasonally flooded)" using the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al., 1979). Within the study area, seasonal wetlands are characterized by sample points DP-8 and DP-11, and the adjacent upland areas are represented by DP-09 and DP-12 (**Photos 1, 2, 17** and **18** of Appendix E). Common plant species observed include the following: Italian rye grass (*Festuca perennis*, FAC),[2] spiny-fruit buttercup (*Ranunculus muricatus*, FACW),[3] iris leaved rush (*Juncus xiphioides*, OBL),[4] Lemmon's canary grass (*Phalaris lemmonii*, FACW), umbrella sedge (*Cyperus eragrostis*, FACW), miner's lettuce (*Claytonia perfoliata* subsp. *Perfoliata*, FAC), and curly dock (*Rumex crispus*, FAC). Vegetation in these features was weakly to strongly hydrophytic. At the time of the survey, many upland annual grasses and weeds were beginning to become established along the periphery of the features. The seasonal wetlands are likely hydrologically connected to the Sacramento River (a TNW) through surface flows. There was surface water present in all four seasonal wetlands at the time of the delineation. SW-2 (DP-8) and SW-5 (DP-11) showed evidence of hydric soil characteristics in the form of hydric soil indicator F8: Redox Depressions.

#### Ephemeral Drainage/Riverine Intermittent

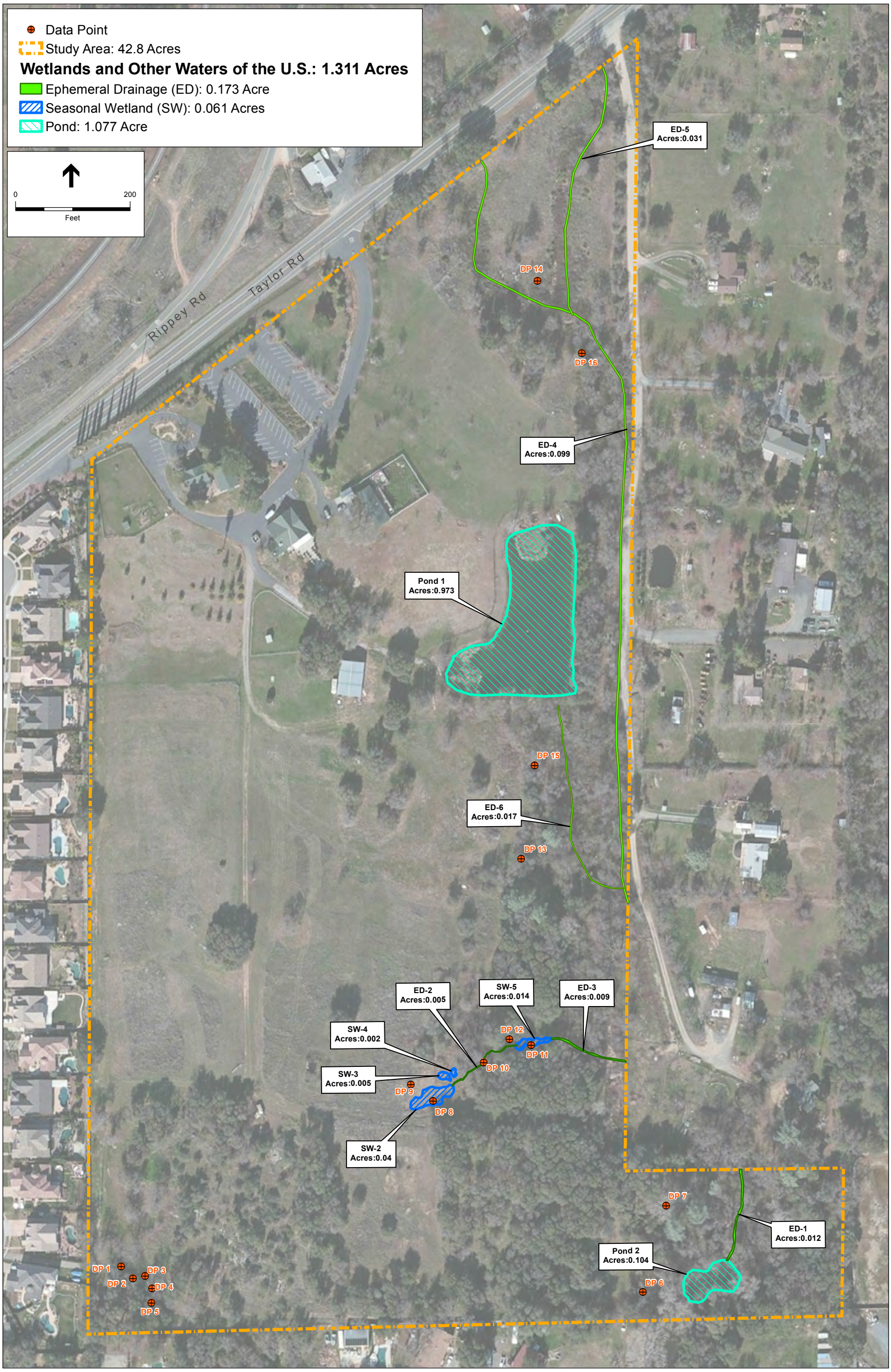
Ephemeral drainages are classified as "riverine intermittent" using the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et. al, 1979). An ephemeral channel has flowing water only during, and for a short duration after, precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow.

The study area contains six ephemeral channels, totaling approximately 0.173 acre (**Photo 3** of Appendix E). These channels range from approximate one to three feet in width. Ephemeral channels in the study area are typically low gradient and flow through annual grassland, interior oak woodland, and valley foothill riparian. Bed material consists of soil and gravel, and the beds are typically not vegetated. The boundaries of ephemeral channels were determined by the OHWM.

2 FAC = facultative (occurs in wetlands and non-wetlands)

3 FACW = facultative wetland (usually occurs in wetlands, but may occur in non-wetlands)

4 OBL = obligate wetland (almost always occurs in wetlands under natural conditions)




Prepared on 3/27/17 by Josh Boldt and Wes McCullough, ESA

SOURCE: ESA, 2017

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**Figure 5**

Potentially Jurisdictional Aquatic Resourcs

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### Pond/Lacustrine Limnetic

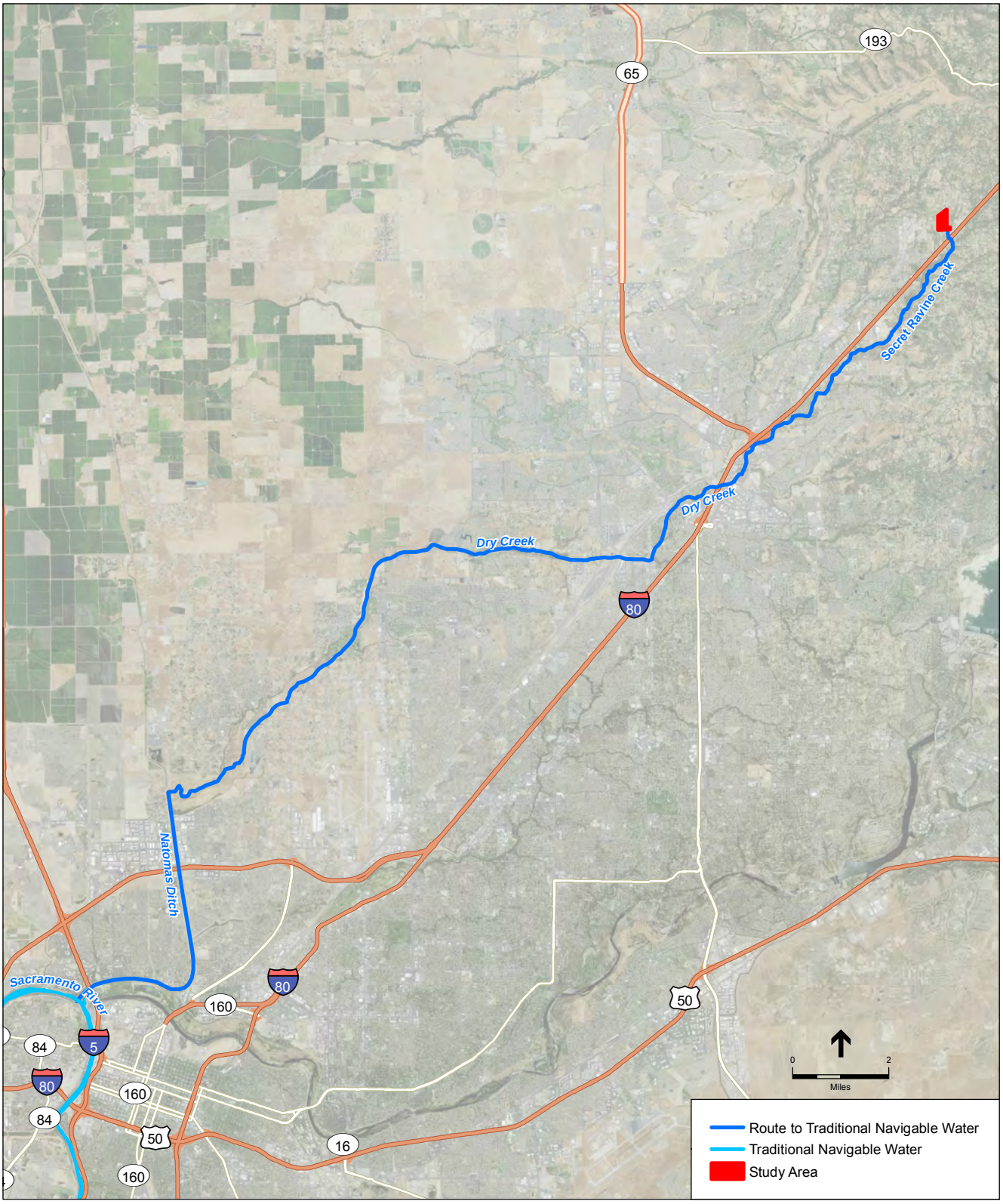
Ponds are classified as "lacustrine limnetic" using the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et. al, 1979). Both ponds in the study area appear to be man-made and total approximately 1.077 acres (**Photos 4-5** of Appendix E). The larger pond (Pond-1) is connected to a pump and irrigation system and has historically been used for irrigation. Although its original function is unknown, Pond 2 was likely initially constructed to serve as a water source for livestock or agriculture, but no longer serves this purpose. Duckweed (*Lemna* sp., OBL) occurs sporadically throughout the surface of both ponds, and both are fringed by tall, perennial, emergent monocots such as broadleaf cattail (*Typha latifolia*, OBL). The ponds also support numerous trees and shrubs along their banks such as Fremont cottonwood (*Populus fremontii* subsp. *fremontii*, NL), willow (*Salix* sp., FACW-OBL), and big-leaf maple (*Acer macrophyllum*, FAC). The larger pond (Pond-1) is fed from Placer County Water Agency's Red Ravine Canal. The smaller pond (Pond-2) is fed by ED-1.

## 4.2 Jurisdictional Analysis

### 4.2.1 Potentially Jurisdictional Features

The USACE and EPA issued guidance related to the Rapanos decision on June 5, 2007. The *Rapanos-Carabell* consolidated decisions addressed several issues, including the question of jurisdiction in relation to waters that are relatively permanent (RPW) or are not relatively permanent (non-RPW). It was concluded that non-RPWs that have a "significant ecological nexus" with a TNW, including non-navigable tributaries that do not typically flow year-round or have continuous flow at least seasonally, wetlands adjacent to such tributaries, and wetlands adjacent to but that do not directly abut permanent, non-navigable tributary, may be considered waters of the U.S. A significant nexus can be determined to be present if the tributary, in combination with any adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical, and biological integrity of a TNW. Key considerations when evaluating a significant nexus include volume, duration, and frequency of the flow of water in the tributary and the proximity of the tributary to the TNW, plus hydrologic, ecologic, and other functions related to the tributary and all of its adjacent wetlands.

Four potentially jurisdictional seasonal wetlands were identified in the study area. These features are seasonally inundated and/or saturated as evidenced by hydrophytic plants, hydric soils, and wetland hydrology. The seasonal wetland features are considered "wetlands adjacent to non-navigable tributaries that are not relatively permanent". These features have a direct surface hydrologic connection to the Sacramento River via the unnamed channel located along the eastern boundary of the study area. As described in the "Hydrology" section of Chapter 2, this unnamed channel eventually flows to the Sacramento River via Secret Ravine Creek, Dry Creek, and the Natomas East Main Drainage Canal (see **Figure 6**). The ephemeral drainages in the study area are considered "non-navigable tributaries that are not relatively permanent". As with the seasonal wetlands, they have a direct surface hydrological connection to the Sacramento River. The Sacramento River is considered a TNW under Section 404 of the Clean Water Act. The seasonal wetlands and ephemeral channels within the study area contribute rainfall runoff to the




SOURCE: ESA, 2017

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**Figure 6**

Route to Traditional Navigable Water

chemical (minerals, carbon, sediment) and physical (water volume) integrity of the Sacramento River. Therefore, it was determined that the seasonal wetlands and ephemeral drainages onsite *would* contribute towards the ecological function of the TNW (Sacramento River), and therefore should be considered as potentially jurisdictional features under the CWA.

There are a number of potential biological, chemical, and physical processes being performed by the seasonal wetlands and ephemeral drainages identified in this delineation. These include processing of organic wastes, attenuation of downstream flooding through interception of surface runoff and water storage onsite, reduction of suspended sediment delivered to downstream waters, groundwater replenishment, provision of breeding and foraging habitat for common and special-status wildlife, and supporting biodiversity at the site and watershed levels through provision of wetland habitat. No specific studies regarding duration of flow, groundwater measurement, or ecological function and values of the wetland covered in this delineation were conducted. The magnitude at which these functions are being performed is also, for the most part, unknown.

### 4.2.2 Non-Jurisdictional Features

A number of features in the study area were characterized as potentially non-jurisdictional. These features are described briefly below and the rationale for their potential non-jurisdictional status is provided. **Table 3** provides the total extent of potentially non-jurisdictional features within the study area. **Figure 7** shows the location and extent of the potentially non-jurisdictional features at a scale of 1 inch equal to 200 ft. Data sheets and representative site photographs are included in Appendices B and D, respectively.

**TABLE 3.**
**NON-JURISDICTIONAL FEATURES**

| Map ID | Acres |
|---|---|
| Seasonal Wetland (Isolated) | |
| SW-1 | 0.060 |
| Drainage Ditch | |
| DD-1 | 0.004 |
| DD-2 | 0.002 |
| Drainage Swale | |
| DS-1 | 0.010 |

#### Drainage Ditch/Drainage Swale

According to the guidance issued by the EPA and the USACE in response to the *Rapanos-Carabell* consolidated decisions in 2007, these agencies generally do not assert jurisdiction over the following features:

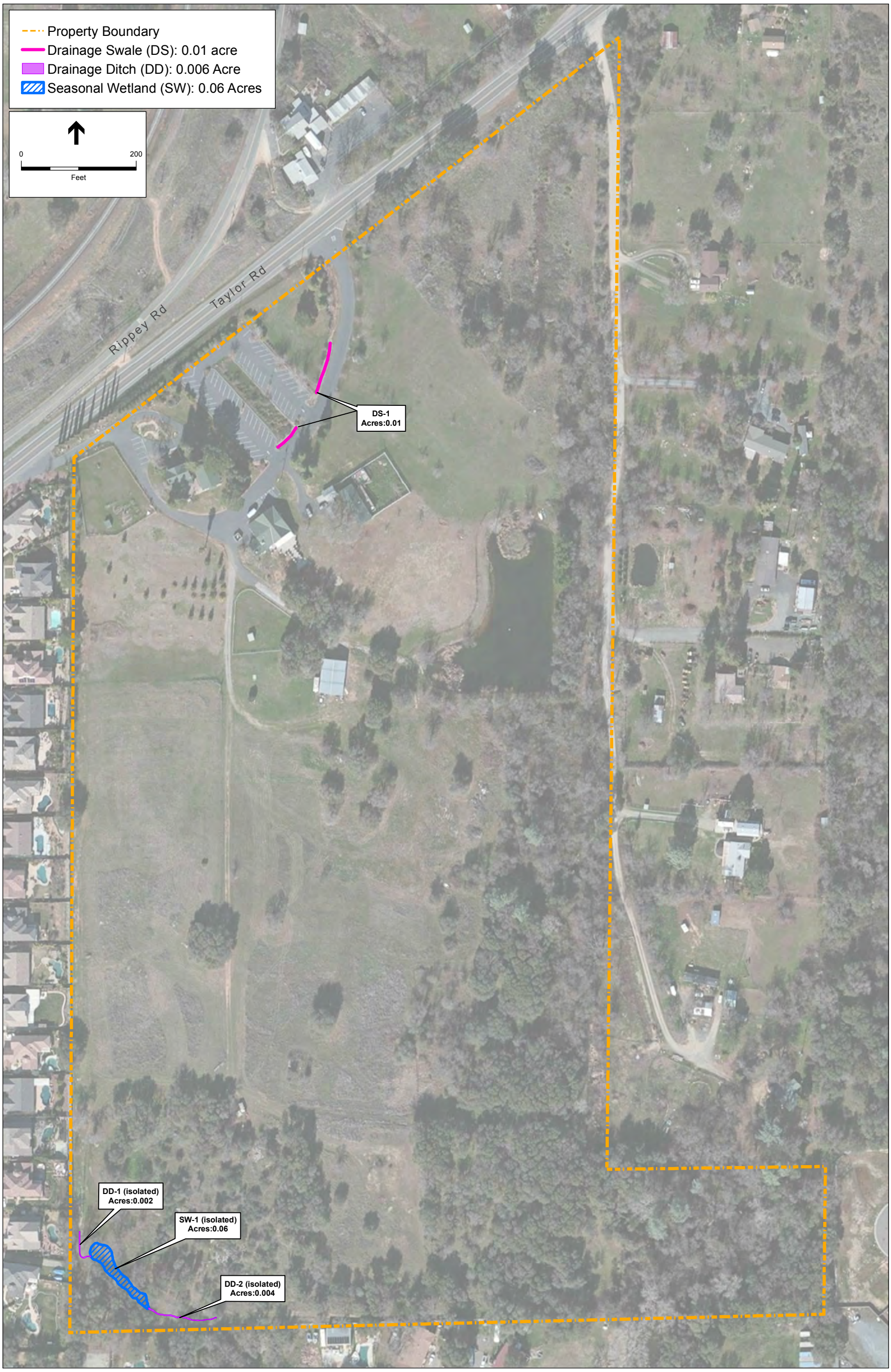
1. Swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent, or short duration flow);

2. Ditches (including roadside ditches) excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water.

The USACE and EPA provided further clarification on the definitions of jurisdictional waters of the U.S. in response to *Rapanos* in the *U.S. Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook* (USACE and EPA, 2007). This guidance states that:

- Certain geographical features (e.g., ditches, canals) that transport relatively permanent (continuous at least seasonal) flow directly into TNWs or between two (or more) waters of the U.S., including wetlands, are jurisdictional waters under the CWA.
- Certain geographical features (e.g., swales, ditches, pipes) may contribute to a surface hydrologic connection where the features:
    - replace or relocate a water of the U.S., or
    - connect a water of the U.S. to another water of the U.S., or
    - provide relatively permanent flow to a water of the U.S.

As discussed in Chapter 2, Section 2.4 (Vegetation/Habitat Types), two small man-made drainage ditches occur in the southwestern corner of the study area (**Photos 7-8** of Appendix E). These ditches appear to drain adjacent residential properties. The water source for these ditches is irrigation water runoff from landscaping associated with residences. The upper ditch eventually flows to a seasonal wetland, and the lower ditch flows out of the seasonal wetland to a culvert along the southern boundary of the study area. These features were evaluated during the field survey to determine if they exhibited any characteristics of waters of the U.S. According to a review of historical aerial photographs (Google Earth, 2017), the subdivision was built sometime between July 2004 and August 2005. Prior to the construction of this subdivision, there does not appear to be any drainage features in or adjacent to the southwestern corner of the study area (see **Figure 8**). These ditches were likely built in response to excessive irrigation runoff flowing from the adjacent subdivision onto the study area. The two ditches do not carry a relatively permanent flow of water, were excavated wholly in uplands, and exist solely to drain irrigation water runoff. Therefore, according to the guidance issued by the EPA and the USACE in response to the *Rapanos-Carabell* consolidated decisions in 2007, these ditches should not be considered regulated features under the CWA. In addition, these ditches do not satisfy the additional clarification on the jurisdictional status of ditches provided by the USACE and EPA in response to *Rapanos* in the *U.S. Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook*. These ditches do not replace or relocate a water of the U.S., nor do they connect a water of the U.S. to another water of the U.S., and they do not appear to directly or indirectly connect to a traditional navigable water or interstate water. Therefore, these ditches do not have a significant nexus with the Sacramento River (TNW) since they not have a hydrological connection to any jurisdictional features. These ditches are isolated and convey irrigation water to a closed depression south of the study area, not to a TNW or its tributaries. Thus, these ditches are not likely to contribute to the ecological function of the Sacramento River and therefore should be considered isolated features under the Rapanos guidance and should not be regulated under the Clean Water Act.




SOURCE: ESA, 2017

UAIC Tribal School . 150225

**Figure 7**

Non-Jurisdictional Features

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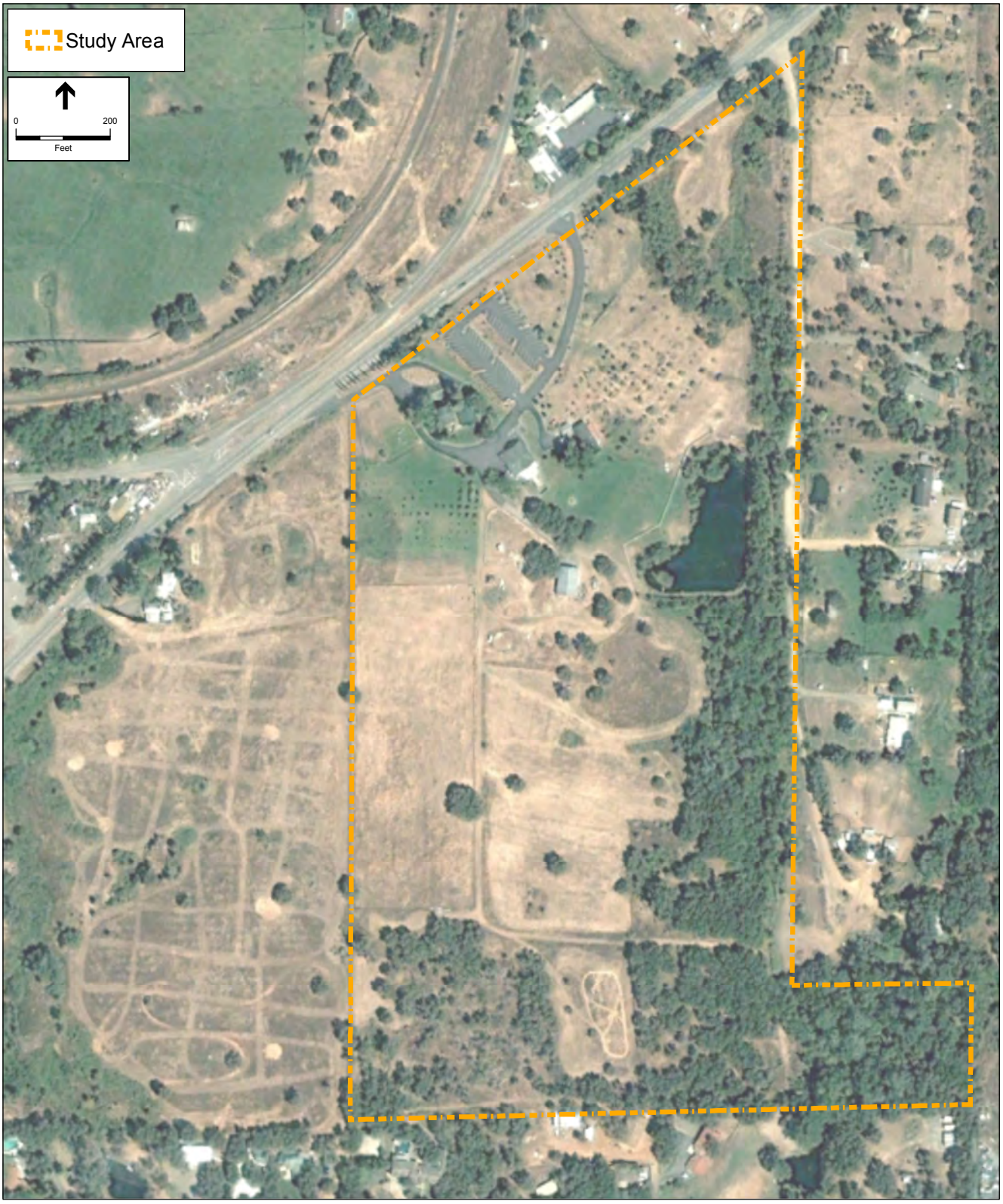


SOURCE: ESA, 2017; Google Earth, 2003

UAIC Tribal School . 150225

**Figure 8**

Study Area with Aerial Photo from 2003

A seasonal wetland feature is directly adjacent to these ditches (SW-1 – isolated) (**Photo 6** of Appendix E. Because these ditches do not have a significant nexus with the Sacramento River (TNW) and are isolated, this adjacent wetland feature is also considered isolated. In addition, this seasonal wetland features is entirely supported by irrigation runoff from the adjacent subdivision. According to a review of historical aerial photographs (Google Earth, 2017), the subdivision was built sometime between July 2004 and August 2005. Prior to the construction of this subdivision, there does not appear to be any drainage features in or adjacent to the southwestern corner of the study area that would have supported the wetland hydrology of this seasonal wetland. In accordance with the 1986 preamble to 33 CFR Part 328.3 (51 FR 41217), the USACE generally does not consider artificially irrigated areas which would revert to uplands if the irrigation ceased to be waters of the U.S. under Section 404 of the Clean Water Act. Therefore, this feature is not considered to be a regulated feature under the CWA because it do not have a significant ecological nexus with a TNW and it would revert to uplands if the artificial irrigation ceased.

As discussed in Chapter 2, Section 2.4 (Vegetation/Habitat Types), a cobble-lined drainage swale occurs within the urban area in the northern part of the study area and drains the parking lot and roadways (**Photo 9** of Appendix E). This feature was evaluated during the field survey to determine if it exhibited any characteristics of waters of the U.S. The drainage swale lacks vegetation and does not exhibit a bed, bank, or OHWM. The swale collects water from the impervious surfaces of the parking lot and roadways and drains to an annual grassland area adjacent to the parking lot. The drainage swale is a manmade cobble-lined feature constructed in uplands to drain surface water from the surrounding urban area following storm events (characterized by low volume, infrequent, and short duration flow). It does not replace or relocated a water of the U.S.; connect a water of the U.S. to another water of the U.S.; or provide relatively permanent flow to a water of the U.S. Based on these conditions, it was determined that this drainage swale does not exhibit characteristics that would qualify it as a regulated feature under the CWA.

## 4.3 Conclusions

A total of 1.311 acres of potentially jurisdictional wetlands occur within the 42.8-acre study area. This report documents the wetland boundary delineation and best professional judgment of ESA investigators. All conclusions presented should be considered preliminary and subject to change pending official review and preliminary jurisdictional determination in writing by the USACE.

# CHAPTER 5
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# Appendix A
## NRCS Soils Report

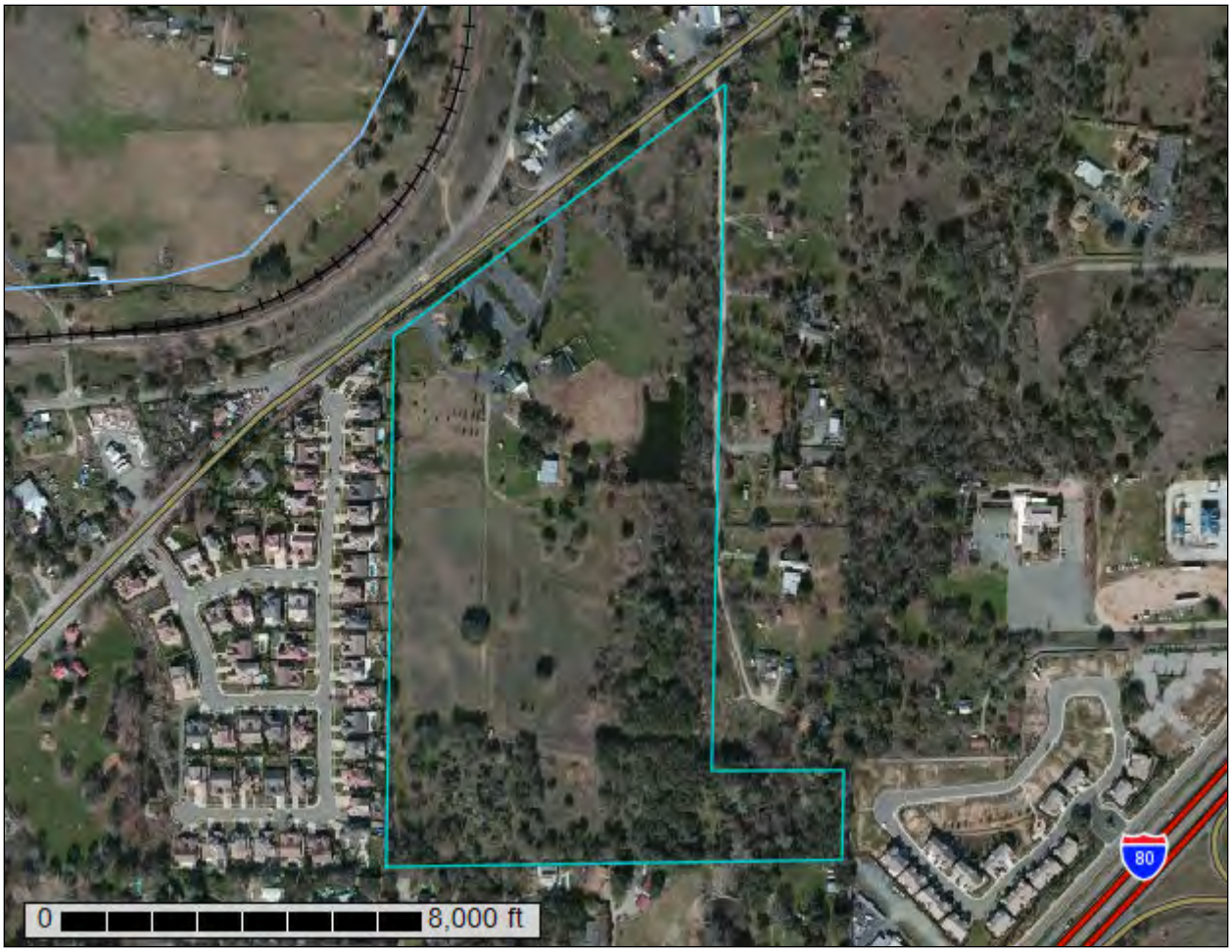
United States Department of Agriculture

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

# Custom Soil Resource Report for Placer County, California, Western Part

## UAIC Tribal School Project




March 24, 2017

# Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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# How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

# Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

# Custom Soil Resource Report
## Soil Map

Map Scale: 1:4,010 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

## MAP LEGEND

**Area of Interest (AOI)**

Area of Interest (AOI)

**Soils**

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

**Special Point Features**

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

**Water Features**

Streams and Canals

**Transportation**

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

**Background**

Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Placer County, California, Western Part
Survey Area Data: Version 8, Sep 21, 2016

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 15, 2011—Apr 29, 2012

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

# Map Unit Legend

| Placer County, California, Western Part (CA620) | | | |
|---|---|---|---|
| **Map Unit Symbol** | **Map Unit Name** | **Acres in AOI** | **Percent of AOI** |
| 106 | Andregg coarse sandy loam, 2 to 9 percent slopes | 35.1 | 81.9% |
| 197 | Xerorthents, placer areas | 7.7 | 18.1% |
| **Totals for Area of Interest** | | **42.8** | **100.0%** |

# Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

# Placer County, California, Western Part

## 106—Andregg coarse sandy loam, 2 to 9 percent slopes

### Map Unit Setting

*National map unit symbol:* hfyf
*Elevation:* 200 to 1,500 feet
*Mean annual precipitation:* 12 to 35 inches
*Mean annual air temperature:* 61 degrees F
*Frost-free period:* 200 to 270 days
*Farmland classification:* Farmland of statewide importance

### Map Unit Composition

*Andregg and similar soils:* 85 percent
*Minor components:* 15 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Andregg

#### Setting

*Landform:* Hills
*Landform position (two-dimensional):* Backslope
*Landform position (three-dimensional):* Side slope
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Parent material:* Residuum weathered from granite

#### Typical profile

*H1 - 0 to 15 inches:* coarse sandy loam
*H2 - 15 to 29 inches:* coarse sandy loam
*H3 - 29 to 33 inches:* weathered bedrock

#### Properties and qualities

*Slope:* 2 to 9 percent
*Depth to restrictive feature:* 29 to 33 inches to paralithic bedrock
*Natural drainage class:* Well drained
*Runoff class:* Low
*Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately low (0.00 to 0.06 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Available water storage in profile:* Low (about 3.5 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 3e
*Land capability classification (nonirrigated):* 3e
*Hydrologic Soil Group:* B
*Ecological site:* GRANITIC (R018XD080CA)
*Hydric soil rating:* No

### Minor Components

#### Caperton

*Percent of map unit:* 5 percent
*Hydric soil rating:* No

**Sierra**
*Percent of map unit:* 5 percent
*Hydric soil rating:* No

**Unnamed, mod deep**
*Percent of map unit:* 4 percent
*Hydric soil rating:* No

**Unnamed**
*Percent of map unit:* 1 percent
*Landform:* Drainageways
*Hydric soil rating:* Yes

## 197—Xerorthents, placer areas

### Map Unit Setting
*National map unit symbol:* hg1c
*Elevation:* 50 to 3,200 feet
*Mean annual precipitation:* 8 to 18 inches
*Mean annual air temperature:* 61 to 64 degrees F
*Frost-free period:* 150 to 280 days
*Farmland classification:* Not prime farmland

### Map Unit Composition
*Xerorthents and similar soils:* 90 percent
*Minor components:* 10 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Xerorthents

**Setting**
*Parent material:* Mine spoil or earthy fill

**Typical profile**
*H1 - 0 to 60 inches:* variable

**Properties and qualities**
*Slope:* 2 to 5 percent
*Depth to restrictive feature:* More than 80 inches
*Natural drainage class:* Well drained
*Depth to water table:* More than 80 inches
*Frequency of flooding:* Frequent
*Frequency of ponding:* None
*Available water storage in profile:* Very low (about 0.0 inches)

**Interpretive groups**
*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 7s
*Ecological site:* PLACER DIGGINGS (R018XD084CA)
*Hydric soil rating:* No

**Minor Components**

**Unnamed**

*Percent of map unit:* 10 percent
*Landform:* Drainageways
*Hydric soil rating:* Yes

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# Appendix B
## Wetland Determination Data Forms

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: UAIC Tribal School Project City/County: Placer County Sampling Date: 3/9/17

Applicant/Owner: United Auburn Indian Community State: CA Sampling Point: DP 1

Investigator(s): Joshua Boldt Section, Township, Range: Section 3, T 11 N, R 7 E (Rocklin CA quad)

Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): concave Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38º 50' 06.17" North Long: 121º 10' 34.81" West Datum:

Soil Map Unit Name: Andregg coarse sandy loam, 2 to 9 percent slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ◉ | No ◯ | |
| Hydric Soil Present? | Yes ◉ | No ◯ | **Is the Sampled Area within a Wetland?** Yes ◉ No ◯ |
| Wetland Hydrology Present? | Yes ◉ | No ◯ | |

Remarks:

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. *Salix gooddingii* | 10 | Yes | FACW |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | 10 % | | |
| **Herb Stratum** | | | |
| 1. *Festuca perennis* | 30 | Yes | FAC |
| 2. *Juncus xiphioides* | 20 | Yes | OBL |
| 3. *Stellaria media* | 10 | No | FACU |
| 4. *Claytonia perfoliata subsp. perfoliata* | 15 | No | FAC |
| 5. *Rumex crispus* | 10 | No | FAC |
| 6. *Geranium molle* | 5 | No | Not Listed |
| 7. | | | |
| 8. | | | |
| Total Cover: | 90 % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum ____ % % Cover of Biotic Crust ____ %

**Dominance Test worksheet:**

| | | |
|---|---|---|
| Number of Dominant Species That Are OBL, FACW, or FAC: | 3 | (A) |
| Total Number of Dominant Species Across All Strata: | 3 | (B) |
| Percent of Dominant Species That Are OBL, FACW, or FAC: | 100.0 % | (A/B) |

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 20 | x 1 = | 20 |
| FACW species | 10 | x 2 = | 20 |
| FAC species | 55 | x 3 = | 165 |
| FACU species | 10 | x 4 = | 40 |
| UPL species | 5 | x 5 = | 25 |
| Column Totals: | 100 (A) | | 270 (B) |

Prevalence Index = B/A = 2.70

**Hydrophytic Vegetation Indicators:**

- ☒ Dominance Test is >50%
- ☒ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes ◉ No ◯

Remarks:

## SOIL

Sampling Point: DP 1

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 1-14 | 7.5 YR 2.5/1 | 85 | 5 YR 4/6 | 15 | RM | M | Sandy clay loam | |
| 14-18 | 7.5 YR 2.5/1 | 100 | | | | | Sandy clay laom | gravelly |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils[4]:**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ◉ No ○

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☒ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

| | | | |
|---|---|---|---|
| Surface Water Present? | Yes ◉ | No ○ | Depth (inches): 3 |
| Water Table Present? | Yes ◉ | No ○ | Depth (inches): surface |
| Saturation Present? (includes capillary fringe) | Yes ◉ | No ○ | Depth (inches): surface |

**Wetland Hydrology Present?** Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: UAIC Tribal School Project City/County: Placer County Sampling Date: 3/9/17

Applicant/Owner: United Auburn Indian Community State: CA Sampling Point: DP 2

Investigator(s): Joshua Boldt Section, Township, Range: Section 3, T 11 N, R 7 E (Rocklin CA quad)

Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38º 50' 06.17" North Long: 121º 10' 34.81" West Datum:

Soil Map Unit Name: Andregg coarse sandy loam, 2 to 9 percent slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ◉ | No ◯ | |
| Hydric Soil Present? | Yes ◉ | No ◯ | **Is the Sampled Area within a Wetland?** Yes ◉ No ◯ |
| Wetland Hydrology Present? | Yes ◉ | No ◯ | |

Remarks:

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** | | | |
| 1. *Festuca perennis* | 65 | Yes | FAC |
| 2. *Silybum marianum* | 10 | No | Not Listed |
| 3. *Juncus xiphioides* | 10 | No | OBL |
| 4. *Stellaria media* | 6 | No | FACU |
| 5. *Galium aparine* | 2 | No | FACU |
| 6. *Claytonia perfoliata subsp. perfoliata* | 2 | No | FAC |
| 7. | | | |
| 8. | | | |
| Total Cover: | 95 % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum ____ % % Cover of Biotic Crust ____ %

**Dominance Test worksheet:**

| | | |
|---|---|---|
| Number of Dominant Species That Are OBL, FACW, or FAC: | 1 | (A) |
| Total Number of Dominant Species Across All Strata: | 1 | (B) |
| Percent of Dominant Species That Are OBL, FACW, or FAC: | 100.0 % | (A/B) |

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 10 | x 1 = | 10 |
| FACW species | | x 2 = | 0 |
| FAC species | 67 | x 3 = | 201 |
| FACU species | 8 | x 4 = | 32 |
| UPL species | 10 | x 5 = | 50 |
| Column Totals: | 95 (A) | | 293 (B) |

Prevalence Index = B/A = 3.08

**Hydrophytic Vegetation Indicators:**

- ☒ Dominance Test is >50%
- ◉ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes ◉ No ◯

Remarks:

## SOIL

Sampling Point: DP 2

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 1-10 | 10 YR 2/2 | 90 | 5 YR 4/6 | 10 | RM | M | Sandy clay loam | |
| 10-16 | 10 YR 2/2 | 90 | 5 YR 4/6 | 10 | RM | M | Sandy clay loam | gravelly |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils[4]:**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ◉ No ◯

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☒ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

| | | | |
|---|---|---|---|
| Surface Water Present? | Yes ◉ | No ◯ | Depth (inches): 2 |
| Water Table Present? | Yes ◉ | No ◯ | Depth (inches): surface |
| Saturation Present? (includes capillary fringe) | Yes ◉ | No ◯ | Depth (inches): survace |

**Wetland Hydrology Present?** Yes ◉ No ◯

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: UAIC Tribal School Project City/County: Placer County Sampling Date: 3/9/17

Applicant/Owner: United Auburn Indian Community State: CA Sampling Point: DP 3

Investigator(s): Joshua Boldt Section, Township, Range: Section 3, T 11 N, R 7 E (Rocklin CA quad)

Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38º 50' 06.17" North Long: 121º 10' 34.81" West Datum:

Soil Map Unit Name: Andregg coarse sandy loam, 2 to 9 percent slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ◯ | No ◉ | |
| Hydric Soil Present? | Yes ◯ | No ◉ | **Is the Sampled Area within a Wetland?** Yes ◯ No ◉ |
| Wetland Hydrology Present? | Yes ◯ | No ◉ | |

Remarks:

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. *Quercus lobata* | 10 | Yes | FACU |
| 2. *Quercus wislizeni* | 5 | Yes | Not Listed |
| 3. | | | |
| 4. | | | |
| Total Cover: | 15 % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. *Toxicodendron diversilobum* | 5 | Yes | FACU |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | 5 % | | |
| **Herb Stratum** | | | |
| 1. *Bromus hordeaceus* | 25 | Yes | FACU |
| 2. *Avena barbata* | 20 | Yes | Not Listed |
| 3. *Chlorogalum pomeridium var.pomeridium* | 20 | Yes | Not Listed |
| 4. *Geranium molle* | 10 | No | Not Listed |
| 5. *Claytonia perfoliata subsp. perfoliata* | 10 | No | FAC |
| 6. *Galium aparine* | 5 | No | FACU |
| 7. *Vicia villosa* | 2 | No | Not Listed |
| 8. *Silybum marianum* | 2 | No | Not Listed |
| Total Cover: | 94 % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum ____ % % Cover of Biotic Crust ____ %

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | | x 1 = | 0 |
| FACW species | | x 2 = | 0 |
| FAC species | 10 | x 3 = | 30 |
| FACU species | 45 | x 4 = | 180 |
| UPL species | 59 | x 5 = | 295 |
| Column Totals: | 114 (A) | | 505 (B) |

Prevalence Index = B/A = 4.43

**Hydrophytic Vegetation Indicators:**

- ◉ Dominance Test is >50%
- ◉ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes ◯ No ◉

Remarks:

## SOIL

Sampling Point: DP 3

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 1-14 | 7.5 YR 3/2 | 100 | | | | | Sandy loam | no redox |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils[4]:**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ○ No ◉

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

| | | | |
|---|---|---|---|
| Surface Water Present? | Yes ○ | No ◉ | Depth (inches): |
| Water Table Present? | Yes ○ | No ◉ | Depth (inches): |
| Saturation Present? (includes capillary fringe) | Yes ◉ | No ○ | Depth (inches): 4 |

**Wetland Hydrology Present?** Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Saturation present at 4 inches. However, no associated water table located below saturation zone. Saturation due to recent rainfall.

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: UAIC Tribal School Project City/County: Placer County Sampling Date: 3/9/17

Applicant/Owner: United Auburn Indian Community State: CA Sampling Point: DP 4

Investigator(s): Joshua Boldt Section, Township, Range: Section 3, T 11 N, R 7 E (Rocklin CA quad)

Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38º 50' 06.17" North Long: 121º 10' 34.81" West Datum:

Soil Map Unit Name: Andregg coarse sandy loam, 2 to 9 percent slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ◉ | No ◯ | |
| Hydric Soil Present? | Yes ◉ | No ◯ | **Is the Sampled Area within a Wetland?** Yes ◉ No ◯ |
| Wetland Hydrology Present? | Yes ◉ | No ◯ | |

Remarks:

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** | | | |
| 1. *Festuca perennis* | 45 | Yes | FAC |
| 2. *Ranunculus muricatus* | 15 | Yes | FACW |
| 3. *Rumex crispus* | 15 | Yes | FAC |
| 4. *Juncus xiphioides* | 2 | No | OBL |
| 5. *Galium aparine* | 4 | No | FACU |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | 81 % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum ____ % % Cover of Biotic Crust ____ %

**Dominance Test worksheet:**

| | | |
|---|---|---|
| Number of Dominant Species That Are OBL, FACW, or FAC: | 3 | (A) |
| Total Number of Dominant Species Across All Strata: | 3 | (B) |
| Percent of Dominant Species That Are OBL, FACW, or FAC: | 100.0 % | (A/B) |

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 2 | x 1 = | 2 |
| FACW species | 15 | x 2 = | 30 |
| FAC species | 60 | x 3 = | 180 |
| FACU species | 4 | x 4 = | 16 |
| UPL species | | x 5 = | 0 |
| Column Totals: | 81 (A) | | 228 (B) |

Prevalence Index = B/A = 2.81

**Hydrophytic Vegetation Indicators:**

- ☒ Dominance Test is >50%
- ☒ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes ◉ No ◯

Remarks:

## SOIL

Sampling Point: DP 4

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 1-14 | 7.5 YR 2.5/1 | 85 | 5 YR 4/6 | 15 | RM | M | Sandy clay loam | |
| 14-18 | 7.5 YR 2.5/1 | 100 | | | | | Sandy clay loam | gravelly |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils[4]:**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ◉ No ◯

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☒ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

| | | | |
|---|---|---|---|
| Surface Water Present? | Yes ◉ | No ◯ | Depth (inches): 2 |
| Water Table Present? | Yes ◉ | No ◯ | Depth (inches): surface |
| Saturation Present? (includes capillary fringe) | Yes ◉ | No ◯ | Depth (inches): survace |

**Wetland Hydrology Present?** Yes ◉ No ◯

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: UAIC Tribal School Project City/County: Placer County Sampling Date: 3/9/17

Applicant/Owner: United Auburn Indian Community State: CA Sampling Point: DP 5

Investigator(s): Joshua Boldt Section, Township, Range: Section 3, T 11 N, R 7 E (Rocklin CA quad)

Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38º 50' 06.17" North Long: 121º 10' 34.81" West Datum:

Soil Map Unit Name: Andregg coarse sandy loam, 2 to 9 percent slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ◯ | No ◉ | |
| Hydric Soil Present? | Yes ◯ | No ◉ | **Is the Sampled Area within a Wetland?** Yes ◯ No ◉ |
| Wetland Hydrology Present? | Yes ◯ | No ◉ | |

Remarks:

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. *Quercus wislizeni* | 25 | Yes | Not Listed |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | 25 % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. *Toxicodendron diversilobum* | 5 | Yes | FACU |
| 2. *Rubus armeniacus* | 7 | Yes | FAC |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | 12 % | | |
| **Herb Stratum** | | | |
| 1. *Bromus hordeaceus* | 20 | Yes | FACU |
| 2. *Avena barbata* | 10 | Yes | Not Listed |
| 3. *Stellaria media* | 3 | No | FACU |
| 4. *Geranium molle* | 7 | No | Not Listed |
| 5. *Galium aparine* | 15 | Yes | FACU |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | 55 % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum ____ % % Cover of Biotic Crust ____ %

**Dominance Test worksheet:**

| | | |
|---|---|---|
| Number of Dominant Species That Are OBL, FACW, or FAC: | 1 | (A) |
| Total Number of Dominant Species Across All Strata: | 6 | (B) |
| Percent of Dominant Species That Are OBL, FACW, or FAC: | 16.7 % | (A/B) |

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | | x 1 = | 0 |
| FACW species | | x 2 = | 0 |
| FAC species | 7 | x 3 = | 21 |
| FACU species | 43 | x 4 = | 172 |
| UPL species | 42 | x 5 = | 210 |
| Column Totals: | 92 (A) | | 403 (B) |

Prevalence Index = B/A = 4.38

**Hydrophytic Vegetation Indicators:**

- ◉ Dominance Test is >50%
- ◉ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes ◯ No ◉

Remarks:

## SOIL

Sampling Point: DP 5

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 1-14 | 7.5 YR 3/2 | 100 | | | | | Sandy loam | no redox |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils[4]:**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ○ No ●

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

| | | | |
|---|---|---|---|
| Surface Water Present? | Yes ○ | No ● | Depth (inches): |
| Water Table Present? | Yes ○ | No ● | Depth (inches): |
| Saturation Present? (includes capillary fringe) | Yes ○ | No ● | Depth (inches): |

**Wetland Hydrology Present?** Yes ○ No ●

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: UAIC Tribal School Project City/County: Placer County Sampling Date: 3/9/17

Applicant/Owner: United Auburn Indian Community State: CA Sampling Point: DP-6

Investigator(s): Joshua Boldt Section, Township, Range: Section 3, T 11 N, R 7 E (Rocklin CA quad)

Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): convex Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38º 50' 06.17" North Long: 121º 10' 34.81" West Datum:

Soil Map Unit Name: Xerothents, placer areas NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ◯ | No ◉ | |
| Hydric Soil Present? | Yes ◯ | No ◉ | **Is the Sampled Area within a Wetland?** Yes ◯ No ◉ |
| Wetland Hydrology Present? | Yes ◯ | No ◉ | |

Remarks: Data point taken in depression in riparian woodland.

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. *Quercus lobata* | 30 | Yes | FACU |
| 2. *Quercus wislizeni* | 20 | Yes | Not Listed |
| 3. *Triadica sebifera* | 3 | No | FAC |
| 4. | | | |
| Total Cover: | 53 % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. *Rubus armeniacus* | 20 | Yes | FAC |
| 2. *Toxicodendron diversilobum* | 3 | No | FACU |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | 23 % | | |
| **Herb Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum ____ % % Cover of Biotic Crust ____ %

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3 % (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | | x 1 = | 0 |
| FACW species | | x 2 = | 0 |
| FAC species | 23 | x 3 = | 69 |
| FACU species | 33 | x 4 = | 132 |
| UPL species | 20 | x 5 = | 100 |
| Column Totals: | 76 (A) | | 301 (B) |

Prevalence Index = B/A = 3.96

**Hydrophytic Vegetation Indicators:**

- ◉ Dominance Test is >50%
- ◉ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes ◯ No ◉

Remarks:

## SOIL

Sampling Point: DP-6

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-14 | 10 YR 4/4 | 90 | 5 YR 4/6 | 10 | RM | M | Sandy gravelly loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils[4]:**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ○ No ◉

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

| | | | |
|---|---|---|---|
| Surface Water Present? | Yes ○ | No ○ | Depth (inches): |
| Water Table Present? | Yes ○ | No ○ | Depth (inches): |
| Saturation Present? (includes capillary fringe) | Yes ○ | No ○ | Depth (inches): |

**Wetland Hydrology Present?** Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No hydrology indicators. Area does not appear to pond water.

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: UAIC Tribal School Project City/County: Placer County Sampling Date: 3/9/17

Applicant/Owner: United Auburn Indian Community State: CA Sampling Point: DP-7

Investigator(s): Joshua Boldt Section, Township, Range: Section 3, T 11 N, R 7 E (Rocklin CA quad)

Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): convex Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38º 50' 06.17" North Long: 121º 10' 34.81" West Datum:

Soil Map Unit Name: Xerothents, placer areas NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ◯ | No ◉ | |
| Hydric Soil Present? | Yes ◯ | No ◉ | **Is the Sampled Area within a Wetland?** Yes ◯ No ◉ |
| Wetland Hydrology Present? | Yes ◯ | No ◉ | |

Remarks: Data point taken in swale area in riparian woodland.

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. *Quercus lobata* | 45 | Yes | FACU |
| 2. *Quercus wislizeni* | 5 | No | Not Listed |
| 3. *Populus fremontii* | 30 | Yes | FACW |
| 4. | | | |
| Total Cover: | 80 % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. *Rubus armeniacus* | 30 | Yes | FAC |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | 30 % | | |
| **Herb Stratum** | | | |
| 1. *Hedera helix* | 35 | Yes | FACU |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | 35 % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum % % Cover of Biotic Crust %

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0 % (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | | x 1 = | 0 |
| FACW species | 30 | x 2 = | 60 |
| FAC species | 30 | x 3 = | 90 |
| FACU species | 80 | x 4 = | 320 |
| UPL species | 5 | x 5 = | 25 |
| Column Totals: | 145 (A) | | 495 (B) |

Prevalence Index = B/A = 3.41

**Hydrophytic Vegetation Indicators:**

- ◉ Dominance Test is >50%
- ◉ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes ◯ No ◉

Remarks:

## SOIL

Sampling Point: DP-7

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-14 | 10 YR 4/4 | 90 | | | | | Gravelly clay loam | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils:[4]**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ○ No ●

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

| | | | |
|---|---|---|---|
| Surface Water Present? | Yes ○ | No ● | Depth (inches): |
| Water Table Present? | Yes ○ | No ● | Depth (inches): |
| Saturation Present? (includes capillary fringe) | Yes ● | No ○ | Depth (inches): 7 |

**Wetland Hydrology Present?** Yes ○ No ●

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Saturation present at 7 inches. However, no associated water table located below saturation zone. Saturation due to recent rainfall. Area does not appear to pond water.

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: UAIC Tribal School Project City/County: Placer County Sampling Date: 3/9/17

Applicant/Owner: United Auburn Indian Community State: CA Sampling Point: DP 8

Investigator(s): Joshua Boldt Section, Township, Range: Section 3, T 11 N, R 7 E (Rocklin CA quad)

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38º 50' 06.17" North Long: 121º 10' 34.81" West Datum:

Soil Map Unit Name: Andregg coarse sandy loam, 2 to 9 percent slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ◉ | No ◯ | |
| Hydric Soil Present? | Yes ◉ | No ◯ | **Is the Sampled Area within a Wetland?** Yes ◉ No ◯ |
| Wetland Hydrology Present? | Yes ◉ | No ◯ | |

Remarks:

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** | | | |
| 1. *Phalaris lemmonii* | 100 | Yes | FACW |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | 100 % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum ____ % % Cover of Biotic Crust ____ %

**Dominance Test worksheet:**

| | | |
|---|---|---|
| Number of Dominant Species That Are OBL, FACW, or FAC: | 1 | (A) |
| Total Number of Dominant Species Across All Strata: | 1 | (B) |
| Percent of Dominant Species That Are OBL, FACW, or FAC: | 100.0 % | (A/B) |

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | | x 1 = | 0 |
| FACW species | 100 | x 2 = | 200 |
| FAC species | | x 3 = | 0 |
| FACU species | | x 4 = | 0 |
| UPL species | | x 5 = | 0 |
| Column Totals: | 100 (A) | | 200 (B) |

Prevalence Index = B/A = 2.00

**Hydrophytic Vegetation Indicators:**

- ☒ Dominance Test is >50%
- ☒ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes ◉ No ◯

Remarks:

## SOIL

Sampling Point: DP 8

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 1-14 | 10 YR 3/2 | 80 | 5 YR 4/6 | 20 | RM | RC | gravelly clay loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils[4]:**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ◉ No ◯

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☒ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

| | | | |
|---|---|---|---|
| Surface Water Present? | Yes ◉ | No ◯ | Depth (inches): 4 |
| Water Table Present? | Yes ◉ | No ◯ | Depth (inches): surface |
| Saturation Present? (includes capillary fringe) | Yes ◉ | No ◯ | Depth (inches): surface |

**Wetland Hydrology Present?** Yes ◉ No ◯

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: UAIC Tribal School Project City/County: Placer County Sampling Date: 3/9/17

Applicant/Owner: United Auburn Indian Community State: CA Sampling Point: DP 9

Investigator(s): Joshua Boldt Section, Township, Range: Section 3, T 11 N, R 7 E (Rocklin CA quad)

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38º 50' 06.17" North Long: 121º 10' 34.81" West Datum:

Soil Map Unit Name: Andregg coarse sandy loam, 2 to 9 percent slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ◯ | No ◉ | |
| Hydric Soil Present? | Yes ◯ | No ◉ | **Is the Sampled Area within a Wetland?** Yes ◯ No ◉ |
| Wetland Hydrology Present? | Yes ◯ | No ◉ | |

Remarks:

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** | | | |
| 1. *Bromus hordeaceus* | 30 | Yes | FACU |
| 2. *Avena barbata* | 20 | Yes | Not Listed |
| 3. *Festuca myuros* | 20 | Yes | Not Listed |
| 4. *Festuca perennis* | 10 | No | FAC |
| 5. *Geranium molle* | 5 | No | Not Listed |
| 6. *Vicia villosa* | 5 | No | Not Listed |
| 7. *Stellaria media* | 3 | No | FACU |
| 8. | | | |
| Total Cover: | 93 % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum ____ % % Cover of Biotic Crust ____ %

**Dominance Test worksheet:**

| | | |
|---|---|---|
| Number of Dominant Species That Are OBL, FACW, or FAC: | 0 | (A) |
| Total Number of Dominant Species Across All Strata: | 3 | (B) |
| Percent of Dominant Species That Are OBL, FACW, or FAC: | 0.0 % | (A/B) |

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | | x 1 = | 0 |
| FACW species | | x 2 = | 0 |
| FAC species | 10 | x 3 = | 30 |
| FACU species | 33 | x 4 = | 132 |
| UPL species | 50 | x 5 = | 250 |
| Column Totals: | 93 (A) | | 412 (B) |

Prevalence Index = B/A = 4.43

**Hydrophytic Vegetation Indicators:**

- ◉ Dominance Test is >50%
- ◉ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes ◯ No ◉

Remarks:

## SOIL

Sampling Point: DP 9

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12 | 10 YR 3/3 | 100 | | | | | Sandy clay loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils[4]:**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ○ No ◉

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

| | | | |
|---|---|---|---|
| Surface Water Present? | Yes ○ | No ◉ | Depth (inches): |
| Water Table Present? | Yes ○ | No ◉ | Depth (inches): |
| Saturation Present? (includes capillary fringe) | Yes ◉ | No ○ | Depth (inches): 3 |

**Wetland Hydrology Present?** Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Saturation present at 3 inches. However, no associated water table located below saturation zone. Saturation due to recent rainfall.

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: UAIC Tribal School Project City/County: Placer County Sampling Date: 3/9/17

Applicant/Owner: United Auburn Indian Community State: CA Sampling Point: DP 10

Investigator(s): Joshua Boldt Section, Township, Range: Section 3, T 11 N, R 7 E (Rocklin CA quad)

Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38º 50' 06.17" North Long: 121º 10' 34.81" West Datum:

Soil Map Unit Name: Andregg coarse sandy loam, 2 to 9 percent slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ◉ | No ◯ | |
| Hydric Soil Present? | Yes ◉ | No ◯ | **Is the Sampled Area within a Wetland?** Yes ◯ No ◯ |
| Wetland Hydrology Present? | Yes ◉ | No ◯ | |

Remarks: Data point taken within channel ED-3 where channel widens and flow slows, allowing vegetation to establish.

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. *Quercus lobata* | 15 | Yes | FACU |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | 15 % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** | | | |
| 1. *Festuca perennis* | 75 | Yes | FAC |
| 2. *Rumex crispus* | 15 | No | FAC |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | 90 % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum ____ % % Cover of Biotic Crust ____ %

**Dominance Test worksheet:**

| | | |
|---|---|---|
| Number of Dominant Species That Are OBL, FACW, or FAC: | 1 | (A) |
| Total Number of Dominant Species Across All Strata: | 2 | (B) |
| Percent of Dominant Species That Are OBL, FACW, or FAC: | 50.0 % | (A/B) |

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | | x 1 = | 0 |
| FACW species | | x 2 = | 0 |
| FAC species | 90 | x 3 = | 270 |
| FACU species | 15 | x 4 = | 60 |
| UPL species | | x 5 = | 0 |
| Column Totals: | 105 (A) | | 330 (B) |

Prevalence Index = B/A = 3.14

**Hydrophytic Vegetation Indicators:**

- ◉ Dominance Test is >50%
- ◉ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes ◉ No ◯

Remarks: Weakly hydrophytic vegetation.

## SOIL

Sampling Point: DP 10

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 1-14 | 10 YR 3/2 | 80 | 5 YR 4/6 | 20 | RM | M | gravelly clay loam | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils[4]:**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ◉ No ○

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☒ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

| | | | |
|---|---|---|---|
| Surface Water Present? | Yes ◉ | No ○ | Depth (inches): 3 |
| Water Table Present? | Yes ◉ | No ○ | Depth (inches): surface |
| Saturation Present? (includes capillary fringe) | Yes ◉ | No ○ | Depth (inches): surface |

**Wetland Hydrology Present?** Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Data point within channel with flowing water.

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: UAIC Tribal School Project City/County: Placer County Sampling Date: 3/9/17

Applicant/Owner: United Auburn Indian Community State: CA Sampling Point: DP 11

Investigator(s): Joshua Boldt Section, Township, Range: Section 3, T 11 N, R 7 E (Rocklin CA quad)

Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38º 50' 06.17" North Long: 121º 10' 34.81" West Datum:

Soil Map Unit Name: Andregg coarse sandy loam, 2 to 9 percent slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ◉ | No ◯ | |
| Hydric Soil Present? | Yes ◉ | No ◯ | **Is the Sampled Area within a Wetland?** Yes ◉ No ◯ |
| Wetland Hydrology Present? | Yes ◉ | No ◯ | |

Remarks:

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** | | | |
| 1. *Cyperus eragrostis* | 20 | Yes | FACW |
| 2. *Rumex crispus* | 20 | Yes | FAC |
| 3. *Festuca perennis* | 15 | Yes | FAC |
| 4. *Juncus xiphioides* | 3 | No | OBL |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | 58 % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum ____ % % Cover of Biotic Crust ____ %

**Dominance Test worksheet:**

| | | |
|---|---|---|
| Number of Dominant Species That Are OBL, FACW, or FAC: | 3 | (A) |
| Total Number of Dominant Species Across All Strata: | 3 | (B) |
| Percent of Dominant Species That Are OBL, FACW, or FAC: | 100.0 % | (A/B) |

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 3 | x 1 = | 3 |
| FACW species | 20 | x 2 = | 40 |
| FAC species | 35 | x 3 = | 105 |
| FACU species | | x 4 = | 0 |
| UPL species | | x 5 = | 0 |
| Column Totals: | 58 (A) | | 148 (B) |

Prevalence Index = B/A = 2.55

**Hydrophytic Vegetation Indicators:**

- ☒ Dominance Test is >50%
- ☒ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes ◉ No ◯

Remarks:

## SOIL

Sampling Point: DP 11

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12 | 7.5 YR 3/2 | 80 | 7.5 YR 5/6 | 20 | RM | M | sandy clay loam | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils[4]:**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ◉ No ○

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☒ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

| | | | |
|---|---|---|---|
| Surface Water Present? | Yes ◉ | No ○ | Depth (inches): 3 |
| Water Table Present? | Yes ◉ | No ○ | Depth (inches): surface |
| Saturation Present? (includes capillary fringe) | Yes ◉ | No ○ | Depth (inches): surface |

**Wetland Hydrology Present?** Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: UAIC Tribal School Project City/County: Placer County Sampling Date: 3/9/17

Applicant/Owner: United Auburn Indian Community State: CA Sampling Point: DP 12

Investigator(s): Joshua Boldt Section, Township, Range: Section 3, T 11 N, R 7 E (Rocklin CA quad)

Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38º 50' 06.17" North Long: 121º 10' 34.81" West Datum:

Soil Map Unit Name: Andregg coarse sandy loam, 2 to 9 percent slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ◯ | No ◉ | |
| Hydric Soil Present? | Yes ◯ | No ◉ | **Is the Sampled Area within a Wetland?** Yes ◯ No ◉ |
| Wetland Hydrology Present? | Yes ◯ | No ◉ | |

Remarks:

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. *Quercus wislizeni* | 35 | Yes | Not Listed |
| 2. *Quercus douglasii* | 30 | Yes | Not Listed |
| 3. | | | |
| 4. | | | |
| Total Cover: | 65 % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** | | | |
| 1. *Bromus hordeaceus* | 15 | Yes | FACU |
| 2. *Bromus diandrus* | 10 | Yes | Not Listed |
| 3. *Geranium molle* | 10 | Yes | Not Listed |
| 4. *Silybum marianum* | 3 | No | Not Listed |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | 38 % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum ____ % % Cover of Biotic Crust ____ %

**Dominance Test worksheet:**

| | | |
|---|---|---|
| Number of Dominant Species That Are OBL, FACW, or FAC: | 0 | (A) |
| Total Number of Dominant Species Across All Strata: | 5 | (B) |
| Percent of Dominant Species That Are OBL, FACW, or FAC: | 0.0 % | (A/B) |

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | | x 1 = | 0 |
| FACW species | | x 2 = | 0 |
| FAC species | | x 3 = | 0 |
| FACU species | 15 | x 4 = | 60 |
| UPL species | 88 | x 5 = | 440 |
| Column Totals: | 103 (A) | | 500 (B) |

Prevalence Index = B/A = 4.85

**Hydrophytic Vegetation Indicators:**

- ◉ Dominance Test is >50%
- ◉ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes ◯ No ◉

Remarks:

## SOIL

Sampling Point: DP 12

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12 | 10 Yr 3/3 | 100 | | | | | sandy clay loam | no redox |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils[4]:**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ○ No ●

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

| | | | |
|---|---|---|---|
| Surface Water Present? | Yes ○ | No ○ | Depth (inches): |
| Water Table Present? | Yes ○ | No ○ | Depth (inches): |
| Saturation Present? (includes capillary fringe) | Yes ○ | No ○ | Depth (inches): |

**Wetland Hydrology Present?** Yes ○ No ●

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: UAIC Tribal School Project City/County: Placer County Sampling Date: 3/9/17

Applicant/Owner: United Auburn Indian Community State: CA Sampling Point: DP 13

Investigator(s): Joshua Boldt Section, Township, Range: Section 3, T 11 N, R 7 E (Rocklin CA quad)

Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38º 50' 06.17" North Long: 121º 10' 34.81" West Datum:

Soil Map Unit Name: Andregg coarse sandy loam, 2 to 9 percent slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ◯ | No ◉ | |
| Hydric Soil Present? | Yes ◯ | No ◉ | **Is the Sampled Area within a Wetland?** Yes ◯ No ◉ |
| Wetland Hydrology Present? | Yes ◯ | No ◉ | |

Remarks:

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. *Quercus lobata* | 35 | Yes | FACU |
| 2. *Quercus wislizeni* | 10 | Yes | Not Listed |
| 3. | | | |
| 4. | | | |
| Total Cover: | 45 % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. *Rubus armeniacus* | 35 | Yes | FAC |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | 35 % | | |
| **Herb Stratum** | | | |
| 1. *Galium aparine* | 15 | Yes | FACU |
| 2. *Bromus hordeaceus* | 10 | Yes | FACU |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | 25 % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum ____ % % Cover of Biotic Crust ____ %

**Dominance Test worksheet:**

| | | |
|---|---|---|
| Number of Dominant Species That Are OBL, FACW, or FAC: | 1 | (A) |
| Total Number of Dominant Species Across All Strata: | 5 | (B) |
| Percent of Dominant Species That Are OBL, FACW, or FAC: | 20.0 % | (A/B) |

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | | x 1 = | 0 |
| FACW species | | x 2 = | 0 |
| FAC species | 35 | x 3 = | 105 |
| FACU species | 60 | x 4 = | 240 |
| UPL species | 10 | x 5 = | 50 |
| Column Totals: | 105 (A) | | 395 (B) |

Prevalence Index = B/A = 3.76

**Hydrophytic Vegetation Indicators:**

- ◉ Dominance Test is >50%
- ◉ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes ◯ No ◉

Remarks:

## SOIL

Sampling Point: DP 13

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-10 | 10 YR 4/4 | 100 | | | | | sandy clay loam | no redox |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils[4]:**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ○ No ●

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ○ No ○ Depth (inches): _____

Water Table Present? Yes ○ No ○ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ○ Depth (inches): _____

**Wetland Hydrology Present?** Yes ○ No ●

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: UAIC Tribal School Project City/County: Placer County Sampling Date: 3/9/17

Applicant/Owner: United Auburn Indian Community State: CA Sampling Point: DP 14

Investigator(s): Joshua Boldt Section, Township, Range: Section 3, T 11 N, R 7 E (Rocklin CA quad)

Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38º 50' 06.17" North Long: 121º 10' 34.81" West Datum:

Soil Map Unit Name: Andregg coarse sandy loam, 2 to 9 percent slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ◯ | No ◉ | |
| Hydric Soil Present? | Yes ◯ | No ◉ | **Is the Sampled Area within a Wetland?** Yes ◯ No ◉ |
| Wetland Hydrology Present? | Yes ◯ | No ◉ | |

Remarks: Data point in low area near ED-5.

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. *Prunus sp.* | 10 | Yes | Not Listed |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | 10 % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. *Baccharis pilularis* | 15 | Yes | Not Listed |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | 15 % | | |
| **Herb Stratum** | | | |
| 1. *Foeniculum vulgare* | 10 | Yes | Not Listed |
| 2. *Silybum marianum* | 10 | Yes | Not Listed |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | 20 % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum ____ % % Cover of Biotic Crust ____ %

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | | x 1 = | 0 |
| FACW species | | x 2 = | 0 |
| FAC species | | x 3 = | 0 |
| FACU species | | x 4 = | 0 |
| UPL species | 45 | x 5 = | 225 |
| Column Totals: | 45 (A) | | 225 (B) |

Prevalence Index = B/A = 5.00

**Hydrophytic Vegetation Indicators:**

- ◉ Dominance Test is >50%
- ◉ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes ◯ No ◉

Remarks:

## SOIL

Sampling Point: DP 14

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-14 | 7.5 YR 4/4 | 100 | | | | | sandy clay loam | no redox |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils[4]:**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ○ No ◉

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

| | | | |
|---|---|---|---|
| Surface Water Present? | Yes ○ | No ○ | Depth (inches): |
| Water Table Present? | Yes ○ | No ○ | Depth (inches): |
| Saturation Present? (includes capillary fringe) | Yes ○ | No ○ | Depth (inches): |

**Wetland Hydrology Present?** Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Area does not appear to pond water.

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: UAIC Tribal School Project City/County: Placer County Sampling Date: 3/9/17

Applicant/Owner: United Auburn Indian Community State: CA Sampling Point: DP 15

Investigator(s): Joshua Boldt Section, Township, Range: Section 3, T 11 N, R 7 E (Rocklin CA quad)

Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38º 50' 06.17" North Long: 121º 10' 34.81" West Datum:

Soil Map Unit Name: Andregg coarse sandy loam, 2 to 9 percent slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ◯ | No ◉ | |
| Hydric Soil Present? | Yes ◯ | No ◉ | **Is the Sampled Area within a Wetland?** Yes ◯ No ◉ |
| Wetland Hydrology Present? | Yes ◯ | No ◉ | |

Remarks:

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. *Quercus lobata* | 45 | Yes | FACU |
| 2. *Quercus wislizeni* | 20 | Yes | Not Listed |
| 3. *Triadica sebifera* | 10 | No | FAC |
| 4. | | | |
| Total Cover: | 75 % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. *Rubus armeniacus* | 55 | Yes | FAC |
| 2. *Toxicodendron diversilobum* | 10 | No | Not Listed |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | 65 % | | |
| **Herb Stratum** | | | |
| 1. *Bromus hordeaceus* | 5 | Yes | FACU |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | 5 % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum ____ % % Cover of Biotic Crust ____ %

**Dominance Test worksheet:**

| | | |
|---|---|---|
| Number of Dominant Species That Are OBL, FACW, or FAC: | 1 | (A) |
| Total Number of Dominant Species Across All Strata: | 4 | (B) |
| Percent of Dominant Species That Are OBL, FACW, or FAC: | 25.0 % | (A/B) |

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | | x 1 = | 0 |
| FACW species | | x 2 = | 0 |
| FAC species | 65 | x 3 = | 195 |
| FACU species | 50 | x 4 = | 200 |
| UPL species | 30 | x 5 = | 150 |
| Column Totals: | 145 (A) | | 545 (B) |

Prevalence Index = B/A = 3.76

**Hydrophytic Vegetation Indicators:**

- ◉ Dominance Test is >50%
- ◉ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes ◯ No ◉

Remarks:

## SOIL

Sampling Point: DP 15

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12 | 10 YR 4/4 | 100 | | | | | snndy clay loam | no redox |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils[4]:**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ○ No ●

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

| | | | |
|---|---|---|---|
| Surface Water Present? | Yes ○ | No ○ | Depth (inches): |
| Water Table Present? | Yes ○ | No ○ | Depth (inches): |
| Saturation Present? (includes capillary fringe) | Yes ○ | No ○ | Depth (inches): |

**Wetland Hydrology Present?** Yes ○ No ●

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: UAIC Tribal School Project City/County: Placer County Sampling Date: 3/9/17

Applicant/Owner: United Auburn Indian Community State: CA Sampling Point: DP 16

Investigator(s): Joshua Boldt Section, Township, Range: Section 3, T 11 N, R 7 E (Rocklin CA quad)

Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38º 50' 06.17" North Long: 121º 10' 34.81" West Datum:

Soil Map Unit Name: Andregg coarse sandy loam, 2 to 9 percent slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ◯ | No ◉ | |
| Hydric Soil Present? | Yes ◯ | No ◉ | **Is the Sampled Area within a Wetland?** Yes ◯ No ◉ |
| Wetland Hydrology Present? | Yes ◯ | No ◉ | |

Remarks:

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. *Quercus lobata* | 25 | Yes | FACU |
| 2. *Quercus wislizeni* | 10 | Yes | Not Listed |
| 3. | | | |
| 4. | | | |
| Total Cover: | 35 % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. *Rubus armeniacus* | 75 | Yes | FAC |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | 75 % | | |
| **Herb Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum ____ % % Cover of Biotic Crust ____ %

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3 % (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | | x 1 = | 0 |
| FACW species | | x 2 = | 0 |
| FAC species | 75 | x 3 = | 225 |
| FACU species | 25 | x 4 = | 100 |
| UPL species | 10 | x 5 = | 50 |
| Column Totals: | 110 (A) | | 375 (B) |

Prevalence Index = B/A = 3.41

**Hydrophytic Vegetation Indicators:**

- ◉ Dominance Test is >50%
- ◉ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes ◯ No ◉

Remarks: Blackberry thicket

## SOIL

Sampling Point: DP 16

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8 | 10 YR 4/4 | 100 | | | | | sandy clay loam | no redox |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils[4]:**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ○ No ◉

Remarks: Dense root system from blackberry shrubs.

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

| | | | |
|---|---|---|---|
| Surface Water Present? | Yes ○ | No ○ | Depth (inches): |
| Water Table Present? | Yes ○ | No ○ | Depth (inches): |
| Saturation Present? (includes capillary fringe) | Yes ○ | No ○ | Depth (inches): |

**Wetland Hydrology Present?** Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

# Appendix C

## Plant Species Observed within the Study Area

# APPENDIX C

# Plant Species Observed within the Study Area

**TABLE C-1.**
**VASCULAR FLORA RECORDED FROM THE PROJECT SITE**

| Scientific Name* | Common Name | Wetland Indicator Status |
|---|---|---|
| Gymnosperms | | |
| Cupressaceae | | |
| *Calocedrus decurrens* | Incense cedar | NL |
| *Sequoia sempervirens* | Coast redwood | NL |
| Pinaceae | | |
| *Pinus* sp. | Ornamental pine | NL |
| Angiosperms Dicotyledonae | | |
| Anacardiaceae | | |
| *Toxicodendron diversilobum* | Western poison oak | FACU |
| Apiaceae | | |
| *Daucus carota* | Queen Anne's-lace | UPL |
| *Foeniculum vulgare* | Fennel | NL |
| Araliaceae | | |
| *Hedera helix* | English ivy | FACU |
| Asteraceae | | |
| *Baccharis pilularis* | Coyote brush | NL |
| *Centaurea solstitialis* | Yellow star-thistle | NL |
| *Helminthotheca echioides* | Bristly ox-tongue | FACU |
| *Silybum marianum* | Milk thistle | NL |
| *Sonchus oleraceus* | Common sow thistle | UPL |
| Betulaceae | | |
| *Alnus rhombifolia* | White alder | FACW |
| Boraginaceae | | |
| *Plagiobothrys* sp. | Popcornflower | FACW-OBL |
| Brassicaceae | | |
| *Brassica nigra* | Black mustard | NL |
| *Raphanus sativus* | Wild radish | NL |
| Caryophyllaceae | | |
| *Stellaria media* | Common chickweed | FACU |
| Euphorbiaceae | | |
| *Triadica sebifera* | Chinese tallowtree | FAC |

**TABLE C-1.**
**VASCULAR FLORA RECORDED FROM THE PROJECT SITE**

| Scientific Name* | Common Name | Wetland Indicator Status |
|---|---|---|
| Fabaceae | | |
| *Lupinus bicolor* | Miniature lupine | NL |
| *Robinia pseudoacacia* | Black locust | FACU |
| *Trifolium* sp. | Clover | - |
| *Vicia villosa* | Hairy vetch | NL |
| Fagaceae | | |
| *Quercus douglasii* | Blue oak | NL |
| *Quercus lobata* | Valley oak | FACU |
| *Quercus wislizeni* | Interior live oak | NL |
| Geraniaceae | | |
| *Erodium botrys* | Broadleaf filaree | FACU |
| *Erodium cicutarium* | Red-stemmed filaree | NL |
| *Geranium dissectum* | Cut-leaved geranium | NL |
| *Geranium molle* | Woodland geranium | NL |
| Juglandaceae | | |
| *Juglans* sp. | Walnut | - |
| Montiaceae | | |
| *Claytonia perfoliata* subsp. *perfoliata* | Miner's lettuce | FAC |
| Moraceae | | |
| *Morus alba* | White mulberry | FACU |
| Papaveraceae | | |
| *Eschscholzia californica* | California poppy | NL |
| Polygonaceae | | |
| *Rumex crispus* | Curly dock | FAC |
| Ranunculaceae | | |
| *Ranunculus muricatus* | Spiny-fruit buttercup | FACW |
| Rosaceae | | |
| *Heteromeles arbutifolia* | Toyon | NL |
| *Prunus* sp. | Cherry | - |
| *Rubus armeniacus* | Himalayan blackberry | FAC |
| Rubiaceae | | |
| *Galium aparine* | Goose grass | FACU |
| Salicaceae | | |
| *Populus fremontii* subsp. *fremontii* | Fremont cottonwood | FAC |
| *Salix gooddingii* | Black willow | FACW |
| *Salix* sp. | Willow | FACW-OBL |
| Sapindaceae | | |
| *Acer macrophyllum* | Big-leaf maple | FAC |
| *Aesculus californica* | California buckeye | NL |

**TABLE C-1.**
**VASCULAR FLORA RECORDED FROM THE PROJECT SITE**

| Scientific Name* | Common Name | Wetland Indicator Status |
|---|---|---|
| Simaroubaceae | | |
| *Ailanthus altissima* | Tree-of-heaven | FACU |
| Vitaceae | | |
| *Vitis californica* | California wild grape | FACU |
| Angiosperms Monocotyledonae | | |
| Agavaceae | | |
| *Chlorogalum pomeridium* var. *pomeridium* | Soap plant | NL |
| Araceae | | |
| *Lemna* sp. | Duckweed | OBL |
| Arecaceae | | |
| *Washingtonia robusta* | Mexican fan palm | FACW |
| Cyperaceae | | |
| *Cyperus eragrostis* | Umbrella sedge | FACW |
| *Eleocharis macrostachya* | Spikerush | OBL |
| Juncaceae | | |
| *Juncus xiphioides* | Iris-leaved rush | OBL |
| Poaceae | | |
| *Avena barbata* | Slender oat | NL |
| *Avena fatua* | Wild oat | NL |
| *Bromus diandrus* | Ripgut brome | NL |
| *Bromus hordeaceus* | Soft brome | FACU |
| *Festuca myuros* | Rat-tail fescue | FACU |
| *Festuca perennis* | Italian ryegrass | FAC |
| *Hordeum marinum* var. *gussoneanum* | Mediterranean barley | FAC |
| *Hordeum murinum* var. *leporinum* | Hare barley | FACU |
| *Phalaris lemmonii* | Lemmon's canary grass | FACW |
| Typhaceae | | |
| *Typha latifolia* | Broadleaf cattail | OBL |

NOTES:
* Arid West 2014 Regional Wetland Plant List (Lichvar, 2014).
Plant taxonomy follows the Jepson Manual (Baldwin et al., 2012)

Wetland Indicator Status Notes:

OBL = Obligate Wetland; occur almost always (estimated probability >99%) under natural conditions in wetlands.
FACW = Facultative Wetland; usually occur in wetlands (estimated probability 67–99%), but occasionally found in non-wetlands.
FAC = Facultative; equally likely to occur in wetlands or nonwetlands (estimated probability 34-66%).
FACU = Facultative Upland; usually occur in nonwetlands (estimated probability 67–99%), but occasionally found in wetlands.
UPL = Obligate Upland; occur almost always (estimated probability >99%) under natural conditions in nonwetlands within this region.
NL = Not listed

# Appendix D
## Aquatic Resources

| Waters_Name | State | Cowardin_Code | Meas_Type | Amount | Units | Waters_Type | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|
| SW-2 | CALIFORNIA | PEM2 | Area | 0.04 | ACRE | NRPWW | 38 50' 1.132" N | 121 10' 32.888" W |
| SW-3 | CALIFORNIA | PEM2 | Area | 0.005 | ACRE | NRPWW | 38 50' 1.481" N | 121 10' 32.629" W |
| SW-4 | CALIFORNIA | PEM2 | Area | 0.002 | ACRE | NRPWW | 38 50' 1.528" N | 121 10' 32.425" W |
| SW-5 | CALIFORNIA | PEM2 | Area | 0.014 | ACRE | NRPWW | 38 50' 2.042" N | 121 10' 30.684" W |
| | | | | | | | | |
| ED-1 | CALIFORNIA | R4SB5 | Area | 0.012 | ACRE | NRPW | 38 49' 58.962" N | 121 10' 26.221" W |
| ED-2 | CALIFORNIA | R4SB5 | Area | 0.005 | ACRE | NRPW | 38 50' 1.659" N | 121 10' 31.811" W |
| ED-3 | CALIFORNIA | R4SB5 | Area | 0.009 | ACRE | NRPW | 38 50' 1.850" N | 121 10' 29.432" W |
| ED-4 | CALIFORNIA | R4SB5 | Area | 0.099 | ACRE | NRPW | 38 50' 10.014" N | 121 10' 28.625" W |
| ED-5 | CALIFORNIA | R4SB5 | Area | 0.031 | ACRE | NRPW | 38 50' 16.929" N | 121 10' 29.578" W |
| ED-6 | CALIFORNIA | R4SB5 | Area | 0.017 | ACRE | NRPW | 38 50' 6.071" N | 121 10' 29.751" W |
| | | | | | | | | |
| Pond 1 | CALIFORNIA | L1AB3 | Area | 0.973 | ACRE | IMPNDMNT | 38 50' 9.237" N | 121 10' 30.513" W |
| Pond 2 | CALIFORNIA | L1AB3 | Area | 0.104 | ACRE | IMPNDMNT | 38 49' 57.952" N | 121 10' 26.753" W |

# Appendix E
## Study Area Photographs

UAIC Tribal School Project.105225

**Photo 1**
SW-2. March 9, 2017

UAIC Tribal School Project.105225

**Photo 2**
SW-5. March 9, 2017

UAIC Tribal School Project.105225

**Photo 3**
ED-4. March 9, 2017

UAIC Tribal School Project.105225

**Photo 4**
Pond-1. March 9, 2017

UAIC Tribal School Project.105225

**Photo 5**
Pond-2. March 9, 2017

UAIC Tribal School Project.105225

**Photo 6**
SW-1 (isolated). March 9, 2017

UAIC Tribal School Project.105225

**Photo 7**
DD-1 (isolated). March 9, 2017

UAIC Tribal School Project.105225

**Photo 8**
DD-2 (isolated). March 9, 2017

UAIC Tribal School Project.105225

**Photo 9**
DS-1. March 9, 2017

UAIC Tribal School Project.105225

**Photo 10**
Sample Point DP-1 (SW-1 isolated). March 9, 2017

UAIC Tribal School Project.105225

**Photo 11**
Sample Point DP-2 (SW-1 isolated). March 9, 2017

UAIC Tribal School Project.105225

**Photo 12**
Sample Point DP-3 (upland). March 9, 2017

UAIC Tribal School Project.105225

**Photo 13**
Sample Point DP-4 (SW-1 isolated). March 9, 2017

UAIC Tribal School Project.105225

**Photo 14**
Sample Point DP-5 (upland). March 9, 2017

UAIC Tribal School Project.105225

**Photo 15**
Sample Point DP-6 (upland). March 9, 2017

UAIC Tribal School Project.105225

**Photo 16**
Sample Point DP-7 (upland). March 9, 2017

UAIC Tribal School Project.105225

**Photo 17**
Sample Point DP-8 (SW-2). March 9, 2017

UAIC Tribal School Project.105225

**Photo 18**
Sample Point DP-11 (SW-5). March 9, 2017

UAIC Tribal School Project.105225

**Photo 19**
Sample Point DP-13 (upland). March 9, 2017

UAIC Tribal School Project.105225

**Photo 20**
Sample Point DP-14 (upland). March 9, 2017

UAIC Tribal School Project.105225

**Photo 21**

Sample Point DP-16 (upland). March 9, 2017

# APPENDIX H

# Report of Phase I Environmental Site Assessment

**THE GATHERING PLACE**
**3141 TAYLOR ROAD**
**LOOMIS, CALIFORNIA 95650**

Prepared for

United Auburn Indian Community
10720 Indian Hill Road
Auburn, CA 95603

Prepared by

Professional Service Industries, Inc.
4703 Tidewater Avenue, Suite B
Oakland, California 94403

November 23, 2015

PSI Project 0575-948

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# GENERAL INFORMATION

**Project Information**
Gathering Place

**Consultant Information**
Professional Service Industries, Inc. (PSI)
4703 Tidewater Avenue, Suite B
Oakland, California 94601

Phone: (510) 434-9200
Facsimile: (510) 434-7676

Contract/Proposal: 575-166000
Authorization Date: 11/6/2015
Authorizing Party: Mr. Brian Garth, United Auburn Indian Community

**Site Information**
Gathering Place
3141 Taylor Road
Loomis, California 95650

**Client Information**
United Auburn Indian Community
10720 Indian Hill Road
Auburn, CA 95603

**Site Assessor:**

Genevieve Enriquez

I declare that, to the best of my professional knowledge and belief, I meet the definition of Environmental Professional as defined in 312.10 of this part. I have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. I have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

**Environmental Professional**

**Principal Consultant**

Frank Poss

# CONTINUED VIABLITY/EXPIRY

ASTM E1527-13 provides that a conforming environmental site assessment completed less than 180 days prior to the date of the intended transaction is presumed to be valid.

Additionally, an environmental assessment for which the information was collected or updated within one year prior to the transaction may be used provided that the following components were conducted or updated within 180 days of the date of the transaction:

- interviews with owners, operators, and occupants;
- searches for recorded environmental cleanup liens;
- reviews of federal, tribal, state, and local government records
- visual inspections of the property and of adjoining properties; and
- the declaration by the environmental professional responsible for the assessment or update.

Standard Guide E2600 for Vapor Encroachment Screening (VES), referenced in ASTME1527-13 provides that the VES is subject to the same expiry schedule as those in the Practice.

# 1 FINDINGS AND CONCLUSIONS

Professional Service Industries, Inc. (PSI) performed a Phase I Environmental Site Assessment (Phase I ESA) of the Gathering Place located at 3141 Taylor Road, Loomis, Placer County, California.

PSI performed the Phase I ESA in general conformance with ASTM E1527-13 (the Practice). Limitations, exceptions and deviations from this protocol are discussed in Section 3.

PSI performed our services to comply with the contract between our client and PSI. The report should be read in its entirety to obtain a more complete understanding of the information provided and to aid in any decisions made or actions taken based on this information.

## 1.1 PHASE I ESA

The subject property is located on the southwest corner of Taylor Road and Trumble Lane. The site address is 3141 Taylor Road, Loomis, California. The site can also be defined by a portion of County of Placer Assessor Parcel Number 043-013-010-000.

Currently, the subject property is currently unused with the exception of the presence of a live-in caretaker. The property had been used as The Gathering Place an operated as an inn. The property consists six buildings. The first set of buildings are the inn and annex, which are two two-story buildings that were used as rooms of the inn. There are individual rooms with bathrooms. The event center is located immediately south of the inn and annex and consists of a one-story building that has a large reception area and a kitchen. The caretaker home is located to the east of the event center and consist of a three bedroom home with a small detached garage. The final building is the barn, which is located south of the event center. The property also has limited parking and a drive way, as well as a pond.

The subject property appears to have been constructed in 1906 as a home and orchard. By 1984, the orchard is primarily gone with the current buildings on the property, as well as the pond. The property appears to have been used as a bed and breakfast until 2008.

During the site reconnaissance, no hazardous waste or materials were identified at the subject property that would constitute a recognized environmental condition. In a review of the environmental database report for the subject property and site vicinity, none of the listed sites appeared to be a REC.

Current uses of the adjoining properties include: Taylor Road followed by scattered single family residences to the north, Tumble Lane followed by scattered single family residences to the east, scattered single family residences to the south, and single family residences to the west.

### 1.1.1 SIGNIFICANT DATA GAPS

The Practice defines a Significant Data Gap as a gap that affects the ability to identify recognized environmental conditions. Findings and conclusions are subject to the limitations imposed by Significant Data Gaps.

PSI's assessment did not identify Significant Data Gaps.

### 1.1.2 HISTORICAL RECOGNIZED ENVIRONMENTAL CONDITIONS

This assessment has revealed no evidence of historical recognized environmental conditions (HRECs) in connection with the subject property.

### 1.1.3 CONTROLLED RECOGNIZED ENVIRONMENTAL CONDITIONS

This assessment has revealed no evidence of controlled recognized environmental conditions (CRECs) in connection with the subject property.

### 1.1.4 RECOGNIZED ENVIRONMENTAL CONDITIONS

This assessment has no evidence of recognized environmental conditions in connection with the property.

### 1.1.5 VAPOR ENCROACHMENT CONDITION

PSI performed a vapor encroachment survey in accordance with ASTM E2600-10. Based on PSI's review of information collected during the site reconnaissance and our review of environmental database records and historical records, PSI concluded that a Vapor Encroachment Condition is not likely to exist at the subject property.

## 1.2 RECOMMENDATIONS

Based on the findings and conclusions of this Phase I ESA, no further assessment is recommended.

# 2 INTRODUCTION

## 2.1 CONTRACT

The contract between PSI and our client, including the proposal number/contract reference and the authorization date was summarized on the General Information section of this report.

## 2.2 THE USER

The Practice defines the "User" of the Phase I Assessment as:

> "… the party seeking to use ASTM E1527 to complete an environmental site assessment of the property. A user may include, without limitation, a potential purchaser of property, a potential tenant of property, an owner of property, a lender, or a property manager. The user has specific obligations for completing a successful application of this practice ..."

PSI considers our direct client to be the User of this report.

## 2.3 PURPOSE OF SERVICES

The purpose of our services was to generally conform with the Practice. The goal of the processes established by the Practice is:

> "…to identify Recognized Environmental Conditions (RECs) in connection with the property."

The purpose of the Practice is:

> "…to define good commercial and customary practice in the United States of America for conducting an environmental site assessment (ESA) of a parcel of commercial real estate with respect to the range of contaminants within the scope of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (42 U.S.C. §9601) and petroleum products.
>
> As such, the Practice is intended to permit a user to satisfy one of the requirements to qualify for the innocent landowner, contiguous property owner, or bona fide prospective purchaser limitations on CERCLA liability (hereinafter, the landowner liability protections or LLPs): that is, the practice that constitutes all appropriate inquiries into the previous ownership and uses of the property consistent with good commercial and customary practice as defined at 42 U.S.C."

The Environmental Protection Agency amended the "All Appropriate Inquiries Rule" at 40 CFR Part 312 to reference the Practice and make clear that persons conducting all

appropriate inquiries may use the procedures included in the Practice to comply with the All Appropriate Inquiries Rule.

## 2.4 STANDARD OF CARE AND WARRANTIES

Our assessment is based on limited information collected under time and cost constraints, in general conformance with the Practice. Findings and conclusions derived from the methodologies described in the Practice contain all of the inherent limitations in the methodologies that are referred to in the Practice, including:

- No ESA can wholly eliminate uncertainty regarding the potential for RECs in connection with the property.
- Our services were not intended to be technically exhaustive. There is a possibility that with the proper application of methodologies, conditions may exist on the property that could not be identified within the scope of the assessment(s) or that were not reasonably identifiable from the available information.
- PSI did not independently verify the information we obtained from records or interviews, and PSI treated the information as reliable.
- Not every property warrants the same level of assessment.
- Subsequent ESAs should not be considered valid standards to judge the appropriateness of a prior assessment. The observations and recommendations presented in this report are time dependent, and conditions will change. This report speaks only as of its date.

PSI did not perform any exploratory probing or discovery, perform tests, operate any specific equipment, or take measurements or samples to perform the ESA scope. The ESA was not a building code, safety, regulatory or environmental compliance inspection. The ESA is not intended to reduce the risk of the presence of mold and physical deficiencies conducive to mold nor the risk that mold or physical deficiencies conducive to mold may pose to the buildings and building occupants.

PSI has performed the services in a manner consistent with that level of care and skill ordinarily exercised by other members of our profession currently practicing in the same locality and under similar conditions, within the limitations of the Practice. No other warranties are implied or expressed.

## 2.5 RELIANCE

Our client United Auburn Indian Community, may rely on this report.

## 2.6 USE BY OTHER PARTIES

This report was prepared pursuant to a contract between PSI and our client. That contractual relationship included an exchange of information about the property and the purpose of our work that was unique and serves as the basis upon which this report was

prepared. Because of the importance of these understandings, our assessment may not be appropriate or sufficient for the intended purposes of another party.

Reliance or any use of this report by anyone other than those parties identified above for which it was prepared, except with express written permission, is prohibited and therefore not foreseeable to PSI. Any unauthorized reliance on or use of this report, including any of the information or conclusions contained herein, will be at such third party's risk. No warranties or representations expressed or implied in this report are made to any such third party.

Third party reliance letters may be issued:

- upon timely request
- subject to the permission by our original client and
- payment of the then-current fee for such letters.

All third parties relying on our report, by such reliance, agree that such reliance is limited by our proposal and/or General Conditions, as applicable.

# 3 SCOPE AND METHODOLOGY

PSI performed a Phase I ESA of the subject property. The scope of our services and general methodology is presented below.

The information sources that PSI used, including published material, material obtained from commercial and other sources, is listed below and cited as it is presented in the report. The information or excerpts thereof is appended.

## 3.1 PHASE I ESA

This assessment included four components:

- Records review;
- Reconnaissance;
- Interviews; and
- Preparation of this report, including our evaluation.

The assessment was also intended to satisfy our client's requirements, described in:

- Proposal 575-166000 dated November 3, 2015.

Assessment of other environmental issues beyond the consideration of ASTM E 1527-13 was not conducted at the request of United Auburn Indian Community.

### 3.1.1 RECORDS REVIEW

**Physical Setting Sources**

The sources that PSI reviewed to evaluate the physical setting of the site to assist with the interpretation of subsurface water movement are tabulated below.

| Summary of Physical Setting Sources | |
|---|---|
| **Source Name** | **Year Published/Issued** |
| **USGS 7.5 Minute Topo Map** | Loomis, CA 1979, photorevised 1981 |
| **EDR GeoCheck Report** | 2015 |
| **State of California GeoTracker Data** | 2015 |

## Environmental Regulatory Information

PSI retained Environmental Data Resources, Inc. (EDR) to provide environmental information attributed to the subject property and its surroundings. EDR obtains environmental records published by local, state, tribal, and federal agencies and maps the information for electronic searches

The search was performed to Approximate Minimum Search Distances (AMSD) listed in ASTM E 1527-13.

Unmappable (orphan) sites (if any were listed) having insufficient address information to be mapped were evaluated for potential location within the AMSD. Those that could be determined to be within the AMSD are discussed in Environmental Records Review section of the report.

## Freedom of Information (FOIA) Requests

PSI often submits requests under the Freedom of Information Act (FOIA) or its State or local equivalent. In some cases, PSI does not submit such requests since the information is available through informal information requests, interviews or other methods.

The FOIA reviews that we submitted and the outcomes are tabulated and discussed below.

| **FOIA Request** | |
|---|---|
| **Agency** | **Response** |
| **Placer County Department of Environmental Health** | Yes |
| **Placer County Fire Department** | Yes |

## Regulatory Agency File and Record Reviews

The Practice provides that if the subject property or any adjoining properties are identified on one or more of the standard environmental record sources in 8.2.1, pertinent regulatory files and/or records associated with the listing should be reviewed, subject to the discretion of the EP. PSI did not consider such file review necessary to assess the property.

## Historical Use Information

PSI used USGS Topo maps to provide information about the history of the subject property and its surroundings. PSI also reviewed other historical resources. The resources PSI reviewed are tabulated below.

| Historical Resources | | |
|---|---|---|
| **Source Type** | **Years Reviewed** | **Source** |
| **USGS Topo Maps** | **See Section 3.1.1** | **USGS** |
| **Aerial Photograph(s)** | 1938, 1952, 1966, 1984, 1993, 1998, 2005, 2006, 2009, 2010, 2012 | EDR |
| **Fire Insurance Maps** | No Coverage Letter | EDR |
| **Street Directories** | 1974, 1980, 1985, 1990, 1992, 1995, 1999, 2003, 2008, 2013 | EDR |

## Recorded Land Title Records

PSI did not review land title records to obtain information about the current and past owners of the subject property and past uses and tenancies.

## User-Provided Information: Liens, AULs and Other Information

The Practice requires that the User provide information about Environmental Liens and Activity and Use Limitations (AULs) currently recorded against the property. The Practice indicates that the User should engage a title company to conduct the review or negotiate such engagement as an addition to the environmental professional's (EP) services. In addition, the Practice suggests that the User provide the EP with certain other information about the property and the reason for the Phase I ESA.

Our client returned PSI's questionnaire indicating 'No' to the question: "Pursuant to ASTM E 1527-13 Section 10.9, as the user of this ESA do you know of (1) any pending, threatened, or past litigation relevant to hazardous substances or petroleum products in, on, or from the property; (2) any pending, threatened, or past administrative proceedings relevant to hazardous substances or petroleum products in, on, or from the property; and (3) any notices from any governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products?".

## Helpful Documents and Proceedings

The Practice requires that the environmental professional ask the property owner, the key site manager (if any is identified), and the User for certain helpful documents about the property and certain legal proceedings involving hazardous substances and the subject property.

The responses documenting the persons we contacted and relevant information obtained are appended where practical. If such documentation was too large to append, it is available at the PSI office that prepared this report.

## Reconnaissance

Mr. John Aspostolos, United Auburn Indian Community, granted PSI access to the subject property. Our assessor was escorted by Jeff, caretaker of the property, during the site reconnaissance.

The ground reconnaissance consisted of observing the periphery of the subject property and viewing the subject property from accessible adjacent public access areas. PSI systematically toured the interior portions of the subject property to provide an overlapping field of view. The peripheries of surface features and/or structures, where present on the subject property, were observed along with accessible interior common areas. PSI photo-documented selected features that we encountered during our reconnaissance.

Reconnaissance of adjoining properties was limited to areas and facilities that were readily observable from the subject property or from public access areas.

## Interviews

PSI made reasonable attempts to interview selected persons having knowledge of the uses and conditions of the subject property, past and present. A list of the persons that PSI interviewed and attempted to interview, along with our interpretations is presented in the Interview section of this report.

## Vapor Encroachment Screening

Vapor encroachment is an evolving matter associated with the potential for chemicals of concern (COC) to migrate as vapors onto a property as a result of contaminated soil and groundwater on or near the property. The Practice requires the EP to evaluate:

> the movement of hazardous substances or petroleum products in any form, including, for example, solid and liquid at the surface or subsurface, and vapor in the subsurface.

The term "hazardous substance" used in CERCLA is not limited to solids and liquids and USEPA has taken the view that the vapor phase of volatile hazardous substances shall be considered and addressed under CERCLA. Additionally, humans may be subjected to subsurface vapor if subsurface volatile chemicals migrate into occupied buildings through cracks and penetrations in the building floor.

Use of Standard Guide E2600-10

ASTM developed E2600-10 "Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions" (E2600). The purpose of the guide is

> to provide practical guidance and a useful process for conducting a vapor encroachment screen (VES) on a property parcel involved in a real estate transaction in the United States of America with respect to chemicals of concern (COC) that may migrate as vapors onto a property as a result of contaminated soil and groundwater on or near the property.
>
> The goal of this VES is to identify a vapor encroachment condition (VEC), which is the presence or likely presence of COC vapors in the sub-surface of the target property (TP) caused by the release of vapors from contaminated soil or groundwater either on or near the property as identified by certain procedures

The Practice references E2600 but does not endorse its use, nor any other process for the assessment of soil vapor. PSI considers the goal described in E2600 to be consistent with the goal of the Practice. Based on our experience, we consider the processes in E2600 to be customary practice for conducting a VES for a commercial property transaction. Therefore, PSI's assessment of soil vapor is based on the processes described in E2600.

Methodology

E2600 VES uses information collected as a normal part of the Practice. PSI proposes to:

- establish a nominal Area of Concern (AoC) using E2600 Approximate Minimum Search Distances (AMSD)
- reduce or expand the distances based on known or inferred groundwater flow directions and other information regarding the subsurface conditions in the area
- identify potential vapor source sites within the AoC using:
  - environmental records
  - historical records and
  - other provided information

PSI will evaluate the identified potential sources and determine for each if:

- A VEC exists or likely exists;
- A VEC cannot be ruled out; or
- A VEC can be ruled out, because a VEC does not or is not likely to exist.

For those sites where PSI determines that a VEC exists or likely exists, PSI will determine whether or not the condition represents a REC. PSI will discuss its evaluation of VECs in the section of this report where the potential source condition is first encountered.

## 3.2 LIMITATIONS, EXCEPTIONS, DEVIATIONS AND DATA GAP

Limitations, exceptions, and deviations from the Practice manifest as a lack of or inability to obtain information required by the Practice. This represents the definition of the 'data gap' contained in the Practice.

PSI listed the component objectives of the Practice on the appended Data Gap Worksheet and tracked the information obtained against the objectives. Therefore, the limitations, exceptions, and deviations are identified in the Worksheet.

In general, when required information was incomplete, not provided, otherwise not obtained, or indicated a need for additional information, PSI attempted to use information from other sources to meet the Practices' performance objectives. When the data gaps affected the Environmental Professional's ability to identify RECs, PSI considered the data gap(s) to be significant. PSI identified significant data gaps (if any) on the Data Gap Worksheet and reported them in Section 1.

- Recorded land title records and lien records to identify environmental liens and activity and use limitations (AULs) was not provided or otherwise made available to PSI for incorporation into this report. In the event that these records become available, PSI will evaluate this new information and determine whether or not it affects the conclusions of this report.

  However, based on information regarding the historical use of the subject property, the lack of evidence indicating a release of hazardous materials at the subject property, and the lack of evidence identifying offsite locations which are likely to have impacted the subject property, PSI does not expect that this data gap will impact the conclusions of this report.

- A data gap of greater than five years is present between historical information sources. However, using the historical information sources available, PSI believes that it is able to construct a complete site history for the site at the subject property since 1938, as a residence and orchard. Based on the size of the historical use of the subject property and site vicinity, the use data gap is not expected to affect the conclusions of this report.

- Historical information sources researched in this assessment did not allow uses of the property to be traced back to first development. However, based on the type of use in 1938, as a residence and orchard, PSI does not expect that this data gap will impact the conclusions of this report.

## 3.3 SIGNIFICANT ASSUMPTIONS

PSI made the following assumptions in developing our Phase I ESA findings and conclusions:

- Regulatory Records and Information - PSI considers all information provided by our environmental information subcontractor(s) and by regulatory agencies regarding regulatory status of facilities to be complete, accurate, and current.
- Title, Lien and AUL Information - PSI considers all information provided by real estate title record review firms regarding property use or ownership, encumbrances or other limitations, if provided, to be complete, accurate and current.
- Interviews - PSI considers all information provided through interviews to be complete, unbiased and provided in good faith.
- PSI interpreted and inferred the direction of the shallow groundwater movement based on the information we obtained and our experience. Actual groundwater flow may be locally influenced by many factors beyond the scope of this assessment. Subsurface investigation would be necessary to determine site-specific groundwater flow direction.

# 4 USER-PROVIDED INFORMATION

## 4.1 USER'S RESPONSIBILITIES

### 4.1.1 ENVIRONMENTAL LIENS

Our client returned PSI's questionnaire indicating 'NO' to the question: "Are you aware of any environmental cleanup liens against the property that are filed under federal, tribal, state of local law?" Our client did not provide supporting documentation. The completed questionnaire is appended.

### 4.1.2 ACTIVITY AND USE LIMITATIONS

Our client returned PSI's questionnaire indicating 'NO' to the question: "Are you aware of any activity and land use limitations (AULs), such as engineering controls, land use restrictions, or institutional controls that are in place at the subject property and/or have been filed or recorded in a registry under federal, tribal, state, or local law?" Our client did not provide supporting documentation. The completed questionnaire is appended.

## 4.2 SUGGESTED INFORMATION

Our client provided PSI with the following suggested information described by the Practice.

- The reason for performing the Phase I ESA.
- The type of property and type of property transaction.
- The complete and correct address for the property.
- The scope of services desired for the Phase I ESA.
- Identification of all parties who will rely on the Phase I ESA report.
- Identification of the site contact and how the contact can be reached.

## 4.3 HELPFUL DOCUMENTS

The client did not provide PSI with prior reports of prior assessments of the site.

## 4.4 PROCEEDINGS

PSI was not provided with information about legal proceedings or litigation involving the subject property. This is a limitation and evaluated on the appended Data Gap Worksheet.

# 5 PHYSICAL SETTING

Based on the quarterly groundwater monitoring report for former Penryn Beacon at 3129 Penryn Road, Penryn, California, approximately 1/4 mile east of the subject property, PSI infers that the shallowest groundwater in the vicinity of the subject property:

- Moves towards the southwest.
- Occurs at about 15 to 20 feet below the ground surface.

Other information about the physical setting of the subject property is tabulated below.

| **Physical Setting** | |
|---|---|
| **Nominal Elevations, (ft, above MSL)** | Approximately 148 |
| **Surface Topo Characteristics** | The site vicinity slopes to the northwest. |
| **General Soil Type, Slopes** | Andregg, coarse sandy loam, Class B – moderate infiltration rates and well drained |
| **Does EDR Map a Floodplain On-Site?** | No |
| **On-Site Water Bodies** | None |
| **Off-Site Water Bodies** | None Adjacent |

## 5.1 WETLANDS

PSI reviewed the National Wetlands Inventory map and performed a visual survey for evidence indicating the potential presence of wetlands at the subject property. This review is not intended to establish the presence or absence of wetlands, or to serve as a formal wetlands delineation. Applicable copies of maps and information reviewed are appended.

Our review of the above records indicated that the area of the existing pond onsite is listed as a wetlands.

# 6 ENVIRONMENTAL RECORDS REVIEW

## 6.1 DATABASE FINDINGS

The distribution of listed sites with respect to the subject property is tabulated and mapped in EDR's Radius Map Report, which is appended. The reader is referred to the table, which can be found near the front of EDR's report.

### 6.1.1 SUBJECT PROPERTY

EDR's report did not identify the subject property.

### 6.1.2 ADJOINING PROPERTIES

EDR's report did not identify sites adjoining the subject property.

### 6.1.3 SURROUNDING PROPERTIES

EDR's report identified sites surrounding the subject property. PSI considered all of the listed sites unlikely to impact the subject site, based upon factors including (but not limited to):

- The nature of the listing
- The use of the site
- When the site was listed and its current listed status
- The developmental density of the setting
- The distance between the listed and subject sites as related to the distance that releases are likely to migrate based on local surface and subsurface drainage conditions
- The presence of intervening drainage divides
- Contaminants of concern
- The groundwater flow direction

## 6.2 OTHER REGULATORY INFORMATION

### 6.2.1 FOIA RESPONSES

PSI submitted a FOIA request to the Placer County Fire Department and the Placer County Department of Environmental Health (PDEH). Any information obtained from these agencies has been incorporated into the body of this report.

### 6.2.2 REGULATORY AGENCY-MAINTAINED WEBSITES

PSI reviewed the State of California GeoTracker website for listings related to USTs, leaking underground storage tanks, or hazardous material releases/clean ups at or near the subject property address. No such listings were identified for the subject property. Pertinent information regarding local depth to groundwater has been previously discussed in Section 5.

### 6.2.3 OTHER REGULATORY AGENCY INFORMATION REVIEWED

No other regulatory agency information was reviewed during this assessment, as such a review was determined not to be warranted since the information in the EDR Radius Map Report was sufficient for PSI to determine if a REC, HREC, and/or CREC related to a regulatory database listing exist in connection with the subject property.

# 7 SITE RECONNAISSANCE

The location and approximate boundaries of the property are illustrated on the appended figures. The legal description of the property, if provided to PSI, is appended.

| Site Reconnaissance | |
|---|---|
| **Project Name** | The Gathering Place |
| **Property Address** | 3141 Taylor Road |
| **City, County, State, ZIP Code** | Loomis, Placer County, California 95650 |
| **Site Area (acres)** | 44.99 |
| **No. Buildings/Stories/Tenants** | 6/1 and 2 Story/1 |
| **Occupied Subgrade Spaces?** | None |
| **Year(s), First Developed for Current Use** | 1906 |
| **Year(s), Additional Phases** | 1980s, barn, event center, and caretaker home added |
| **Year Significant Renovations** | 1996 |

## 7.1 DESCRIPTION AND CURRENT USES

The subject property is located on the southwest corner of Taylor Road and Trumble Lane. The site address is 3141 Taylor Road, Loomis, California. The site can also be defined by a portion of County of Placer Assessor Parcel Number 043-013-010-000.

Currently, the subject property is currently unused with the exception of the presence of a live-in caretaker. The property had been used as The Gathering Place an operated as an inn. The property consists six buildings. The first set of buildings are the inn and annex, which are two two-story buildings that were used as rooms of the inn. There are individual rooms with bathrooms. The event center is located immediately south of the inn and annex and consists of a one-story building that has a large reception area and a kitchen. The caretaker home is located to the east of the event center and consist of a three bedroom home with a small detached garage. The final building is the barn, which is located south of the event center. The property also has limited parking and a drive way, as well as a pond.

### 7.1.1 INTERIOR AND EXTERIOR OBSERVATIONS

A summary of the subject property uses and conditions is tabulated below. Detailed information is discussed following the summary for any "yes" answers, along with an opinion about the significance of the listing.

| Interior and Exterior Observations | |
|---|---|
| **Yes/No** | **Category** |
| **Yes** | Hazardous Substances |
| **Yes** | Petroleum Products |
| **No** | Aboveground or Underground Storage Tanks (ASTs/USTs) |
| **No** | Drums |
| **No** | Suspect Containers |
| **No** | Electrical or Mechanical Equip. Suspected to Contain PCBs |
| **No** | Interior Stains or Corrosion |
| **No** | Drains or Sumps |
| **No** | Wastewater Discharges |
| **Yes** | Septic or Sewage Tanks |
| **Yes** | Pits, Ponds or Lagoons |
| **No** | Pools of Liquid or Standing Water |
| **No** | Solid Waste Dumping/Landfills/Suspect Fill Material |
| **No** | Stained Soil or Pavement |
| **No** | Stressed Vegetation |
| **No** | Drinking Water Wells |
| **Yes** | Irrigation Wells |
| **No** | Monitoring Wells |
| **No** | Odors |
| **No** | Other Uses or Conditions of Concern |

No evidence of recognized environmental conditions was observed as part of the site reconnaissance of the subject property.

#### HAZARDOUS MATERIALS AND PETROLEUM PRODUCTS IN CONNECTION WITH PROPERTY

Small quantities of lubricants, oils, gasoline, and herbicides are located within the barn. No staining or other evidence of a release of the aforementioned material was observed

during site reconnaissance. Therefore, the hazardous materials and petroleum products do not represent a recognized environmental condition in connection with the subject property.

#### SEPTIC OR SEWAGE TANKS

A septic tank is located at the property. There is no indication of use of chemicals at the site that would result in the septic tank being a recognized environmental condition.

#### PITS, PONDS OR LAGOONS

A pond is located on the eastern portion of the property. The pond first appears in the 1984 aerial photograph for the property. There is no indication of use of chemicals at the site that would result in the pond being a recognized environmental condition.

#### DRINKING WATER WELL AND IRRIGATION WELL

A water-well is also located in the garden on the northwestern portion of the subject property. No indication of a release was observed associated with any of these compounds, and therefore, they do not represent a recognized environmental condition.

## 7.2 PAST USES

Our interpretation of the past uses of the property, based on the historical data sources listed in Section 3.1 of this report, is tabulated below.

| **Past Uses** | |
|---|---|
| **Year(s)** | **Interpreted Property Use** |
| 1938, 1952, 1966 | Aerial Photographs & City Directory: The subject property appears to be an orchard with what appears to be two single family residences (inn and caretaker home). By 1966, the orchard is mostly gone and the property is primarily undeveloped land. |
| 1974, 1980, 1984, 1990, 1992, 1993, 1995, 1998, 1999, 2003, 2005, 2006, 2008, 2009, 2010, 2012, 2013 | Aerial Photographs & City Directory: The subject property appears to be primarily undeveloped land. The current buildings are all present and the pond is no present on the eastern portion of the property. There are no listings in the City Director for 3141 Taylor Road other than the following:<br><br>1999, Aaron Fondren; 2003, Tina Fondren; 2008, Davis Mozell; and 2013, Harold Fondren<br><br>The property also appears to have the address of 3137 Taylor Road with the City Directory indicating the following: 1974, Loomis Plumbing & John Whitehead; 1980, JL Sorenson; 1985-1990-1992, several individuals; 1995, Joseph Sorenson; 1999-2003-2008, Emma's Bed & Breakfast |

Though the historical information developed and reviewed for the subject property did not reveal evidence of recognized environmental conditions, it should be noted that the subject property was at some point agriculturally developed. While no structures indicative of pesticide/herbicide/chemical storage/mixing areas were noted in the aerial photographs, typically, crops are maintained with chemicals applied as a normal agricultural process. While no surficial evidence of misuse, misapplication of residual materials from pesticides, herbicides, or fertilizers were observed during the site reconnaissance, in certain instances, the chemicals historically applied to the subject site could be persistent and not biodegrade. As with any agriculturally developed land, there exists the possibility that pesticides, herbicides, or fertilizers have been applied, which may have impacted the subject property. Due to the fact that there is no evidence of mixing and storage of pesticides, herbicides, or fertilizers at the subject property, PSI does not consider former agricultural use to represent a REC.

# 8 ADJOINING PROPERTY RECONNAISSANCE

## 8.1 DESCRIPTION AND CURRENT USES

Our interpretation of the uses of the adjoining and surrounding property is tabulated below and detailed in the subsequent sections.

| Adjoining Current Use | |
|---|---|
| **Direction** | **Interpreted Property Use** |
| **North** | Taylor Road followed by single family residences |
| **South** | Scattered single family residences |
| **East** | Tumble Lane followed by single family residences |
| **West** | Single family residences |

### 8.1.1 INTERIOR AND EXTERIOR OBSERVATIONS

A summary of our interpretation of the current and past uses and conditions of adjoining and surrounding property based on historical records and observations is provided below.

| Interior and Exterior Observations | |
|---|---|
| **Yes/No** | **Category** |
| **No** | Hazardous Substances |
| **No** | Petroleum Products |
| **No** | Aboveground or Underground Storage Tanks (ASTs/USTs) |
| **No** | Drums |
| **No** | Suspect Containers |
| **No** | Electrical or Mechanical Equip. Suspected to Contain PCBs |
| **No** | Interior Stains or Corrosion |
| **No** | Drains or Sumps |
| **No** | Wastewater Discharges |
| **No** | Septic or Sewage Tanks |
| **No** | Pits, Ponds or Lagoons |
| **No** | Pools of Liquid or Standing Water |

| | |
|---|---|
| **No** | Solid Waste Dumping/Landfills/Suspect Fill Material |
| **No** | Stained Soil or Pavement |
| **No** | Stressed Vegetation |
| **No** | Drinking Water Wells |
| **No** | Irrigation Wells |
| **No** | Monitoring Wells |
| **No** | Odors |
| **No** | Other Uses or Conditions of Concern |

The information developed and reviewed for adjoining properties did not reveal evidence of recognized environmental conditions in connection with the subject property.

## 8.2 PAST USES

Our interpretation of the past uses of the adjoining properties is tabulated below.

| **Adjoining North** | |
|---|---|
| **Year(s)** | **Interpreted Property Use** |
| 1938, 1952, 1966, 1984, 1993, 1998, 2005, 2006, 2009, 2010, 2012 | The adjacent property to the north appears to be Taylor Road followed by scattered single family residences |

| **Adjoining East** | |
|---|---|
| **Year(s)** | **Interpreted Property Use** |
| 1938, 1952, 1966 | The adjacent property to the east appears to be Tumble Lane followed by undeveloped land |
| 1984, 1993, 1998, 2005, 2006, 2009, 2010, 2012 | The adjacent property to the east appears to be Tumble Lane followed by scattered single family residences. |

| **Adjoining South** | |
|---|---|
| **Year(s)** | **Interpreted Property Use** |
| 1938, 1952, 1966, 1984, 1993, 1998, 2005, 2006, 2009, 2010, 2012 | The adjacent property to the south appears to be scattered single family residences. |

| Adjoining West | |
|---|---|
| **Year(s)** | **Interpreted Property Use** |
| 1938, 1952, 1966, 1984, 1993, 1998 | The adjacent property to the west appears to be undeveloped land. |
| 2005, 2006, 2009, 2010, 2012 | The adjacent property to the west appears to be single family residences. |

The historical information developed and reviewed for adjoining properties did not reveal evidence of recognized environmental conditions in connection with the subject property. It should be noted that adjacent properties were at some point agriculturally developed. While no structures indicative of pesticide/herbicide/chemical storage/mixing areas were noted in the aerial photographs, typically, crops are maintained with chemicals applied as a normal agricultural process. While no surficial evidence of misuse, misapplication of residual materials from pesticides, herbicides, or fertilizers were observed during the site reconnaissance, in certain instances, the chemicals historically applied to the subject site could be persistent and not biodegrade. As with any agriculturally developed land, there exists the possibility that pesticides, herbicides, or fertilizers have been applied, which may have impacted the subject property. Due to the fact that there is no evidence of mixing and storage of pesticides, herbicides, or fertilizers at adjoining properties, PSI does not consider former agricultural use to represent a REC.

# 9 INTERVIEWS

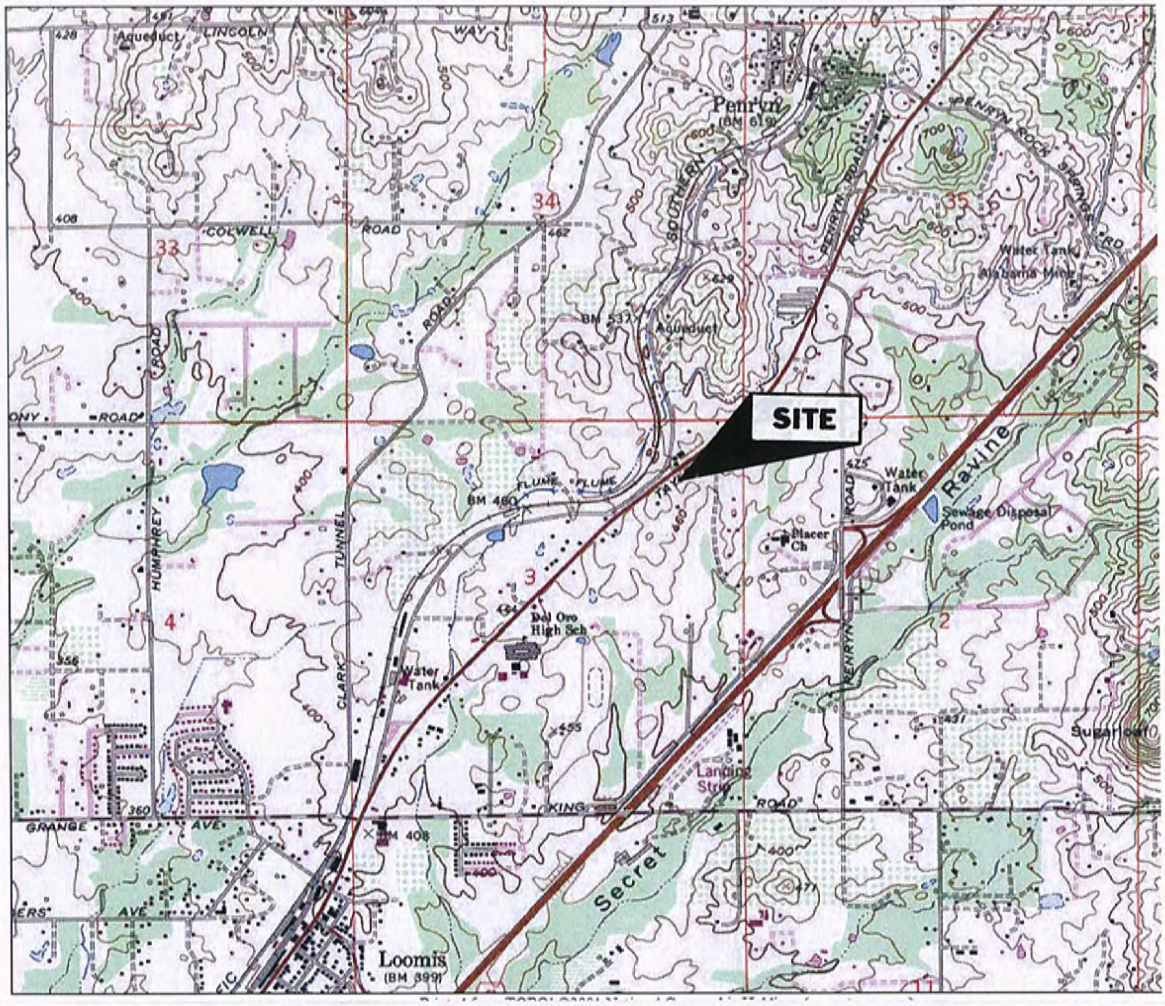
PSI interviewed parties potentially having information about current and/or former conditions at the subject property. The parties and their affiliation are tabulated below.

| Interviews | | |
|---|---|---|
| **Name** | **Affiliation** | **Role** |
| Mr. John Aspostolos | United Auburn Indian Community | Client |
| Jeff | Caretaker | Site Contact |
| Mr. West Bourgault | Placer Department of Environmental Health | Senior Office Specialist |
| Clerk | Placer County Fire Department | Clerk |

No evidence of RECs was identified as a result of the interviews conducted during this assessment.

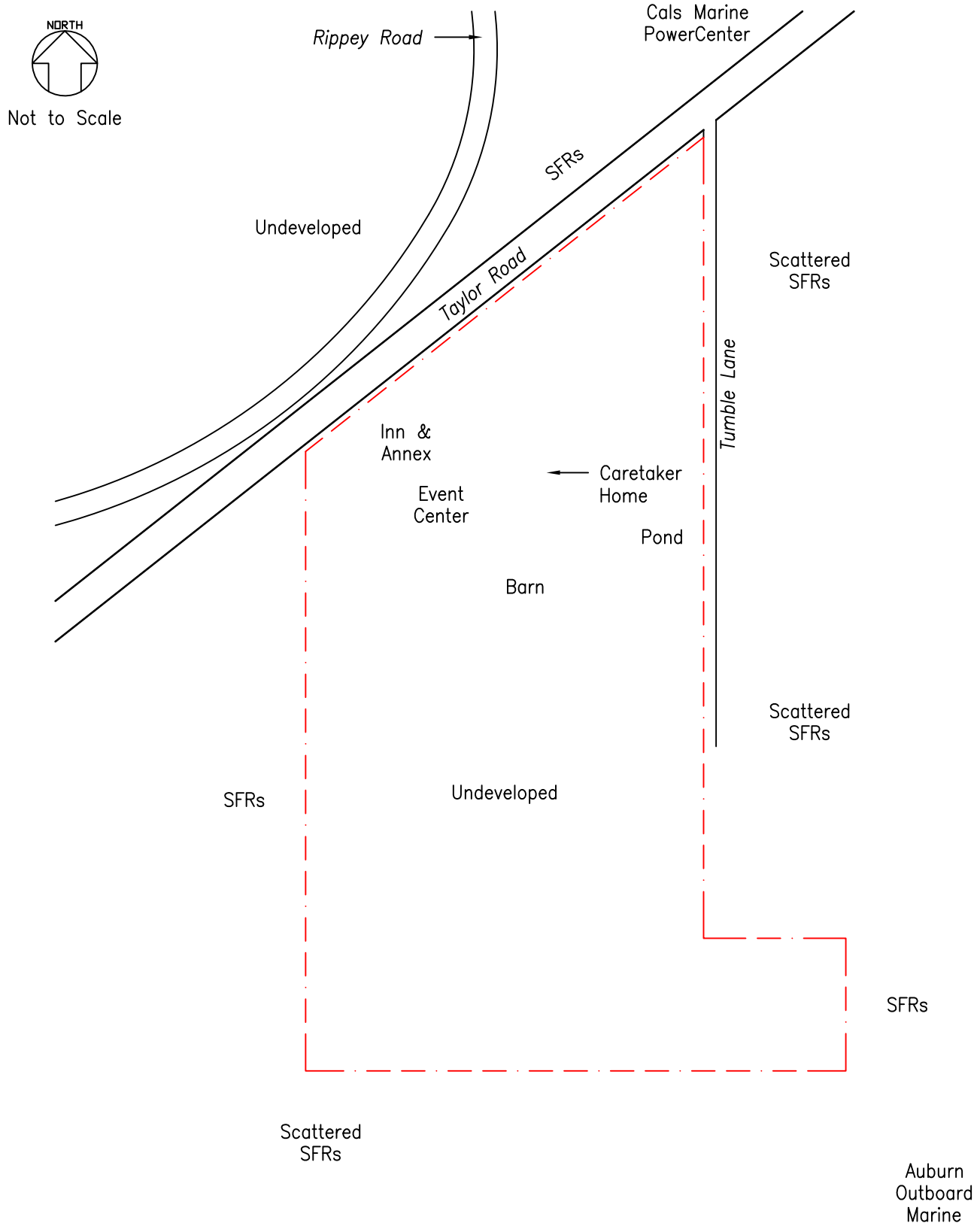
# FIGURES

NORTH




REFERENCE:
U.S.G.S. LOOMIS, CA 2012

| | | | | |
|---|---|---|---|---|
| psi Information To Build On<br>Engineering • Consulting • Testing | 4703 Tidewater Avenue, Suite B<br>Oakland, California 94601<br>(510) 434-9200 | | | |
| Project Name:<br>THE GATHERING PLACE<br>3141 TAYLOR ROAD, LOOMIS, CALIFORNIA | Drawn By:<br>M.G. | Date:<br>11/17/15 | File No.:<br>948-001 | Figure No.:<br>1 |
| Title:<br>SITE VICINITY MAP | Approved By:<br>F.P. | Project No.:<br>575-948 | | |




## LEGEND

SUBJECT PROPERTY BOUDNDARY

SFR SINGLE–FAMILY RESIDENCE

psi Information To Build On
Engineering • Consulting • Testing

4703 Tidewater Avenue, Suite B
Oakland, California 94601
(510) 434–9200

| Project Name: | Drawn By: | Date: | File No.: | Figure No.: |
|---|---|---|---|---|
| THE GATHERING PLACE<br>3141 TAYLOR ROAD, LOOMIS, CALIFORNIA | M.G. | 11/17/15 | 948–001 | 2 |
| Title: SITE PLAN | Approved By: F.P. | Project No.: 575–948 | | |

# PHOTOGRAPHS

# PHOTOGRAPHIC LOG

*3141 Taylor Road, Loomis, California*

Photo 1: View looking at the event center at the subject property.

Photo 2: View looking at the Inn & Annex at the subject property.

Photo 3:  View looking at the caretakers home and detached garage at the subject property.

Photo 4:  View looking at the pond at the subject property.

Photo 5: View looking at the rear of the subject property.

Photo 6:  View looking inside the barn at the subject property.

Photo 7:  View looking inside the inn at the subject property.

Photo 8:  View looking inside the event center at the subject property.

Photo 9:  View looking north across Taylor Road at the adjacent property to the north.

Photo 10:  View looking east at the adjacent property to the east.

Photo 11:  View looking south at the adjacent property to the south.

Photo 12:  View looking west at the adjacent property to the west

# ENVIRONMENTAL DATABASE REPORT

**The Gathering Place**
3141 Taylor Road
Loomis, CA 95650

Inquiry Number: 4468335.2s
November 16, 2015

# The EDR Radius Map™ Report with GeoCheck®

EDR® Environmental Data Resources Inc

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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with any questions or comments.


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# EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

**TARGET PROPERTY INFORMATION**

**ADDRESS**

3141 TAYLOR ROAD
LOOMIS, CA 95650

**COORDINATES**

| | |
|---|---|
| Latitude (North): | 38.8350000 - 38˚ 50' 6.00'' |
| Longitude (West): | 121.1761000 - 121˚ 10' 33.96'' |
| Universal Tranverse Mercator: | Zone 10 |
| UTM X (Meters): | 658310.7 |
| UTM Y (Meters): | 4299839.5 |
| Elevation: | 449 ft. above sea level |

**USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY**

| | |
|---|---|
| Target Property Map: | 5629068 ROCKLIN, CA |
| Version Date: | 2012 |

**AERIAL PHOTOGRAPHY IN THIS REPORT**

| | |
|---|---|
| Portions of Photo from: | 20120706 |
| Source: | USDA |

## MAPPED SITES SUMMARY

Target Property Address:
3141 TAYLOR ROAD
LOOMIS, CA 95650

Click on Map ID to see full detail.

| MAP ID | SITE NAME | ADDRESS | DATABASE ACRONYMS | RELATIVE ELEVATION | DIST (ft. & mi.) DIRECTION |
|---|---|---|---|---|---|
| 1 | CAL'S MARINE | 3040 TAYLOR RD | HAZNET, CA PLACER CO. MS | Higher | 65, 0.012, North |
| A2 | LOOMIS TRAILERS & WE | 2871 TAYLOR RD | CA PLACER CO. MS | Higher | 167, 0.032, NNE |
| 3 | | 3028 ORCHARD PARK W | EDR US Hist Auto Stat | Higher | 169, 0.032, West |
| A4 | GORDON, MITCHELL AND | 2868 TAYLOR RD | CA PLACER CO. MS | Higher | 172, 0.033, NNE |
| 5 | MG PENRYN PROPERTY | 2851 & 2881 TAYLOR R | ENVIROSTOR, VCP | Higher | 793, 0.150, NNE |
| 6 | T-MOBILE SC09132A | 3268 PENRYN RD | CA PLACER CO. MS | Lower | 973, 0.184, SE |
| 7 | PACIFIC TRAILS R.V. | 3320 BOYINGTON DR | CA PLACER CO. MS | Lower | 974, 0.184, SSE |
| 8 | AMERIGAS LOOMIS | 3200 TAYLOR RD | CA PLACER CO. MS | Lower | 988, 0.187, West |
| 9 | MORGAN'S ORCHARD | SOUTH OF INTERSTATE | ENVIROSTOR, VCP | Lower | 1070, 0.203, SSE |
| 10 | PENRYN DEVELOPMENT | APN 043-060-052, 043 | ENVIROSTOR, VCP | Higher | 1204, 0.228, NE |
| 11 | PENRYN 76 | 3142 BOYINGTON RD | CA PLACER CO. MS | Lower | 1254, 0.237, East |
| 12 | INCH'S TOOLING & MAC | 3230 TAYLOR RD | CA PLACER CO. MS | Lower | 1288, 0.244, WSW |
| 13 | PENRYN DEVELOPMENT - | PENRYN RD. & INTERST | SLIC | Higher | 1702, 0.322, ENE |
| 14 | PENRYN BEACON | 3121 PENRYN RD | LUST, SWEEPS UST, HIST CORTESE | Lower | 1881, 0.356, East |
| 15 | RUSS PEST CONTROL | 3321 TAYLOR RD | CERC-NFRAP | Lower | 2590, 0.491, WSW |

# EXECUTIVE SUMMARY

## TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

## DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

## STANDARD ENVIRONMENTAL RECORDS

### *Federal NPL site list*

NPL ..... National Priority List
Proposed NPL ..... Proposed National Priority List Sites
NPL LIENS ..... Federal Superfund Liens

### *Federal Delisted NPL site list*

Delisted NPL ..... National Priority List Deletions

### *Federal CERCLIS list*

FEDERAL FACILITY ..... Federal Facility Site Information listing
CERCLIS ..... Comprehensive Environmental Response, Compensation, and Liability Information System

### *Federal RCRA CORRACTS facilities list*

CORRACTS ..... Corrective Action Report

### *Federal RCRA non-CORRACTS TSD facilities list*

RCRA-TSDF ..... RCRA - Treatment, Storage and Disposal

### *Federal RCRA generators list*

RCRA-LQG ..... RCRA - Large Quantity Generators
RCRA-SQG ..... RCRA - Small Quantity Generators
RCRA-CESQG ..... RCRA - Conditionally Exempt Small Quantity Generator

### *Federal institutional controls / engineering controls registries*

LUCIS ..... Land Use Control Information System
US ENG CONTROLS ..... Engineering Controls Sites List
US INST CONTROL ..... Sites with Institutional Controls

### *Federal ERNS list*

ERNS ..... Emergency Response Notification System

***State- and tribal - equivalent NPL***

RESPONSE..... State Response Sites

***State and tribal landfill and/or solid waste disposal site lists***

SWF/LF..... Solid Waste Information System

***State and tribal leaking storage tank lists***

INDIAN LUST..... Leaking Underground Storage Tanks on Indian Land

***State and tribal registered storage tank lists***

FEMA UST..... Underground Storage Tank Listing
UST..... Active UST Facilities
AST..... Aboveground Petroleum Storage Tank Facilities
INDIAN UST..... Underground Storage Tanks on Indian Land

***State and tribal voluntary cleanup sites***

INDIAN VCP..... Voluntary Cleanup Priority Listing

***State and tribal Brownfields sites***

BROWNFIELDS..... Considered Brownfieds Sites Listing

**ADDITIONAL ENVIRONMENTAL RECORDS**

***Local Brownfield lists***

US BROWNFIELDS..... A Listing of Brownfields Sites

***Local Lists of Landfill / Solid Waste Disposal Sites***

WMUDS/SWAT..... Waste Management Unit Database
SWRCY..... Recycler Database
HAULERS..... Registered Waste Tire Haulers Listing
INDIAN ODI..... Report on the Status of Open Dumps on Indian Lands
ODI..... Open Dump Inventory
DEBRIS REGION 9..... Torres Martinez Reservation Illegal Dump Site Locations

***Local Lists of Hazardous waste / Contaminated Sites***

US HIST CDL..... National Clandestine Laboratory Register
HIST Cal-Sites..... Historical Calsites Database
SCH..... School Property Evaluation Program
CDL..... Clandestine Drug Labs
Toxic Pits..... Toxic Pits Cleanup Act Sites
US CDL..... Clandestine Drug Labs

***Local Lists of Registered Storage Tanks***

SWEEPS UST..... SWEEPS UST Listing

| | |
|---|---|
| HIST UST | Hazardous Substance Storage Container Database |
| CA FID UST | Facility Inventory Database |

***Local Land Records***

| | |
|---|---|
| LIENS | Environmental Liens Listing |
| LIENS 2 | CERCLA Lien Information |
| DEED | Deed Restriction Listing |

***Records of Emergency Release Reports***

| | |
|---|---|
| HMIRS | Hazardous Materials Information Reporting System |
| CHMIRS | California Hazardous Material Incident Report System |
| LDS | Land Disposal Sites Listing |
| MCS | Military Cleanup Sites Listing |
| SPILLS 90 | SPILLS 90 data from FirstSearch |

***Other Ascertainable Records***

| | |
|---|---|
| RCRA NonGen / NLR | RCRA - Non Generators / No Longer Regulated |
| FUDS | Formerly Used Defense Sites |
| DOD | Department of Defense Sites |
| SCRD DRYCLEANERS | State Coalition for Remediation of Drycleaners Listing |
| US FIN ASSUR | Financial Assurance Information |
| EPA WATCH LIST | EPA WATCH LIST |
| 2020 COR ACTION | 2020 Corrective Action Program List |
| TSCA | Toxic Substances Control Act |
| TRIS | Toxic Chemical Release Inventory System |
| SSTS | Section 7 Tracking Systems |
| ROD | Records Of Decision |
| RMP | Risk Management Plans |
| RAATS | RCRA Administrative Action Tracking System |
| PRP | Potentially Responsible Parties |
| PADS | PCB Activity Database System |
| ICIS | Integrated Compliance Information System |
| FTTS | FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act) |
| MLTS | Material Licensing Tracking System |
| COAL ASH DOE | Steam-Electric Plant Operation Data |
| COAL ASH EPA | Coal Combustion Residues Surface Impoundments List |
| PCB TRANSFORMER | PCB Transformer Registration Database |
| RADINFO | Radiation Information Database |
| HIST FTTS | FIFRA/TSCA Tracking System Administrative Case Listing |
| DOT OPS | Incident and Accident Data |
| CONSENT | Superfund (CERCLA) Consent Decrees |
| INDIAN RESERV | Indian Reservations |
| UMTRA | Uranium Mill Tailings Sites |
| LEAD SMELTERS | Lead Smelter Sites |
| US AIRS | Aerometric Information Retrieval System Facility Subsystem |
| US MINES | Mines Master Index File |
| FINDS | Facility Index System/Facility Registry System |
| CA BOND EXP. PLAN | Bond Expenditure Plan |
| Cortese | "Cortese" Hazardous Waste & Substances Sites List |
| CUPA Listings | CUPA Resources List |
| DRYCLEANERS | Cleaner Facilities |

# EXECUTIVE SUMMARY

EMI ..... Emissions Inventory Data
ENF ..... Enforcement Action Listing
Financial Assurance ..... Financial Assurance Information Listing
HAZNET ..... Facility and Manifest Data
HWP ..... EnviroStor Permitted Facilities Listing
HWT ..... Registered Hazardous Waste Transporter Database
MINES ..... Mines Site Location Listing
MWMP ..... Medical Waste Management Program Listing
NPDES ..... NPDES Permits Listing
PEST LIC ..... Pesticide Regulation Licenses Listing
PROC ..... Certified Processors Database
Notify 65 ..... Proposition 65 Records
UIC ..... UIC Listing
WASTEWATER PITS ..... Oil Wastewater Pits Listing
WDS ..... Waste Discharge System
WIP ..... Well Investigation Program Case List

**EDR HIGH RISK HISTORICAL RECORDS**

***EDR Exclusive Records***

EDR MGP ..... EDR Proprietary Manufactured Gas Plants
EDR US Hist Cleaners ..... EDR Exclusive Historic Dry Cleaners

**EDR RECOVERED GOVERNMENT ARCHIVES**

***Exclusive Recovered Govt. Archives***

RGA LF ..... Recovered Government Archive Solid Waste Facilities List
RGA LUST ..... Recovered Government Archive Leaking Underground Storage Tank

**SURROUNDING SITES: SEARCH RESULTS**

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

**STANDARD ENVIRONMENTAL RECORDS**

***Federal CERCLIS NFRAP site List***

CERC-NFRAP: Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed

and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

A review of the CERC-NFRAP list, as provided by EDR, and dated 10/25/2013 has revealed that there is 1 CERC-NFRAP site within approximately 0.5 miles of the target property.

| Lower Elevation | Address | Direction / Distance | Map ID | Page |
|---|---|---|---|---|
| RUSS PEST CONTROL | 3321 TAYLOR RD | WSW 1/4 - 1/2 (0.491 mi.) | 15 | 36 |

***State- and tribal - equivalent CERCLIS***

ENVIROSTOR: The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

A review of the ENVIROSTOR list, as provided by EDR, and dated 08/03/2015 has revealed that there are 3 ENVIROSTOR sites within approximately 1 mile of the target property.

| Equal/Higher Elevation | Address | Direction / Distance | Map ID | Page |
|---|---|---|---|---|
| ***MG PENRYN PROPERTY***<br>Facility Id: 31010002<br>Status: No Further Action | ***2851 & 2881 TAYLOR R*** | ***NNE 1/8 - 1/4 (0.150 mi.)*** | ***5*** | ***10*** |
| ***PENRYN DEVELOPMENT***<br>Facility Id: 60000467<br>Status: Inactive - Action Required | ***APN 043-060-052, 043*** | ***NE 1/8 - 1/4 (0.228 mi.)*** | ***10*** | ***17*** |

| Lower Elevation | Address | Direction / Distance | Map ID | Page |
|---|---|---|---|---|
| ***MORGAN'S ORCHARD***<br>Facility Id: 60000180<br>Status: No Further Action | ***SOUTH OF INTERSTATE*** | ***SSE 1/8 - 1/4 (0.203 mi.)*** | ***9*** | ***14*** |

***State and tribal leaking storage tank lists***

LUST: The Leaking Underground Storage Tank Incident Reports contain an inventory of reported leaking underground storage tank incidents. The data come from the State Water Resources Control Board Leaking Underground Storage Tank Information System.

A review of the LUST list, as provided by EDR, and dated 10/21/2015 has revealed that there is 1 LUST

site within approximately 0.5 miles of the target property.

| Lower Elevation | Address | Direction / Distance | Map ID | Page |
|---|---|---|---|---|
| ***PENRYN BEACON*** | ***3121 PENRYN RD*** | ***E 1/4 - 1/2 (0.356 mi.)*** | ***14*** | ***24*** |
| Status: Completed - Case Closed<br>Status: Preliminary site assessment underway<br>Global Id: T0606100207 | | | | |

SLIC: SLIC Region comes from the California Regional Water Quality Control Board.

A review of the SLIC list, as provided by EDR, and dated 10/21/2015 has revealed that there is 1 SLIC site within approximately 0.5 miles of the target property.

| Equal/Higher Elevation | Address | Direction / Distance | Map ID | Page |
|---|---|---|---|---|
| PENRYN DEVELOPMENT - | PENRYN RD. & INTERST | ENE 1/4 - 1/2 (0.322 mi.) | 13 | 24 |
| Facility Status: Open - Inactive<br>Global Id: SL0606131540 | | | | |

***State and tribal voluntary cleanup sites***

VCP: Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

A review of the VCP list, as provided by EDR, and dated 08/03/2015 has revealed that there are 3 VCP sites within approximately 0.5 miles of the target property.

| Equal/Higher Elevation | Address | Direction / Distance | Map ID | Page |
|---|---|---|---|---|
| ***MG PENRYN PROPERTY*** | ***2851 & 2881 TAYLOR R*** | ***NNE 1/8 - 1/4 (0.150 mi.)*** | ***5*** | ***10*** |
| Status: No Further Action<br>Facility Id: 31010002 | | | | |
| ***PENRYN DEVELOPMENT*** | ***APN 043-060-052, 043*** | ***NE 1/8 - 1/4 (0.228 mi.)*** | ***10*** | ***17*** |
| Status: Inactive - Action Required<br>Facility Id: 60000467 | | | | |

| Lower Elevation | Address | Direction / Distance | Map ID | Page |
|---|---|---|---|---|
| ***MORGAN'S ORCHARD*** | ***SOUTH OF INTERSTATE*** | ***SSE 1/8 - 1/4 (0.203 mi.)*** | ***9*** | ***14*** |
| Status: No Further Action<br>Facility Id: 60000180 | | | | |

**ADDITIONAL ENVIRONMENTAL RECORDS**

***Other Ascertainable Records***

# EXECUTIVE SUMMARY

HIST CORTESE: The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

A review of the HIST CORTESE list, as provided by EDR, and dated 04/01/2001 has revealed that there is 1 HIST CORTESE site within approximately 0.5 miles of the target property.

| Lower Elevation | Address | Direction / Distance | Map ID | Page |
|---|---|---|---|---|
| ***PENRYN BEACON***<br>Reg Id: 310257 | ***3121 PENRYN RD*** | ***E 1/4 - 1/2 (0.356 mi.)*** | ***14*** | ***24*** |

CA PLACER CO. MS: Placer County Master List of Facilities includes Aboveground Hazardous Material tanks, Underground Storage tanks, Site Clean-up sites.

A review of the CA PLACER CO. MS list, as provided by EDR, and dated 09/08/2015 has revealed that there are 8 CA PLACER CO. MS sites within approximately 0.25 miles of the target property.

| Equal/Higher Elevation | Address | Direction / Distance | Map ID | Page |
|---|---|---|---|---|
| ***CAL'S MARINE***<br>Facility Status: Closed<br>Facility Status: Active<br>Facility Id: FA0020153<br>Facility Id: FA0001548 | ***3040 TAYLOR RD*** | ***N 0 - 1/8 (0.012 mi.)*** | ***1*** | ***8*** |
| LOOMIS TRAILERS & WE<br>Facility Status: Closed<br>Facility Id: FA0001722<br>Facility Id: FA0002590 | 2871 TAYLOR RD | NNE 0 - 1/8 (0.032 mi.) | A2 | 8 |
| GORDON, MITCHELL AND<br>Facility Status: Closed<br>Facility Id: FA0003577 | 2868 TAYLOR RD | NNE 0 - 1/8 (0.033 mi.) | A4 | 9 |

| Lower Elevation | Address | Direction / Distance | Map ID | Page |
|---|---|---|---|---|
| T-MOBILE SC09132A<br>Facility Status: Closed<br>Facility Id: FA0017453 | 3268 PENRYN RD | SE 1/8 - 1/4 (0.184 mi.) | 6 | 13 |
| PACIFIC TRAILS R.V.<br>Facility Status: Closed<br>Facility Id: FA0002363 | 3320 BOYINGTON DR | SSE 1/8 - 1/4 (0.184 mi.) | 7 | 14 |
| AMERIGAS LOOMIS<br>Facility Status: Closed<br>Facility Status: Active<br>Facility Id: FA0020167<br>Facility Id: FA0001530 | 3200 TAYLOR RD | W 1/8 - 1/4 (0.187 mi.) | 8 | 14 |
| PENRYN 76<br>Facility Status: Active<br>Facility Id: FA0005557 | 3142 BOYINGTON RD | E 1/8 - 1/4 (0.237 mi.) | 11 | 23 |
| INCH'S TOOLING & MAC<br>Facility Status: Closed<br>Facility Id: FA0001709 | 3230 TAYLOR RD | WSW 1/8 - 1/4 (0.244 mi.) | 12 | 24 |

# EXECUTIVE SUMMARY

## EDR HIGH RISK HISTORICAL RECORDS

### *EDR Exclusive Records*

EDR US Hist Auto Stat: EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

A review of the EDR US Hist Auto Stat list, as provided by EDR, has revealed that there is 1 EDR US Hist Auto Stat site within approximately 0.125 miles of the target property.

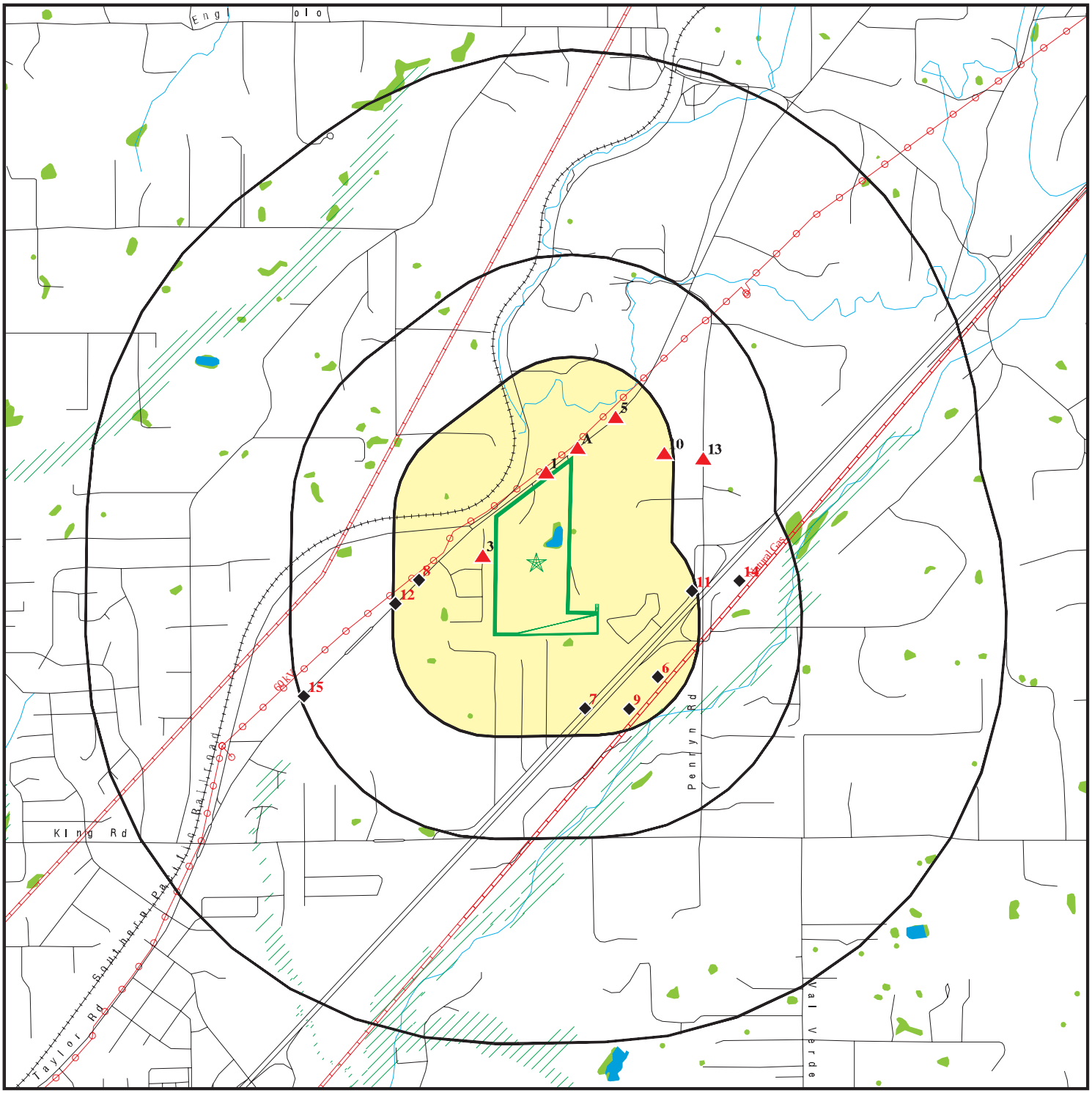
| Equal/Higher Elevation | Address | Direction / Distance | Map ID | Page |
|---|---|---|---|---|
| Not reported | 3028 ORCHARD PARK W | W 0 - 1/8 (0.032 mi.) | 3 | 9 |

# EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 3 records.

| Site Name | Database(s) |
| --- | --- |
| ORCHARD PLACE SUBDIVISION | ENVIROSTOR, VCP |
| ORCHARD PLACE SUBDIVISION | FINDS |
| LINCOLN HIGHWAY ABANDONMENT PARCEL | SLIC |

# OVERVIEW MAP - 4468335.2S




Target Property

Sites at elevations higher than or equal to the target property

Sites at elevations lower than the target property

Manufactured Gas Plants

National Priority List Sites

Dept. Defense Sites

0 1/4 1/2 1 Miles

Indian Reservations BIA

Power transmission lines

Pipelines

100-year flood zone

500-year flood zone

National Wetland Inventory

State Wetlands

Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

| | |
|---|---|
| SITE NAME: The Gathering Place | CLIENT: PSI, Inc. |
| ADDRESS: 3141 Taylor Road<br>Loomis CA 95650 | CONTACT: Frank Poss<br>INQUIRY #: 4468335.2s |
| LAT/LONG: 38.835 / 121.1761 | DATE: November 16, 2015 4:58 pm |

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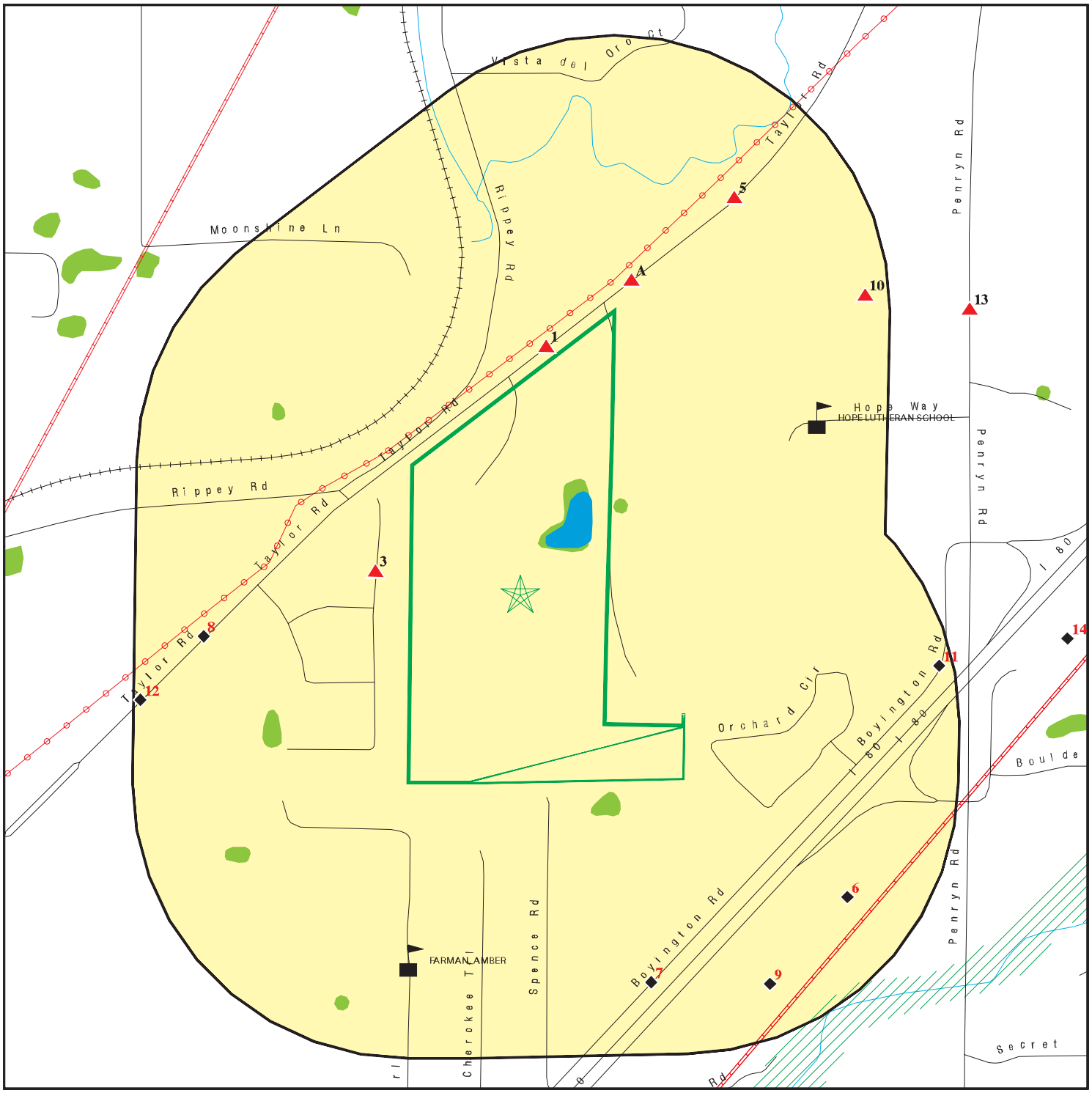
# DETAIL MAP - 4468335.2S




0 1/8 1/4 1/2 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Pipelines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- State Wetlands
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

| | |
|---|---|
| SITE NAME: The Gathering Place | CLIENT: PSI, Inc. |
| ADDRESS: 3141 Taylor Road | CONTACT: Frank Poss |
| Loomis CA 95650 | INQUIRY #: 4468335.2s |
| LAT/LONG: 38.835 / 121.1761 | DATE: November 16, 2015 5:00 pm |

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# MAP FINDINGS SUMMARY

| Database | Search Distance (Miles) | Target Property | < 1/8 | 1/8 - 1/4 | 1/4 - 1/2 | 1/2 - 1 | > 1 | Total Plotted |
|---|---|---|---|---|---|---|---|---|
| **STANDARD ENVIRONMENTAL RECORDS** | | | | | | | | |
| ***Federal NPL site list*** | | | | | | | | |
| NPL | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| Proposed NPL | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| NPL LIENS | TP | | NR | NR | NR | NR | NR | 0 |
| ***Federal Delisted NPL site list*** | | | | | | | | |
| Delisted NPL | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| ***Federal CERCLIS list*** | | | | | | | | |
| FEDERAL FACILITY | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| CERCLIS | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| ***Federal CERCLIS NFRAP site List*** | | | | | | | | |
| CERC-NFRAP | 0.500 | | 0 | 0 | 1 | NR | NR | 1 |
| ***Federal RCRA CORRACTS facilities list*** | | | | | | | | |
| CORRACTS | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| ***Federal RCRA non-CORRACTS TSD facilities list*** | | | | | | | | |
| RCRA-TSDF | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| ***Federal RCRA generators list*** | | | | | | | | |
| RCRA-LQG | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| RCRA-SQG | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| RCRA-CESQG | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| ***Federal institutional controls / engineering controls registries*** | | | | | | | | |
| LUCIS | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| US ENG CONTROLS | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| US INST CONTROL | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| ***Federal ERNS list*** | | | | | | | | |
| ERNS | TP | | NR | NR | NR | NR | NR | 0 |
| ***State- and tribal - equivalent NPL*** | | | | | | | | |
| RESPONSE | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| ***State- and tribal - equivalent CERCLIS*** | | | | | | | | |
| ENVIROSTOR | 1.000 | | 0 | 3 | 0 | 0 | NR | 3 |
| ***State and tribal landfill and/or solid waste disposal site lists*** | | | | | | | | |
| SWF/LF | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| ***State and tribal leaking storage tank lists*** | | | | | | | | |
| LUST | 0.500 | | 0 | 0 | 1 | NR | NR | 1 |

# MAP FINDINGS SUMMARY

| Database | Search Distance (Miles) | Target Property | < 1/8 | 1/8 - 1/4 | 1/4 - 1/2 | 1/2 - 1 | > 1 | Total Plotted |
|---|---|---|---|---|---|---|---|---|
| INDIAN LUST | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| SLIC | 0.500 | | 0 | 0 | 1 | NR | NR | 1 |
| ***State and tribal registered storage tank lists*** | | | | | | | | |
| FEMA UST | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| UST | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| AST | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| INDIAN UST | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| ***State and tribal voluntary cleanup sites*** | | | | | | | | |
| VCP | 0.500 | | 0 | 3 | 0 | NR | NR | 3 |
| INDIAN VCP | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| ***State and tribal Brownfields sites*** | | | | | | | | |
| BROWNFIELDS | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| **ADDITIONAL ENVIRONMENTAL RECORDS** | | | | | | | | |
| ***Local Brownfield lists*** | | | | | | | | |
| US BROWNFIELDS | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| ***Local Lists of Landfill / Solid Waste Disposal Sites*** | | | | | | | | |
| WMUDS/SWAT | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| SWRCY | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| HAULERS | TP | | NR | NR | NR | NR | NR | 0 |
| INDIAN ODI | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| ODI | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| DEBRIS REGION 9 | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| ***Local Lists of Hazardous waste / Contaminated Sites*** | | | | | | | | |
| US HIST CDL | TP | | NR | NR | NR | NR | NR | 0 |
| HIST Cal-Sites | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| SCH | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| CDL | TP | | NR | NR | NR | NR | NR | 0 |
| Toxic Pits | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| US CDL | TP | | NR | NR | NR | NR | NR | 0 |
| ***Local Lists of Registered Storage Tanks*** | | | | | | | | |
| SWEEPS UST | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| HIST UST | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| CA FID UST | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| ***Local Land Records*** | | | | | | | | |
| LIENS | TP | | NR | NR | NR | NR | NR | 0 |
| LIENS 2 | TP | | NR | NR | NR | NR | NR | 0 |
| DEED | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| ***Records of Emergency Release Reports*** | | | | | | | | |
| HMIRS | TP | | NR | NR | NR | NR | NR | 0 |

# MAP FINDINGS SUMMARY

| Database | Search Distance (Miles) | Target Property | < 1/8 | 1/8 - 1/4 | 1/4 - 1/2 | 1/2 - 1 | > 1 | Total Plotted |
|---|---|---|---|---|---|---|---|---|
| CHMIRS | TP | | NR | NR | NR | NR | NR | 0 |
| LDS | TP | | NR | NR | NR | NR | NR | 0 |
| MCS | TP | | NR | NR | NR | NR | NR | 0 |
| SPILLS 90 | TP | | NR | NR | NR | NR | NR | 0 |
| ***Other Ascertainable Records*** | | | | | | | | |
| RCRA NonGen / NLR | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| FUDS | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| DOD | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| SCRD DRYCLEANERS | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| US FIN ASSUR | TP | | NR | NR | NR | NR | NR | 0 |
| EPA WATCH LIST | TP | | NR | NR | NR | NR | NR | 0 |
| 2020 COR ACTION | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| TSCA | TP | | NR | NR | NR | NR | NR | 0 |
| TRIS | TP | | NR | NR | NR | NR | NR | 0 |
| SSTS | TP | | NR | NR | NR | NR | NR | 0 |
| ROD | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| RMP | TP | | NR | NR | NR | NR | NR | 0 |
| RAATS | TP | | NR | NR | NR | NR | NR | 0 |
| PRP | TP | | NR | NR | NR | NR | NR | 0 |
| PADS | TP | | NR | NR | NR | NR | NR | 0 |
| ICIS | TP | | NR | NR | NR | NR | NR | 0 |
| FTTS | TP | | NR | NR | NR | NR | NR | 0 |
| MLTS | TP | | NR | NR | NR | NR | NR | 0 |
| COAL ASH DOE | TP | | NR | NR | NR | NR | NR | 0 |
| COAL ASH EPA | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| PCB TRANSFORMER | TP | | NR | NR | NR | NR | NR | 0 |
| RADINFO | TP | | NR | NR | NR | NR | NR | 0 |
| HIST FTTS | TP | | NR | NR | NR | NR | NR | 0 |
| DOT OPS | TP | | NR | NR | NR | NR | NR | 0 |
| CONSENT | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| INDIAN RESERV | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| UMTRA | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| LEAD SMELTERS | TP | | NR | NR | NR | NR | NR | 0 |
| US AIRS | TP | | NR | NR | NR | NR | NR | 0 |
| US MINES | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| FINDS | TP | | NR | NR | NR | NR | NR | 0 |
| CA BOND EXP. PLAN | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| Cortese | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| CUPA Listings | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| DRYCLEANERS | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| EMI | TP | | NR | NR | NR | NR | NR | 0 |
| ENF | TP | | NR | NR | NR | NR | NR | 0 |
| Financial Assurance | TP | | NR | NR | NR | NR | NR | 0 |
| HAZNET | TP | | NR | NR | NR | NR | NR | 0 |
| HIST CORTESE | 0.500 | | 0 | 0 | 1 | NR | NR | 1 |
| HWP | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| HWT | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| MINES | TP | | NR | NR | NR | NR | NR | 0 |
| CA PLACER CO. MS | 0.250 | | 3 | 5 | NR | NR | NR | 8 |
| MWMP | 0.250 | | 0 | 0 | NR | NR | NR | 0 |

# MAP FINDINGS SUMMARY

| Database | Search Distance (Miles) | Target Property | < 1/8 | 1/8 - 1/4 | 1/4 - 1/2 | 1/2 - 1 | > 1 | Total Plotted |
|---|---|---|---|---|---|---|---|---|
| NPDES | TP | | NR | NR | NR | NR | NR | 0 |
| PEST LIC | TP | | NR | NR | NR | NR | NR | 0 |
| PROC | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| Notify 65 | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| UIC | TP | | NR | NR | NR | NR | NR | 0 |
| WASTEWATER PITS | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| WDS | TP | | NR | NR | NR | NR | NR | 0 |
| WIP | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| **EDR HIGH RISK HISTORICAL RECORDS** | | | | | | | | |
| ***EDR Exclusive Records*** | | | | | | | | |
| EDR MGP | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| EDR US Hist Auto Stat | 0.125 | | 1 | NR | NR | NR | NR | 1 |
| EDR US Hist Cleaners | 0.125 | | 0 | NR | NR | NR | NR | 0 |
| **EDR RECOVERED GOVERNMENT ARCHIVES** | | | | | | | | |
| ***Exclusive Recovered Govt. Archives*** | | | | | | | | |
| RGA LF | TP | | NR | NR | NR | NR | NR | 0 |
| RGA LUST | TP | | NR | NR | NR | NR | NR | 0 |
| - Totals -- | | 0 | 4 | 11 | 4 | 0 | 0 | 19 |

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

**1**
**North**
**< 1/8**
**0.012 mi.**
**65 ft.**

**CAL'S MARINE**
**3040 TAYLOR RD**
**LOOMIS, CA 95650**

**HAZNET** **S109518285**
**CA PLACER CO. MS** **N/A**

**Relative:**
**Higher**

**Actual:**
**463 ft.**

HAZNET:

| | |
|---|---|
| envid: | S109518285 |
| Year: | 2013 |
| GEPAID: | CAL000056619 |
| Contact: | TIM JENKINS |
| Telephone: | 9166525984 |
| Mailing Name: | Not reported |
| Mailing Address: | 3040 TAYLOR RD |
| Mailing City,St,Zip: | LOOMIS, CA 956500000 |
| Gen County: | Placer |
| TSD EPA ID: | CAD980887418 |
| TSD County: | Alameda |
| Waste Category: | Not reported |
| Disposal Method: | Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135) |
| Tons: | 0.10425 |
| Facility County: | Not reported |

PLACER CO. MS:

| | |
|---|---|
| Facility ID: | FA0020153 |
| Facility Status: | Active |
| Program Element Code: | 2268 |
| Program: | CONDITIONALLY EXEMPT SMALL QUANTITY GENERATOR |
| Record Num: | PR0017348 |
| District Code: | 58 |
| Decode for Fstatus: | Active |

| | |
|---|---|
| Facility ID: | FA0001548 |
| Facility Status: | Closed |
| Program Element Code: | 2105 |
| Program: | HAZMAT BUSINESS PLAN |
| Record Num: | PR0002305 |
| District Code: | 58 |
| Decode for Fstatus: | Closed |

---

**A2**
**NNE**
**< 1/8**
**0.032 mi.**
**167 ft.**

**LOOMIS TRAILERS & WELDING, INC**
**2871 TAYLOR RD**
**LOOMIS, CA 95650**

**CA PLACER CO. MS** **S109518340**
**N/A**

**Site 1 of 2 in cluster A**

**Relative:**
**Higher**

**Actual:**
**471 ft.**

PLACER CO. MS:

| | |
|---|---|
| Facility ID: | FA0001722 |
| Facility Status: | Closed |
| Program Element Code: | 2105 |
| Program: | HAZMAT BUSINESS PLAN |
| Record Num: | PR0002489 |
| District Code: | 999 |
| Decode for Fstatus: | Closed |

| | |
|---|---|
| Facility ID: | FA0002590 |
| Facility Status: | Closed |
| Program Element Code: | 2302 |

**LOOMIS TRAILERS & WELDING, INC (Continued)** **S109518340**

Program: UNDERGROUND STORAGE TANKS - 2 TANKS
Record Num: PR0003883
District Code: 53
Decode for Fstatus: Closed

Facility ID: FA0002590
Facility Status: Closed
Program Element Code: 2107
Program: US HAZMAT ONLY-NO WASTE <20,000/month
Record Num: PR0003884
District Code: 53
Decode for Fstatus: Closed

Facility ID: FA0002590
Facility Status: Closed
Program Element Code: 2270
Program: SMALL QUANTITY GENERATOR
Record Num: PR0008268
District Code: 53
Decode for Fstatus: Closed

---

**3** **EDR US Hist Auto Stat** **1015405100**
**West** **3028 ORCHARD PARK WAY** **N/A**
**< 1/8** **LOOMIS, CA 95650**
**0.032 mi.**
**169 ft.**

**Relative:**
**Higher**

**Actual:**
**458 ft.**

EDR Historical Auto Stations:
Name: GIN FUEL INC
Year: 2007
Address: 3028 ORCHARD PARK WAY

Name: GIN FUEL INC
Year: 2008
Address: 3028 ORCHARD PARK WAY

---

**A4** **GORDON, MITCHELL AND DAVID** **CA PLACER CO. MS** **S110710010**
**NNE** **2868 TAYLOR RD** **N/A**
**< 1/8** **LOOMIS, CA 95650**
**0.033 mi.**
**172 ft.** **Site 2 of 2 in cluster A**

**Relative:**
**Higher**

**Actual:**
**471 ft.**

PLACER CO. MS:
Facility ID: FA0003577
Facility Status: Closed
Program Element Code: 2301
Program: UNDERGROUND STORAGE TANK - 1 TANK
Record Num: PR0005385
District Code: 53
Decode for Fstatus: Closed

**5 NNE 1/8-1/4 0.150 mi. 793 ft.** | **MG PENRYN PROPERTY**
**2851 & 2881 TAYLOR ROAD**
**PENRYN, CA 95663** | **ENVIROSTOR VCP** | **S104241828 N/A**

**Relative: Higher**

**Actual: 496 ft.**

ENVIROSTOR:

| | |
|---|---|
| Facility ID: | 31010002 |
| Status: | No Further Action |
| Status Date: | 04/03/2001 |
| Site Code: | 101221 |
| Site Type: | Voluntary Cleanup |
| Site Type Detailed: | Voluntary Cleanup |
| Acres: | 46 |
| NPL: | NO |
| Regulatory Agencies: | SMBRP |
| Lead Agency: | SMBRP |
| Program Manager: | Steven Becker |
| Supervisor: | Steven Becker |
| Division Branch: | Cleanup Sacramento |
| Assembly: | 06 |
| Senate: | 01 |
| Special Program: | Voluntary Cleanup Program |
| Restricted Use: | NO |
| Site Mgmt Req: | NONE SPECIFIED |
| Funding: | Responsible Party |
| Latitude: | 38.8402 |
| Longitude: | -121.1725 |
| APN: | NONE SPECIFIED |
| Past Use: | AGRICULTURAL - ORCHARD |
| Potential COC: | Arsenic |
| Confirmed COC: | Arsenic |
| Potential Description: | SOIL |
| Alias Name: | MG PENRYN |
| Alias Type: | Alternate Name |
| Alias Name: | PENRYN COUNTRY ESTATES |
| Alias Type: | Alternate Name |
| Alias Name: | 110033610652 |
| Alias Type: | EPA (FRS #) |
| Alias Name: | 101221 |
| Alias Type: | Project Code (Site Code) |
| Alias Name: | 31010002 |
| Alias Type: | Envirostor ID Number |

Completed Info:

| | |
|---|---|
| Completed Area Name: | PROJECT WIDE |
| Completed Sub Area Name: | Not reported |
| Completed Document Type: | Voluntary Cleanup Agreement |
| Completed Date: | 09/07/2000 |
| Comments: | ORDER/VCP - New agreement signed to conduct PEA at site. |
| Completed Area Name: | PROJECT WIDE |
| Completed Sub Area Name: | Not reported |
| Completed Document Type: | Voluntary Cleanup Agreement |
| Completed Date: | 10/08/1999 |
| Comments: | Site is a former orchard. Site Proponent has entered into a VCA w/DTSC. DTSC is to review and comment on data provided by proponent. |
| Completed Area Name: | PROJECT WIDE |
| Completed Sub Area Name: | Not reported |

**MG PENRYN PROPERTY (Continued)** **S104241828**

Completed Document Type: Preliminary Endangerment Assessment Report
Completed Date: 04/04/2001
Comments: PEA-NFA - Approval of PEA conducted under a VCA which determined that No Further Action (NFA) is necessary.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Phase 1
Completed Date: 11/01/1998
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Feasibility Study Workplan
Completed Date: 09/08/2000
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Removal Action Completion Report
Completed Date: 02/06/2003
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: *Voluntary Cleanup Agreement Completion
Completed Date: 12/13/1999
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Voluntary Cleanup Consultation
Completed Date: 12/13/1999
Comments: VCONS/VCOMP - DTSC completed a review of the Phase I Environmen- tal Site Assessment of the M.G. Penryn property. DTSC recommende that a PEA be completed to more fully assess the risks at the site due to pesticide contamination.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: *Voluntary Cleanup Agreement Completion
Completed Date: 04/04/2001
Comments: Not reported

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

VCP:
Facility ID: 31010002
Site Type: Voluntary Cleanup

**MG PENRYN PROPERTY (Continued)** **S104241828**

| | |
|---|---|
| Site Type Detail: | Voluntary Cleanup |
| Site Mgmt. Req.: | NONE SPECIFIED |
| Acres: | 46 |
| National Priorities List: | NO |
| Cleanup Oversight Agencies: | SMBRP |
| Lead Agency: | SMBRP |
| Lead Agency Description: | DTSC - Site Cleanup Program |
| Project Manager: | Steven Becker |
| Supervisor: | Steven Becker |
| Division Branch: | Cleanup Sacramento |
| Site Code: | 101221 |
| Assembly: | 06 |
| Senate: | 01 |
| Special Programs Code: | Voluntary Cleanup Program |
| Status: | No Further Action |
| Status Date: | 04/03/2001 |
| Restricted Use: | NO |
| Funding: | Responsible Party |
| Lat/Long: | 38.8402 / -121.1725 |
| APN: | NONE SPECIFIED |
| Past Use: | AGRICULTURAL - ORCHARD |
| Potential COC: | 30001 |
| Confirmed COC: | 30001 |
| Potential Description: | SOIL |
| Alias Name: | MG PENRYN |
| Alias Type: | Alternate Name |
| Alias Name: | PENRYN COUNTRY ESTATES |
| Alias Type: | Alternate Name |
| Alias Name: | 110033610652 |
| Alias Type: | EPA (FRS #) |
| Alias Name: | 101221 |
| Alias Type: | Project Code (Site Code) |
| Alias Name: | 31010002 |
| Alias Type: | Envirostor ID Number |

Completed Info:

| | |
|---|---|
| Completed Area Name: | PROJECT WIDE |
| Completed Sub Area Name: | Not reported |
| Completed Document Type: | Voluntary Cleanup Agreement |
| Completed Date: | 09/07/2000 |
| Comments: | ORDER/VCP - New agreement signed to conduct PEA at site. |
| Completed Area Name: | PROJECT WIDE |
| Completed Sub Area Name: | Not reported |
| Completed Document Type: | Voluntary Cleanup Agreement |
| Completed Date: | 10/08/1999 |
| Comments: | Site is a former orchard. Site Proponent has entered into a VCA w/DTSC. DTSC is to review and comment on data provided by proponent. |
| Completed Area Name: | PROJECT WIDE |
| Completed Sub Area Name: | Not reported |
| Completed Document Type: | Preliminary Endangerment Assessment Report |
| Completed Date: | 04/04/2001 |
| Comments: | PEA-NFA - Approval of PEA conducted under a VCA which determined that No Further Action (NFA) is necessary. |
| Completed Area Name: | PROJECT WIDE |
| Completed Sub Area Name: | Not reported |

**MG PENRYN PROPERTY (Continued)** **S104241828**

Completed Document Type: Phase 1
Completed Date: 11/01/1998
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Feasibility Study Workplan
Completed Date: 09/08/2000
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Removal Action Completion Report
Completed Date: 02/06/2003
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: *Voluntary Cleanup Agreement Completion
Completed Date: 12/13/1999
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Voluntary Cleanup Consultation
Completed Date: 12/13/1999
Comments: VCONS/VCOMP - DTSC completed a review of the Phase I Environmen- tal Site Assessment of the M.G. Penryn property. DTSC recommende that a PEA be completed to more fully assess the risks at the site due to pesticide contamination.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: *Voluntary Cleanup Agreement Completion
Completed Date: 04/04/2001
Comments: Not reported

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

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**6** **T-MOBILE SC09132A** **CA PLACER CO. MS** **S110071547**
**SE** **3268 PENRYN RD** **N/A**
**1/8-1/4** **LOOMIS, CA 95650**
**0.184 mi.**
**973 ft.**

**Relative:**
**Lower**

**Actual:**
**419 ft.**

PLACER CO. MS:
Facility ID: FA0017453
Facility Status: Closed
Program Element Code: 2105
Program: HAZMAT BUSINESS PLAN

**T-MOBILE SC09132A (Continued)** **S110071547**

Record Num: PR0013503
District Code: 999
Decode for Fstatus: Closed

---

**7 SSE 1/8-1/4 0.184 mi. 974 ft.**

**PACIFIC TRAILS R.V.**
**3320 BOYINGTON DR**
**LOOMIS, CA 95650**

**CA PLACER CO. MS** **S109518450**
**N/A**

**Relative: Lower**

**Actual: 406 ft.**

PLACER CO. MS:
Facility ID: FA0002363
Facility Status: Closed
Program Element Code: 2105
Program: HAZMAT BUSINESS PLAN
Record Num: PR0003477
District Code: 999
Decode for Fstatus: Closed

---

**8 West 1/8-1/4 0.187 mi. 988 ft.**

**AMERIGAS LOOMIS**
**3200 TAYLOR RD**
**LOOMIS, CA 95650**

**CA PLACER CO. MS** **S109518276**
**N/A**

**Relative: Lower**

**Actual: 448 ft.**

PLACER CO. MS:
Facility ID: FA0020167
Facility Status: Closed
Program Element Code: 2105
Program: HAZMAT BUSINESS PLAN
Record Num: PR0017393
District Code: 58
Decode for Fstatus: Closed

Facility ID: FA0001530
Facility Status: Active
Program Element Code: 2105
Program: HAZMAT BUSINESS PLAN
Record Num: PR0002287
District Code: 58
Decode for Fstatus: Active

---

**9 SSE 1/8-1/4 0.203 mi. 1070 ft.**

**MORGAN'S ORCHARD**
**SOUTH OF INTERSTATE HWY 80, APPROXIMATELY 1 MILE NORTHEAST O**
**LOOMIS, CA 95650**

**ENVIROSTOR VCP** **S107736774**
**N/A**

**Relative: Lower**

**Actual: 416 ft.**

ENVIROSTOR:
Facility ID: 60000180
Status: No Further Action
Status Date: 07/11/2006
Site Code: 101780
Site Type: Voluntary Cleanup
Site Type Detailed: Voluntary Cleanup

**MORGAN'S ORCHARD (Continued)** **S107736774**

| | |
|---|---|
| Acres: | 16 |
| NPL: | NO |
| Regulatory Agencies: | SMBRP, PLACER COUNTY |
| Lead Agency: | SMBRP |
| Program Manager: | Not reported |
| Supervisor: | Steven Becker |
| Division Branch: | Cleanup Sacramento |
| Assembly: | 06 |
| Senate: | 01 |
| Special Program: | Voluntary Cleanup Program |
| Restricted Use: | NO |
| Site Mgmt Req: | NONE SPECIFIED |
| Funding: | Responsible Party |
| Latitude: | 38.82986 |
| Longitude: | -121.1719 |
| APN: | 043-072-024, 043-072-025 |
| Past Use: | AGRICULTURAL - ORCHARD |
| Potential COC: | Arsenic Lead |
| Confirmed COC: | Arsenic Lead |
| Potential Description: | SOIL |
| Alias Name: | 043-072-024 |
| Alias Type: | APN |
| Alias Name: | 043-072-025 |
| Alias Type: | APN |
| Alias Name: | 110033610803 |
| Alias Type: | EPA (FRS #) |
| Alias Name: | 101780 |
| Alias Type: | Project Code (Site Code) |
| Alias Name: | 60000180 |
| Alias Type: | Envirostor ID Number |

Completed Info:

| | |
|---|---|
| Completed Area Name: | PROJECT WIDE |
| Completed Sub Area Name: | Not reported |
| Completed Document Type: | Voluntary Cleanup Agreement |
| Completed Date: | 04/21/2006 |
| Comments: | Not reported |
| | |
| Completed Area Name: | PROJECT WIDE |
| Completed Sub Area Name: | Not reported |
| Completed Document Type: | Preliminary Endangerment Assessment Report |
| Completed Date: | 06/27/2006 |
| Comments: | Sent no further action letter to project proponent. |
| | |
| Completed Area Name: | PROJECT WIDE |
| Completed Sub Area Name: | Not reported |
| Completed Document Type: | Phase 1 |
| Completed Date: | 05/27/1997 |
| Comments: | Not reported |
| | |
| Future Area Name: | Not reported |
| Future Sub Area Name: | Not reported |
| Future Document Type: | Not reported |
| Future Due Date: | Not reported |
| Schedule Area Name: | Not reported |
| Schedule Sub Area Name: | Not reported |
| Schedule Document Type: | Not reported |
| Schedule Due Date: | Not reported |

**MORGAN'S ORCHARD (Continued)** **S107736774**

Schedule Revised Date: Not reported

VCP:

| | |
|---|---|
| Facility ID: | 60000180 |
| Site Type: | Voluntary Cleanup |
| Site Type Detail: | Voluntary Cleanup |
| Site Mgmt. Req.: | NONE SPECIFIED |
| Acres: | 16 |
| National Priorities List: | NO |
| Cleanup Oversight Agencies: | SMBRP, PLACER COUNTY |
| Lead Agency: | SMBRP |
| Lead Agency Description: | DTSC - Site Cleanup Program |
| Project Manager: | Not reported |
| Supervisor: | Steven Becker |
| Division Branch: | Cleanup Sacramento |
| Site Code: | 101780 |
| Assembly: | 06 |
| Senate: | 01 |
| Special Programs Code: | Voluntary Cleanup Program |
| Status: | No Further Action |
| Status Date: | 07/11/2006 |
| Restricted Use: | NO |
| Funding: | Responsible Party |
| Lat/Long: | 38.82986 / -121.1719 |
| APN: | 043-072-024, 043-072-025 |
| Past Use: | AGRICULTURAL - ORCHARD |
| Potential COC: | 30001, 30013 |
| Confirmed COC: | 30001,30013 |
| Potential Description: | SOIL |
| Alias Name: | 043-072-024 |
| Alias Type: | APN |
| Alias Name: | 043-072-025 |
| Alias Type: | APN |
| Alias Name: | 110033610803 |
| Alias Type: | EPA (FRS #) |
| Alias Name: | 101780 |
| Alias Type: | Project Code (Site Code) |
| Alias Name: | 60000180 |
| Alias Type: | Envirostor ID Number |

Completed Info:

| | |
|---|---|
| Completed Area Name: | PROJECT WIDE |
| Completed Sub Area Name: | Not reported |
| Completed Document Type: | Voluntary Cleanup Agreement |
| Completed Date: | 04/21/2006 |
| Comments: | Not reported |
| | |
| Completed Area Name: | PROJECT WIDE |
| Completed Sub Area Name: | Not reported |
| Completed Document Type: | Preliminary Endangerment Assessment Report |
| Completed Date: | 06/27/2006 |
| Comments: | Sent no further action letter to project proponent. |
| | |
| Completed Area Name: | PROJECT WIDE |
| Completed Sub Area Name: | Not reported |
| Completed Document Type: | Phase 1 |
| Completed Date: | 05/27/1997 |

**MORGAN'S ORCHARD (Continued)** **S107736774**

Comments: Not reported

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

---

**10**
**NE**
**1/8-1/4**
**0.228 mi.**
**1204 ft.**

**PENRYN DEVELOPMENT**
**APN 043-060-052, 043-060-053 / IT IS BORDER BY PENRYN ROAD A**
**LOOMIS, CA 95650**

**ENVIROSTOR** **S108195988**
**VCP** **N/A**

**Relative:**
**Higher**

**Actual:**
**471 ft.**

ENVIROSTOR:

| | |
|---|---|
| Facility ID: | 60000467 |
| Status: | Inactive - Action Required |
| Status Date: | 01/15/2015 |
| Site Code: | 101853 |
| Site Type: | Voluntary Cleanup |
| Site Type Detailed: | Voluntary Cleanup |
| Acres: | 15 |
| NPL: | NO |
| Regulatory Agencies: | SMBRP, PLACER COUNTY |
| Lead Agency: | SMBRP |
| Program Manager: | Duane White |
| Supervisor: | Fernando A. Amador |
| Division Branch: | Cleanup Sacramento |
| Assembly: | 06 |
| Senate: | 01 |
| Special Program: | Voluntary Cleanup Program |
| Restricted Use: | NO |
| Site Mgmt Req: | NONE SPECIFIED |
| Funding: | Responsible Party |
| Latitude: | 38.83892 |
| Longitude: | -121.1703 |
| APN: | 032230002000, 043260075000 |
| Past Use: | AGRICULTURAL - ORCHARD |
| Potential COC: | Arsenic DDD DDE DDT Lead |
| Confirmed COC: | Arsenic DDD DDE DDT Lead |
| Potential Description: | SED, SOIL, SURFW |
| Alias Name: | Orchard at Penryn |
| Alias Type: | Alternate Name |
| Alias Name: | 032230002000 |
| Alias Type: | APN |
| Alias Name: | 043260075000 |
| Alias Type: | APN |
| Alias Name: | 110033610527 |
| Alias Type: | EPA (FRS #) |
| Alias Name: | 101853 |
| Alias Type: | Project Code (Site Code) |
| Alias Name: | 60000467 |
| Alias Type: | Envirostor ID Number |

**PENRYN DEVELOPMENT (Continued)** **S108195988**

Completed Info:

| | |
|---|---|
| Completed Area Name: | PROJECT WIDE |
| Completed Sub Area Name: | Not reported |
| Completed Document Type: | Correspondence |
| Completed Date: | 08/17/2013 |
| Comments: | DTSC received a letter from the Hope Church with comments following the 30-day public comment period. DTSC will mail a response within 30 days. |

| | |
|---|---|
| Completed Area Name: | PROJECT WIDE |
| Completed Sub Area Name: | Not reported |
| Completed Document Type: | Correspondence |
| Completed Date: | 04/25/2013 |
| Comments: | Email from consultant and property owner |

| | |
|---|---|
| Completed Area Name: | PROJECT WIDE |
| Completed Sub Area Name: | Not reported |
| Completed Document Type: | Voluntary Cleanup Agreement |
| Completed Date: | 02/20/2007 |
| Comments: | DTSC and the Proponent signed a Voluntary Cleanup Agreement for DTSC to provide oversight for investigation and remediation of the property. |

| | |
|---|---|
| Completed Area Name: | PROJECT WIDE |
| Completed Sub Area Name: | Not reported |
| Completed Document Type: | CEQA - Responsible Agency Review |
| Completed Date: | 06/27/2013 |
| Comments: | DTSC filed a Notice of Determination with the State Clearing House. |

| | |
|---|---|
| Completed Area Name: | PROJECT WIDE |
| Completed Sub Area Name: | Not reported |
| Completed Document Type: | Correspondence |
| Completed Date: | 08/26/2013 |
| Comments: | DTSC mailed a response to the Hope Church comment letter. |

| | |
|---|---|
| Completed Area Name: | PROJECT WIDE |
| Completed Sub Area Name: | Not reported |
| Completed Document Type: | Removal Action Workplan |
| Completed Date: | 07/16/2013 |
| Comments: | Not reported |

| | |
|---|---|
| Completed Area Name: | PROJECT WIDE |
| Completed Sub Area Name: | Not reported |
| Completed Document Type: | Site Characterization Workplan |
| Completed Date: | 07/10/2007 |
| Comments: | DTSC approved the Supplemental Site Investigation Work Plan. The Work Plan proposes to collect additional soil and surface water samples to characterize the contamination. |

| | |
|---|---|
| Completed Area Name: | PROJECT WIDE |
| Completed Sub Area Name: | Not reported |
| Completed Document Type: | Site Characterization Report |
| Completed Date: | 12/27/2007 |
| Comments: | DTSC reviewed the site investigation report (report) and mailed a conditional approval letter to the project proponent. The report documents high levels of arsenic, DDT, and DDD on the property. |

**PENRYN DEVELOPMENT (Continued)** **S108195988**

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: *Correspondence - Received
Completed Date: 01/19/2012
Comments: DTSC received Placer County's response to DTSC CEQA comments.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Community Profile
Completed Date: 04/29/2013
Comments: DTSC approved the community profile for the Penryn Development.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report
Completed Date: 01/08/2013
Comments: DTSC received the certified EIR for the Orchard at Penryn development in Penryn. Placer County certified the EIR on December 10, 2012.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Fact Sheets
Completed Date: 04/25/2013
Comments: DTSC prepared a Fact Sheet. The Fact Sheet will be mailed before the May 2 comment period.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Public Notice
Completed Date: 04/25/2013
Comments: DTSC prepared the public notice. Wallace Kuhl and Associates posted the public notice as a display ad in the May 2, 2013 Loomis Newspaper. Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Phase 1
Completed Date: 01/11/1998
Comments: DTSC received an environmental site assessment and recommended a Preliminary Endangerment Assessment.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Remedial Action Completion Report
Completed Date: 02/06/2003
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Correspondence
Completed Date: 08/11/2011
Comments: Emails received and / or sent

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Voluntary Cleanup Agreement
Completed Date: 08/29/2000

**PENRYN DEVELOPMENT (Continued)** **S108195988**

Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Correspondence
Completed Date: 08/24/2011
Comments: DTSC reviewed a draft EIR and provided comments to Placer County.

Future Area Name: PROJECT WIDE
Future Sub Area Name: Not reported
Future Document Type: Certification
Future Due Date: 2016
Future Area Name: PROJECT WIDE
Future Sub Area Name: Not reported
Future Document Type: Remedial Action Completion Report
Future Due Date: 2016
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

VCP:
Facility ID: 60000467
Site Type: Voluntary Cleanup
Site Type Detail: Voluntary Cleanup
Site Mgmt. Req.: NONE SPECIFIED
Acres: 15
National Priorities List: NO
Cleanup Oversight Agencies: SMBRP, PLACER COUNTY
Lead Agency: SMBRP
Lead Agency Description: DTSC - Site Cleanup Program
Project Manager: Duane White
Supervisor: Fernando A. Amador
Division Branch: Cleanup Sacramento
Site Code: 101853
Assembly: 06
Senate: 01
Special Programs Code: Voluntary Cleanup Program
Status: Inactive - Action Required
Status Date: 01/15/2015
Restricted Use: NO
Funding: Responsible Party
Lat/Long: 38.83892 / -121.1703
APN: 032230002000, 043260075000
Past Use: AGRICULTURAL - ORCHARD
Potential COC: 30001, 30006, 30007, 30008, 30013
Confirmed COC: 30001,30006,30007,30008,30013
Potential Description: SED, SOIL, SURFW
Alias Name: Orchard at Penryn
Alias Type: Alternate Name
Alias Name: 032230002000
Alias Type: APN
Alias Name: 043260075000
Alias Type: APN
Alias Name: 110033610527
Alias Type: EPA (FRS #)

**PENRYN DEVELOPMENT (Continued)** **S108195988**

Alias Name: 101853
Alias Type: Project Code (Site Code)
Alias Name: 60000467
Alias Type: Envirostor ID Number

Completed Info:

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Correspondence
Completed Date: 08/17/2013
Comments: DTSC received a letter from the Hope Church with comments following the 30-day public comment period. DTSC will mail a response within 30 days.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Correspondence
Completed Date: 04/25/2013
Comments: Email from consultant and property owner

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Voluntary Cleanup Agreement
Completed Date: 02/20/2007
Comments: DTSC and the Proponent signed a Voluntary Cleanup Agreement for DTSC to provide oversight for investigation and remediation of the property.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: CEQA - Responsible Agency Review
Completed Date: 06/27/2013
Comments: DTSC filed a Notice of Determination with the State Clearing House.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Correspondence
Completed Date: 08/26/2013
Comments: DTSC mailed a response to the Hope Church comment letter.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Removal Action Workplan
Completed Date: 07/16/2013
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Characterization Workplan
Completed Date: 07/10/2007
Comments: DTSC approved the Supplemental Site Investigation Work Plan. The Work Plan proposes to collect additional soil and surface water samples to characterize the contamination.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Characterization Report
Completed Date: 12/27/2007

**PENRYN DEVELOPMENT (Continued)** **S108195988**

Comments: DTSC reviewed the site investigation report (report) and mailed a conditional approval letter to the project proponent. The report documents high levels of arsenic, DDT, and DDD on the property.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: *Correspondence - Received
Completed Date: 01/19/2012
Comments: DTSC received Placer County's response to DTSC CEQA comments.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Community Profile
Completed Date: 04/29/2013
Comments: DTSC approved the community profile for the Penryn Development.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report
Completed Date: 01/08/2013
Comments: DTSC received the certified EIR for the Orchard at Penryn development in Penryn. Placer County certified the EIR on December 10, 2012.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Fact Sheets
Completed Date: 04/25/2013
Comments: DTSC prepared a Fact Sheet. The Fact Sheet will be mailed before the May 2 comment period.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Public Notice
Completed Date: 04/25/2013
Comments: DTSC prepared the public notice. Wallace Kuhl and Associates posted the public notice as a display ad in the May 2, 2013 Loomis Newspaper. Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Phase 1
Completed Date: 01/11/1998
Comments: DTSC received an environmental site assessment and recommended a Preliminary Endangerment Assessment.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Remedial Action Completion Report
Completed Date: 02/06/2003
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Correspondence
Completed Date: 08/11/2011
Comments: Emails received and / or sent

**PENRYN DEVELOPMENT (Continued)** **S108195988**

| | |
|---|---|
| Completed Area Name: | PROJECT WIDE |
| Completed Sub Area Name: | Not reported |
| Completed Document Type: | Voluntary Cleanup Agreement |
| Completed Date: | 08/29/2000 |
| Comments: | Not reported |

| | |
|---|---|
| Completed Area Name: | PROJECT WIDE |
| Completed Sub Area Name: | Not reported |
| Completed Document Type: | Correspondence |
| Completed Date: | 08/24/2011 |
| Comments: | DTSC reviewed a draft EIR and provided comments to Placer County. |

| | |
|---|---|
| Future Area Name: | PROJECT WIDE |
| Future Sub Area Name: | Not reported |
| Future Document Type: | Certification |
| Future Due Date: | 2016 |
| Future Area Name: | PROJECT WIDE |
| Future Sub Area Name: | Not reported |
| Future Document Type: | Remedial Action Completion Report |
| Future Due Date: | 2016 |
| Schedule Area Name: | Not reported |
| Schedule Sub Area Name: | Not reported |
| Schedule Document Type: | Not reported |
| Schedule Due Date: | Not reported |
| Schedule Revised Date: | Not reported |

---

**11**
**East**
**1/8-1/4**
**0.237 mi.**
**1254 ft.**

**PENRYN 76** **CA PLACER CO. MS** **S108752899**
**3142 BOYINGTON RD** **N/A**
**PENRYN, CA 95663**

**Relative:**
**Lower**

**Actual:**
**445 ft.**

PLACER CO. MS:

| | |
|---|---|
| Facility ID: | FA0005557 |
| Facility Status: | Active |
| Program Element Code: | 2303 |
| Program: | UNDERGROUND STORAGE TANKS - 3 TANKS |
| Record Num: | PR0008157 |
| District Code: | 58 |
| Decode for Fstatus: | Active |

| | |
|---|---|
| Facility ID: | FA0005557 |
| Facility Status: | Active |
| Program Element Code: | 2105 |
| Program: | HAZMAT BUSINESS PLAN |
| Record Num: | PR0008175 |
| District Code: | 58 |
| Decode for Fstatus: | Active |

| | |
|---|---|
| Facility ID: | FA0005557 |
| Facility Status: | Active |
| Program Element Code: | 2268 |
| Program: | CONDITIONALLY EXEMPT SMALL QUANTITY GENERATOR |
| Record Num: | PR0009796 |
| District Code: | 58 |
| Decode for Fstatus: | Active |

**12 WSW 1/8-1/4 0.244 mi. 1288 ft.** | **INCH'S TOOLING & MACHINING**
**3230 TAYLOR RD**
**LOOMIS, CA 95650** | **CA PLACER CO. MS** | **S109518334**
**N/A**

**Relative: Lower**

**Actual: 444 ft.**

PLACER CO. MS:

| | |
|---|---|
| Facility ID: | FA0001709 |
| Facility Status: | Closed |
| Program Element Code: | 2105 |
| Program: | HAZMAT BUSINESS PLAN |
| Record Num: | PR0002476 |
| District Code: | 999 |
| Decode for Fstatus: | Closed |

---

**13 ENE 1/4-1/2 0.322 mi. 1702 ft.** | **PENRYN DEVELOPMENT - MOTT PROPERTY**
**PENRYN RD. & INTERSTATE 80**
**PENRYN, CA 95663** | **SLIC** | **S108543245**
**N/A**

**Relative: Higher**

**Actual: 474 ft.**

SLIC:

| | |
|---|---|
| Region: | STATE |
| **Facility Status:** | **Open - Inactive** |
| Status Date: | 05/20/2009 |
| Global Id: | SL0606131540 |
| Lead Agency: | CENTRAL VALLEY RWQCB (REGION 5S) |
| Lead Agency Case Number: | Not reported |
| Latitude: | 38.838734 |
| Longitude: | -121.168543 |
| Case Type: | Cleanup Program Site |
| Case Worker: | ZZZ |
| Local Agency: | DEPARTMENT OF TOXIC SUBSTANCES CONTROL |
| RB Case Number: | Not reported |
| File Location: | Not reported |
| Potential Media Affected: | Not reported |
| Potential Contaminants of Concern: | Not reported |
| Site History: | Not reported |

Click here to access the California GeoTracker records for this facility:

---

**14 East 1/4-1/2 0.356 mi. 1881 ft.** | **PENRYN BEACON**
**3121 PENRYN RD**
**PENRYN, CA 95663** | **LUST**
**SWEEPS UST**
**HIST CORTESE** | **S101300260**
**N/A**

**Relative: Lower**

**Actual: 435 ft.**

LUST:

| | |
|---|---|
| Region: | STATE |
| Global Id: | T0606100207 |
| Latitude: | 38.836013611 |
| Longitude: | -121.168041618 |
| Case Type: | LUST Cleanup Site |
| Status: | Completed - Case Closed |
| Status Date: | 08/17/2010 |
| Lead Agency: | CENTRAL VALLEY RWQCB (REGION 5S) |
| Case Worker: | PRS |
| Local Agency: | PLACER COUNTY |

**PENRYN BEACON (Continued)** **S101300260**

| | |
|---|---|
| RB Case Number: | 310257 |
| LOC Case Number: | Not reported |
| File Location: | Not reported |
| Potential Media Affect: | Aquifer used for drinking water supply |
| Potential Contaminants of Concern: | Gasoline |
| Site History: | The case was opened following an unauthorized release from an underground storage tank system at the subject site. Corrective action is underway as directed by the CVRWQCB. Corrective action may consist of preliminary site investigation, planning and implementation of remedial action, verification monitoring, or a combination thereof. A summary of the site history is available by clicking on either the "Cleanup Status History", "Regulatory Activities" or the "Site Maps/Documents" tab. For a complete site history the case file at the CVRWQCB should be consulted. |

Click here to access the California GeoTracker records for this facility:

Contact:

| | |
|---|---|
| Global Id: | T0606100207 |
| Contact Type: | Local Agency Caseworker |
| Contact Name: | WEST BOURGAULT |
| Organization Name: | PLACER COUNTY |
| Address: | 3091 County Center Drive, Suite 180 |
| City: | AUBURN |
| Email: | wbourgau@placer.ca.gov |
| Phone Number: | Not reported |

| | |
|---|---|
| Global Id: | T0606100207 |
| Contact Type: | Regional Board Caseworker |
| Contact Name: | PAUL SANDERS |
| Organization Name: | CENTRAL VALLEY RWQCB (REGION 5S) |
| Address: | 11020 SUN CENTER DRIVE #200 |
| City: | RANCHO CORDOVA |
| Email: | psanders@waterboards.ca.gov |
| Phone Number: | Not reported |

Status History:

| | |
|---|---|
| Global Id: | T0606100207 |
| Status: | Completed - Case Closed |
| Status Date: | 08/17/2010 |

| | |
|---|---|
| Global Id: | T0606100207 |
| Status: | Open - Case Begin Date |
| Status Date: | 03/04/1993 |

| | |
|---|---|
| Global Id: | T0606100207 |
| Status: | Open - Remediation |
| Status Date: | 02/12/2001 |

| | |
|---|---|
| Global Id: | T0606100207 |
| Status: | Open - Site Assessment |
| Status Date: | 03/04/1993 |

| | |
|---|---|
| Global Id: | T0606100207 |
| Status: | Open - Site Assessment |
| Status Date: | 06/19/1999 |

**PENRYN BEACON (Continued)** **S101300260**

Global Id: T0606100207
Status: Open - Site Assessment
Status Date: 02/18/2000

Global Id: T0606100207
Status: Open - Site Assessment
Status Date: 10/26/2007

Global Id: T0606100207
Status: Open - Verification Monitoring
Status Date: 05/23/2005

Global Id: T0606100207
Status: Open - Verification Monitoring
Status Date: 10/27/2007

Regulatory Activities:

Global Id: T0606100207
Action Type: ENFORCEMENT
Date: 08/17/2010
Action: Closure/No Further Action Letter

Global Id: T0606100207
Action Type: RESPONSE
Date: 08/15/2007
Action: Soil and Water Investigation Report

Global Id: T0606100207
Action Type: ENFORCEMENT
Date: 04/05/2010
Action: Technical Correspondence / Assistance / Other

Global Id: T0606100207
Action Type: ENFORCEMENT
Date: 07/22/2009
Action: Staff Letter

Global Id: T0606100207
Action Type: ENFORCEMENT
Date: 10/23/2000
Action: Staff Letter

Global Id: T0606100207
Action Type: ENFORCEMENT
Date: 01/03/2005
Action: * Historical Enforcement

Global Id: T0606100207
Action Type: ENFORCEMENT
Date: 01/03/2007
Action: Staff Letter

Global Id: T0606100207
Action Type: RESPONSE
Date: 03/31/2005
Action: Soil and Water Investigation Report

**PENRYN BEACON (Continued)** **S101300260**

Global Id: T0606100207
Action Type: RESPONSE
Date: 04/15/2007
Action: Monitoring Report - Quarterly

Global Id: T0606100207
Action Type: RESPONSE
Date: 04/15/2010
Action: Monitoring Report - Semi-Annually

Global Id: T0606100207
Action Type: RESPONSE
Date: 10/15/2009
Action: Monitoring Report - Semi-Annually

Global Id: T0606100207
Action Type: ENFORCEMENT
Date: 09/13/2002
Action: Staff Letter

Global Id: T0606100207
Action Type: ENFORCEMENT
Date: 10/17/2002
Action: Staff Letter

Global Id: T0606100207
Action Type: ENFORCEMENT
Date: 05/26/2010
Action: Technical Correspondence / Assistance / Other

Global Id: T0606100207
Action Type: ENFORCEMENT
Date: 05/10/2010
Action: Technical Correspondence / Assistance / Other

Global Id: T0606100207
Action Type: ENFORCEMENT
Date: 04/13/2010
Action: Technical Correspondence / Assistance / Other

Global Id: T0606100207
Action Type: ENFORCEMENT
Date: 05/06/2010
Action: Staff Letter

Global Id: T0606100207
Action Type: RESPONSE
Date: 06/01/2004
Action: Soil and Water Investigation Report

Global Id: T0606100207
Action Type: RESPONSE
Date: 06/01/2004
Action: Soil and Water Investigation Report

Global Id: T0606100207
Action Type: RESPONSE

**PENRYN BEACON (Continued)** **S101300260**

Date: 11/21/2003
Action: Soil and Water Investigation Workplan

Global Id: T0606100207
Action Type: RESPONSE
Date: 08/06/2010
Action: Well Destruction Report

Global Id: T0606100207
Action Type: RESPONSE
Date: 06/17/2010
Action: Well Destruction Workplan

Global Id: T0606100207
Action Type: ENFORCEMENT
Date: 02/24/2010
Action: Technical Correspondence / Assistance / Other

Global Id: T0606100207
Action Type: ENFORCEMENT
Date: 03/17/2010
Action: Technical Correspondence / Assistance / Other

Global Id: T0606100207
Action Type: ENFORCEMENT
Date: 03/15/2010
Action: Technical Correspondence / Assistance / Other

Global Id: T0606100207
Action Type: ENFORCEMENT
Date: 04/23/2003
Action: * Verbal Communication

Global Id: T0606100207
Action Type: ENFORCEMENT
Date: 02/25/2003
Action: Warning Letter

Global Id: T0606100207
Action Type: ENFORCEMENT
Date: 11/14/2007
Action: Staff Letter

Global Id: T0606100207
Action Type: ENFORCEMENT
Date: 11/14/2007
Action: Technical Correspondence / Assistance / Other

Global Id: T0606100207
Action Type: ENFORCEMENT
Date: 06/13/2000
Action: Staff Letter

Global Id: T0606100207
Action Type: ENFORCEMENT
Date: 06/20/2003
Action: * Historical Enforcement

**PENRYN BEACON (Continued)** **S101300260**

Global Id: T0606100207
Action Type: ENFORCEMENT
Date: 06/21/2003
Action: * Historical Enforcement

Global Id: T0606100207
Action Type: RESPONSE
Date: 07/15/2009
Action: Monitoring Report - Quarterly

Global Id: T0606100207
Action Type: RESPONSE
Date: 08/15/2007
Action: Soil and Water Investigation Report

Global Id: T0606100207
Action Type: RESPONSE
Date: 05/26/2006
Action: Request for Closure

Global Id: T0606100207
Action Type: RESPONSE
Date: 01/15/2007
Action: Monitoring Report - Quarterly

Global Id: T0606100207
Action Type: RESPONSE
Date: 01/31/2007
Action: Other Workplan

Global Id: T0606100207
Action Type: RESPONSE
Date: 10/15/2007
Action: Monitoring Report - Quarterly

Global Id: T0606100207
Action Type: ENFORCEMENT
Date: 12/18/2006
Action: Warning Letter

Global Id: T0606100207
Action Type: ENFORCEMENT
Date: 11/08/2005
Action: Warning Letter

Global Id: T0606100207
Action Type: ENFORCEMENT
Date: 11/25/2003
Action: Staff Letter

Global Id: T0606100207
Action Type: ENFORCEMENT
Date: 09/07/2005
Action: * Historical Enforcement

Global Id: T0606100207
Action Type: ENFORCEMENT

**PENRYN BEACON (Continued)** **S101300260**

Date: 08/18/2005
Action: Staff Letter

Global Id: T0606100207
Action Type: ENFORCEMENT
Date: 01/24/2005
Action: Warning Letter

Global Id: T0606100207
Action Type: ENFORCEMENT
Date: 03/09/2005
Action: * Historical Enforcement

Global Id: T0606100207
Action Type: RESPONSE
Date: 01/15/2009
Action: Monitoring Report - Quarterly

Global Id: T0606100207
Action Type: RESPONSE
Date: 05/23/2003
Action: Monitoring Report - Quarterly

Global Id: T0606100207
Action Type: ENFORCEMENT
Date: 02/25/2009
Action: Warning Letter

Global Id: T0606100207
Action Type: ENFORCEMENT
Date: 09/17/2008
Action: Meeting

Global Id: T0606100207
Action Type: ENFORCEMENT
Date: 06/26/2008
Action: Staff Letter

Global Id: T0606100207
Action Type: ENFORCEMENT
Date: 09/05/2003
Action: Warning Letter

Global Id: T0606100207
Action Type: RESPONSE
Date: 03/31/2005
Action: Soil and Water Investigation Report

Global Id: T0606100207
Action Type: ENFORCEMENT
Date: 07/03/2003
Action: * Historical Enforcement

Global Id: T0606100207
Action Type: ENFORCEMENT
Date: 07/07/2003
Action: Staff Letter

**PENRYN BEACON (Continued)** **S101300260**

Global Id: T0606100207
Action Type: ENFORCEMENT
Date: 11/13/2007
Action: Technical Correspondence / Assistance / Other

Global Id: T0606100207
Action Type: RESPONSE
Date: 05/23/2003
Action: Monitoring Report - Quarterly

Global Id: T0606100207
Action Type: RESPONSE
Date: 10/15/2004
Action: Monitoring Report - Quarterly

Global Id: T0606100207
Action Type: RESPONSE
Date: 12/15/2005
Action: Monitoring Report - Quarterly

Global Id: T0606100207
Action Type: RESPONSE
Date: 01/15/2006
Action: Monitoring Report - Quarterly

Global Id: T0606100207
Action Type: Other
Date: 03/04/1993
Action: Leak Discovery

Global Id: T0606100207
Action Type: ENFORCEMENT
Date: 08/31/2006
Action: Staff Letter

Global Id: T0606100207
Action Type: ENFORCEMENT
Date: 08/30/2006
Action: Technical Correspondence / Assistance / Other

Global Id: T0606100207
Action Type: ENFORCEMENT
Date: 04/08/2004
Action: Warning Letter

Global Id: T0606100207
Action Type: ENFORCEMENT
Date: 03/09/2004
Action: Site Visit / Inspection / Sampling

Global Id: T0606100207
Action Type: ENFORCEMENT
Date: 03/04/2004
Action: * Historical Enforcement

Global Id: T0606100207
Action Type: ENFORCEMENT

**PENRYN BEACON (Continued)** **S101300260**

Date: 07/14/2004
Action: Staff Letter

Global Id: T0606100207
Action Type: RESPONSE
Date: 07/15/2008
Action: Monitoring Report - Quarterly

Global Id: T0606100207
Action Type: RESPONSE
Date: 04/15/2004
Action: Soil and Water Investigation Report

Global Id: T0606100207
Action Type: RESPONSE
Date: 01/15/2008
Action: Monitoring Report - Quarterly

Global Id: T0606100207
Action Type: RESPONSE
Date: 04/25/2008
Action: Other Report / Document

Global Id: T0606100207
Action Type: Other
Date: 03/04/1993
Action: Leak Reported

Global Id: T0606100207
Action Type: ENFORCEMENT
Date: 11/27/2007
Action: Technical Correspondence / Assistance / Other

Global Id: T0606100207
Action Type: RESPONSE
Date: 04/15/2009
Action: Monitoring Report - Quarterly

Global Id: T0606100207
Action Type: RESPONSE
Date: 10/15/2002
Action: Monitoring Report - Quarterly

Global Id: T0606100207
Action Type: RESPONSE
Date: 07/15/2005
Action: Monitoring Report - Quarterly

Global Id: T0606100207
Action Type: RESPONSE
Date: 12/15/2005
Action: Monitoring Report - Quarterly

Global Id: T0606100207
Action Type: RESPONSE
Date: 01/15/2005
Action: Monitoring Report - Quarterly

**PENRYN BEACON (Continued)** **S101300260**

Global Id: T0606100207
Action Type: RESPONSE
Date: 04/15/2005
Action: Monitoring Report - Quarterly

Global Id: T0606100207
Action Type: RESPONSE
Date: 11/21/2003
Action: Soil and Water Investigation Workplan

Global Id: T0606100207
Action Type: RESPONSE
Date: 01/31/2007
Action: Other Workplan

Global Id: T0606100207
Action Type: RESPONSE
Date: 06/22/2009
Action: Clean Up Fund - 5-Year Review Summary

Global Id: T0606100207
Action Type: ENFORCEMENT
Date: 05/23/2007
Action: Warning Letter

Global Id: T0606100207
Action Type: ENFORCEMENT
Date: 06/23/2005
Action: * Historical Enforcement

Global Id: T0606100207
Action Type: ENFORCEMENT
Date: 10/25/2010
Action: Technical Correspondence / Assistance / Other

Global Id: T0606100207
Action Type: RESPONSE
Date: 07/15/2003
Action: Monitoring Report - Quarterly

Global Id: T0606100207
Action Type: RESPONSE
Date: 07/15/2007
Action: Monitoring Report - Quarterly

Global Id: T0606100207
Action Type: RESPONSE
Date: 05/29/2009
Action: Risk Assessment Report

Global Id: T0606100207
Action Type: RESPONSE
Date: 05/29/2009
Action: Other Report / Document

Global Id: T0606100207
Action Type: RESPONSE

**PENRYN BEACON (Continued)** **S101300260**

Date: 10/15/2008
Action: Monitoring Report - Quarterly

Global Id: T0606100207
Action Type: RESPONSE
Date: 08/17/2007
Action: Clean Up Fund - 5-Year Review Summary

Global Id: T0606100207
Action Type: RESPONSE
Date: 08/17/2007
Action: Clean Up Fund - 5-Year Review Summary

Global Id: T0606100207
Action Type: RESPONSE
Date: 07/29/2010
Action: Clean Up Fund - 5-Year Review Summary

LUST REG 5:
Region: 5
Status: Preliminary site assessment underway
Case Number: 310257
Case Type: Drinking Water Aquifer affected
Substance: GASOLINE
Staff Initials: PRS
Lead Agency: Regional
Program: LUST
MTBE Code: 7

SWEEPS UST:
Status: Active
Comp Number: 927
Number: 2
Board Of Equalization: Not reported
Referral Date: 02-03-92
Action Date: 02-03-92
Created Date: 02-03-92
Owner Tank Id: 1
SWRCB Tank Id: 31-000-000927-000001
Tank Status: A
Capacity: 10000
Active Date: 02-03-92
Tank Use: M.V. FUEL
STG: P
Content: REG UNLEADED
Number Of Tanks: 5

Status: Active
Comp Number: 927
Number: 2
Board Of Equalization: Not reported
Referral Date: 02-03-92
Action Date: 02-03-92
Created Date: 02-03-92
Owner Tank Id: 2

**PENRYN BEACON (Continued)** **S101300260**

SWRCB Tank Id: 31-000-000927-000002
Tank Status: A
Capacity: 4000
Active Date: 02-03-92
Tank Use: M.V. FUEL
STG: P
Content: LEADED
Number Of Tanks: Not reported

Status: Active
Comp Number: 927
Number: 2
Board Of Equalization: Not reported
Referral Date: 02-03-92
Action Date: 02-03-92
Created Date: 02-03-92
Owner Tank Id: 3
SWRCB Tank Id: 31-000-000927-000003
Tank Status: A
Capacity: 4000
Active Date: 02-03-92
Tank Use: M.V. FUEL
STG: P
Content: REG UNLEADED
Number Of Tanks: Not reported

Status: Active
Comp Number: 927
Number: 2
Board Of Equalization: Not reported
Referral Date: 02-03-92
Action Date: 02-03-92
Created Date: 02-03-92
Owner Tank Id: 4
SWRCB Tank Id: 31-000-000927-000004
Tank Status: A
Capacity: 4000
Active Date: 02-03-92
Tank Use: M.V. FUEL
STG: P
Content: DIESEL
Number Of Tanks: Not reported

Status: Active
Comp Number: 927
Number: 2
Board Of Equalization: Not reported
Referral Date: 02-03-92
Action Date: 02-03-92
Created Date: 02-03-92
Owner Tank Id: 5
SWRCB Tank Id: 31-000-000927-000005
Tank Status: A
Capacity: 500
Active Date: 02-03-92
Tank Use: OIL
STG: W

**PENRYN BEACON (Continued)** **S101300260**

Content: WASTE OIL
Number Of Tanks: Not reported

HIST CORTESE:
Region: CORTESE
Facility County Code: 31
Reg By: LTNKA
Reg Id: 310257

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**15**
**WSW**
**1/4-1/2**
**0.491 mi.**
**2590 ft.**

**Relative:**
**Lower**

**Actual:**
**421 ft.**

**RUSS PEST CONTROL** **CERC-NFRAP** **1003879454**
**3321 TAYLOR RD** **CAD982524639**
**LOOMIS, CA 95650**

CERC-NFRAP:
Site ID: 0903625
Federal Facility: Not a Federal Facility
NPL Status: Not on the NPL
Non NPL Status: NFRAP-Site does not qualify for the NPL based on existing information

CERCLIS-NFRAP Site Contact Details:
Contact Sequence ID: 13287294.00000
Person ID: 13003854.00000

Contact Sequence ID: 13292889.00000
Person ID: 13003858.00000

Contact Sequence ID: 13298747.00000
Person ID: 13004003.00000

CERCLIS-NFRAP Assessment History:
Action: PRELIMINARY ASSESSMENT
Date Started: / /
Date Completed: 02/14/91
Priority Level: NFRAP-Site does not qualify for the NPL based on existing information

Action: ARCHIVE SITE
Date Started: / /
Date Completed: 02/14/91
Priority Level: Not reported

Action: DISCOVERY
Date Started: / /
Date Completed: 06/15/89
Priority Level: Not reported

Count: 3 records.

ORPHAN SUMMARY

| City | EDR ID | Site Name | Site Address | Zip | Database(s) |
|---|---|---|---|---|---|
| LOOMIS | S107770204 | ORCHARD PLACE SUBDIVISION | 3241 AND 3239 TAYLOR ROAD | 95650 | ENVIROSTOR, VCP |
| LOOMIS | 1010727171 | ORCHARD PLACE SUBDIVISION | 3241 AND 3239 TAYLOR ROAD | 95650 | FINDS |
| LOOMIS | S106842899 | LINCOLN HIGHWAY ABANDONMENT PARCEL | TAYLOR RD & UNION PACIFIC RR T | | SLIC |

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

**Number of Days to Update:** Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

## STANDARD ENVIRONMENTAL RECORDS

### *Federal NPL site list*

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 03/26/2015
Date Data Arrived at EDR: 04/08/2015
Date Made Active in Reports: 06/22/2015
Number of Days to Update: 75

Source: EPA
Telephone: N/A
Last EDR Contact: 11/07/2015
Next Scheduled EDR Contact: 01/18/2016
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 03/26/2015
Date Data Arrived at EDR: 04/08/2015
Date Made Active in Reports: 06/22/2015
Number of Days to Update: 75

Source: EPA
Telephone: N/A
Last EDR Contact: 11/07/2015
Next Scheduled EDR Contact: 01/18/2016
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

***Federal Delisted NPL site list***

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

| | |
|---|---|
| Date of Government Version: 03/26/2015 | Source: EPA |
| Date Data Arrived at EDR: 04/08/2015 | Telephone: N/A |
| Date Made Active in Reports: 06/22/2015 | Last EDR Contact: 11/07/2015 |
| Number of Days to Update: 75 | Next Scheduled EDR Contact: 01/18/2016 |
| | Data Release Frequency: Quarterly |

***Federal CERCLIS list***

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

| | |
|---|---|
| Date of Government Version: 03/26/2015 | Source: Environmental Protection Agency |
| Date Data Arrived at EDR: 04/08/2015 | Telephone: 703-603-8704 |
| Date Made Active in Reports: 06/11/2015 | Last EDR Contact: 10/09/2015 |
| Number of Days to Update: 64 | Next Scheduled EDR Contact: 01/18/2016 |
| | Data Release Frequency: Varies |

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System

CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

| | |
|---|---|
| Date of Government Version: 10/25/2013 | Source: EPA |
| Date Data Arrived at EDR: 11/11/2013 | Telephone: 703-412-9810 |
| Date Made Active in Reports: 02/13/2014 | Last EDR Contact: 08/28/2015 |
| Number of Days to Update: 94 | Next Scheduled EDR Contact: 12/07/2015 |
| | Data Release Frequency: Quarterly |

***Federal CERCLIS NFRAP site List***

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned

Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

| | |
|---|---|
| Date of Government Version: 10/25/2013 | Source: EPA |
| Date Data Arrived at EDR: 11/11/2013 | Telephone: 703-412-9810 |
| Date Made Active in Reports: 02/13/2014 | Last EDR Contact: 08/28/2015 |
| Number of Days to Update: 94 | Next Scheduled EDR Contact: 12/07/2015 |
| | Data Release Frequency: Quarterly |

***Federal RCRA CORRACTS facilities list***

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 06/09/2015
Date Data Arrived at EDR: 06/26/2015
Date Made Active in Reports: 09/16/2015
Number of Days to Update: 82

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 09/29/2015
Next Scheduled EDR Contact: 01/11/2016
Data Release Frequency: Quarterly

***Federal RCRA non-CORRACTS TSD facilities list***

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 06/09/2015
Date Data Arrived at EDR: 06/26/2015
Date Made Active in Reports: 09/16/2015
Number of Days to Update: 82

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/29/2015
Next Scheduled EDR Contact: 01/11/2016
Data Release Frequency: Quarterly

***Federal RCRA generators list***

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 06/09/2015
Date Data Arrived at EDR: 06/26/2015
Date Made Active in Reports: 09/16/2015
Number of Days to Update: 82

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/29/2015
Next Scheduled EDR Contact: 01/11/2016
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 06/09/2015
Date Data Arrived at EDR: 06/26/2015
Date Made Active in Reports: 09/16/2015
Number of Days to Update: 82

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/29/2015
Next Scheduled EDR Contact: 01/11/2016
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 06/09/2015
Date Data Arrived at EDR: 06/26/2015
Date Made Active in Reports: 09/16/2015
Number of Days to Update: 82

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/29/2015
Next Scheduled EDR Contact: 01/11/2016
Data Release Frequency: Varies

***Federal institutional controls / engineering controls registries***

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 05/28/2015
Date Data Arrived at EDR: 05/29/2015
Date Made Active in Reports: 06/11/2015
Number of Days to Update: 13

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 11/13/2015
Next Scheduled EDR Contact: 02/29/2016
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 09/10/2015
Date Data Arrived at EDR: 09/11/2015
Date Made Active in Reports: 11/03/2015
Number of Days to Update: 53

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 08/31/2015
Next Scheduled EDR Contact: 12/14/2015
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 09/10/2015
Date Data Arrived at EDR: 09/11/2015
Date Made Active in Reports: 11/03/2015
Number of Days to Update: 53

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 08/31/2015
Next Scheduled EDR Contact: 12/14/2015
Data Release Frequency: Varies

***Federal ERNS list***

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 06/22/2015
Date Data Arrived at EDR: 06/26/2015
Date Made Active in Reports: 09/16/2015
Number of Days to Update: 82

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 09/29/2015
Next Scheduled EDR Contact: 01/11/2016
Data Release Frequency: Annually

***State- and tribal - equivalent NPL***

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 08/03/2015
Date Data Arrived at EDR: 08/04/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 30

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 11/07/2015
Next Scheduled EDR Contact: 02/15/2016
Data Release Frequency: Quarterly

***State- and tribal - equivalent CERCLIS***

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 08/03/2015
Date Data Arrived at EDR: 08/04/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 30

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 11/07/2015
Next Scheduled EDR Contact: 02/15/2016
Data Release Frequency: Quarterly

***State and tribal landfill and/or solid waste disposal site lists***

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 08/17/2015
Date Data Arrived at EDR: 08/18/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 16

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 08/18/2015
Next Scheduled EDR Contact: 11/30/2015
Data Release Frequency: Quarterly

***State and tribal leaking storage tank lists***

LUST REG 1: Active Toxic Site Investigation

Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 9: Leaking Underground Storage Tank Report

Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 09/26/2011
Next Scheduled EDR Contact: 01/09/2012
Data Release Frequency: No Update Planned

LUST: Geotracker's Leaking Underground Fuel Tank Report

Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state. For more information on a particular leaking underground storage tank sites, please contact the appropriate regulatory agency.

Date of Government Version: 10/21/2015
Date Data Arrived at EDR: 10/22/2015
Date Made Active in Reports: 11/05/2015
Number of Days to Update: 14

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 10/22/2015
Next Scheduled EDR Contact: 12/28/2015
Data Release Frequency: Quarterly

LUST REG 7: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 6V: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing
For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database
Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

LUST REG 4: Underground Storage Tank Leak List
Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

LUST REG 3: Leaking Underground Storage Tank Database
Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List
Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

LUST REG 8: Leaking Underground Storage Tanks
California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 03/30/2015
Date Data Arrived at EDR: 04/28/2015
Date Made Active in Reports: 06/22/2015
Number of Days to Update: 55

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 10/08/2015
Next Scheduled EDR Contact: 02/08/2016
Data Release Frequency: Varies

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 07/21/2015
Date Data Arrived at EDR: 07/29/2015
Date Made Active in Reports: 10/13/2015
Number of Days to Update: 76

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 10/26/2015
Next Scheduled EDR Contact: 02/08/2016
Data Release Frequency: Quarterly

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 05/13/2015
Date Data Arrived at EDR: 08/03/2015
Date Made Active in Reports: 10/13/2015
Number of Days to Update: 71

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 10/26/2015
Next Scheduled EDR Contact: 02/08/2016
Data Release Frequency: Varies

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 07/28/2015
Date Data Arrived at EDR: 08/07/2015
Date Made Active in Reports: 10/13/2015
Number of Days to Update: 67

Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 10/26/2015
Next Scheduled EDR Contact: 02/08/2016
Data Release Frequency: Varies

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 01/08/2015
Date Data Arrived at EDR: 01/08/2015
Date Made Active in Reports: 02/09/2015
Number of Days to Update: 32

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 10/30/2015
Next Scheduled EDR Contact: 02/08/2016
Data Release Frequency: Quarterly

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 04/30/2015
Date Data Arrived at EDR: 05/05/2015
Date Made Active in Reports: 06/22/2015
Number of Days to Update: 48

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 10/08/2015
Next Scheduled EDR Contact: 02/08/2016
Data Release Frequency: Quarterly

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 07/30/2015
Date Data Arrived at EDR: 08/07/2015
Date Made Active in Reports: 10/13/2015
Number of Days to Update: 67

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 10/26/2015
Next Scheduled EDR Contact: 02/08/2016
Data Release Frequency: Semi-Annually

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 02/03/2015
Date Data Arrived at EDR: 04/30/2015
Date Made Active in Reports: 06/22/2015
Number of Days to Update: 53

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 10/27/2015
Next Scheduled EDR Contact: 02/08/2016
Data Release Frequency: Varies

SLIC: Statewide SLIC Cases
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 10/21/2015
Date Data Arrived at EDR: 10/22/2015
Date Made Active in Reports: 11/06/2015
Number of Days to Update: 15

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 10/22/2015
Next Scheduled EDR Contact: 12/28/2015
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: Semi-Annually

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: Varies

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Semi-Annually

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 08/08/2011
Next Scheduled EDR Contact: 11/21/2011
Data Release Frequency: Annually

***State and tribal registered storage tank lists***

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 01/01/2010
Date Data Arrived at EDR: 02/16/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 55

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 10/08/2015
Next Scheduled EDR Contact: 01/25/2016
Data Release Frequency: Varies

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 09/14/2015
Date Data Arrived at EDR: 09/15/2015
Date Made Active in Reports: 10/13/2015
Number of Days to Update: 28

Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 10/22/2015
Next Scheduled EDR Contact: 12/28/2015
Data Release Frequency: Semi-Annually

AST: Aboveground Petroleum Storage Tank Facilities
A listing of aboveground storage tank petroleum storage tank locations.

Date of Government Version: 08/01/2009
Date Data Arrived at EDR: 09/10/2009
Date Made Active in Reports: 10/01/2009
Number of Days to Update: 21

Source: California Environmental Protection Agency
Telephone: 916-327-5092
Last EDR Contact: 09/28/2015
Next Scheduled EDR Contact: 01/11/2016
Data Release Frequency: Quarterly

INDIAN UST R4: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 07/30/2015
Date Data Arrived at EDR: 08/07/2015
Date Made Active in Reports: 10/13/2015
Number of Days to Update: 67

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 10/26/2015
Next Scheduled EDR Contact: 02/08/2016
Data Release Frequency: Semi-Annually

INDIAN UST R7: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 09/23/2014
Date Data Arrived at EDR: 11/25/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 65

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 10/26/2015
Next Scheduled EDR Contact: 02/08/2016
Data Release Frequency: Varies

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 07/28/2015
Date Data Arrived at EDR: 08/07/2015
Date Made Active in Reports: 10/13/2015
Number of Days to Update: 67

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 10/26/2015
Next Scheduled EDR Contact: 02/08/2016
Data Release Frequency: Varies

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 02/03/2015
Date Data Arrived at EDR: 04/30/2015
Date Made Active in Reports: 06/22/2015
Number of Days to Update: 53

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 10/27/2015
Next Scheduled EDR Contact: 02/08/2016
Data Release Frequency: Varies

INDIAN UST R10: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 07/21/2015
Date Data Arrived at EDR: 07/29/2015
Date Made Active in Reports: 10/13/2015
Number of Days to Update: 76

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 10/26/2015
Next Scheduled EDR Contact: 02/08/2016
Data Release Frequency: Quarterly

INDIAN UST R9: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 12/14/2014
Date Data Arrived at EDR: 02/13/2015
Date Made Active in Reports: 03/13/2015
Number of Days to Update: 28

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 10/30/2015
Next Scheduled EDR Contact: 02/09/2016
Data Release Frequency: Quarterly

INDIAN UST R8: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 07/28/2015
Date Data Arrived at EDR: 08/14/2015
Date Made Active in Reports: 10/13/2015
Number of Days to Update: 60

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 07/22/2015
Next Scheduled EDR Contact: 02/08/2016
Data Release Frequency: Quarterly

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 05/13/2015
Date Data Arrived at EDR: 08/03/2015
Date Made Active in Reports: 10/13/2015
Number of Days to Update: 71

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 10/26/2015
Next Scheduled EDR Contact: 02/08/2016
Data Release Frequency: Semi-Annually

***State and tribal voluntary cleanup sites***

VCP: Voluntary Cleanup Program Properties
Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 08/03/2015
Date Data Arrived at EDR: 08/04/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 30

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 11/07/2015
Next Scheduled EDR Contact: 02/15/2016
Data Release Frequency: Quarterly

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 09/29/2014
Date Data Arrived at EDR: 10/01/2014
Date Made Active in Reports: 11/06/2014
Number of Days to Update: 36

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 09/29/2015
Next Scheduled EDR Contact: 01/11/2016
Data Release Frequency: Varies

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng
A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

***State and tribal Brownfields sites***

BROWNFIELDS: Considered Brownfieds Sites Listing
A listing of sites the SWRCB considers to be Brownfields since these are sites have come to them through the MOA Process.

Date of Government Version: 06/25/2015
Date Data Arrived at EDR: 09/08/2015
Date Made Active in Reports: 10/12/2015
Number of Days to Update: 34

Source: State Water Resources Control Board
Telephone: 916-323-7905
Last EDR Contact: 09/08/2015
Next Scheduled EDR Contact: 12/21/2015
Data Release Frequency: Varies

**ADDITIONAL ENVIRONMENTAL RECORDS**

***Local Brownfield lists***

US BROWNFIELDS: A Listing of Brownfields Sites
Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 06/22/2015
Date Data Arrived at EDR: 06/24/2015
Date Made Active in Reports: 09/02/2015
Number of Days to Update: 70

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 09/23/2015
Next Scheduled EDR Contact: 01/04/2016
Data Release Frequency: Semi-Annually

***Local Lists of Landfill / Solid Waste Disposal Sites***

WMUDS/SWAT: Waste Management Unit Database

Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 11/09/2015
Next Scheduled EDR Contact: 02/22/2016
Data Release Frequency: No Update Planned

SWRCY: Recycler Database

A listing of recycling facilities in California.

Date of Government Version: 09/14/2015
Date Data Arrived at EDR: 09/15/2015
Date Made Active in Reports: 10/14/2015
Number of Days to Update: 29

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 09/15/2015
Next Scheduled EDR Contact: 12/28/2015
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing

A listing of registered waste tire haulers.

Date of Government Version: 09/21/2015
Date Data Arrived at EDR: 09/22/2015
Date Made Active in Reports: 11/05/2015
Number of Days to Update: 44

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 11/13/2015
Next Scheduled EDR Contact: 02/29/2016
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands

Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 11/06/2015
Next Scheduled EDR Contact: 02/15/2016
Data Release Frequency: Varies

ODI: Open Dump Inventory

An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 10/26/2015
Next Scheduled EDR Contact: 02/08/2016
Data Release Frequency: No Update Planned

***Local Lists of Hazardous waste / Contaminated Sites***

US HIST CDL: National Clandestine Laboratory Register
A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 08/12/2015
Date Data Arrived at EDR: 09/04/2015
Date Made Active in Reports: 11/03/2015
Number of Days to Update: 60

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 08/31/2015
Next Scheduled EDR Contact: 12/14/2015
Data Release Frequency: No Update Planned

HIST CAL-SITES: Calsites Database
The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program
This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 08/03/2015
Date Data Arrived at EDR: 08/04/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 30

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 11/07/2015
Next Scheduled EDR Contact: 02/15/2016
Data Release Frequency: Quarterly

CDL: Clandestine Drug Labs
A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 03/10/2015
Date Made Active in Reports: 03/18/2015
Number of Days to Update: 8

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 10/26/2015
Next Scheduled EDR Contact: 01/25/2016
Data Release Frequency: Varies

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 08/12/2015
Date Data Arrived at EDR: 09/04/2015
Date Made Active in Reports: 11/03/2015
Number of Days to Update: 60

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 08/31/2015
Next Scheduled EDR Contact: 12/14/2015
Data Release Frequency: Quarterly

***Local Lists of Registered Storage Tanks***

SWEEPS UST: SWEEPS UST Listing

Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database

A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 09/23/2009
Date Data Arrived at EDR: 09/23/2009
Date Made Active in Reports: 10/01/2009
Number of Days to Update: 8

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 08/31/2015
Next Scheduled EDR Contact: 12/14/2015
Data Release Frequency: Annually

HIST UST: Hazardous Substance Storage Container Database

The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CA FID UST: Facility Inventory Database

The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

***Local Land Records***

LIENS: Environmental Liens Listing

A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 09/08/2015
Date Data Arrived at EDR: 09/10/2015
Date Made Active in Reports: 10/12/2015
Number of Days to Update: 32

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 09/08/2015
Next Scheduled EDR Contact: 12/21/2015
Data Release Frequency: Varies

LIENS 2: CERCLA Lien Information

A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 02/18/2014
Date Data Arrived at EDR: 03/18/2014
Date Made Active in Reports: 04/24/2014
Number of Days to Update: 37

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 10/30/2015
Next Scheduled EDR Contact: 02/08/2016
Data Release Frequency: Varies

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 09/08/2015
Date Data Arrived at EDR: 09/09/2015
Date Made Active in Reports: 10/13/2015
Number of Days to Update: 34

Source: DTSC and SWRCB
Telephone: 916-323-3400
Last EDR Contact: 09/09/2015
Next Scheduled EDR Contact: 12/21/2015
Data Release Frequency: Semi-Annually

***Records of Emergency Release Reports***

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 06/24/2015
Date Data Arrived at EDR: 06/26/2015
Date Made Active in Reports: 09/02/2015
Number of Days to Update: 68

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 09/29/2015
Next Scheduled EDR Contact: 01/11/2016
Data Release Frequency: Annually

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 06/15/2015
Date Data Arrived at EDR: 07/28/2015
Date Made Active in Reports: 08/03/2015
Number of Days to Update: 6

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 10/27/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Varies

LDS: Land Disposal Sites Listing

The Land Disposal program regulates of waste discharge to land for treatment, storage and disposal in waste management units.

Date of Government Version: 10/21/2015
Date Data Arrived at EDR: 10/22/2015
Date Made Active in Reports: 11/05/2015
Number of Days to Update: 14

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 10/22/2015
Next Scheduled EDR Contact: 12/28/2015
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing

The State Water Resources Control Board and nine Regional Water Quality Control Boards partner with the Department of Defense (DoD) through the Defense and State Memorandum of Agreement (DSMOA) to oversee the investigation and remediation of water quality issues at military facilities.

Date of Government Version: 10/21/2015
Date Data Arrived at EDR: 10/22/2015
Date Made Active in Reports: 11/05/2015
Number of Days to Update: 14

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 10/22/2015
Next Scheduled EDR Contact: 12/28/2015
Data Release Frequency: Quarterly

SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 06/06/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/22/2013
Number of Days to Update: 50

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

***Other Ascertainable Records***

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 06/09/2015
Date Data Arrived at EDR: 06/26/2015
Date Made Active in Reports: 09/16/2015
Number of Days to Update: 82

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/29/2015
Next Scheduled EDR Contact: 01/11/2016
Data Release Frequency: Varies

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 01/31/2015
Date Data Arrived at EDR: 07/08/2015
Date Made Active in Reports: 10/13/2015
Number of Days to Update: 97

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 09/11/2015
Next Scheduled EDR Contact: 12/21/2015
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 10/16/2015
Next Scheduled EDR Contact: 01/25/2016
Data Release Frequency: Semi-Annually

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 10/16/2015
Next Scheduled EDR Contact: 01/25/2016
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 03/07/2011
Date Data Arrived at EDR: 03/09/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 54

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 08/21/2015
Next Scheduled EDR Contact: 11/30/2015
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 09/01/2015
Date Data Arrived at EDR: 09/03/2015
Date Made Active in Reports: 11/03/2015
Number of Days to Update: 61

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 11/13/2015
Next Scheduled EDR Contact: 02/29/2016
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 11/10/2015
Next Scheduled EDR Contact: 02/22/2016
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 04/22/2013
Date Data Arrived at EDR: 03/03/2015
Date Made Active in Reports: 03/09/2015
Number of Days to Update: 6

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 11/13/2015
Next Scheduled EDR Contact: 02/22/2016
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 01/15/2015
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 14

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 09/25/2015
Next Scheduled EDR Contact: 01/04/2016
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2013
Date Data Arrived at EDR: 02/12/2015
Date Made Active in Reports: 06/02/2015
Number of Days to Update: 110

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 08/28/2015
Next Scheduled EDR Contact: 12/07/2015
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 10/26/2015
Next Scheduled EDR Contact: 02/08/2016
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 11/25/2013
Date Data Arrived at EDR: 12/12/2013
Date Made Active in Reports: 02/24/2014
Number of Days to Update: 74

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 09/11/2015
Next Scheduled EDR Contact: 12/21/2015
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 08/01/2015
Date Data Arrived at EDR: 08/26/2015
Date Made Active in Reports: 11/03/2015
Number of Days to Update: 69

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 10/26/2015
Next Scheduled EDR Contact: 02/08/2016
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties

A listing of verified Potentially Responsible Parties

Date of Government Version: 10/25/2013
Date Data Arrived at EDR: 10/17/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 3

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 11/13/2015
Next Scheduled EDR Contact: 02/22/2016
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 07/01/2014
Date Data Arrived at EDR: 10/15/2014
Date Made Active in Reports: 11/17/2014
Number of Days to Update: 33

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 10/29/2015
Next Scheduled EDR Contact: 01/25/2016
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 01/23/2015
Date Data Arrived at EDR: 02/06/2015
Date Made Active in Reports: 03/09/2015
Number of Days to Update: 31

Source: Environmental Protection Agency
Telephone: 202-564-5088
Last EDR Contact: 10/08/2015
Next Scheduled EDR Contact: 01/25/2016
Data Release Frequency: Quarterly

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/24/2015
Next Scheduled EDR Contact: 12/07/2015
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/24/2015
Next Scheduled EDR Contact: 12/07/2015
Data Release Frequency: Quarterly

MLTS: Material Licensing Tracking System
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 06/26/2015
Date Data Arrived at EDR: 07/10/2015
Date Made Active in Reports: 10/13/2015
Number of Days to Update: 95

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 09/03/2015
Next Scheduled EDR Contact: 12/21/2015
Data Release Frequency: Quarterly

COAL ASH DOE: Steam-Electric Plant Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76

Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 07/13/2015
Next Scheduled EDR Contact: 10/28/2015
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 07/01/2014
Date Data Arrived at EDR: 09/10/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 09/11/2015
Next Scheduled EDR Contact: 12/21/2015
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 02/01/2011
Date Data Arrived at EDR: 10/19/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 83

Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 10/29/2015
Next Scheduled EDR Contact: 02/08/2016
Data Release Frequency: Varies

RADINFO: Radiation Information Database
The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 07/07/2015
Date Data Arrived at EDR: 07/09/2015
Date Made Active in Reports: 09/16/2015
Number of Days to Update: 69

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 10/07/2015
Next Scheduled EDR Contact: 01/18/2016
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing

A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing

A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 07/31/2012
Date Data Arrived at EDR: 08/07/2012
Date Made Active in Reports: 09/18/2012
Number of Days to Update: 42

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 11/07/2015
Next Scheduled EDR Contact: 02/15/2016
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 04/17/2015
Date Made Active in Reports: 06/02/2015
Number of Days to Update: 46

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 09/28/2015
Next Scheduled EDR Contact: 01/11/2016
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2013
Date Data Arrived at EDR: 02/24/2015
Date Made Active in Reports: 09/30/2015
Number of Days to Update: 218

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 08/28/2015
Next Scheduled EDR Contact: 12/07/2015
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 12/08/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 34

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 10/16/2015
Next Scheduled EDR Contact: 01/25/2016
Data Release Frequency: Semi-Annually

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 09/14/2010
Date Data Arrived at EDR: 10/07/2011
Date Made Active in Reports: 03/01/2012
Number of Days to Update: 146

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 08/25/2015
Next Scheduled EDR Contact: 12/07/2015
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 11/25/2014
Date Data Arrived at EDR: 11/26/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 64

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 10/05/2015
Next Scheduled EDR Contact: 01/18/2016
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites

A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)

The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 07/22/2015
Date Data Arrived at EDR: 07/24/2015
Date Made Active in Reports: 09/02/2015
Number of Days to Update: 40

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/28/2015
Next Scheduled EDR Contact: 01/11/2016
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data

A listing of minor source facilities.

Date of Government Version: 07/22/2015
Date Data Arrived at EDR: 07/24/2015
Date Made Active in Reports: 09/02/2015
Number of Days to Update: 40

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/28/2015
Next Scheduled EDR Contact: 01/11/2016
Data Release Frequency: Annually

US MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 05/14/2015
Date Data Arrived at EDR: 06/03/2015
Date Made Active in Reports: 09/02/2015
Number of Days to Update: 91

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 09/01/2015
Next Scheduled EDR Contact: 12/14/2015
Data Release Frequency: Semi-Annually

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing

This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 12/05/2005
Date Data Arrived at EDR: 02/29/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 49

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 09/04/2015
Next Scheduled EDR Contact: 12/14/2015
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 09/04/2015
Next Scheduled EDR Contact: 12/14/2015
Data Release Frequency: Varies

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 07/20/2015
Date Data Arrived at EDR: 09/09/2015
Date Made Active in Reports: 11/03/2015
Number of Days to Update: 55

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 09/09/2015
Next Scheduled EDR Contact: 12/21/2015
Data Release Frequency: Quarterly

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CORTESE: "Cortese" Hazardous Waste & Substances Sites List

The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

Date of Government Version: 09/28/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 11/05/2015
Number of Days to Update: 37

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 09/29/2015
Next Scheduled EDR Contact: 01/11/2016
Data Release Frequency: Quarterly

DRYCLEANERS: Cleaner Facilities

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 08/10/2015
Date Data Arrived at EDR: 08/27/2015
Date Made Active in Reports: 10/01/2015
Number of Days to Update: 35

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 09/03/2015
Next Scheduled EDR Contact: 12/21/2015
Data Release Frequency: Annually

EMI: Emissions Inventory Data

Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2013
Date Data Arrived at EDR: 09/25/2015
Date Made Active in Reports: 11/05/2015
Number of Days to Update: 41

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 09/25/2015
Next Scheduled EDR Contact: 01/04/2016
Data Release Frequency: Varies

ENF: Enforcement Action Listing

A listing of Water Board Enforcement Actions. Formal is everything except Oral/Verbal Communication, Notice of Violation, Expedited Payment Letter, and Staff Enforcement Letter.

Date of Government Version: 08/24/2015
Date Data Arrived at EDR: 08/26/2015
Date Made Active in Reports: 10/01/2015
Number of Days to Update: 36

Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 11/09/2015
Next Scheduled EDR Contact: 02/08/2016
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing

Financial Assurance information

Date of Government Version: 08/03/2015
Date Data Arrived at EDR: 08/06/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 28

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 10/26/2015
Next Scheduled EDR Contact: 02/08/2016
Data Release Frequency: Varies

Financial Assurance 2: Financial Assurance Information Listing

A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 08/17/2015
Date Data Arrived at EDR: 08/18/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 16

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 11/13/2015
Next Scheduled EDR Contact: 02/29/2016
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method. This database begins with calendar year 1993.

Date of Government Version: 12/31/2013
Date Data Arrived at EDR: 10/15/2014
Date Made Active in Reports: 11/19/2014
Number of Days to Update: 35

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 10/14/2015
Next Scheduled EDR Contact: 01/25/2016
Data Release Frequency: Annually

HIST CORTESE: Hazardous Waste & Substance Site List
The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

HWP: EnviroStor Permitted Facilities Listing
Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 08/24/2015
Date Data Arrived at EDR: 08/26/2015
Date Made Active in Reports: 10/01/2015
Number of Days to Update: 36

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/26/2015
Next Scheduled EDR Contact: 12/07/2015
Data Release Frequency: Quarterly

HWT: Registered Hazardous Waste Transporter Database
A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 07/13/2015
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 08/03/2015
Number of Days to Update: 20

Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 10/14/2015
Next Scheduled EDR Contact: 01/25/2016
Data Release Frequency: Quarterly

MINES: Mines Site Location Listing
A listing of mine site locations from the Office of Mine Reclamation.

Date of Government Version: 09/14/2015
Date Data Arrived at EDR: 09/15/2015
Date Made Active in Reports: 10/14/2015
Number of Days to Update: 29

Source: Department of Conservation
Telephone: 916-322-1080
Last EDR Contact: 09/15/2015
Next Scheduled EDR Contact: 12/28/2015
Data Release Frequency: Varies

MWMP: Medical Waste Management Program Listing
The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 09/03/2015
Date Data Arrived at EDR: 09/09/2015
Date Made Active in Reports: 10/12/2015
Number of Days to Update: 33

Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 09/09/2015
Next Scheduled EDR Contact: 12/21/2015
Data Release Frequency: Varies

NPDES: NPDES Permits Listing
A listing of NPDES permits, including stormwater.

Date of Government Version: 08/17/2015
Date Data Arrived at EDR: 08/18/2015
Date Made Active in Reports: 09/11/2015
Number of Days to Update: 24

Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 08/18/2015
Next Scheduled EDR Contact: 11/30/2015
Data Release Frequency: Quarterly

PEST LIC: Pesticide Regulation Licenses Listing

A listing of licenses and certificates issued by the Department of Pesticide Regulation. The DPR issues licenses and/or certificates to: Persons and businesses that apply or sell pesticides; Pest control dealers and brokers; Persons who advise on agricultural pesticide applications.

Date of Government Version: 09/08/2015
Date Data Arrived at EDR: 09/09/2015
Date Made Active in Reports: 10/12/2015
Number of Days to Update: 33

Source: Department of Pesticide Regulation
Telephone: 916-445-4038
Last EDR Contact: 09/09/2015
Next Scheduled EDR Contact: 12/21/2015
Data Release Frequency: Quarterly

PROC: Certified Processors Database

A listing of certified processors.

Date of Government Version: 09/14/2015
Date Data Arrived at EDR: 09/15/2015
Date Made Active in Reports: 10/14/2015
Number of Days to Update: 29

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 09/15/2015
Next Scheduled EDR Contact: 12/28/2015
Data Release Frequency: Quarterly

NOTIFY 65: Proposition 65 Records

Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 08/04/2015
Date Data Arrived at EDR: 08/25/2015
Date Made Active in Reports: 10/05/2015
Number of Days to Update: 41

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 10/19/2015
Next Scheduled EDR Contact: 01/04/2016
Data Release Frequency: No Update Planned

UIC: UIC Listing

A listing of wells identified as underground injection wells, in the California Oil and Gas Wells database.

Date of Government Version: 07/23/2015
Date Data Arrived at EDR: 09/15/2015
Date Made Active in Reports: 10/13/2015
Number of Days to Update: 28

Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 09/15/2015
Next Scheduled EDR Contact: 12/28/2015
Data Release Frequency: Varies

WASTEWATER PITS: Oil Wastewater Pits Listing

Water officials discovered that oil producers have been dumping chemical-laden wastewater into hundreds of unlined pits that are operating without proper permits. Inspections completed by the Central Valley Regional Water Quality Control Board revealed the existence of previously unidentified waste sites. The water board?s review found that more than one-third of the region?s active disposal pits are operating without permission.

Date of Government Version: 04/15/2015
Date Data Arrived at EDR: 04/17/2015
Date Made Active in Reports: 06/23/2015
Number of Days to Update: 67

Source: RWQCB, Central Valley Region
Telephone: 559-445-5577
Last EDR Contact: 10/16/2015
Next Scheduled EDR Contact: 01/25/2016
Data Release Frequency: Varies

WDS: Waste Discharge System

Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 08/24/2015
Next Scheduled EDR Contact: 12/07/2015
Data Release Frequency: Quarterly

WIP: Well Investigation Program Case List
Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 09/28/2015
Next Scheduled EDR Contact: 01/11/2016
Data Release Frequency: Varies

**EDR HIGH RISK HISTORICAL RECORDS**

***EDR Exclusive Records***

EDR MGP: EDR Proprietary Manufactured Gas Plants
The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR US Hist Auto Stat: EDR Exclusive Historic Gas Stations
EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR US Hist Cleaners: EDR Exclusive Historic Dry Cleaners
EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

**EDR RECOVERED GOVERNMENT ARCHIVES**

***Exclusive Recovered Govt. Archives***

RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Resources Recycling and Recovery in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/13/2014
Number of Days to Update: 196

Source: Department of Resources Recycling and Recovery
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the State Water Resources Control Board in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 12/30/2013
Number of Days to Update: 182

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

**COUNTY RECORDS**

ALAMEDA COUNTY:

Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 07/21/2015
Date Data Arrived at EDR: 07/24/2015
Date Made Active in Reports: 08/05/2015
Number of Days to Update: 12

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 10/09/2015
Next Scheduled EDR Contact: 01/25/2016
Data Release Frequency: Semi-Annually

Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 07/21/2015
Date Data Arrived at EDR: 07/22/2015
Date Made Active in Reports: 08/03/2015
Number of Days to Update: 12

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 10/09/2015
Next Scheduled EDR Contact: 01/25/2016
Data Release Frequency: Semi-Annually

AMADOR COUNTY:

CUPA Facility List
Cupa Facility List

Date of Government Version: 08/24/2015
Date Data Arrived at EDR: 09/08/2015
Date Made Active in Reports: 10/13/2015
Number of Days to Update: 35

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 09/08/2015
Next Scheduled EDR Contact: 12/21/2015
Data Release Frequency: Varies

BUTTE COUNTY:

CUPA Facility Listing
Cupa facility list.

Date of Government Version: 11/20/2014
Date Data Arrived at EDR: 11/24/2014
Date Made Active in Reports: 01/07/2015
Number of Days to Update: 44

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 11/09/2015
Next Scheduled EDR Contact: 01/25/2016
Data Release Frequency: No Update Planned

CALVERAS COUNTY:

CUPA Facility Listing
Cupa Facility Listing

Date of Government Version: 07/15/2015
Date Data Arrived at EDR: 07/17/2015
Date Made Active in Reports: 08/03/2015
Number of Days to Update: 17

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 09/28/2015
Next Scheduled EDR Contact: 01/11/2016
Data Release Frequency: Quarterly

COLUSA COUNTY:

CUPA Facility List
Cupa facility list.

Date of Government Version: 06/08/2015
Date Data Arrived at EDR: 09/22/2015
Date Made Active in Reports: 10/14/2015
Number of Days to Update: 22

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 11/09/2015
Next Scheduled EDR Contact: 02/22/2016
Data Release Frequency: Varies

CONTRA COSTA COUNTY:

Site List
List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 08/24/2015
Date Data Arrived at EDR: 08/25/2015
Date Made Active in Reports: 10/01/2015
Number of Days to Update: 37

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 11/07/2015
Next Scheduled EDR Contact: 02/15/2016
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:

CUPA Facility List
Cupa Facility list

Date of Government Version: 05/20/2015
Date Data Arrived at EDR: 08/03/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 31

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 11/13/2015
Next Scheduled EDR Contact: 02/15/2016
Data Release Frequency: Varies

EL DORADO COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 09/23/2015
Date Data Arrived at EDR: 09/25/2015
Date Made Active in Reports: 10/15/2015
Number of Days to Update: 20

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 11/07/2015
Next Scheduled EDR Contact: 02/15/2016
Data Release Frequency: Varies

FRESNO COUNTY:

CUPA Resources List
Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 07/13/2015
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 08/03/2015
Number of Days to Update: 20

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 10/05/2015
Next Scheduled EDR Contact: 01/18/2016
Data Release Frequency: Semi-Annually

HUMBOLDT COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 08/04/2015
Date Data Arrived at EDR: 08/07/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 27

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 11/12/2015
Next Scheduled EDR Contact: 12/07/2015
Data Release Frequency: Varies

IMPERIAL COUNTY:

CUPA Facility List
Cupa facility list.

Date of Government Version: 08/11/2015
Date Data Arrived at EDR: 08/14/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 20

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 10/26/2015
Next Scheduled EDR Contact: 02/08/2016
Data Release Frequency: Varies

INYO COUNTY:

CUPA Facility List
Cupa facility list.

Date of Government Version: 09/10/2013
Date Data Arrived at EDR: 09/11/2013
Date Made Active in Reports: 10/14/2013
Number of Days to Update: 33

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 08/24/2015
Next Scheduled EDR Contact: 12/07/2015
Data Release Frequency: Varies

KERN COUNTY:

Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 05/19/2015
Date Data Arrived at EDR: 06/18/2015
Date Made Active in Reports: 07/22/2015
Number of Days to Update: 34

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 11/09/2015
Next Scheduled EDR Contact: 02/22/2016
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 08/25/2015
Date Data Arrived at EDR: 08/27/2015
Date Made Active in Reports: 09/30/2015
Number of Days to Update: 34

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 08/24/2015
Next Scheduled EDR Contact: 12/07/2015
Data Release Frequency: Varies

LAKE COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 08/11/2015
Date Data Arrived at EDR: 08/14/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 20

Source: Lake County Environmental Health
Telephone: 707-263-1164
Last EDR Contact: 10/19/2015
Next Scheduled EDR Contact: 02/01/2016
Data Release Frequency: Varies

LOS ANGELES COUNTY:

San Gabriel Valley Areas of Concern
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office.

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: EPA Region 9
Telephone: 415-972-3178
Last EDR Contact: 09/21/2015
Next Scheduled EDR Contact: 01/04/2016
Data Release Frequency: No Update Planned

HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 11/24/2014
Date Data Arrived at EDR: 01/30/2015
Date Made Active in Reports: 03/04/2015
Number of Days to Update: 33

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 10/09/2015
Next Scheduled EDR Contact: 01/25/2016
Data Release Frequency: Semi-Annually

List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 07/20/2015
Date Data Arrived at EDR: 07/21/2015
Date Made Active in Reports: 08/03/2015
Number of Days to Update: 13

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 10/20/2015
Next Scheduled EDR Contact: 02/01/2016
Data Release Frequency: Varies

City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 01/01/2015
Date Data Arrived at EDR: 07/27/2015
Date Made Active in Reports: 08/10/2015
Number of Days to Update: 14

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 10/19/2015
Next Scheduled EDR Contact: 02/01/2016
Data Release Frequency: Varies

Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 01/15/2015
Date Data Arrived at EDR: 01/29/2015
Date Made Active in Reports: 03/10/2015
Number of Days to Update: 40

Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 10/19/2015
Next Scheduled EDR Contact: 02/01/2016
Data Release Frequency: Annually

City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 03/30/2015
Date Data Arrived at EDR: 04/02/2015
Date Made Active in Reports: 04/13/2015
Number of Days to Update: 11

Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 10/19/2015
Next Scheduled EDR Contact: 02/01/2016
Data Release Frequency: Semi-Annually

City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 03/03/2015
Date Data Arrived at EDR: 05/26/2015
Date Made Active in Reports: 06/11/2015
Number of Days to Update: 16

Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 10/26/2015
Next Scheduled EDR Contact: 02/08/2016
Data Release Frequency: Annually

City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 06/03/2015
Date Data Arrived at EDR: 06/04/2015
Date Made Active in Reports: 07/06/2015
Number of Days to Update: 32

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 10/09/2015
Next Scheduled EDR Contact: 01/25/2016
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA Facility List

A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 09/15/2015
Date Data Arrived at EDR: 09/17/2015
Date Made Active in Reports: 10/14/2015
Number of Days to Update: 27

Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 08/24/2015
Next Scheduled EDR Contact: 12/07/2015
Data Release Frequency: Varies

MARIN COUNTY:

Underground Storage Tank Sites

Currently permitted USTs in Marin County.

Date of Government Version: 10/05/2015
Date Data Arrived at EDR: 10/08/2015
Date Made Active in Reports: 10/15/2015
Number of Days to Update: 7

Source: Public Works Department Waste Management
Telephone: 415-499-6647
Last EDR Contact: 10/05/2015
Next Scheduled EDR Contact: 01/18/2016
Data Release Frequency: Semi-Annually

MERCED COUNTY:

CUPA Facility List

CUPA facility list.

Date of Government Version: 09/21/2015
Date Data Arrived at EDR: 09/22/2015
Date Made Active in Reports: 11/03/2015
Number of Days to Update: 42

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 09/21/2015
Next Scheduled EDR Contact: 12/07/2015
Data Release Frequency: Varies

MONO COUNTY:

CUPA Facility List

CUPA Facility List

Date of Government Version: 09/02/2015
Date Data Arrived at EDR: 09/04/2015
Date Made Active in Reports: 10/13/2015
Number of Days to Update: 39

Source: Mono County Health Department
Telephone: 760-932-5580
Last EDR Contact: 08/31/2015
Next Scheduled EDR Contact: 12/14/2015
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA Facility Listing

CUPA Program listing from the Environmental Health Division.

Date of Government Version: 06/30/2015
Date Data Arrived at EDR: 07/07/2015
Date Made Active in Reports: 07/16/2015
Number of Days to Update: 9

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 08/24/2015
Next Scheduled EDR Contact: 12/07/2015
Data Release Frequency: Varies

NAPA COUNTY:

Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 12/05/2011
Date Data Arrived at EDR: 12/06/2011
Date Made Active in Reports: 02/07/2012
Number of Days to Update: 63

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 08/31/2015
Next Scheduled EDR Contact: 12/14/2015
Data Release Frequency: No Update Planned

Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 01/15/2008
Date Data Arrived at EDR: 01/16/2008
Date Made Active in Reports: 02/08/2008
Number of Days to Update: 23

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 08/31/2015
Next Scheduled EDR Contact: 12/14/2015
Data Release Frequency: No Update Planned

NEVADA COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 06/03/2015
Date Data Arrived at EDR: 06/04/2015
Date Made Active in Reports: 07/22/2015
Number of Days to Update: 48

Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 11/06/2015
Next Scheduled EDR Contact: 02/15/2016
Data Release Frequency: Varies

ORANGE COUNTY:

List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 08/01/2015
Date Data Arrived at EDR: 08/10/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 24

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 11/10/2015
Next Scheduled EDR Contact: 02/22/2016
Data Release Frequency: Annually

List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 08/03/2015
Date Data Arrived at EDR: 08/10/2015
Date Made Active in Reports: 09/11/2015
Number of Days to Update: 32

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 11/10/2015
Next Scheduled EDR Contact: 02/22/2016
Data Release Frequency: Quarterly

List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 08/01/2015
Date Data Arrived at EDR: 08/11/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 23

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 11/11/2015
Next Scheduled EDR Contact: 02/22/2016
Data Release Frequency: Quarterly

PLACER COUNTY:

Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 09/08/2015
Date Data Arrived at EDR: 09/08/2015
Date Made Active in Reports: 10/14/2015
Number of Days to Update: 36

Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 09/08/2015
Next Scheduled EDR Contact: 12/21/2015
Data Release Frequency: Semi-Annually

RIVERSIDE COUNTY:

Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 07/15/2015
Date Data Arrived at EDR: 07/17/2015
Date Made Active in Reports: 08/03/2015
Number of Days to Update: 17

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 09/21/2015
Next Scheduled EDR Contact: 01/04/2016
Data Release Frequency: Quarterly

Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 07/15/2015
Date Data Arrived at EDR: 07/17/2015
Date Made Active in Reports: 08/03/2015
Number of Days to Update: 17

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 09/21/2015
Next Scheduled EDR Contact: 01/04/2016
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 05/07/2015
Date Data Arrived at EDR: 07/24/2015
Date Made Active in Reports: 08/03/2015
Number of Days to Update: 10

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 10/06/2015
Next Scheduled EDR Contact: 01/18/2016
Data Release Frequency: Quarterly

Master Hazardous Materials Facility List
Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 08/03/2015
Date Data Arrived at EDR: 10/06/2015
Date Made Active in Reports: 11/06/2015
Number of Days to Update: 31

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 10/06/2015
Next Scheduled EDR Contact: 01/18/2016
Data Release Frequency: Quarterly

SAN BERNARDINO COUNTY:

Hazardous Material Permits
This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 06/30/2015
Date Data Arrived at EDR: 07/07/2015
Date Made Active in Reports: 07/14/2015
Number of Days to Update: 7

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 11/09/2015
Next Scheduled EDR Contact: 02/22/2016
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 09/23/2013
Date Data Arrived at EDR: 09/24/2013
Date Made Active in Reports: 10/17/2013
Number of Days to Update: 23

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 09/08/2015
Next Scheduled EDR Contact: 12/21/2015
Data Release Frequency: Quarterly

Solid Waste Facilities

San Diego County Solid Waste Facilities.

Date of Government Version: 10/31/2014
Date Data Arrived at EDR: 11/21/2014
Date Made Active in Reports: 12/29/2014
Number of Days to Update: 38

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 10/26/2015
Next Scheduled EDR Contact: 02/08/2016
Data Release Frequency: Varies

Environmental Case Listing

The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 09/03/2015
Next Scheduled EDR Contact: 12/21/2015
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

Local Oversite Facilities

A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 11/09/2015
Next Scheduled EDR Contact: 02/22/2016
Data Release Frequency: Quarterly

Underground Storage Tank Information

Underground storage tank sites located in San Francisco county.

Date of Government Version: 11/29/2010
Date Data Arrived at EDR: 03/10/2011
Date Made Active in Reports: 03/15/2011
Number of Days to Update: 5

Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 11/09/2015
Next Scheduled EDR Contact: 02/22/2016
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 09/23/2015
Date Data Arrived at EDR: 09/25/2015
Date Made Active in Reports: 10/15/2015
Number of Days to Update: 20

Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 09/21/2015
Next Scheduled EDR Contact: 01/04/2016
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 08/25/2015
Date Data Arrived at EDR: 08/27/2015
Date Made Active in Reports: 09/30/2015
Number of Days to Update: 34

Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 08/24/2015
Next Scheduled EDR Contact: 12/07/2015
Data Release Frequency: Varies

SAN MATEO COUNTY:

Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 07/20/2015
Date Data Arrived at EDR: 07/22/2015
Date Made Active in Reports: 08/03/2015
Number of Days to Update: 12

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 09/14/2015
Next Scheduled EDR Contact: 12/28/2015
Data Release Frequency: Annually

Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 09/16/2015
Date Data Arrived at EDR: 09/17/2015
Date Made Active in Reports: 11/05/2015
Number of Days to Update: 49

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 09/14/2015
Next Scheduled EDR Contact: 12/28/2015
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA Facility Listing
CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 09/08/2011
Date Data Arrived at EDR: 09/09/2011
Date Made Active in Reports: 10/07/2011
Number of Days to Update: 28

Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 08/24/2015
Next Scheduled EDR Contact: 12/07/2015
Data Release Frequency: Varies

SANTA CLARA COUNTY:

Cupa Facility List
Cupa facility list

Date of Government Version: 08/24/2015
Date Data Arrived at EDR: 08/28/2015
Date Made Active in Reports: 11/03/2015
Number of Days to Update: 67

Source: Department of Environmental Health
Telephone: 408-918-1973
Last EDR Contact: 08/24/2015
Next Scheduled EDR Contact: 12/07/2015
Data Release Frequency: Varies

HIST LUST - Fuel Leak Site Activity Report

A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LOP Listing

A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 03/03/2014
Date Data Arrived at EDR: 03/05/2014
Date Made Active in Reports: 03/18/2014
Number of Days to Update: 13

Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 08/31/2015
Next Scheduled EDR Contact: 12/14/2015
Data Release Frequency: Annually

Hazardous Material Facilities

Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 08/10/2015
Date Data Arrived at EDR: 08/14/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 20

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 11/09/2015
Next Scheduled EDR Contact: 02/22/2016
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA Facility List

CUPA facility listing.

Date of Government Version: 08/25/2015
Date Data Arrived at EDR: 08/26/2015
Date Made Active in Reports: 10/01/2015
Number of Days to Update: 36

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 08/24/2015
Next Scheduled EDR Contact: 12/07/2015
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA Facility List

Cupa Facility List.

Date of Government Version: 09/15/2015
Date Data Arrived at EDR: 09/17/2015
Date Made Active in Reports: 11/05/2015
Number of Days to Update: 49

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 08/24/2015
Next Scheduled EDR Contact: 12/07/2015
Data Release Frequency: Varies

SOLANO COUNTY:

Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 09/02/2015
Date Data Arrived at EDR: 09/17/2015
Date Made Active in Reports: 11/05/2015
Number of Days to Update: 49

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 09/10/2015
Next Scheduled EDR Contact: 12/28/2015
Data Release Frequency: Quarterly

Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 09/02/2015
Date Data Arrived at EDR: 09/18/2015
Date Made Active in Reports: 10/15/2015
Number of Days to Update: 27

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 09/10/2015
Next Scheduled EDR Contact: 12/28/2015
Data Release Frequency: Quarterly

SONOMA COUNTY:

Cupa Facility List
Cupa Facility list

Date of Government Version: 09/28/2015
Date Data Arrived at EDR: 09/30/2015
Date Made Active in Reports: 11/05/2015
Number of Days to Update: 36

Source: County of Sonoma Fire & Emergency Services Department
Telephone: 707-565-1174
Last EDR Contact: 09/28/2015
Next Scheduled EDR Contact: 01/11/2016
Data Release Frequency: Varies

Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 10/01/2015
Date Data Arrived at EDR: 10/02/2015
Date Made Active in Reports: 11/05/2015
Number of Days to Update: 34

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 09/28/2015
Next Scheduled EDR Contact: 01/11/2016
Data Release Frequency: Quarterly

SUTTER COUNTY:

Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 06/05/2015
Date Data Arrived at EDR: 06/09/2015
Date Made Active in Reports: 07/06/2015
Number of Days to Update: 27

Source: Sutter County Department of Agriculture
Telephone: 530-822-7500
Last EDR Contact: 09/08/2015
Next Scheduled EDR Contact: 12/21/2015
Data Release Frequency: Semi-Annually

TUOLUMNE COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 07/13/2015
Date Data Arrived at EDR: 07/28/2015
Date Made Active in Reports: 08/03/2015
Number of Days to Update: 6

Source: Divison of Environmental Health
Telephone: 209-533-5633
Last EDR Contact: 10/26/2015
Next Scheduled EDR Contact: 02/08/2016
Data Release Frequency: Varies

VENTURA COUNTY:

Business Plan, Hazardous Waste Producers, and Operating Underground Tanks

The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 08/17/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 17

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 08/12/2015
Next Scheduled EDR Contact: 11/30/2015
Data Release Frequency: Quarterly

Inventory of Illegal Abandoned and Inactive Sites

Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 12/01/2011
Date Made Active in Reports: 01/19/2012
Number of Days to Update: 49

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 10/02/2015
Next Scheduled EDR Contact: 01/18/2016
Data Release Frequency: Annually

Listing of Underground Tank Cleanup Sites

Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 11/13/2015
Next Scheduled EDR Contact: 02/29/2016
Data Release Frequency: Quarterly

Medical Waste Program List

To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 07/29/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 36

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 10/26/2015
Next Scheduled EDR Contact: 02/08/2016
Data Release Frequency: Quarterly

Underground Tank Closed Sites List

Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 08/26/2015
Date Data Arrived at EDR: 09/15/2015
Date Made Active in Reports: 10/15/2015
Number of Days to Update: 30

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 09/15/2015
Next Scheduled EDR Contact: 12/28/2015
Data Release Frequency: Quarterly

YOLO COUNTY:

Underground Storage Tank Comprehensive Facility Report

Underground storage tank sites located in Yolo county.

Date of Government Version: 07/08/2015
Date Data Arrived at EDR: 07/13/2015
Date Made Active in Reports: 07/22/2015
Number of Days to Update: 9

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 10/19/2015
Next Scheduled EDR Contact: 01/18/2016
Data Release Frequency: Annually

YUBA COUNTY:

CUPA Facility List
CUPA facility listing for Yuba County.

Date of Government Version: 08/04/2015
Date Data Arrived at EDR: 08/07/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 27

Source: Yuba County Environmental Health Department
Telephone: 530-749-7523
Last EDR Contact: 11/13/2015
Next Scheduled EDR Contact: 02/15/2016
Data Release Frequency: Varies

**OTHER DATABASE(S)**

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 07/30/2013
Date Data Arrived at EDR: 08/19/2013
Date Made Active in Reports: 10/03/2013
Number of Days to Update: 45

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 08/17/2015
Next Scheduled EDR Contact: 11/30/2015
Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2013
Date Data Arrived at EDR: 07/17/2015
Date Made Active in Reports: 08/12/2015
Number of Days to Update: 26

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 10/13/2015
Next Scheduled EDR Contact: 01/25/2016
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 08/01/2015
Date Data Arrived at EDR: 08/06/2015
Date Made Active in Reports: 08/24/2015
Number of Days to Update: 18

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 11/08/2015
Next Scheduled EDR Contact: 02/15/2016
Data Release Frequency: Annually

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/24/2015
Date Made Active in Reports: 08/18/2015
Number of Days to Update: 25

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 10/19/2015
Next Scheduled EDR Contact: 02/01/2016
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2013
Date Data Arrived at EDR: 06/19/2015
Date Made Active in Reports: 07/15/2015
Number of Days to Update: 26

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 08/24/2015
Next Scheduled EDR Contact: 12/07/2015
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 03/19/2015
Date Made Active in Reports: 04/07/2015
Number of Days to Update: 19

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 09/10/2015
Next Scheduled EDR Contact: 12/28/2015
Data Release Frequency: Annually

Oil/Gas Pipelines
Source: PennWell Corporation
Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Electric Power Transmission Line Data
Source: PennWell Corporation
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Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish & Game
Telephone: 916-445-0411

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

**STREET AND ADDRESS INFORMATION**

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# GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

**TARGET PROPERTY ADDRESS**

THE GATHERING PLACE
3141 TAYLOR ROAD
LOOMIS, CA 95650

**TARGET PROPERTY COORDINATES**

| | |
|---|---|
| Latitude (North): | 38.835 - 38˚ 50’ 6.00’’ |
| Longitude (West): | 121.1761 - 121˚ 10’ 33.96’’ |
| Universal Tranverse Mercator: | Zone 10 |
| UTM X (Meters): | 658310.7 |
| UTM Y (Meters): | 4299839.5 |
| Elevation: | 449 ft. above sea level |

**USGS TOPOGRAPHIC MAP**

| | |
|---|---|
| Target Property Map: | 5629068 ROCKLIN, CA |
| Version Date: | 2012 |

EDR’s GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principal investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

# GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

**GROUNDWATER FLOW DIRECTION INFORMATION**

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

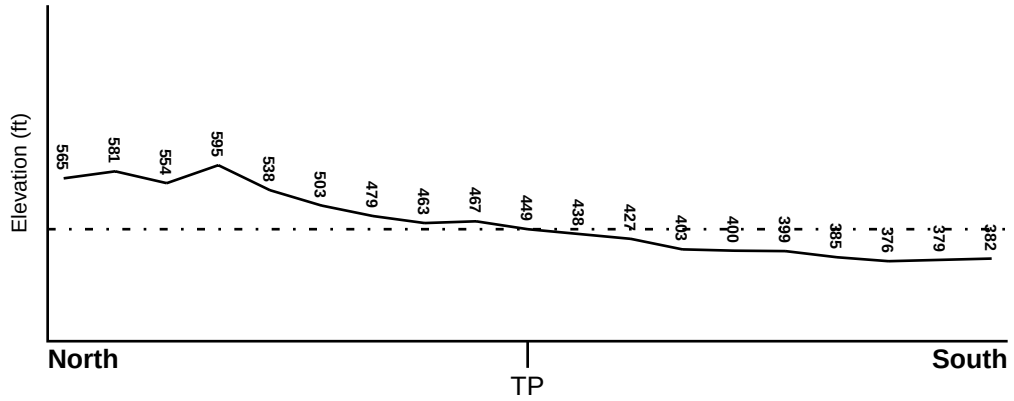
**TOPOGRAPHIC INFORMATION**

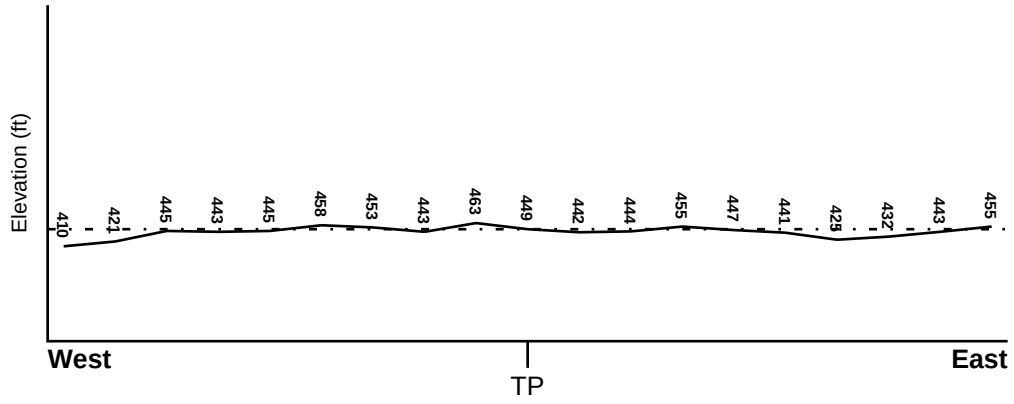
Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

**TARGET PROPERTY TOPOGRAPHY**

General Topographic Gradient: General South

**SURROUNDING TOPOGRAPHY: ELEVATION PROFILES**




**Target Property Elevation: 449 ft.**

0 1/2 1 Miles

Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

# GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

**HYDROLOGIC INFORMATION**

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

**FEMA FLOOD ZONE**

| Target Property County | FEMA Flood Electronic Data |
|---|---|
| PLACER, CA | YES - refer to the Overview Map and Detail Map |

| | |
|---|---|
| Flood Plain Panel at Target Property: | 0602390416D - FEMA Q3 Flood data |
| Additional Panels in search area: | 0602390425C - FEMA Q3 Flood data<br>0607210001A - FEMA Q3 Flood data<br>0602390418D - FEMA Q3 Flood data |

**NATIONAL WETLAND INVENTORY**

| NWI Quad at Target Property | NWI Electronic Data Coverage |
|---|---|
| ROCKLIN | YES - refer to the Overview Map and Detail Map |

**HYDROGEOLOGIC INFORMATION**

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

***Site-Specific Hydrogeological Data*:***

| | |
|---|---|
| Search Radius: | 1.25 miles |
| Status: | Not found |

**AQUIFLOW®**

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

| MAP ID | LOCATION FROM TP | GENERAL DIRECTION GROUNDWATER FLOW |
|---|---|---|
| Not Reported | | |

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

# GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

**GROUNDWATER FLOW VELOCITY INFORMATION**

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

**GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY**

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

**ROCK STRATIGRAPHIC UNIT**

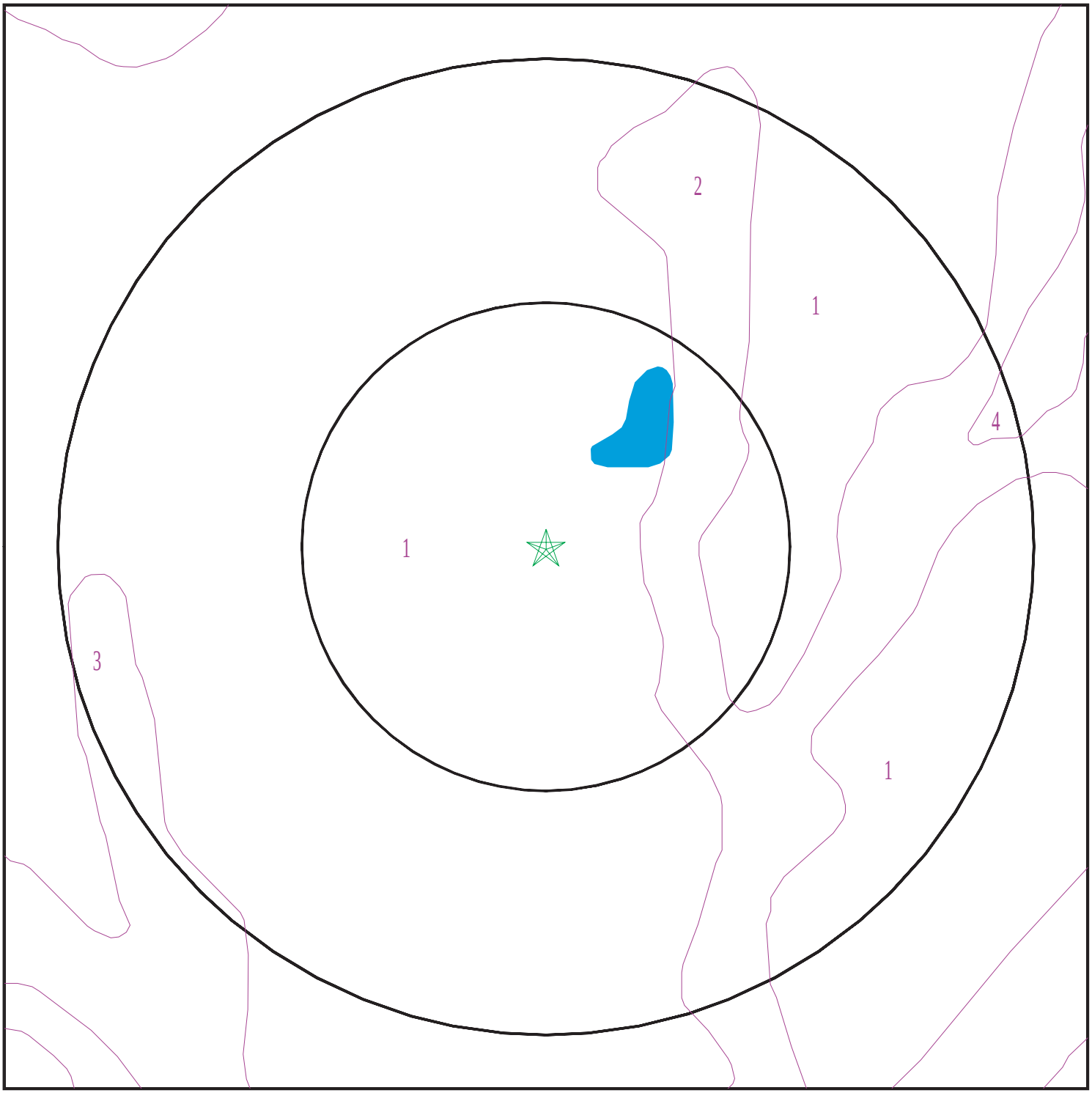
| | |
|---|---|
| Era: | Mesozoic |
| System: | Jurassic |
| Series: | Jurassic |
| Code: | Jg *(decoded above as Era, System & Series)* |

**GEOLOGIC AGE IDENTIFICATION**

Category: Jurassic granitic rocks

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

# SSURGO SOIL MAP - 4468335.2s




Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

| | |
|---|---|
| SITE NAME: The Gathering Place<br>ADDRESS: 3141 Taylor Road<br>Loomis CA 95650<br>LAT/LONG: 38.835 / 121.1761 | CLIENT: PSI, Inc.<br>CONTACT: Frank Poss<br>INQUIRY #: 4468335.2s<br>DATE: November 16, 2015 5:00 pm |

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# GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

**DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY**

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

---

**Soil Map ID: 1**

Soil Component Name: ANDREGG

Soil Surface Texture: coarse sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

| Soil Layer Information | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Boundary | | | Classification | | Saturated hydraulic conductivity micro m/sec | Soil Reaction (pH) |
| Layer | Upper | Lower | Soil Texture Class | AASHTO Group | Unified Soil | | |
| 1 | 0 inches | 14 inches | coarse sandy loam | Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand. | COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand. | Max: 42<br>Min: 14 | Max: 7.3<br>Min: 5.6 |
| 2 | 14 inches | 29 inches | coarse sandy loam | Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand. | COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand. | Max: 42<br>Min: 14 | Max: 6.5<br>Min: 5.6 |
| 3 | 29 inches | 33 inches | weathered bedrock | Not reported | Not reported | Max: 0.42<br>Min: 0 | Max: Min: |

**Soil Map ID: 2**

Soil Component Name: XERORTHENTS

Soil Surface Texture: variable

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

| Soil Layer Information | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Boundary | | | Classification | | Saturated hydraulic conductivity micro m/sec | Soil Reaction (pH) |
| Layer | Upper | Lower | Soil Texture Class | AASHTO Group | Unified Soil | | |
| 1 | 0 inches | 59 inches | variable | Not reported | Not reported | Max:<br>Min: | Max: Min: |

**Soil Map ID: 3**

Soil Component Name: Xerofluvents

Soil Surface Texture: stratified loamy sand to fine sandy loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Somewhat poorly drained

Hydric Status: All hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 111 inches

# GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

| Soil Layer Information | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Boundary | | | Classification | | Saturated hydraulic conductivity micro m/sec | Soil Reaction (pH) |
| Layer | Upper | Lower | Soil Texture Class | AASHTO Group | Unified Soil | | |
| 1 | 0 inches | 14 inches | stratified loamy sand to fine sandy loam | Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand. | COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. | Max: 141 Min: 1.4 | Max: 8.4 Min: 7.9 |
| 2 | 14 inches | 37 inches | stratified loamy sand to fine sandy loam to silt loam | Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand. | COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. | Max: 141 Min: 1.4 | Max: 8.4 Min: 7.9 |
| 3 | 37 inches | 55 inches | stratified loam to silty clay loam to clay | Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils. | COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. | Max: 14 Min: 1.4 | Max: 8.4 Min: 7.9 |

---

**Soil Map ID: 4**

Soil Component Name: ANDREGG

Soil Surface Texture: coarse sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

# GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

| Soil Layer Information | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Boundary | | | Classification | | Saturated hydraulic conductivity micro m/sec | Soil Reaction (pH) |
| Layer | Upper | Lower | Soil Texture Class | AASHTO Group | Unified Soil | | |
| 1 | 0 inches | 14 inches | coarse sandy loam | Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand. | COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand. | Max: 42<br>Min: 14 | Max: 7.3<br>Min: 5.6 |
| 2 | 14 inches | 29 inches | coarse sandy loam | Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand. | COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand. | Max: 42<br>Min: 14 | Max: 6.5<br>Min: 5.6 |
| 3 | 29 inches | 33 inches | weathered bedrock | Not reported | Not reported | Max: 0.42<br>Min: 0 | Max: Min: |

## LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

## WELL SEARCH DISTANCE INFORMATION

| DATABASE | SEARCH DISTANCE (miles) |
|---|---|
| Federal USGS | 1.000 |
| Federal FRDS PWS | Nearest PWS within 1 mile |
| State Database | 1.000 |

## FEDERAL USGS WELL INFORMATION

| MAP ID | WELL ID | LOCATION FROM TP |
|---|---|---|
| 1 | USGS40000190418 | 1/8 - 1/4 Mile SSW |
| 2 | USGS40000190415 | 1/8 - 1/4 Mile South |
| 4 | USGS40000190395 | 1/2 - 1 Mile South |
| 7 | USGS40000190400 | 1/2 - 1 Mile SE |

## FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

| MAP ID | WELL ID | LOCATION FROM TP |
|---|---|---|

# GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

**FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION**

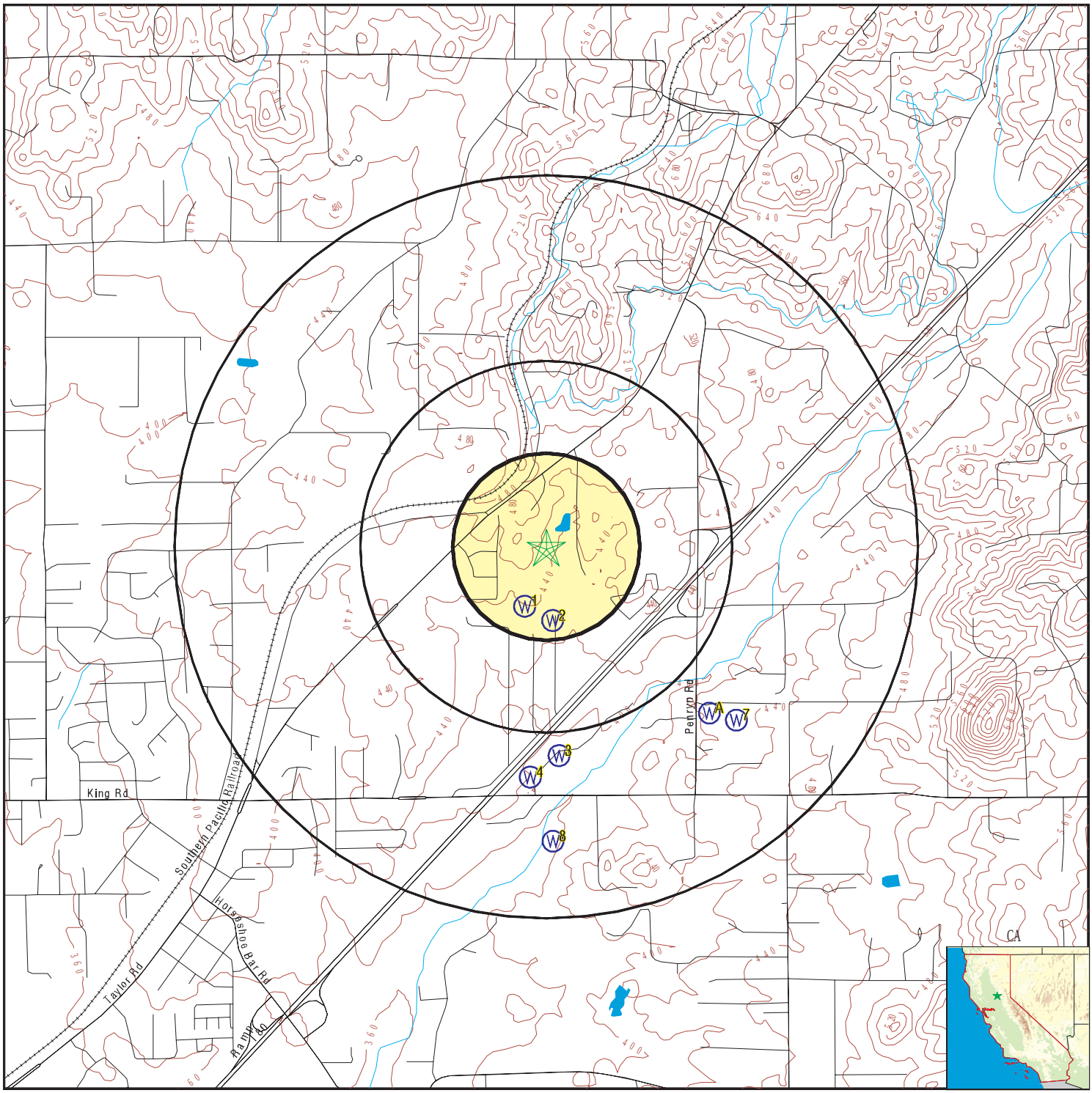
| MAP ID | WELL ID | LOCATION FROM TP |
|---|---|---|
| No PWS System Found | | |

Note: PWS System location is not always the same as well location.

**STATE DATABASE WELL INFORMATION**

| MAP ID | WELL ID | LOCATION FROM TP |
|---|---|---|
| 3 | 10378 | 1/2 - 1 Mile South |
| A5 | 10377 | 1/2 - 1 Mile SE |
| A6 | 10379 | 1/2 - 1 Mile SE |
| 8 | 10380 | 1/2 - 1 Mile South |

# PHYSICAL SETTING SOURCE MAP - 4468335.2s




County Boundary
Major Roads
Contour Lines
Earthquake Fault Lines
Earthquake epicenter, Richter 5 or greater
Water Wells
Public Water Supply Wells
Cluster of Multiple Icons

Groundwater Flow Direction
Indeterminate Groundwater Flow at Location
Groundwater Flow Varies at Location
Closest Hydrogeological Data
Oil, gas or related wells

| | |
|---|---|
| SITE NAME: The Gathering Place | CLIENT: PSI, Inc. |
| ADDRESS: 3141 Taylor Road | CONTACT: Frank Poss |
| Loomis CA 95650 | INQUIRY #: 4468335.2s |
| LAT/LONG: 38.835 / 121.1761 | DATE: November 16, 2015 5:00 pm |

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| Map ID<br>Direction<br>Distance<br>Elevation | Database | EDR ID Number |
|---|---|---|
| **1**<br>**SSW**<br>**1/8 - 1/4 Mile**<br>**Lower** | **FED USGS** | **USGS40000190418** |

| | | | |
|---|---|---|---|
| Org. Identifier: | USGS-CA | | |
| Formal name: | USGS California Water Science Center | | |
| Monloc Identifier: | USGS-384958121103401 | | |
| Monloc name: | 011N007E03H001M | | |
| Monloc type: | Well | | |
| Monloc desc: | Not Reported | | |
| Huc code: | 18020111 | Drainagearea value: | Not Reported |
| Drainagearea Units: | Not Reported | Contrib drainagearea: | Not Reported |
| Contrib drainagearea units: | Not Reported | Latitude: | 38.8326776 |
| Longitude: | -121.1771705 | Sourcemap scale: | 24000 |
| Horiz Acc measure: | 1 | Horiz Acc measure units: | seconds |
| Horiz Collection method: | Interpolated from map | | |
| Horiz coord refsys: | NAD83 | Vert measure val: | 480.00 |
| Vert measure units: | feet | Vertacc measure val: | 10 |
| Vert accmeasure units: | feet | | |
| Vertcollection method: | Interpolated from topographic map | | |
| Vert coord refsys: | NGVD29 | Countrycode: | US |
| Aquifername: | Other aquifers | | |
| Formation type: | Not Reported | | |
| Aquifer type: | Not Reported | | |
| Construction date: | 19810310 | Welldepth: | 175 |
| Welldepth units: | ft | Wellholedepth: | 175 |
| Wellholedepth units: | ft | | |

Ground-water levels, Number of Measurements: 1

| Date | Feet below Surface | Feet to Sealevel |
|---|---|---|
| 1981-03-10 | 5.00 | |

| | | |
|---|---|---|
| **2**<br>**South**<br>**1/8 - 1/4 Mile**<br>**Lower** | **FED USGS** | **USGS40000190415** |

| | | | |
|---|---|---|---|
| Org. Identifier: | USGS-CA | | |
| Formal name: | USGS California Water Science Center | | |
| Monloc Identifier: | USGS-384956121102901 | | |
| Monloc name: | 011N007E03J001M | | |
| Monloc type: | Well | | |
| Monloc desc: | Not Reported | | |
| Huc code: | 18020111 | Drainagearea value: | Not Reported |
| Drainagearea Units: | Not Reported | Contrib drainagearea: | Not Reported |
| Contrib drainagearea units: | Not Reported | Latitude: | 38.8321221 |
| Longitude: | -121.1757815 | Sourcemap scale: | 24000 |
| Horiz Acc measure: | 1 | Horiz Acc measure units: | seconds |
| Horiz Collection method: | Interpolated from map | | |
| Horiz coord refsys: | NAD83 | Vert measure val: | 480.00 |
| Vert measure units: | feet | Vertacc measure val: | 10 |
| Vert accmeasure units: | feet | | |
| Vertcollection method: | Interpolated from topographic map | | |
| Vert coord refsys: | NGVD29 | Countrycode: | US |
| Aquifername: | Other aquifers | | |
| Formation type: | Basement Complex of Pretertiary Age | | |

| | | | |
|---|---|---|---|
| Aquifer type: | Not Reported | | |
| Construction date: | 19780616 | Welldepth: | 175 |
| Welldepth units: | ft | Wellholedepth: | 175 |
| Wellholedepth units: | ft | | |

Ground-water levels, Number of Measurements: 1

| Date | Feet below Surface | Feet to Sealevel |
|---|---|---|
| 1978-06-16 | 25.00 | |

---

**3**
**South** **CA WELLS** **10378**
**1/2 - 1 Mile**
**Lower**

**Water System Information:**

| | | | |
|---|---|---|---|
| Prime Station Code: | 11N/07E-03R01 M | User ID: | 31C |
| FRDS Number: | 3100021001 | County: | Placer |
| District Number: | 61 | Station Type: | WELL/AMBNT/MUN/INTAKE |
| Water Type: | Well/Groundwater | Well Status: | Active Raw |
| Source Lat/Long: | 384937.0 1211028.0 | Precision: | 1,000 Feet (10 Seconds) |
| Source Name: | NORTH WELL 02 | | |
| System Number: | 3100021 | | |
| System Name: | LOOMIS COMMUNITY, SOUTH PARK | | |
| Organization That Operates System: | Not Reported | | |
| Pop Served: | Unknown, Small System | Connections: | Unknown, Small System |
| Area Served: | Not Reported | | |

---

**4**
**South** **FED USGS** **USGS40000190395**
**1/2 - 1 Mile**
**Lower**

| | | | |
|---|---|---|---|
| Org. Identifier: | USGS-CA | | |
| Formal name: | USGS California Water Science Center | | |
| Monloc Identifier: | USGS-384934121103301 | | |
| Monloc name: | 011N007E03R001M | | |
| Monloc type: | Well | | |
| Monloc desc: | Not Reported | | |
| Huc code: | 18020111 | Drainagearea value: | Not Reported |
| Drainagearea Units: | Not Reported | Contrib drainagearea: | Not Reported |
| Contrib drainagearea units: | Not Reported | Latitude: | 38.8260111 |
| Longitude: | -121.1768926 | Sourcemap scale: | 24000 |
| Horiz Acc measure: | 1 | Horiz Acc measure units: | seconds |
| Horiz Collection method: | Interpolated from map | | |
| Horiz coord refsys: | NAD83 | Vert measure val: | 385.00 |
| Vert measure units: | feet | Vertacc measure val: | 10 |
| Vert accmeasure units: | feet | | |
| Vertcollection method: | Interpolated from topographic map | | |
| Vert coord refsys: | NGVD29 | Countrycode: | US |
| Aquifername: | Other aquifers | | |
| Formation type: | Not Reported | | |

| | | | |
|---|---|---|---|
| Aquifer type: | Not Reported | | |
| Construction date: | 19790202 | Welldepth: | 100 |
| Welldepth units: | ft | Wellholedepth: | 100 |
| Wellholedepth units: | ft | | |

Ground-water levels, Number of Measurements: 2

| Date | Feet below Surface | Feet to Sealevel | Date | Feet below Surface | Feet to Sealevel |
|---|---|---|---|---|---|
| 1982-07-14 | 15.75 | | | | |
| Note: The site had been pumped recently. | | | | | |
| 1979-02-02 | 10.00 | | | | |

---

**A5**
**SE** **CA WELLS** **10377**
**1/2 - 1 Mile**
**Lower**

**Water System Information:**

| | | | |
|---|---|---|---|
| Prime Station Code: | 11N/07E-02P02 M | User ID: | 31C |
| FRDS Number: | 3100039001 | County: | Placer |
| District Number: | 61 | Station Type: | WELL/AMBNT/MUN/INTAKE |
| Water Type: | Well/Groundwater | Well Status: | Active Raw |
| Source Lat/Long: | 384943.0 1211001.0 | Precision: | 1,000 Feet (10 Seconds) |
| Source Name: | WELL 01 | | |
| System Number: | 3100039 | | |
| System Name: | PENRYN OAKS SCHOOL | | |
| Organization That Operates System: | | | |
| | Not Reported | | |
| Pop Served: | Unknown, Small System | Connections: | Unknown, Small System |
| Area Served: | Not Reported | | |

---

**A6**
**SE** **CA WELLS** **10379**
**1/2 - 1 Mile**
**Lower**

**Water System Information:**

| | | | |
|---|---|---|---|
| Prime Station Code: | 11N/07E-03R02 M | User ID: | 31C |
| FRDS Number: | 3100021003 | County: | Placer |
| District Number: | 61 | Station Type: | WELL/AMBNT/MUN/INTAKE |
| Water Type: | Well/Groundwater | Well Status: | Active Raw |
| Source Lat/Long: | 384943.0 1211001.0 | Precision: | 1 Mile (One Minute) |
| Source Name: | WELL 01 - NORTH PARK | | |
| System Number: | 3100021 | | |
| System Name: | LOOMIS COMMUNITY, SOUTH PARK | | |
| Organization That Operates System: | | | |
| | Not Reported | | |
| Pop Served: | Unknown, Small System | Connections: | Unknown, Small System |
| Area Served: | Not Reported | | |

---

**7**
**SE** **FED USGS** **USGS40000190400**
**1/2 - 1 Mile**
**Lower**

| | | | |
|---|---|---|---|
| Org. Identifier: | USGS-CA | | |
| Formal name: | USGS California Water Science Center | | |
| Monloc Identifier: | USGS-384942121095601 | | |
| Monloc name: | 011N007E02P001M | | |
| Monloc type: | Well | | |
| Monloc desc: | Not Reported | | |
| Huc code: | 18020111 | Drainagearea value: | Not Reported |
| Drainagearea Units: | Not Reported | Contrib drainagearea: | Not Reported |
| Contrib drainagearea units: | Not Reported | Latitude: | 38.8282333 |
| Longitude: | -121.1666145 | Sourcemap scale: | 24000 |
| Horiz Acc measure: | 1 | Horiz Acc measure units: | seconds |
| Horiz Collection method: | Interpolated from map | | |
| Horiz coord refsys: | NAD83 | Vert measure val: | 428.00 |
| Vert measure units: | feet | Vertacc measure val: | 10 |
| Vert accmeasure units: | feet | | |
| Vertcollection method: | Interpolated from topographic map | | |
| Vert coord refsys: | NGVD29 | Countrycode: | US |
| Aquifername: | Other aquifers | | |
| Formation type: | Basement Complex of Pretertiary Age | | |
| Aquifer type: | Not Reported | | |
| Construction date: | 19700620 | Welldepth: | 72 |
| Welldepth units: | ft | Wellholedepth: | 72 |
| Wellholedepth units: | ft | | |

Ground-water levels, Number of Measurements: 1

| Date | Feet below Surface | Feet to Sealevel |
|---|---|---|
| 1970-06-20 | 35.00 | |

---

**8**
**South** **CA WELLS** **10380**
**1/2 - 1 Mile**
**Lower**

**Water System Information:**

| | | | |
|---|---|---|---|
| Prime Station Code: | 11N/07E-10A01 M | User ID: | 31C |
| FRDS Number: | 3100021002 | County: | Placer |
| District Number: | 61 | Station Type: | WELL/AMBNT/MUN/INTAKE |
| Water Type: | Well/Groundwater | Well Status: | Active Raw |
| Source Lat/Long: | 384925.0 1211029.0 | Precision: | 1,000 Feet (10 Seconds) |
| Source Name: | SOUTH WELL | | |
| System Number: | 3100021 | | |
| System Name: | LOOMIS COMMUNITY, SOUTH PARK | | |
| Organization That Operates System: | Not Reported | | |
| Pop Served: | Unknown, Small System | Connections: | Unknown, Small System |
| Area Served: | Not Reported | | |

# GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
# RADON

**AREA RADON INFORMATION**

State Database: CA Radon

Radon Test Results

| Zipcode | Num Tests | > 4 pCi/L |
|---|---|---|
| 95650 | 17 | 0 |

Federal EPA Radon Zone for PLACER County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

---

Federal Area Radon Information for Zip Code: 95650

Number of sites tested: 6

| Area | Average Activity | % <4 pCi/L | % 4-20 pCi/L | % >20 pCi/L |
|---|---|---|---|---|
| Living Area - 1st Floor | 0.817 pCi/L | 100% | 0% | 0% |
| Living Area - 2nd Floor | Not Reported | Not Reported | Not Reported | Not Reported |
| Basement | Not Reported | Not Reported | Not Reported | Not Reported |

# PHYSICAL SETTING SOURCE RECORDS SEARCHED

## TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

## HYDROLOGIC INFORMATION

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish & Game
Telephone: 916-445-0411

## HYDROGEOLOGIC INFORMATION

AQUIFLOW[R] Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

## GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Services, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

# PHYSICAL SETTING SOURCE RECORDS SEARCHED

## LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Public Health
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

## OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations
Source: Department of Conservation
Telephone: 916-323-1779
Oil and Gas well locations in the state.

RADON

State Database: CA Radon
Source: Department of Health Services
Telephone: 916-324-2208
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

# PHYSICAL SETTING SOURCE RECORDS SEARCHED

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

**STREET AND ADDRESS INFORMATION**

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# HISTORICAL RESEARCH INFORMATION

**The Gathering Place**
3141 Taylor Road
Loomis, CA 95650

Inquiry Number: 4468335.10
November 20, 2015

# The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th Floor
Shelton, Connecticut 06484
Toll Free: 800.352.0050
www.edrnet.com

# EDR Aerial Photo Decade Package

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

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## Date EDR Searched Historical Sources:

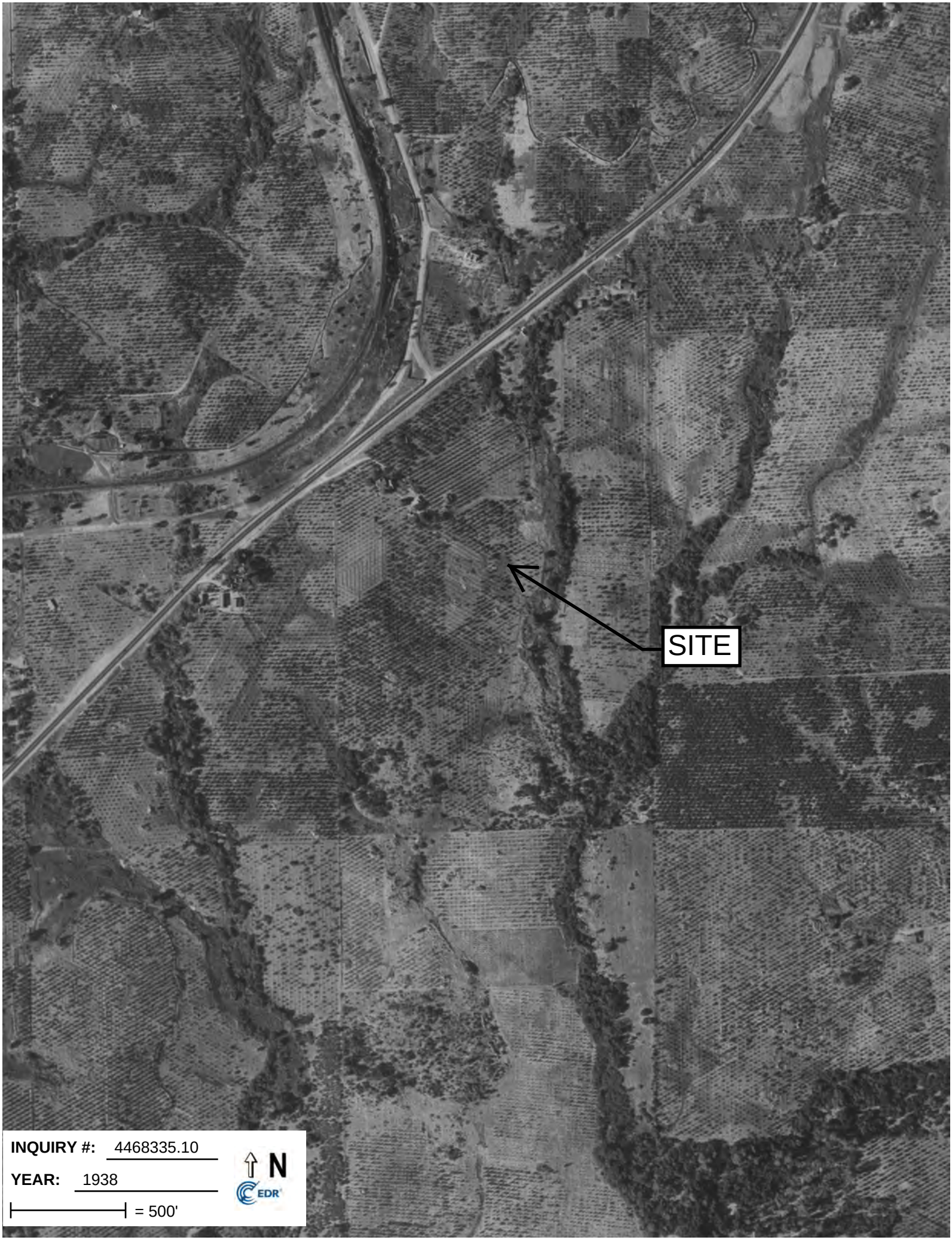
Aerial Photography November 20, 2015

## Target Property:

3141 Taylor Road

Loomis, CA 95650

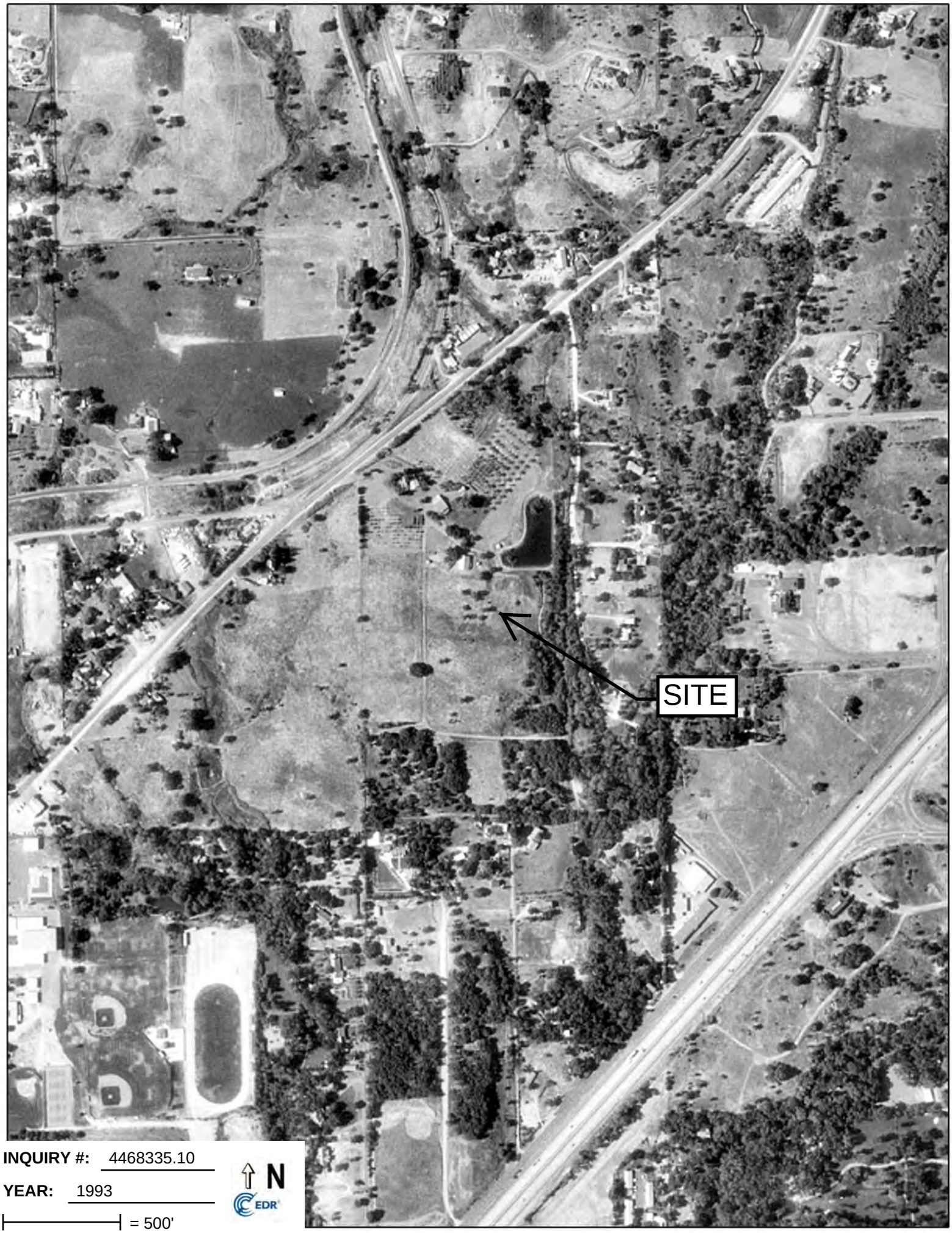
| ***Year*** | ***Scale*** | ***Details*** | ***Source*** |
|---|---|---|---|
| 1938 | Aerial Photograph. Scale: 1"=500' | Flight Year: 1938 | USGS |
| 1952 | Aerial Photograph. Scale: 1"=500' | Flight Year: 1952 | USGS |
| 1966 | Aerial Photograph. Scale: 1"=500' | Flight Year: 1966 | USGS |
| 1984 | Aerial Photograph. Scale: 1"=500' | Flight Year: 1984 | USGS |
| 1993 | Aerial Photograph. Scale: 1"=500' | Flight Year: 1993 | USGS |
| 1998 | Aerial Photograph. Scale: 1"=500' | /DOQQ - acquisition dates: 1998 | USGS/DOQQ |
| 2005 | Aerial Photograph. Scale: 1"=500' | Flight Year: 2005 | USDA/NAIP |
| 2006 | Aerial Photograph. Scale: 1"=500' | Flight Year: 2006 | USDA/NAIP |
| 2009 | Aerial Photograph. Scale: 1"=500' | Flight Year: 2009 | USDA/NAIP |
| 2010 | Aerial Photograph. Scale: 1"=500' | Flight Year: 2010 | USDA/NAIP |
| 2012 | Aerial Photograph. Scale: 1"=500' | Flight Year: 2012 | USDA/NAIP |


SITE
INQUIRY #: 4468335.10
YEAR: 1938
= 500'
N
EDR

SITE
INQUIRY #: 4468335.10
YEAR: 1952
= 500'
N
EDR

SITE
INQUIRY #: 4468335.10
YEAR: 1966
= 500'
N
EDR

SITE
INQUIRY #: 4468335.10
YEAR: 1984
= 500'
N
EDR




**INQUIRY #:** 4468335.10

**YEAR:** 1993

= 500'

N

EDR

SITE
INQUIRY #: 4468335.10
YEAR: 1998
= 500'
N
EDR

SITE
INQUIRY #: 4468335.10
YEAR: 2005
= 500'
N
EDR

SITE
INQUIRY #: 4468335.10
YEAR: 2006
= 500'
N
EDR

SITE
INQUIRY #: 4468335.10
YEAR: 2009
= 500'
N
EDR

SITE
INQUIRY #: 4468335.10
YEAR: 2010
= 500'
N
EDR

SITE
INQUIRY #: 4468335.10
YEAR: 2012
= 500'
N
EDR

**The Gathering Place**
3141 Taylor Road
Loomis, CA 95650

Inquiry Number: 4468335.3
November 16, 2015

# Certified Sanborn® Map Report

6 Armstrong Road, 4th Floor
Shelton, Connecticut 06484
Toll Free: 800.352.0050
www.edrnet.com

# Certified Sanborn® Map Report

11/16/15

**Site Name:**
The Gathering Place
3141 Taylor Road
Loomis, CA 95650

**Client Name:**
PSI, Inc.
4703 Tidewater Avenue
Oakland, CA 94601

EDR Inquiry # 4468335.3

Contact: Frank Poss

The Sanborn Library has been searched by EDR and maps covering the target property location as provided by PSI, Inc. were identified for the years listed below. The Sanborn Library is the largest, most complete collection of fire insurance maps. The collection includes maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow, and others. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by the Sanborn Library LLC, the copyright holder for the collection. Results can be authenticated by visiting www.edrnet.com/sanborn.

The Sanborn Library is continually enhanced with newly identified map archives. This report accesses all maps in the collection as of the day this report was generated.

## *Certified Sanborn Results:*

**Site Name:** The Gathering Place
**Address:** 3141 Taylor Road
**City, State, Zip:** Loomis, CA 95650
**Cross Street:**
**P.O. #** NA
**Project:** 575-940
**Certification #** ADFD-4F9D-B0CD

UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

Sanborn® Library search results
Certification # ADFD-4F9D-B0CD

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- ✔ Library of Congress
- ✔ University Publications of America
- ✔ EDR Private Collection

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**The Gathering Place**
3141 Taylor Road
Loomis, CA 95650

Inquiry Number: 4468335.6
November 19, 2015

# The EDR-City Directory Image Report

Environmental Data Resources Inc

6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

# TABLE OF CONTENTS

## SECTION

**Executive Summary**

**Findings**

**City Directory Images**

***Thank you for your business.***
Please contact EDR at 1-800-352-0050
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# EXECUTIVE SUMMARY

## DESCRIPTION

Environmental Data Resources, Inc.'s (EDR) City Directory Report is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's City Directory Report includes a search of available city directory data at 5 year intervals.

## RESEARCH SUMMARY

The following research sources were consulted in the preparation of this report. A check mark indicates where information was identified in the source and provided in this report.

| *Year* | *Target Street* | *Cross Street* | *Source* |
|---|---|---|---|
| 2013 | ☑ | ☑ | Cole Information Services |
| 2008 | ☑ | ☑ | Cole Information Services |
| 2003 | ☑ | ☑ | Cole Information Services |
| 1999 | ☑ | ☑ | Cole Information Services |
| 1995 | ☑ | ☑ | Cole Information Services |
| 1992 | ☑ | ☑ | Cole Information Services |
| 1990 | ☑ | ☑ | Haines Criss-Cross Directory |
| 1985 | ☑ | ☑ | Haines Criss-Cross Directory |
| 1980 | ☑ | ☑ | Haines Criss-Cross Directory |
| 1974 | ☑ | ☑ | Haines Criss-Cross Directory |
| 1970 | ☐ | ☐ | Haines Criss-Cross Directory |

## RECORD SOURCES

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# FINDINGS

## TARGET PROPERTY STREET

3141 Taylor Road
Loomis, CA 95650

| Year | CD Image | Source | |
|---|---|---|---|
| **TAYLOR RD** | | | |
| 2013 | pg A2 | Cole Information Services | |
| 2008 | pg A4 | Cole Information Services | |
| 2003 | pg A6 | Cole Information Services | |
| 1999 | pg A8 | Cole Information Services | |
| 1995 | pg A10 | Cole Information Services | |
| 1992 | pg A12 | Cole Information Services | |
| 1990 | pg A14 | Haines Criss-Cross Directory | |
| 1985 | pg A16 | Haines Criss-Cross Directory | |
| 1980 | pg A18 | Haines Criss-Cross Directory | |
| 1974 | pg A20 | Haines Criss-Cross Directory | |
| 1970 | - | Haines Criss-Cross Directory | Target and Adjoining not listed in Source |

# FINDINGS

## CROSS STREETS

| *Year* | *CD Image* | *Source* | |
|---|---|---|---|
| **BOYINGTON RD** | | | |
| 2013 | pg. A1 | Cole Information Services | |
| 2008 | pg. A3 | Cole Information Services | |
| 2003 | pg. A5 | Cole Information Services | |
| 1999 | pg. A7 | Cole Information Services | |
| 1995 | pg. A9 | Cole Information Services | |
| 1992 | pg. A11 | Cole Information Services | |
| 1990 | pg. A13 | Haines Criss-Cross Directory | |
| 1985 | pg. A15 | Haines Criss-Cross Directory | |
| 1980 | pg. A17 | Haines Criss-Cross Directory | |
| 1974 | pg. A19 | Haines Criss-Cross Directory | |
| 1970 | - | Haines Criss-Cross Directory | Street not listed in Source |

# City Directory Images

| Target Street | Cross Street | Source |
|---|---|---|
| - | ✓ | Cole Information Services |

# BOYINGTON RD 2013

| | |
|---|---|
| 3314 | MICHAEL ENGBRECHT |
| 3320 | AUBURN OUTBOARD MARINE |
| 3340 | JAMES ENGBRECHT |

| Target Street | Cross Street | Source |
|---|---|---|
| ✓ | - | Cole Information Services |

# TAYLOR RD 2013

| | |
|---|---|
| 2800 | RICHARD BRENING |
| 2850 | OCCUPANT UNKNOWN |
| 2868 | OCCUPANT UNKNOWN |
| 2881 | OCCUPANT UNKNOWN |
| 2961 | HARBHAJAN KANDOLA |
| 2991 | BALBINDER UPPAL |
| 2992 | DALE KNISLEY |
| 3005 | GUS PURTEE |
| 3025 | FLETCHER MACOLA |
| 3030 | COLE KIMBERLY LAW OFFICE |
| | JAMES MANGOLD |
| | KIMBERLY COLE ATTORNEY AT LAW |
| 3035 | BILL BERGQUIST |
| 3039 | LORINDA COCKRUM |
| 3040 | CALS MARINE POWER CENTER |
| 3072 | DONALD OAKDEN |
| | GREGORY JOHNSON |
| | JAMES ALMDALE |
| 3141 | HAROLD FONDREN |
| 3173 | CARL TEETERS |
| 3224 | SERGIO INCHAURREGUI |
| 3230 | INCHS TOOLING & MACHINING |
| 3241 | OCCUPANT UNKNOWN |
| 3244 | EDWARD ROMIG |
| 3254 | VICTOR MARKEY |
| 3260 | ABLE SELF STORAGE |
| | UHAUL NEIGHBORHOOD DEALER |
| 3270 | BERT BRAUN |
| 3291 | OCCUPANT UNKNOWN |
| 3293 | FOOTHILL FEED & GIFT |
| 3300 | FIRST BAPTIST CHURCH |
| 3301 | PLACER HILLS UNION SCHOOL DISTRICT |
| | PLACER UNION HIGH SCHOOL DISTRICT |
| 3319 | KAREN RIZZI |
| 3321 | CHURCH OF CHRIST |

| Target Street | Cross Street | Source |
|---|---|---|
| - | ✓ | Cole Information Services |

# BOYINGTON RD 2008

| | |
|---|---|
| 3192 | TESSHI AOYAMA |
| 3198 | M HOW |
| 3314 | MICHAEL ENGBRECHT |
| 3340 | JAMES ENGBRECHT |
| 3344 | JULIEN GRELA |
| 3390 | TIMOTHY FAULKNER |

| Target Street | Cross Street | Source |
|---|---|---|
| ✓ | - | Cole Information Services |

# TAYLOR RD 2008

| | |
|---|---|
| 2800 | SCOTT BRENING |
| 2868 | ROBERT HAYES |
| 2871 | LOOMIS TRAILERS INC |
| 2881 | OCCUPANT UNKNOWN |
| 2900 | ZORANA VALLES |
| 2961 | ANDREY MCHEDLIDZE |
| 2991 | BALBINDER UPPAL |
| 2992 | DALE KNISLEY |
| 3005 | GUS PURTEE |
| 3025 | STEPHEN MACOLA |
| 3030 | COLE KIMBERLY ATTORNEY AT LAW |
| | EMERALD INVESTMENTS |
| | J COLE |
| 3035 | BILL BERGQUIST |
| 3039 | LORINDA COCKRUM |
| 3040 | CALS MARINE POWER CENTER |
| 3072 | DAVID NEWMAN |
| | DONALD HERONEMUS |
| | GAYLE LEE |
| | LOUIS LAUMBACH |
| | M OCONNOR |
| | MILTON CARLSON |
| | RACHEL RHYNE |
| | RICHARD STEINER |
| 3137 | EMMAS BED & BREAKFAST |
| 3141 | MOZELL DAVIS |
| 3173 | DONNY CHURCHMAN |
| 3180 | FREEMANS |
| 3224 | SERGIO INCHAURREGUI |
| 3230 | INCHS TOOLING & MACHINING |
| 3244 | COLLEEN ROMIG |
| 3254 | COHESIVE MORTGAGE LOOMIS BASIN |
| | VICTOR MARKEY |
| 3260 | ABLE SELF STORAGE |
| 3270 | BERT BRAUN |
| 3291 | OCCUPANT UNKNOWN |
| 3293 | FOOTHILL FEED & GIFT |
| 3300 | FIRST BAPTIST CHURCH OF LOOMIS |
| 3301 | DEL ORO HIGH SCHOOL |
| | PLACER UNION HIGH SCHOOL DISTRICT |
| 3319 | ETHELBERT NEBLETT |
| | RHONDA PERRYMAN |

| Target Street | Cross Street | Source |
|---|---|---|
| - | ✓ | Cole Information Services |

# BOYINGTON RD 2003

| | |
|---|---|
| 3188 | RONALD SCOTT |
| 3192 | IKUO NISHIMURA |
| 3320 | AUBURN OUTBOARD SERVICE INC |
| 3390 | OCCUPANT UNKNOWN |

| Target Street | Cross Street | Source |
|---|---|---|
| ✓ | - | Cole Information Services |

# TAYLOR RD 2003

| | |
|---|---|
| 2868 | ROBERT HAYES |
| 2873 | B LAUGHRIDGE |
| | JUSTICE TRAILER |
| 2992 | DALE KNISLEY |
| 3005 | GUS PURTEE |
| 3021 | CHARLES HARRIS |
| 3025 | STEPHEN MACOLA |
| 3030 | KIMBERLY COLE |
| | KIMBERLY COLE |
| 3035 | BILL BERGQUIST |
| 3039 | ROBERT BERGQUIST |
| 3040 | CALS MARINE POWER CTR |
| | JOANN JENKINS |
| 3041 | STEVEN HIRSCH |
| 3072 | MARVIN SIMONSON |
| | MILTON CARLSON |
| 3137 | OCCUPANT UNKNOWN |
| 3141 | TINA FONDREN |
| 3173 | DENNIS THOMAS |
| 3180 | FREEMANS |
| 3224 | SERGIO INCHAURREGUI |
| 3230 | INCHS TOOLING & MACHINING |
| | SERGIO INCHAURREGUI |
| 3240 | LLOYD FOX |
| 3241 | CAROL WOLFE |
| 3244 | DARLYS MURRAY |
| 3254 | LARK WEGER |
| 3260 | ABLE SELF STORAGE |
| | ROBIN CASEY |
| 3270 | CAROL BRAUN |
| 3291 | V BLAKE |
| 3293 | COWPOKE |
| | OCCUPANT UNKNOWN |
| 3300 | FIRST BAPTIST CHURCH OF LOOMIS |
| 3301 | DEL ORO SWIMMING POOL |
| | PLACER UNION HIGH SCHOOL DIST |
| | VINCENTE RODRIQUEZ |
| 3319 | ETHELBERT NEBLETT |
| 3321 | CHURCH OF CHRIST |

| Target Street | Cross Street | Source |
|---|---|---|
| - | ✓ | Cole Information Services |

## BOYINGTON RD 1999

| | |
|---|---|
| 3192 | TESSHI AOYAMA |
| 3198 | M HOW |
| 3314 | MICHAEL ENGBRECHT |
| 3320 | AUBURN OUTBOARD MARINE |
| 3340 | JAMES ENGBRECHT |
| | OCCUPANT UNKNOWN |
| 3344 | JULIEN GRELA |

| Target Street | Cross Street | Source |
|---|---|---|
| ✓ | - | Cole Information Services |

# TAYLOR RD 1999

| | |
|---|---|
| 2850 | GREGORY HOFFMAN |
| 2900 | ZORANA VALLES |
| 2961 | ANDREY MCHEDLIDZE |
| 2991 | BALBINDER UPPAL |
| 2992 | DALE KNISLEY |
| | OCCUPANT UNKNOWN |
| 3005 | GUS PURTEE |
| | OCCUPANT UNKNOWN |
| 3021 | CHARLES HARRIS |
| 3025 | STEPHEN MACOLA |
| 3035 | BILL BERGQUIST |
| 3039 | LORINDA COCKRUM |
| | OCCUPANT UNKNOWN |
| 3040 | CALS MARINE POWER CENTER |
| | OCCUPANT UNKNOWN |
| 3045 | OCCUPANT UNKNOWN |
| 3072 | GREGORY JOHNSON |
| 3130 | OCCUPANT UNKNOWN |
| 3131 | OCCUPANT UNKNOWN |
| 3137 | EMMASS BED & BREAKFAST |
| 3141 | AARON FONDREN |
| 3173 | DONNY CHURCHMAN |
| 3180 | FREEMANS |
| | OCCUPANT UNKNOWN |
| 3200 | AMERIGAS |
| 3224 | TAMARA RICHER |
| 3230 | INCHS TOOLING & MACHINING |
| 3239 | OCCUPANT UNKNOWN |
| 3241 | OCCUPANT UNKNOWN |
| 3244 | COLLEEN ROMIG |
| 3270 | BERT BRAUN |
| 3291 | OCCUPANT UNKNOWN |
| 3293 | COWPOKE THE |
| | OCCUPANT UNKNOWN |
| | U HAUL COMPANY INDEPENDENT DEALERS |
| 3300 | FIRST BAPTIST CHURCH OF LOOMIS |
| 3301 | DEL ORO HIGH SCHOOL |
| | DEL ORO SWIMMING POOL |
| | PLACER UNION HIGH SCHOOL DISTRICT |
| 3313 | OCCUPANT UNKNOWN |
| 3319 | ETHELBERT NEBLETT |
| | RHONDA PERRYMAN |
| 3321 | CHURCH OF CHRIST |

| Target Street | Cross Street | Source |
|---|---|---|
| - | ✓ | Cole Information Services |

# BOYINGTON RD 1995

| | |
|---|---|
| 3340 | COX, FRANK J |
| 3344 | GRELA, JULIEN R |

| Target Street | Cross Street | Source |
|---|---|---|
| ✓ | - | Cole Information Services |

# TAYLOR RD 1995

| | |
|---|---|
| 2871 | LOOMIS TRAILERS |
| 3021 | HARRIS, CHARLES D |
| 3030 | RILEY, SUE |
| 3031 | SANCHEZ, DANIEL P |
| 3035 | BERGQUIST, BILL |
| 3039 | BERGQUIST, ROBERT H |
| 3040 | CALS MARINE |
| 3045 | BLACK, RAY |
| 3072 | CARLSON, MILTON |
| | HAMPTON, EDWARD A |
| 3137 | SORENSON, JOSEPH L |
| 3180 | CHARLES C FREEMANS TRADN PST |
| 3224 | BONNIE LOCKSMITH & SEC SVC |
| 3230 | INCHAURREGUI, SERGIO |
| | INCHS TOOLING & MACHINING |
| 3240 | FOX, LLOYD L |
| 3241 | LEMOS, JOSEPH M |
| 3244 | MURRAY, GEORGE Y |
| | TREON, MIKE |
| 3270 | BRAUN, BERT |
| 3293 | COWPOKE |
| 3300 | FIRST BAPTIST CHURCH |
| 3301 | DEL ORO HIGH SCHOOL |
| | DEL ORO SWIMMING POOL |
| 3319 | NEBLETT, JOHN |

| Target Street | Cross Street | Source |
|---|---|---|
| - | ✓ | Cole Information Services |

## BOYINGTON RD 1992

| | |
|---|---|
| 3320 | PAC TRAILS RV CNTR |
| 3340 | COX, FRANK J |
| 3344 | GRELA, JULIEN R |
| 3390 | SHELTON, JOSEPH |

| Target Street | Cross Street | Source |
|---|---|---|
| ✓ | - | Cole Information Services |

# TAYLOR RD 1992

| | |
|---|---|
| 2871 | LOOMIS TRAILERS |
| 3021 | HARRIS, CHARLES D |
| 3030 | MANGOLD, JAMES |
| 3031 | SANCHEZ, DANIEL P |
| 3035 | BERGQUIST, BILL |
| 3039 | BERGQUIST, ROBERT |
| 3040 | CALS MARINE |
| 3045 | BLACK, RAY |
| 3050 | A ALL MINI STORAGE |
| 3072 | CARLSON, MILTON |
| | LENZI DON DRY WALL |
| | NEUENSWANDER, JIMMIE |
| 3137 | BATTERTON, K |
| | DESCOTEAUX, CHARLES H |
| | SORENSON, JOSEPH L |
| 3180 | FREEMANS |
| 3200 | AMERIGAS |
| 3224 | BONNIE LOCKSMITH |
| 3230 | INCHAURREGUI, SERGIO |
| | INCHS TOOL&MACHINE |
| 3240 | FOX, LLOYD L |
| 3241 | LEMOS, JOSEPH M |
| 3244 | MURRAY, GEORGE Y |
| | TREON, MIKE |
| 3254 | FLATT, ALICE J |
| 3270 | BRAUN, BERT |
| 3293 | COWPOKE THE |
| | U HAUL CO |
| 3300 | FIRST BAPTIST CH |
| 3301 | DELORO HIGH SCHOOL |
| 3319 | NEBLETT, JOHN |

| Target Street | Cross Street | Source |
|---|---|---|
| - | ✓ | Haines Criss-Cross Directory |

**BOYINGTON RD 1990**

BOYINGTON RD 95650
LOOMIS

| | | | |
|---|---|---|---|
| 3314 | *FOSSUMS S SLF DFNSE | 652-5425 | +0 |
| 3320 | *FOLSOM LAKE MARINE | 652-0471 | 9 |
| 3340 | COX Frank J | 652-7101 | |
| 3344 | GRELA Julien R | 652-5340 | |

* 2 BUS 2 RES 1 NEW

| Target Street | Cross Street | Source |
|---|---|---|
| ✓ | - | Haines Criss-Cross Directory |

## TAYLOR RD 1990

# TAYLOR RD 95650
# LOOMIS

| | | | |
|---|---|---|---|
| 2871 | *LOOMIS TRAILERS | 652-9470 | |
| 2881 | KUBO E A | 652-6658 | |
| 3021 | HARRIS Charles D | 652-0921 | |
| 3030 | MANGOLD James | 652-0958 | 9 |
| 3031 | SANCHEZ Danl P | 652-5525 | |
| 3035 | BERGQUIST Bill | 652-6618 | |
| 3039 | BERGQUIST Robt | 652-6932 | |
| 3040 | *CALS MARINE | 652-5984 | |
| 3045 | BLACK Ray | 652-6711 | |
| 3050 | *A ALL MINI STORAGE | 888-7234 | |
| 3072 | CARLSON Milton | 652-7185 | |
| 3137 | DESCOTEAUX Chas H | 652-9049 | |
| | HARRISON A | 652-0752 | +0 |
| | HARRISON T | 652-0752 | +0 |
| | SORENSON J L | 652-0149 | |
| | SORENSON Jos L | 652-0965 | |
| 3173 | RENN Wm A | 652-7510 | |
| 3180 | *CHARLES C FREEMANS | 652-6544 | 7 |
| | *FREEMAN CHAS | 652-6544 | |
| 3200 | *CAL GAS LOOMIS | 652-7989 | |
| 3224 | *BONNIE LOCKSMITH | 652-7815 | |
| 3230 | INCHAURREGUI Sergio | 652-5315 | |
| | *INCHS TOOL&MACHINE | 652-0628 | |
| 3240 | FOX Lloyd L | 652-7505 | |
| 3241 | LEMOS J M | 652-7565 | |
| 3244 | MURRAY C | 652-9336 | 7 |
| | MURRAY Darlys | 652-3190 | |
| | MURRAY George Y | 652-3190 | |
| 3254 | FLATT A J | 652-7404 | |
| 3270 | BRAUN Bert | 652-6290 | |
| 3293 | *COWPOKE THE | 652-7121 | |
| | *U HAUL CO | 652-7121 | 9 |
| 3300 | *FIRST BAPTIST CH | 652-6279 | |
| | *SIERRA FOOTHLL BAPT | 652-6672 | |

| Target Street | Cross Street | Source |
|---|---|---|
| - | ✓ | Haines Criss-Cross Directory |

**BOYINGTON RD 1985**

# BOYINGTON RD 95650
# LOOMIS

| | | | |
|---|---|---|---|
| 3314 | SKYVW SATELLITE TV | 652-9701 | +5 |
| 3320 | THUNDRCLD MRNE SPRT | 652-6808 | |
| 3333 | LEE DAN P | 652-5463 | 7 |
| 3340 | COX FRANK J | 652-7101 | |
| 3344 | GRELA JULIEN R | 652-5340 | 1 |
| | PENRYN CHAPEL | 652-0532 | 4 |
| 3390 | BROWN L M | 652-6297 | 7 |
| | HARRISON B | 652-6297 | 3 |

* 3 BUS 5 RES 1 NEW

| Target Street | Cross Street | Source |
|---|---|---|
| ✓ | - | Haines Criss-Cross Directory |

# TAYLOR RD 1985

## TAYLOR RD 95650
## LOOMIS

| | | | |
|---|---|---|---|
| 2871 | LOOMIS TRAILERS | 652-9470 | 2 |
| 2873 | XXXX | 00 | |
| 2881 | KUBO E A | 652-6658 | |
| 3005 | XXXX | 00 | |
| 3021 | HARRIS CHARLES D | 652-0921 | 8 |
| 3030 | XXXX | 00 | |
| 3031 | SANCHEZ DANL P | 652-5525 | 6 |
| 3035 | BERGQUIST BILL | 652-5618 | |
| 3039 | BERGQUIST ROBT | 652-6932 | |
| 3040 | CALS MARINE | 652-5984 | 4 |
| 3041 | XXXX | 00 | |
| 3045 | BLACK RAY | 652-6711 | 0 |
| 3050 | A ALL MINI STORAGE | 888-7234 | +5 |
| 3072 | CARLSON MILTON | 652-7185 | 6 |
| | FAULKENDER MICHAEL | 652-6219 | 3 |
| | GROUNDS KEEPER THE | 652-6219 | 3 |
| | MARTENS JEFF | 652-4349 | +5 |
| 3130 | XXXX | 00 | |
| 3137 | DESCOTEAUX CHAS H | 652-9049 | 3 |
| | SORENSON J L | 652-0149 | 7 |
| | SORENSON JOS L | 652-0965 | 2 |
| 3173 | RENN WM A | 652-7510 | |
| 3180 | FREEMAN CHAS | 652-6544 | |
| | FREEMAN CHAS | 652-6701 | |
| | FREEMANS TRADN POST | 652-6544 | |
| 3200 | CAL GAS LOOMIS | 652-7969 | 4 |
| 3230 | INCHAURREGUI SERGIO | 652-5315 | 9 |
| | INCHS TOOL&MACHINE | 652-0628 | 9 |
| 3233 | XXXX | 00 | |
| 3240 | FOX LLOYD L | 652-7505 | |
| 3241 | LEMOS J M | 652-7565 | |
| 3244 | XXXX | 00 | |
| 3248 | CUSTOM AUTO REPAIR | 652-5408 | 4 |
| 3254 | FLATT A J | 652-7404 | 0 |
| 3264 | XXXX | 00 | |
| 3270 | BRAUN BERT | 652-6290 | 9 |
| 3281 | XXXX | 00 | |
| 3291 | XXXX | 00 | |
| 3293 | COWPOKE THE | 652-7121 | 9 |
| 3300 | FIRST BAPTIST CH | 652-6279 | |
| | SIERRA FOOTHLL BAPT | 652-6672 | 4 |
| 3301 | DELORO HIGH SCHOOL | 652-7243 | |
| | DELORO SWIMMNG POOL | 652-6656 | 7 |
| | PLACER UN HI DL ORO | 652-7243 | 1 |
| 3310 | XXXX | 00 | |
| 3315 | LOOMIS UN SCH DIST | 652-7013 | 6 |
| 3319 | NEBLETT JOHN | 652-0225 | 6 |
| | PERRYMAN R L | 652-5028 | 4 |
| | WELLS ART | 652-9471 | 2 |

| Target Street | Cross Street | Source |
|---|---|---|
| - | ✓ | Haines Criss-Cross Directory |

**BOYINGTON RD 1980**

BOYINGTON RD 95650
LOOMIS

| | | | |
|---|---|---|---|
| 3314 | LOOMIS BASIN REALTY | 652-7286 | 8 |
| | TRAUGH A M | 652-7286 | 7 |
| 3320 | THUNDRCLD MRNE SPRT | 652-6808 | 2 |
| 3333 | LEE DAN P | 652-5463 | 7 |
| 3340 | COX FRANK J | 652-7101 | |
| 3390 | BROWN L M | 652-6297 | 7 |
| | HARRISON B | 652-6059 | 8 |

★ 3 BUS 4 RES 0 NEW

| Target Street | Cross Street | Source |
|---|---|---|
| ✓ | - | Haines Criss-Cross Directory |

# TAYLOR RD 1980

## TAYLOR RD 95650 LOOMIS

| | | | |
|---|---|---|---|
| 2610 | FORGEY FRANK L | 652-5492 | 4 |
| 2660 | XXXX | 00 | |
| 2871 | **HITCH SHOP THE** | **652-0754** | 9 |
| 2873 | **MATSUDA LANDSCAPE** | **652-6623** | +0 |
| 2881 | KUBO E A | 652-6658 | 3 |
| 3005 | XXXX | 00 | |
| 3021 | HARRIS CHARLES D | 652-0921 | 8 |
| 3030 | XXXX | 00 | |
| 3031 | SANCHEZ DANL P | 652-5525 | 6 |
| 3035 | BERGQUIST BILL | 652-5618 | 4 |
| 3039 | BERGQUIST ROBT | 652-6932 | 3 |
| 3041 | XXXX | 00 | |
| 3045 | BLACK RAY | 652-6711 | +0 |
| 3072 | CARLSON MILTON | 652-7185 | 6 |
| | **CLIP SHOP THE** | **652-0334** | 6 |
| | DOZIER CHAS | 652-0967 | +0 |
| | ISHOY HARRY SR | 652-0244 | 9 |
| 3130 | LOPEZ BASILIO | 652-6045 | |
| 3137 | SORENSON J L | 652-0149 | 7 |
| 3173 | RENN WM A | 652-7510 | |
| 3180 | **FREEMAN CHARLES** | **652-6544** | 7 |
| | FREEMAN CHAS | 652-6701 | 3 |
| | FREEMAN SHIRLEY A | 652-6373 | +0 |
| | **FREEMANS ENTERPRISE** | **652-6544** | 5 |
| 3230 | INCHAURREGUI SERGI | 652-5315 | 9 |
| | **INCHS TOOL&MACHINE** | **652-0628** | 9 |
| 3233 | ORLANDO RICHARD M | 652-7156 | +0 |
| 3240 | FOX LLOYD L | 652-7505 | |
| 3241 | LEMOS J M | 652-7565 | |
| 3244 | XXXX | 00 | |
| 3248 | **A&J REPAIRS** | **652-0917** | +0 |
| 3254 | FLATT A J | 652-7404 | +0 |
| 3264 | COX GEO | 652-6611 | |
| 3270 | BRAUN BERT | 652-6290 | 9 |
| 3281 | XXXX | 00 | |
| 3291 | XXXX | 00 | |
| 3293 | **COWPOKE THE** | **652-7121** | 9 |
| 3300 | **FIRST BAPTIST CH** | **652-6279** | |
| 3301 | **DELORO HIGH SCHOOL** | **652-7243** | 5 |
| | **DELORO SWIMMNG POOL** | **652-6656** | 7 |
| | **SC DEL ORO HIGH** | **652-7243** | +0 |
| 3310 | XXXX | 00 | |
| 3315 | **LOOMIS UN SCH DIST** | **652-7013** | 6 |
| | **MID PLACER PUB SCHS** | **652-6877** | 8 |
| 3319 | FOX ROSS | 652-0053 | +0 |
| | GROTTANELLI PETER | 652-6441 | 8 |
| | GROTTANELLI S L | 652-6441 | 8 |
| | NEBLETT JOHN | 652-0225 | 6 |

| Target Street | Cross Street | Source |
|---|---|---|
| - | ✓ | Haines Criss-Cross Directory |

**BOYINGTON RD 1974**

```
*    0 BUS    16 RES    3 NEW

BOYINGTON RD  95650  LOOMIS

3320*THUNDRCLD MRNE SPRT652-6808 2
3340 COX FRANK J         652-7101
*    1 BUS    1 RES    0 NEW
```

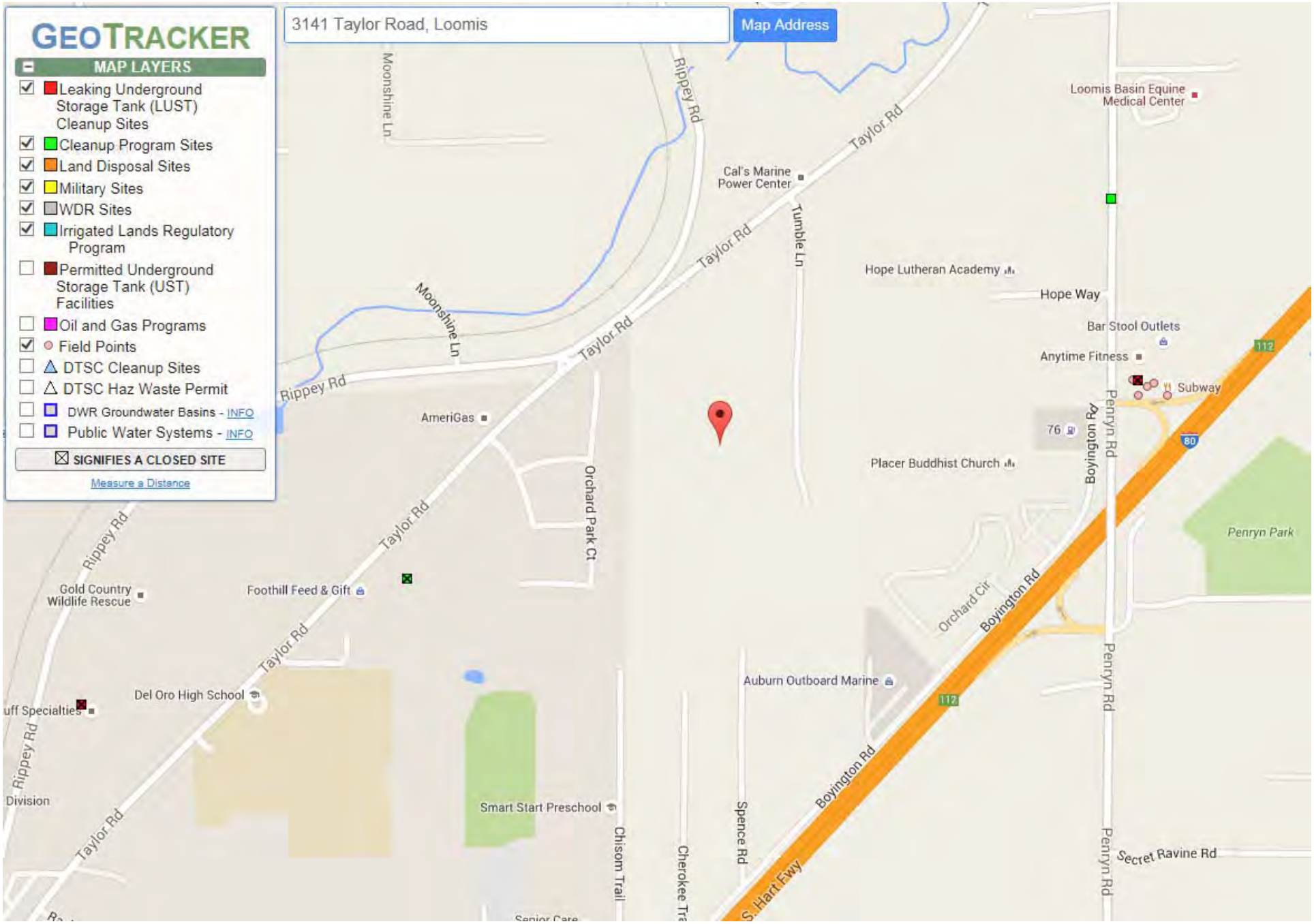
| Target Street | Cross Street | Source |
|---|---|---|
| ✓ | - | Haines Criss-Cross Directory |

## TAYLOR RD 1974

TAYLOR RD 95650 LOOMIS

| | | | |
|---|---|---|---|
| 2610 | FORGEY FRANK L | 652-5492+4 | |
| 2660 | BENSCOTER FRANK M | 652-5152+4 | 3 |
| | BENSCOTER MAE M | 652-5152+4 | 3 |
| 2881 | KUBO E A | 652-6658 3 | 3 |
| 3005 | PURTEE CARRIE | 652-6410 3 | 3 |
| | PURTEE GUS | 652-6410 3 | 3 |
| 3030 | JAMES MARY | 652-6666+4 | 3 |
| 3035 | BERGQUIST BILL | 652-5618+4 | |
| 3039 | BERGQUIST ROBT | 652-6932 3 | 3 |
| 3045 | MCCRACKEN E C | 652-7047 | 3 |
| 3072 | *A F C O CONSTRUCTN | 652-5821+4 | 3 |
| | HOOPER E | 652-6353 | 3 |
| 3130 | LOPEZ BASILIO | 652-6045 | 3 |
| 3137 | *LOOMIS PLUMBING CO | 652-6862 2 | 3 |
| | WHITEHEAD JOHN | 652-6800 2 | 3 |
| 3173 | RENN WM A | 652-7510 | 3 |
| 3180 | FREEMAN LAVERNE | 652-6701 3 | 3 |
| 3230 | BYERS HOMER H | 652-7778 2 | 3 |
| 3233 | SMITH EVELYN | 652-5785+4 | 3 |
| 3240 | FOX LLOYD L | 652-7505 | 4 |
| 3241 | LEMOS J M | 652-7565 | 4 |
| 3248 | COX KENNETH H | 652-6840 2 | 4 |
| | *K C REPAIRS | 652-6840 | 4 |
| 3254 | FLATT DANL T | 652-7190 | 4 |
| 3264 | COX GEO | 652-6611 | 4 |
| 3270 | FANNING JAY | 652-6523 2 | 4 |
| 3291 | XXXX | 00 | 42 |
| 3293 | FISHER PAUL F | 652-6669+4 | |
| | *FOOTHILL FEED TACK | 652-7121 3 | |
| | MARTINSON JAS T | 652-5435+4 | |
| 3300 | *FIRST BAPTIST CH | 652-6279 | |
| 3301 | *DEL ORO HIGH SCHOOL | 652-7243 | |
| | *DEL ORO SWIMMING PL | 652-9960 | |
| 3310 | *MILLSTONE THE | 652-5333 3 | |
| 3321 | XXXX | 00 | |

# REGULATORY RECORDS REVIEW DOCUMENTATION


GEOTRACKER
MAP LAYERS
Leaking Underground Storage Tank (LUST) Cleanup Sites
Cleanup Program Sites
Land Disposal Sites
Military Sites
WDR Sites
Irrigated Lands Regulatory Program
Permitted Underground Storage Tank (UST) Facilities
Oil and Gas Programs
Field Points
DTSC Cleanup Sites
DTSC Haz Waste Permit
DWR Groundwater Basins - INFO
Public Water Systems - INFO
SIGNIFIES A CLOSED SITE
Measure a Distance
3141 Taylor Road, Loomis
Map Address
Moonshine Ln
Rippey Rd
Taylor Rd
Loomis Basin Equine Medical Center
Cal's Marine Power Center
Tumble Ln
Hope Lutheran Academy
Hope Way
Bar Stool Outlets
Anytime Fitness
Subway
AmeriGas
Boyington Rd
Penryn Rd
Placer Buddhist Church
Orchard Park Ct
Penryn Park
Gold Country Wildlife Rescue
Foothill Feed & Gift
Orchard Cir
Auburn Outboard Marine
Del Oro High School
Smart Start Preschool
Chisom Trail
Cherokee Tra
Spence Rd
S. Hart Fwy
Secret Ravine Rd
Division

EARTHTEC, Inc.
GEOTECHNICAL ENGINEERS • SPECIAL INSPECTORS
GEOLOGICAL AND ENVIRONMENTAL CONSULTANTS

# QUARTERLY MONITORING REPORT
# FIRST QUARTER – 2010
# FORMER PENRYN BEACON
# 3129 PENRYN ROAD
# PENRYN, CALIFORNIA

**PROJECT NO. 304072**

**PREPARED BY:**
**EARTHTEC, INC.**
**1830 VERNON STREET, SUITE 7**
**ROSEVILLE, CALIFORNIA 95678**
**(916) 786-5262**
**(916) 786-5263 FAX**

**PREPARED FOR:**

**MR. KONSTANTINOS MATHIOPOULOS**
**P.O. BOX 365**
**LOOMIS, CALIFORNIA 95650**

**DATE: APRIL 7, 2010**

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EARTHTEC, Inc.
GEOTECHNICAL ENGINEERS • SPECIAL INSPECTORS
GEOLOGICAL AND ENVIRONMENTAL CONSULTANTS

April 7, 2010

Mr. Konstantinos Mathiopoulos
P.O. Box 365
Loomis, California 95650

**RE: QUARTERLY MONITORING REPORT**
**FIRST QUARTER, 2010**
**FORMER PENRYN BEACON**
**3129 PENRYN ROAD**
**PENRYN, CALIFORNIA**

**PROJECT NO. 304072**

Dear Mr. Mathiopoulos:

Earthtec, Inc., is pleased to present the results of our first quarter groundwater monitoring event for the calendar year 2010 at the former Penryn Beacon (currently a Valero Station) located in Penryn, California. The groundwater monitoring was conducted under the direction of Mr. Paul Sanders with the California Regional Water Quality Control Board (RWQCB). Mr. Sanders, in a letter dated July 22, 2009, directed that the monitoring program be reduced to occur semi-annually during the 1st and 3rd quarters for this site.

Site Description

The site is located at 3129 Penryn Road on the northeastern corner of the intersection between Penryn Road and the access/exit ramp for Highway 80 in Penryn, Placer County, California. The subject site is a small triangular property that is approximately 14,000 square feet (± 0.32 acres). The site lies at an elevation of approximately 460-feet above mean sea level and gently slopes down toward the south and southeast. Along the south and southwest boundary of the site the topography slopes steeply down to the highway exit ramp. It appears that the north portion of the site is on native undisturbed ground and the south and southwest portion of the subject site is on engineered fill material.

The subject site is currently a Valero Service Station with fuel dispensers located along the northern

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boundary of the site. South of the fuel dispenser island is an approximately 1,000 square foot, single-story, business building. The remainder of the site is paved with concrete or asphaltic-concrete. The southern boundary of the subject site drops vertically approximately five feet and borders the Interstate 80 off-ramp for the Penryn Road exit. The western boundary of the site borders Penryn Road.

Groundwater Flow Direction and Hydraulic Gradient

On March 16, 2010, groundwater level measurements were collected from all five groundwater monitoring wells using an interface probe. The air tight seal on each monitoring well was opened and the groundwater levels in the wells were allowed 30 minutes to equilibrate to ambient atmospheric pressure prior to taking water elevation measurements. This equilibration time allows water levels in the well casings and the surrounding sandpacks to adjust to true groundwater elevation. The groundwater elevations at the site ranged from a high of 446.21 feet above mean sea level (msl) in monitoring well MW-1 to a low of 439.24 feet msl in monitoring well MW-5.

Using trigonometric techniques, groundwater flow direction and gradient were calculated then contoured using Surfer, a computer aided triangulation program. Groundwater flow direction for the first quarter 2010 sampling event was determined to go toward the east southeast (see Groundwater Contour Map, Figure 2, Appendix A) with an approximate hydraulic gradient of 0.032 ft/ft. A rose diagram showing all past groundwater flow directions at the subject site since January 2000 is shown on the insert on Figure 2, Appendix A. The diagram shows that the groundwater flow direction has generally been in an east southeasterly direction.

Groundwater Sampling

All five groundwater monitoring wells on site were purged and then sampled on March 16, 2010. The monitoring wells were purged of a minimum of three well volumes by bailing each well with a new, clean, disposable, polyethylene bailer. During purging, physical groundwater characteristics of temperature ($^{o}$F), electrical conductivity (uS/cm), total dissolved solids (ppm) and pH were measured and recorded using a Hanna meter. The groundwater parameters stabilized within approximately five to ten minutes of purging for each two-inch diameter well. Physical characteristics of odor, color, or unusual turbidity were noted during this sampling event. The purged groundwater was contained in a labeled 55-gallon and transported to InStrat Inc, of Davis, California for disposal. Monitoring well pump data sheets are attached in Appendix C.

Groundwater samples were collected using disposable polyethylene bailers. The collected groundwater was dispensed into 40-ml glass VOA vials pre-preserved with HCL for analysis of volatile hydrocarbons and fuel oxygenates. All groundwater samples were labeled, sealed in plastic bags, stored on ice in a chilled cooler, and transported under chain of custody protocol to a state certified laboratory.

Groundwater Analytical Test Results

The samples were analyzed for gasoline range organics (GRO), benzene, toluene, ethylbenzene, and xylenes (BTEX); and for oxygenates methyl-tert-butyl ether (MTBE), diisopropyl ether (DIPE), ethyl-t-butyl ether (ETBE), ter-amylmethyl ether (TAME), tert-butanol (TBA), by EPA method 8260B and for diesel range organics (DRO) by EPA method 8015M. Table A summarizes the groundwater analytical test results for this monitoring event.

**TABLE A**
GROUNDWATER TEST RESULTS
March 16, 2010
All Results are in Parts Per Billion (ug/L=ppb)

| Constituent | MW-1 | MW-2 | MW-3 | MW-4 | MW-5 |
|---|---|---|---|---|---|
| GRO | <50 | <50 | <50 | <50 | <50 |
| DRO | <50 | <50 | <50 | <50 | <50 |
| Benzene | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| Toluene | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| Ethyl-benz | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| Xylenes | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| MTBE | **93** | **340** | **84** | <0.50 | <0.50 |
| DIPE | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| ETBE | <0.50 | **5.1** | <0.50 | <0.50 | <0.50 |
| TAME | **2.0** | **8.1** | <0.50 | <0.50 | <0.50 |
| TBA | <5 | **74** | **20** | <5 | <5 |

Past and present groundwater sampling laboratory tests results are summarized in Table II, Appendix B. Analytical laboratory data sheets are enclosed in Appendix D.

Discussion

A Public Notice Fact Sheet was distributed to pertinent property owners on March 31, 2010. The

public comment period will close May 5, 2010.

If you have any questions concerning the information presented in this report, please contact us.

Sincerely,
**EARTHTEC, Inc.**

Matthew Cohen
Staff Geologist

Paul Fry, P.G. # 8126, Expires 02/11
Project Geologist

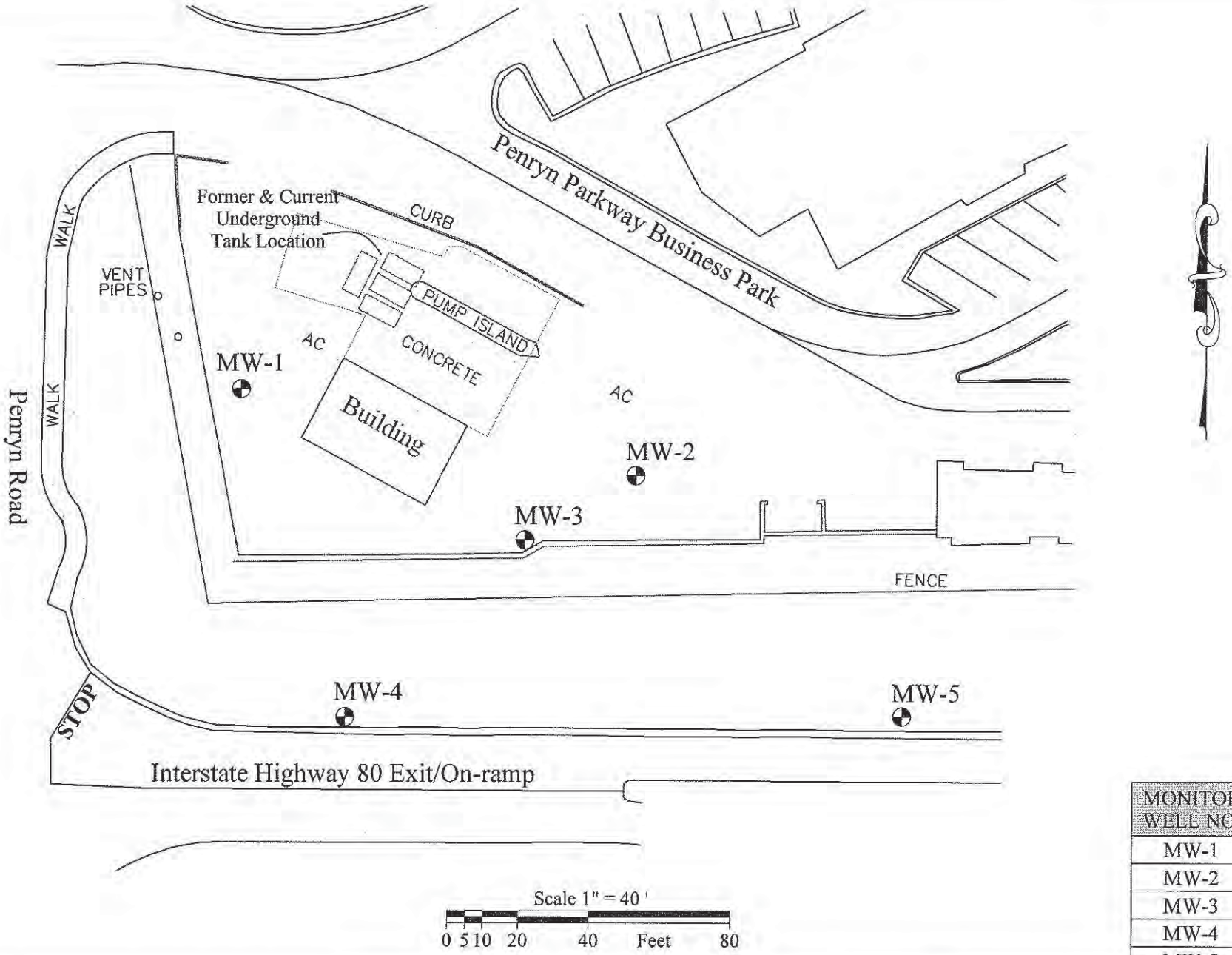
MLC/PJF/vs

cc: Mr. West Borgault – Placer County Department of Environmental Health
Mr. Paul Sanders – Central Valley Regional Water Quality Control Board

# APPENDIX A

FIGURE 1: SITE MAP

FIGURE 2: GROUNDWATER CONTOUR MAP




| MONITOR WELL NO. | ELEV. TOC |
|---|---|
| MW-1 | 460.27' |
| MW-2 | 458.96' |
| MW-3 | 460.47' |
| MW-4 | 448.28' |
| MW-5 | 442.43' |

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PENRYN BEACON
3129 PENRYN ROAD
PENRYN, CALIFORNIA

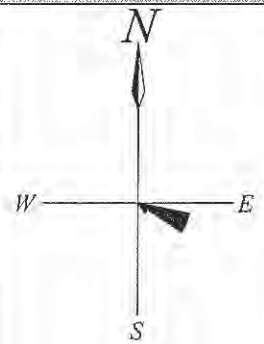
GROUNDWATER CONTOUR MAP

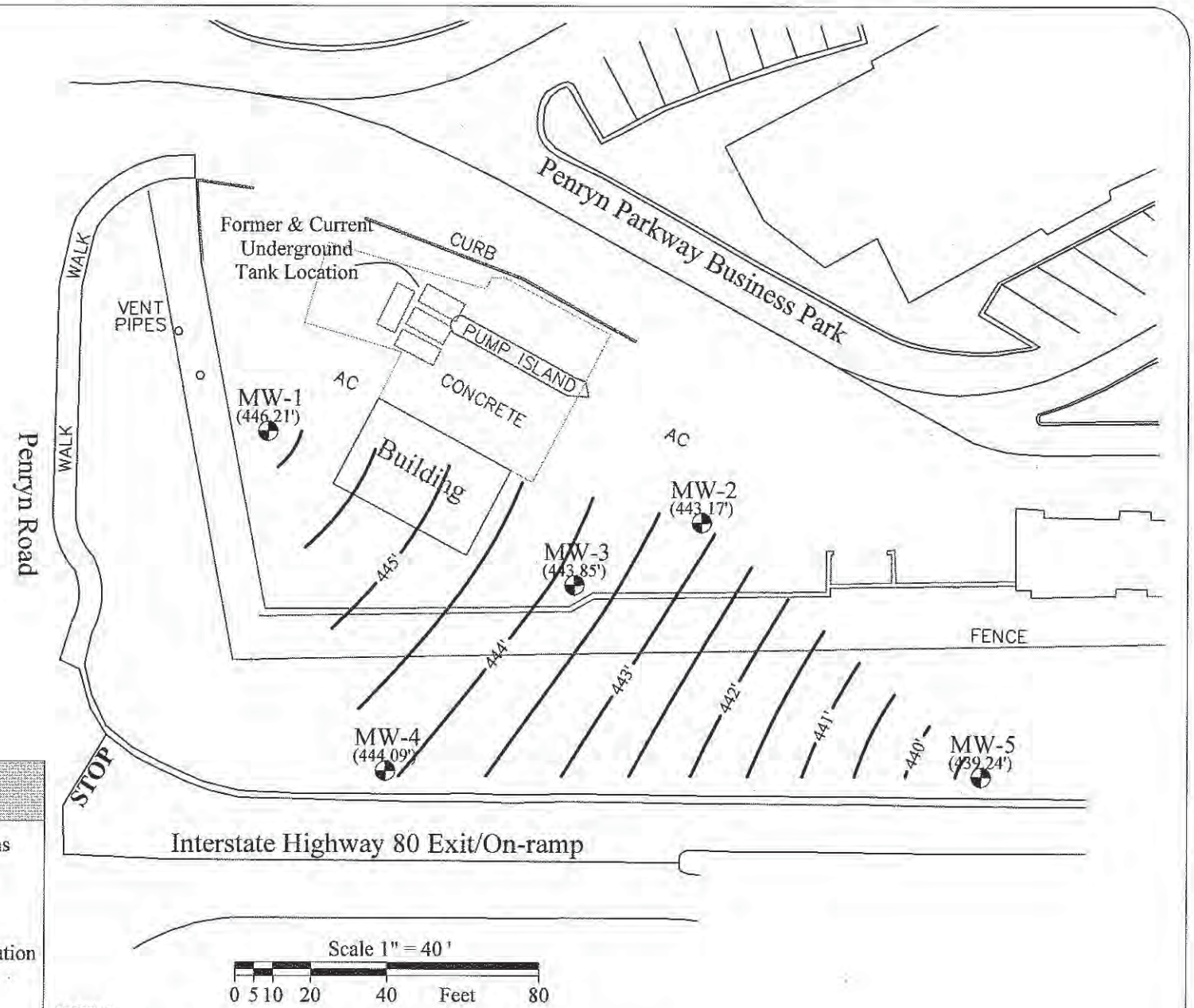
| | |
|---|---|
| Project 304072 | April 2010 |
| Appendix A | Figure 1 |

FIRST QUARTER 2010 GENERALIZED GROUNDWATER FLOW DIRECTION

Approximate hydraulic gradient is 0.032 ft/ft.

HISTORIC GROUNDWATER FLOW DIRECTION From January 2000 through August 2009




## LEGEND:

- Former underground tank locations
- Concrete and asphalt locations
- Concrete locations
- MW Groundwater monitoring well location
- ( ') Groundwater elevation
- Groundwater contours (Contour Interval of 0.5 ft)

NOTES:

1. Groundwater flow direction and gradient based on March 16, 2010, measurement data.
2. Adopted from Site Plan, provided by GW Consulting Engineers, dated June 2005.

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| GROUNDWATER CONTOUR MAP | |
|---|---|
| Project 304072 | April 2010 |
| Appendix A | Figure 2 |

## APPENDIX B

| | |
|---|---|
| TABLE I: | SUMMARY OF GROUNDWATER MEASUREMENTS AND ELEVATIONS |
| TABLE II: | GROUNDWATER QUALITY RESULTS |
| TABLE III: | CAM 17 METALS IN GROUNDWATER |

# Table I

Summary of Groundwater Elevations

Penryn Beacon
3129 Penryn Road
Penryn, California

| | MW-1 (TOC=460.27') Screen 15'to 35' | | MW-2 (TOC=458.96') Screen 15' to 35' | | MW-3 (TOC=460.47') Screen 15' to 35' | | MW-4 (TOC=448.28') Screen 4.5'-24.5' | | MW-5 (TOC=442.43') Screen 4.5'-14.5' | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sampling Date | Depth to Water | Ground water Elev. | Depth to Water | Ground water Elev. | Depth to Water | Ground water Elev. | Depth to Water | Ground water Elev. | Depth to Water | Ground water Elev. | Groundwater Flow Direction | Groundwater Gradient FT./FT. |
| 3/16/10 | 14.06 | 446.21 | 15.79 | 443.17 | 16.62 | 443.85 | 4.19 | 444.09 | 3.19 | 439.24 | E/SE | 0.032 |
| 8/19/09 | 17.30 | 442.97 | 19.00 | 439.96 | 20.07 | 440.40 | 7.10 | 441.18 | 7.00 | 435.43 | E/SE | 0.036 |
| 5/8/09 | 14.41 | 445.86 | 15.94 | 443.02 | 16.60 | 443.87 | 4.05 | 444.23 | 3.35 | 439.08 | E/SE | 0.032 |
| 2/27/09 | 14.62 | 445.65 | 16.07 | 442.89 | 16.56 | 443.91 | 4.11 | 444.17 | 2.81 | 439.62 | E/SE | 0.030 |
| 11/11/08 | 17.10 | 443.17 | 18.87 | 440.09 | 19.92 | 440.55 | 6.69 | 441.59 | 6.80 | 435.63 | E/SE | 0.037 |
| 9/9/08 | 17.88 | 442.39 | 19.65 | 439.31 | 20.78 | 439.69 | 8.06 | 440.22 | 7.37 | 435.06 | E/SE | 0.035 |
| 6/19/08 | 16.48 | 443.79 | 18.17 | 440.79 | 19.28 | 441.19 | 6.40 | 441.88 | 5.51 | 436.92 | E/SE | 0.030 |
| 3/12/08 | 14.32 | 445.95 | 16.02 | 442.94 | 16.95 | 443.52 | 4.47 | 443.81 | 3.56 | 438.87 | E/SE | 0.032 |
| 12/11/07 | 19.10 | 441.17 | 20.59 | 438.37 | 21.57 | 438.72 | 8.60 | 439.68 | 7.81 | 434.62 | E/SE | 0.021-0.038 |
| 8/29/07 | 19.45 | 440.82 | 19.85 | 439.11 | 21.05 | 439.42 | 8.35 | 439.83 | 7.6 | 434.83 | ESE to SE | 0.0279 |
| 7/06/07 | 18.7 | 441.57 | 20.07 | 438.26 | 20.3 | 440.17 | 7.3 | 440.98 | 6.9 | 435.53 | E to SE | 0.0360 |
| 3/28/07 | 14.19 | 446.06 | 17.15 | 441.81 | 18.00 | 442.47 | 5.50 | 442.78 | 4.90 | 437.53 | ESE to SE | 0.0415 |
| 11/15/06 | 17.29 | 442.98 | 18.84 | 440.12 | 19.86 | 440.61 | 6.76 | 441.52 | 6.50 | 435.93 | ESE to SE | 0.0325 |
| 11/22/2005 | 17.67 | 442.60 | 19.14 | 439.82 | 20.24 | 440.23 | 7.42 | 440.86 | 6.28 | 436.15 | ESE to SE | 0.0315 |
| 8/25/2005 | 15.76 | 444.51 | 17.40 | 441.56 | 17.94 | 442.53 | 5.14 | 443.14 | 4.67 | 437.76 | E to SE | 0.0345 |
| 5/23/2005 | 13.50 | 446.77 | 15.54 | 443.42 | 15.57 | 444.90 | 3.94 | 444.34 | 3.23 | 439.20 | E/SSE | 0.038 |
| Site Renovation TOC for Wells MW-2 and MW-3 Modified. All Wells Re-Surveyed | | | | | | | | | | | | |

TOC= Top of Casing Elevation.

# Table I (continued)

Summary of Groundwater Elevations

Penryn Beacon
3129 Penryn Road
Penryn, California

| | MW-1 (TOC=460.46') Screen | | MW-2 (TOC=458.64') Screen | | MW-3 (TOC=458.81') Screen | | | |
|---|---|---|---|---|---|---|---|---|
| | Depth to Water | Ground water Elev. | Depth to Water | Ground water Elev. | Depth to Water | Ground-water Elev. | Groundwater Flow Direction | Groundwater Gradient FT./FT. |
| 3/28/05 | 12.54 | 447.92 | 14.12 | 444.52 | 13.55 | 445.26 | East/Southeast | 0.03 |
| 12/13/04 | 17.47 | 442.99 | 17.70 | 440.94 | 17.45 | 441.36 | East/Southeast | 0.02 |
| 9/3/2004 | 19.21 | 441.25 | 20.06 | 438.58 | 20.01 | 438.80 | East/Southeast | 0.026 |
| Groundwater Depths from Table I Cirrus Engineering Services report | | | | | | | | |
| 10/17/2003 | 18.81 | 441.65 | 19.64 | 439.00 | 19.56 | 439.25 | East/Southeast | 0.026 |
| 4/14/2003 | 15.33 | 445.13 | 16.42 | 442.22 | 16.30 | 442.51 | East/Southeast | 0.029 |
| 12/27/2002 | 17.45 | 443.01 | 18.44 | 440.20 | 18.22 | 440.59 | East/Southeast | 0.026 |
| 9/10/2002 | 16.81 | 443.65 | 18.55 | 440.09 | 18.40 | 440.41 | East/Southeast | 0.035 |
| 12/31/2001 | 15.84 | 444.62 | 15.84 | 442.80 | 15.56 | 443.25 | East/Southeast | 0.032 |
| 9/7/2001 | 16.48 | 443.98 | 18.39 | 440.25 | 18.16 | 440.65 | East/Southeast | 0.0375 |
| 3/9/2001 | 14.93 | 445.53 | 15.90 | 442.74 | 15.70 | 443.11 | East/Southeast | 0.025 |
| 12/1/2000 | 17.91 | 442.55 | 19.15 | 439.49 | 18.94 | 439.87 | East/Southeast | 0.029 |
| 8/11/2000 | 14.88 | 445.58 | 17.19 | 441.45 | 16.87 | 441.94 | East/Southeast | 0.039 |
| 1/14/2000 | 18.94 | 441.52 | 19.12 | 439.52 | 19.00 | 439.81 | East/Southeast | 0.039 |

TOC= Top of Casing Elevation.

**TABLE II**
HISTORIC GROUNDWATER QUALITY RESULTS
Penryn Beacon
Penryn, California

Monitoring Well
**MW-1**
Results are in Parts Per Billion (ppb = ug/L)

| Date | TPH D | TPH-Gas | B | T | EB | X | MTBE | DIPE | ETBE | TAME | TBA | EDB | 1,2 DCA | Naph-thalene | Meth-anol | Eth-anol |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3/16/10 | <50 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | **93** | <0.50 | <0.50 | **2.0** | <5.0 | - | - | - | - | - |
| 8/19/09 | <50 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | **220** | <0.50 | <0.50 | <0.50 | <5.0 | - | - | - | - | - |
| 5/8/09 | <50 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | **450** | <0.50 | **2.5** | **1.9** | <5.0 | - | - | - | - | - |
| 2/27/09 | <50 | **70** | <0.50 | <0.50 | <0.50 | <1.0 | **160** | <0.50 | <0.50 | <0.50 | <5.0 | - | - | - | - | - |
| 11/12/08 | <50 | <50 | <0.50 | <0.50 | <0.50 | <0.50 | **110** | <0.50 | <0.50 | <0.50 | <5.0 | <1.0 | <1.0 | <1.0 | <1000 | <1000 |
| 9/9/08 | <50 | **200** | <0.50 | <0.50 | <0.50 | <0.50 | **170** | <0.50 | <0.50 | <0.50 | <5.0 | - | - | - | - | - |
| 6/19/08 | <50 | **200** | <0.50 | <0.50 | <0.50 | <0.50 | **140** | <0.50 | <0.50 | <0.50 | <5.0 | - | - | - | - | - |
| 3/12/08 | <50 | <50 | <0.50 | <0.50 | <0.50 | <0.50 | **25** | <0.50 | <0.50 | <0.50 | **430** | - | - | - | - | - |
| 12/11/07 | <500 | **98** | <0.50 | **2.2** | **1.9** | **6.7** | **180** | <0.50 | <0.50 | <0.50 | **15** | <1.0 | - | **11** | - | - |
| 8/29/07 | - | **71** | <0.50 | <0.50 | <0.50 | <0.50 | **390** | <0.50 | <0.50 | <0.50 | **15** | - | - | - | - | - |
| 7/06/07 | - | **73** | <0.50 | <0.50 | <0.50 | <0.50 | **280** | <0.50 | <0.50 | <0.50 | **16** | - | - | - | - | - |
| 3/28/07 | <50 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | **190** | <2.0 | <2.0 | <2.0 | **190** | - | - | - | - | - |
| 11/15/06 | <50 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | **420** | <2.0 | <2.0 | **3.3** | **120** | - | - | - | - | - |
| 11/22/05 | <50 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | **490** | <2.0 | <2.0 | <2.0 | <10 | - | - | - | - | - |
| 8/25/05 | <50 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | **500** | <2.0 | <2.0 | <2.0 | **150** | - | - | - | - | - |
| 5/23/05 | <50 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | **330** | <2.0 | <2.0 | <2.0 | <10 | - | - | - | - | - |
| 3/28/05 | <50 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | **440** | <2.0 | <2.0 | <2.0 | <10 | - | - | - | - | - |
| 12/13/04 | <50 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | **490** | <2.0 | <2.0 | <2.0 | <10 | - | - | - | - | - |
| 9/3/2004 | <50 | **68** | <0.50 | <0.50 | <0.50 | <1.0 | **420** | <2.0 | <2.0 | <2.0 | **120** | - | - | - | - | - |
| Previous results from Table II Cirrus Engineering Services report | | | | | | | | | | | | | | | | |
| 10/17/2003 | **190** | <200 | <2.0 | <2.0 | <2.0 | <2.0 | **730** | <2.0 | <2.0 | <2.0 | **68** | - | - | - | - | - |
| 4/14/2003 | <50 | **210** | **1.2** | <0.50 | <0.50 | <0.50 | **440** | <0.50 | <0.50 | <0.50 | <25 | - | - | - | - | - |
| 12/27/2002 | <50 | **210** | **1.3** | <0.50 | <0.50 | <0.50 | **1,000** | <0.50 | <0.50 | **1.2** | **110** | - | - | - | - | - |
| 9/10/2002 | <50 | **260** | **5.7** | <0.50 | <0.50 | <0.50 | **680** | <0.50 | <0.50 | <0.50 | <25 | - | - | - | - | - |
| 12/31/2001 | <50 | **360** | **4.3** | <0.50 | <0.50 | <0.50 | **1,400** | <0.50 | <0.50 | **3.0** | **700** | - | - | - | - | - |
| 9/7/2001 | **90** | **390** | **7.1** | <0.50 | <0.50 | <0.50 | **1,700** | <0.50 | **2** | **5.2** | <25 | - | - | - | - | - |
| 3/9/2001 | <50 | **2,500** | <0.50 | <0.50 | <0.50 | <0.50 | **3,800** | <0.50 | <0.50 | **7.7** | <25 | - | - | - | - | - |
| 12/1/2000 | <50 | **2,150** | **6.4** | <0.5 | <0.5 | **1.3** | **6,140** | <0.50 | <0.50 | <0.50 | <25 | - | - | - | - | - |
| 8/11/2000 | <50 | **355** | **13.3** | **0.8** | **0.8** | **1.5** | **8,780** | <0.50 | <0.50 | <0.50 | <25 | - | - | - | - | - |
| 1/14/2000 | <50 | **222** | **1.0** | **3.8** | **1.6** | **10.0** | **13,500** | <0.50 | <0.50 | <0.50 | <25 | - | - | - | - | - |

**TABLE II (continued)**
HISTORIC GROUNDWATER QUALITY RESULTS

Penryn Beacon
Penryn, California

Monitoring Well
**MW-2**
Results are in Parts Per Billion (ppb = ug/L)

| Date | TPH D | TPH-Gas | B | T | EB | X | MTBE | DIPE | ETBE | TAME | TBA | EDB | 1,2 DCA | Naph-thalene | Meth-anol | Eth-anol |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3/16/10 | <50 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | **340** | <0.50 | **5.1** | **8.1** | **74** | - | - | - | - | - |
| 8/19/09 | <50 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | **480** | <0.50 | **2.6** | <0.50 | <5.0 | - | - | - | - | - |
| 5/8/09 | <50 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | **130** | <0.50 | <0.50 | <0.50 | <5.0 | - | - | - | - | - |
| 2/27/09 | <50 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | **330** | <0.50 | <0.50 | **1.3** | <5.0 | - | - | - | - | - |
| 11/12/08 | <50 | **94** | <0.50 | <0.50 | <0.50 | <0.50 | **290** | <0.50 | <0.50 | <0.50 | <5.0 | <1.0 | <1.0 | <1.0 | <1000 | <1000 |
| 9/9/08 | <50 | **310** | <0.50 | <0.50 | <0.50 | <0.50 | **390** | <0.50 | <0.50 | <0.50 | <5.0 | - | - | - | - | - |
| 6/19/08 | <50 | **300** | <0.50 | <0.50 | <0.50 | <0.50 | **290** | <0.50 | **2.1** | **1.5** | <5.0 | - | - | - | - | - |
| 3/12/08 | <50 | <50 | <0.50 | <0.50 | <0.50 | <0.50 | **470** | <0.50 | <0.50 | <0.50 | **1,200** | - | - | - | - | - |
| 12/11/07 | <500 | **160** | <0.50 | **0.7** | <0.50 | **1.3** | **390** | <0.50 | **1.4** | **0.9** | <5.0 | <1.0 | - | <1.0 | - | - |
| 8/29/07 | - | **93** | <0.50 | <0.50 | <0.50 | <0.50 | **230** | <0.50 | **2.0** | **0.71** | <5.0 | - | - | - | - | - |
| 7/06/07 | - | **74** | <0.50 | <0.50 | <0.50 | <0.50 | **900** | <0.50 | **2.9** | **1.9** | <5.0 | - | - | - | - | - |
| 3/28/07 | <50 | **120** | <0.50 | <0.50 | <0.50 | <0.50 | **470** | <0.50 | **2.4** | **1.3** | <5.0 | - | - | - | - | - |
| 11/15/06 | <50 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | **590** | <2.0 | **3.1** | **2.7** | **58** | - | - | - | - | - |
| 11/22/05 | <50 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | **590** | <2.0 | <2.0 | <2.0 | <10 | - | - | - | - | - |
| 8/25/05 | <50 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | **790** | <2.0 | **6.2** | <2.0 | **28** | - | - | - | - | - |
| 5/23/05 | <50 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | **610** | <2.0 | **2.6** | <2.0 | <10 | - | - | - | - | - |
| 3/28/05 | <50 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | **290** | <2.0 | <2.0 | <2.0 | **160** | - | - | - | - | - |
| 12/13/04 | <50 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | **53** | <2.0 | <2.0 | <2.0 | <10 | - | - | - | - | - |
| 9/3/2004 | <50 | **59** | <0.50 | <0.50 | <0.50 | <1.0 | **1,700** | <2.0 | **6.2** | **4.4** | <10 | - | - | - | - | - |
| Previous results from Table II Cirrus Engineering Services report | | | | | | | | | | | | | | | | |
| 10/17/2003 | **99** | <500 | <0.50 | <0.50 | <0.50 | <0.50 | **3,300** | <5.0 | **6.7** | **6.1** | <50 | - | - | - | - | - |
| 4/14/2003 | <50 | **670** | **3.7** | <0.50 | <0.50 | <0.50 | **3,400** | <0.50 | <0.50 | <0.50 | <25 | - | - | - | - | - |
| 12/27/2002 | <50 | <50 | **4.6** | <0.50 | <0.50 | <0.50 | **7,200** | <0.50 | **22** | **12** | **650** | - | - | - | - | - |
| 9/10/2002 | <50 | **1,000** | **4.4** | <0.50 | <0.50 | <0.50 | **7,400** | <0.50 | <0.50 | <0.50 | <25 | - | - | - | - | - |
| 12/31/2001 | <50 | <50 | <0.50 | <0.50 | <0.50 | <0.50 | **5,600** | <0.50 | **39** | **22** | **1,700** | - | - | - | - | - |
| 9/7/2001 | <50 | **740** | **1.1** | <0.50 | <0.50 | <0.50 | **5,800** | <0.50 | **52** | **25** | **470** | - | - | - | - | - |
| 3/9/2001 | <50 | <50 | <0.50 | <0.50 | <0.50 | <0.50 | **5,700** | <0.50 | **50** | **21** | **970** | - | - | - | - | - |
| 12/1/2000 | <50 | <50 | <0.50 | <0.50 | <0.50 | <0.50 | **6,650** | <0.50 | <0.50 | <0.50 | <25 | - | - | - | - | - |
| 8/11/2000 | <50 | <50 | <0.50 | <0.50 | <0.50 | <0.50 | **5,490** | <0.50 | **40.7** | **13.1** | **1,060** | - | - | - | - | - |
| 1/14/2000 | <50 | **149** | **1.2** | **2.1** | **2.1** | **6** | **5,360** | <0.50 | <0.50 | <0.50 | <25 | - | - | - | - | - |

**TABLE II (continued)**
HISTORIC GROUNDWATER QUALITY RESULTS

Penryn Beacon
Penryn, California

Monitoring Well
**MW-3**
Results are in Parts Per Billion (ppb = ug/L)

| Date | TPH D | TPH-Gas | B | T | EB | X | MTBE | DIPE | ETBE | TAME | TBA | EDB | 1,2 DCA | Naph-thalene | Meth-anol | Eth-anol |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3/16/10 | <50 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | **84** | <0.50 | <0.50 | <0.50 | **20** | - | - | - | - | - |
| 8/19/09 | <50 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | **330** | <0.50 | <0.50 | <0.50 | <5.0 | - | - | - | - | - |
| 5/8/09 | <50 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | **51** | <0.50 | <0.50 | <0.50 | <5.0 | - | - | - | - | - |
| 2/27/09 | <50 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | **8.4** | <0.50 | <0.50 | <0.50 | <5.0 | - | - | - | - | - |
| 11/12/08 | <50 | **120** | <0.50 | <0.50 | <0.50 | <0.50 | **99** | <0.50 | <0.50 | <0.50 | <5.0 | <1.0 | <1.0 | <1.0 | <1000 | <1000 |
| 9/9/08 | <50 | **130** | <0.50 | <0.50 | <0.50 | **1.0** | **140** | <0.50 | <0.50 | <0.50 | <5.0 | - | - | - | - | - |
| 6/19/08 | <50 | **57** | <0.50 | <0.50 | <0.50 | <0.50 | **5.3** | <0.50 | <0.50 | <0.50 | <5.0 | - | - | - | - | - |
| 3/12/08 | <50 | <50 | <0.50 | <0.50 | <0.50 | <0.50 | **14** | <0.50 | <0.50 | <0.50 | **230** | - | - | - | - | - |
| 12/11/07 | <500 | **160** | <0.50 | <0.50 | <0.50 | **0.64** | **440** | <0.50 | <0.50 | **0.48** | <5.0 | <1.0 | - | <1.0 | - | - |
| 8/29/07 | - | **58** | <0.50 | <0.50 | <0.50 | <0.50 | **77** | <0.50 | <0.50 | <0.50 | <5.0 | - | - | - | - | - |
| 7/06/07 | - | **65** | <0.50 | <0.50 | <0.50 | <0.50 | **59** | <0.50 | <0.50 | <0.50 | <5.0 | - | - | - | - | - |
| 3/28/07 | <50 | <50 | <0.50 | <0.50 | <0.50 | <0.50 | **72** | <0.50 | <0.50 | <0.50 | <5.0 | - | - | - | - | - |
| 11/15/06 | <50 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | **190** | <2.0 | <2.0 | <2.0 | <10 | - | - | - | - | - |
| 11/22/05 | <50 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | **280** | <2.0 | <2.0 | <2.0 | <10 | - | - | - | - | - |
| 8/25/05 | <50 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | **460** | <2.0 | <2.0 | <2.0 | **33** | - | - | - | - | - |
| 5/23/05 | <50 | <50 | <0.50 | **6.3** | <0.50 | <1.0 | **410** | <2.0 | <2.0 | <2.0 | <10 | - | - | - | - | - |
| 3/28/05 | <50 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | **290** | <2.0 | <2.0 | <2.0 | **110** | - | - | - | - | - |
| 12/13/04 | <50 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | **36** | <2.0 | <2.0 | <2.0 | <10 | - | - | - | - | - |
| 9/3/2004 | <50 | **81** | <0.50 | <0.50 | <0.50 | <1.0 | **660** | <2.0 | <2.0 | <2.0 | <10 | - | - | - | - | - |
| Previous results from Table II Cirrus Engineering Services report | | | | | | | | | | | | | | | | |
| 10/17/2003 | **580** | <200 | <2.0 | <2.0 | <2.0 | <2.0 | **990** | <2.0 | <2.0 | <2.0 | **59** | - | - | - | - | - |
| 4/14/2003 | **57** | <50 | **0.8** | <0.50 | <0.50 | <0.50 | **730** | <0.50 | <0.50 | <0.50 | <25 | - | - | - | - | - |
| 12/27/2002 | <50 | <50 | **0.7** | <0.50 | <0.50 | <0.50 | **1,100** | <0.50 | **0.8** | **1.5** | **130** | - | - | - | - | - |
| 9/10/2002 | <50 | <50 | **1.8** | <0.50 | <0.50 | <0.50 | **2,000** | <0.50 | **3.1** | **5.3** | **630** | - | - | - | - | - |
| 12/31/2001 | <50 | <50 | <0.50 | <0.50 | <0.50 | <0.50 | **430** | <0.50 | **0.7** | **1.7** | **460** | - | - | - | - | - |
| 9/7/2001 | <50 | **450** | <0.50 | <0.50 | <0.50 | <0.50 | **3,600** | <0.50 | **8.6** | **12** | **720** | - | - | - | - | - |
| 3/9/2001 | <50 | <50 | <0.50 | <0.50 | <0.50 | <0.50 | **1,600** | <0.50 | **4.7** | **5.4** | **400** | - | - | - | - | - |
| 12/1/2000 | <50 | <50 | <0.50 | <0.50 | <0.50 | <0.50 | **2,370** | <0.50 | <0.50 | <0.50 | <25 | - | - | - | - | - |
| 8/11/2000 | <50 | **147** | <0.50 | <0.50 | <0.50 | <0.50 | **1,020** | <0.50 | <0.50 | **5.4** | **799** | - | - | - | - | - |
| 1/14/2000 | <50 | **140** | **1.0** | **3.9** | **1.6** | **9.6** | **3,270** | <0.50 | <0.50 | <0.50 | <25 | - | - | - | - | - |

**TABLE II (continued)**
HISTORIC GROUNDWATER QUALITY RESULTS

Penryn Beacon
Penryn, California

Monitoring Well
**MW-4**
Results are in Parts Per Billion (ppb = ug/L)

| Date | TPH D | TPH-Gas | B | T | EB | X | MTBE | DIPE | ETBE. | TAME | TBA | EDB | 1,2 DCA | Naph-thalene | Meth-anol | Eth-anol |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3/16/10 | <50 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | <0.50 | <0.50 | <0.50 | <0.50 | <5.0 | - | - | - | - | - |
| 8/19/09 | <50 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | <0.50 | <0.50 | <0.50 | <0.50 | <5.0 | - | - | - | - | - |
| 5/8/09 | <50 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | <0.50 | <0.50 | <0.50 | <0.50 | <5.0 | - | - | - | - | - |
| 2/27/09 | <50 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | <0.50 | <0.50 | <0.50 | <0.50 | <5.0 | - | - | - | - | - |
| 11/12/08 | <50 | <50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <5.0 | <1.0 | <1.0 | <1.0 | <1000 | <1000 |
| 9/9/08 | <50 | **80** | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <5.0 | - | - | - | - | - |
| 6/19/08 | <50 | **74** | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <5.0 | - | - | - | - | - |
| 3/12/08 | <50 | <50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <5.0 | - | - | - | - | - |
| 12/11/07 | **580** | <50 | <0.50 | <0.50 | <0.50 | <0.50 | **1.5** | <0.50 | <0.50 | <0.50 | <5.0 | <1.0 | - | <1.0 | - | - |
| 8/29/07 | - | <50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <5.0 | - | - | - | - | - |
| 7/06/07 | - | <50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <5.0 | - | - | - | - | - |
| 3/28/07 | <50 | <50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <5.0 | - | - | - | - | - |
| 11/15/06 | <50 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | <1.0 | <2.0 | <2.0 | <2.0 | <10 | - | - | - | - | - |
| 11/22/05 | <50 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | <1.0 | <2.0 | <2.0 | <2.0 | <10 | - | - | - | - | - |
| 8/25/05 | <50 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | <1.0 | <2.0 | <2.0 | <2.0 | <10 | - | - | - | - | - |
| 5/23/05 | <50 | <50 | <0.50 | **4.0** | <0.50 | <1.0 | <1.0 | <2.0 | <2.0 | <2.0 | <10 | - | - | - | - | - |

**TABLE II (continued)**
HISTORIC GROUNDWATER QUALITY RESULTS

Penryn Beacon
Penryn, California

Monitoring Well
**MW-5**
Results are in Parts Per Billion (ppb = ug/L)

| Date | TPH D | TPH-Gas | B | T | EB | X | MTBE | DIPE | ETBE. | TAME | TBA | EDB | 1,2 DCA | Naph-thalene | Meth-anol | Eth-anol |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3/16/10 | <50 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | <0.50 | <0.50 | <0.50 | <0.50 | <5.0 | - | - | - | - | - |
| 8/19/09 | <50 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | <0.50 | <0.50 | <0.50 | <0.50 | <5.0 | - | - | - | - | - |
| 5/8/09 | <50 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | <0.50 | <0.50 | <0.50 | <0.50 | <5.0 | - | - | - | - | - |
| 2/27/09 | <50 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | <0.50 | <0.50 | <0.50 | <0.50 | <5.0 | - | - | - | - | - |
| 11/12/08 | **51** | <50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <5.0 | <1.0 | <1.0 | <1.0 | <1000 | <1000 |
| 9/9/08 | <50 | **140** | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <5.0 | - | - | - | - | - |
| 6/19/08 | <50 | **70** | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <5.0 | - | - | - | - | - |
| 3/12/08 | <50 | <50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <5.0 | - | - | - | - | - |
| 12/11/07 | <500 | <50 | <0.50 | <0.50 | <0.50 | <0.50 | **0.68** | <0.50 | <0.50 | <0.50 | <5.0 | <1.0 | - | <1.0 | - | - |
| 8/29/07 | - | <50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <5.0 | - | - | - | - | - |
| 7/06/07 | - | <50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <5.0 | - | - | - | - | - |
| 3/28/07 | <50 | <50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <5.0 | - | - | - | - | - |
| 11/15/06 | <50 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | <1.0 | <2.0 | <2.0 | <2.0 | <10 | - | - | - | - | - |
| 11/22/05 | <50 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | <1.0 | <2.0 | <2.0 | <2.0 | <10 | - | - | - | - | - |
| 8/25/05 | <50 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | <1.0 | <2.0 | <2.0 | <2.0 | <10 | - | - | - | - | - |

# TABLE II (continued)

HISTORIC GROUNDWATER QUALITY RESULTS

Church of Jesus Christ of Latter Day Saints, Roseville Stake
3211 Boulder Creek Place
Penryn, CA

Water Well
**Well B**
Results are in Parts Per Billion (ppb = ug/L)

| Date | TPH D | TPH-Gas | B | T | EB | X | MTBE | DIPE | ETBE. | TAME | TBA |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 11/6/06 | <50 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | <1.0 | <2.0 | <2.0 | <2.0 | <10 |

Grab Groundwater Samples
Collected
February 17, 2005
Results are in Parts Per Billion (ppb = ug/L)

| Sample Loc. | TPH D | TPH-Gas | B | T | EB | X | MTBE | DIPE | ETBE. | TAME | TBA |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SB-7 | <50 | <50 | **1.0** | **0.82** | <0.50 | <1.0 | <1.0 | <2.0 | <2.0 | <2.0 | <10 |
| SB-8 | <50 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | <1.0 | <2.0 | <2.0 | <2.0 | <10 |

# Table III

Laboratory Test Results CAM 17 Metals
In Groundwater

Penryn Beacon
3129 Penryn Road
Penryn, California

By EPA Method 6010B and 7471A
Results are in Parts Per Billion (ppb = ug/L)

| Sample ID | | MW1 | MW-2 | MW-3 | MW-4 | MW-5 | DHS MCL |
|---|---|---|---|---|---|---|---|
| **Constituent** | **Date** | | | | | | |
| Antimony | 12/11/07 | <10 | <10 | <10 | <10 | <10 | 6 |
| | 11/15/06 | <7.8 | <7.8 | <7.8 | - | - | |
| Arsenic | 12/11/07 | <20 | <20 | <20 | <20 | <20 | 50 |
| | 11/15/06 | **10** | **8.8** | <5.7 | - | - | |
| Barium | 12/11/07 | **49** | **76** | **150** | **66** | **71** | 1,000 |
| | 11/15/06 | **58** | **150** | **69** | - | - | |
| Beryllium | 12/11/07 | <4.1 | <4.1 | <4.1 | <4.1 | <4.1 | 4 |
| | 11/15/06 | <0.97 | <0.97 | <0.97 | - | - | |
| Cadmium | 12/11/07 | <1.9 | <1.9 | <1.9 | <1.9 | <1.9 | 5 |
| | 11/15/06 | <1.8 | <1.8 | <1.8 | - | - | |
| Chromium* | 12/11/07 | <1.9 | <1.9 | <1.9 | <1.9 | <1.9 | 50 |
| | 11/15/06 | **2.1** | <1.7 | <1.7 | - | - | |
| Cobalt | 12/11/07 | **4.5** | <1.3 | <1.3 | <1.3 | <1.3 | --- |
| | 11/15/06 | <1.7 | **2.6** | <1.7 | - | - | |
| Copper | 12/11/07 | **19** | **13** | **15** | **12** | **8.7** | 1,300 |
| | 11/15/06 | <4.4 | <4.4 | <4.4 | - | - | |
| Lead | 12/11/07 | <8.6 | <8.6 | <8.6 | <8.6 | <8.6 | 15 |
| | 11/15/06 | <1.4 | <1.4 | <1.4 | - | - | |
| Mercury | 12/11/07 | **0.22** | **0.22** | **0.22** | **0.18** | **0.19** | 2** |
| | 11/15/06 | <0.50 | <0.50 | <0.50 | - | - | |
| Molybdenum | 12/11/07 | <5.7 | <5.7 | <5.7 | <5.7 | <5.7 | --- |
| | 11/15/06 | <1.9 | <1.9 | <1.9 | - | - | |
| Nickel | 12/11/07 | **11** | <3.3 | **6.4** | <3.3 | <3.3 | 100 |
| | 11/15/06 | <3.2 | **10** | <3.2 | - | - | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Selenium | 12/11/07 | <31 | <31 | <31 | <31 | <31 | 50 |
| | 11/15/06 | <14 | <14 | <14 | - | - | |
| Silver | 12/11/07 | <5 | <5 | <5 | <5 | <5 | 100s |
| | 11/15/06 | <0.69 | <0.69 | <0.69 | - | - | |
| Thallium | 12/11/07 | <14 | <14 | <14 | <14 | <14 | 2 |
| | 11/15/06 | <4.9 | <4.9 | <4.9 | - | - | |
| Vanadium | 12/11/07 | **6.8** | **6.4** | <3.1 | <3.1 | <3.1 | --- |
| | 11/15/06 | **6.6** | **3.4** | **5.1** | - | - | |
| Zinc | 12/11/07 | **13** | **17** | **13** | **10** | **6.6** | 5,000 |
| | 11/15/06 | **14** | **11** | <4.8 | - | - | |

** MCL for inorganic mercury. s Secondary MCL.
--- No primary or secondary MCL available.

California Department of Health Services (DHS) Primary Maximum Contamination Levels (MCL) for drinking water as outlined in A Compilation of Water Quality Goals developed by Central Valley Regional Water Quality Control Board (August 2003).

# INTERVIEW DOCUMENTATION

**County of Placer**
Land Information Search

3141 TAYLOR RD

3141 TAYLOR RD 043-013-010-000

## Details

APN
043-013-010-000

Street Address
3141 TAYLOR RD

Owner Address1
P O BOX 65912

Owner Address 2
SALT LAKE CITY UT 84165

Owner City
SALT LAKE CITY

Owner State
UT

Owner Zip
84165

Approx. Acres
43.1684

Elementary School District
LOOMIS UNION SCHOOL DISTRICT

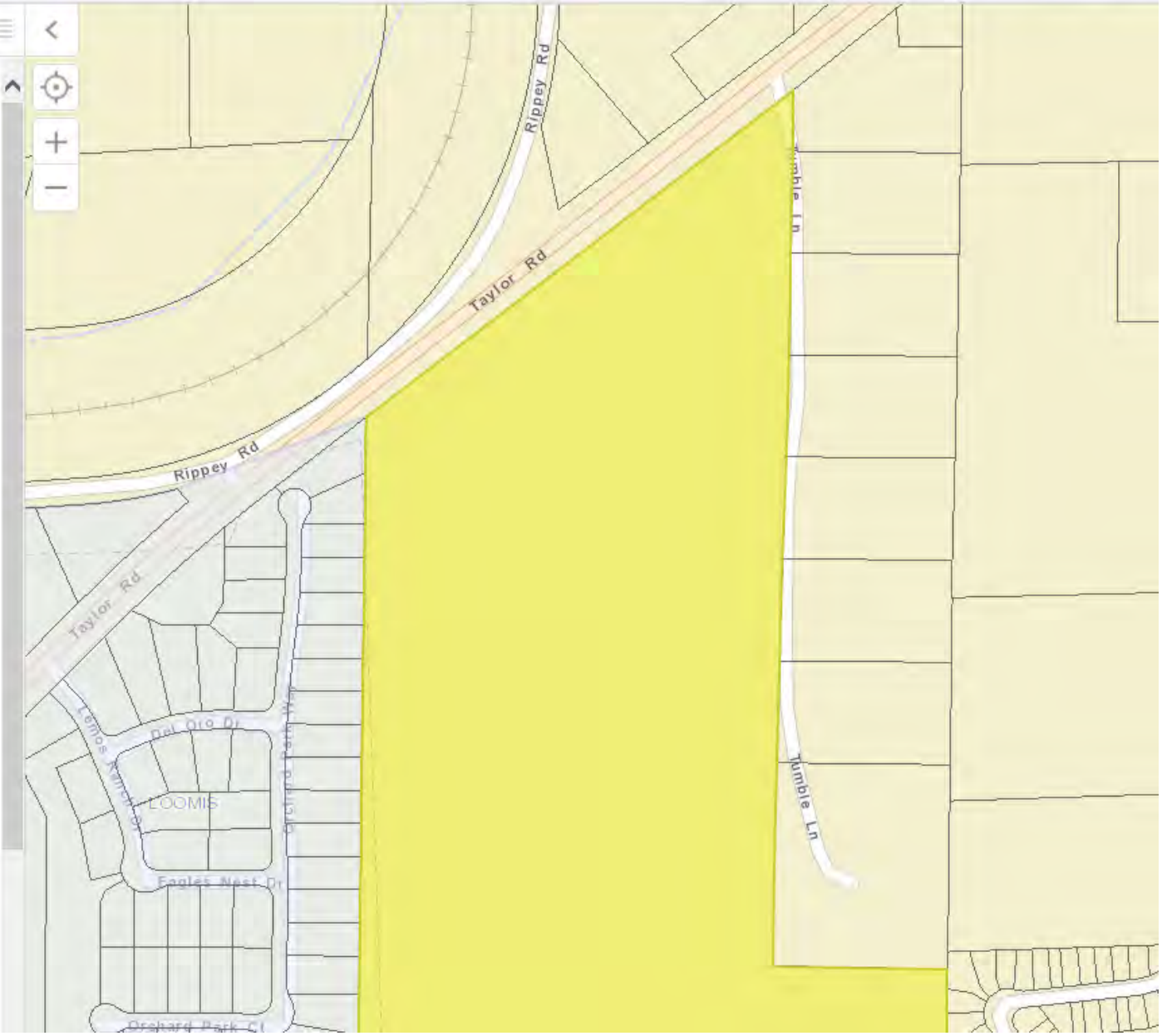
High School District
PLACER UNION HIGH SCHOOL DISTRICT

Fire District
PENRYN FPD

Community Plan
Horseshoe Bar/Penryn CP

Zoning
RA-B-100

General Plan Land Use
Rural Residential 2.3 - 4.6 Ac. Min



# DATA GAP WORKSHEET

Project Name:
Project Number:
Date:

# DATA GAP WORKSHEET

APPEND

| Requirement | Status | | | Other Sources of Information | SDG* |
|---|---|---|---|---|---|
| **Category**<br>Activity | N/A | Complete | Incomplete | **Reference other sources used in coordination with or to augment** | **Blank if None** |
| **User Responsibilities** | | | | | |
| User Knowledge and Information | | ☐ | ☐ | | |
| Environmental Lien and AUL Information | | ☐ | ☒ | Based on use, not an issue | |
| **Environmental Records Review** | | | | | |
| Standard Environmental Records Source Information | | ☒ | ☐ | | |
| Discretionary local environmental record information | ☐ | ☒ | ☐ | | |
| **Physical Setting Source** | | | | | |
| Standard Physical Setting Information | | ☒ | ☐ | | |
| Additional Physical Setting Record Information | ☐ | ☒ | ☐ | | |
| **Historical Records Review** | | | | | |
| Property History Identified to 1940 | | ☒ | ☐ | | |
| Property History Identified first Developed Use | | ☐ | ☒ | Based on use, not an issue | |
| Surrounding Property History Information | | ☒ | ☐ | | |
| **Site Reconnaissance** | | | | | |
| Observations: Exterior of the Subject Property | | ☒ | ☐ | | |
| Observations: Interior of the Subject Property | ☐ | ☒ | ☐ | | |
| Current and Past Uses of the Subject Property | | ☒ | ☐ | | |

**Project Name:**
**Project Number:**
**Date:**

# DATA GAP WORKSHEET

| Site Reconnaissance (cont.) | N/A | C | I | Other Sources of Information | SDG* |
|---|---|---|---|---|---|
| Observations: Adjoining Property | | ☒ | ☐ | | |
| Current and Past Uses of the Adjoining Property | | ☒ | ☐ | | |
| Uses of the Surrounding Area | | ☒ | ☐ | | |
| **Interviews (with...)** | | | | | |
| Current Owner or Identified Key Site Manager | | ☒ | ☐ | | |
| Non-Residential Major Occupants | ☐ | ☒ | ☐ | | |
| Occupants with operations likely to indicate RECs | ☐ | ☒ | ☐ | | |
| Past owners, operator, and occupants | ☐ | ☒ | ☐ | | |
| If subject property abandoned, owner or occupants of neighboring properties | ☒ | ☐ | ☐ | | |
| State or local government official | | ☒ | ☐ | | |

**Comments and Explanations**

*** SDG = Significant Data Gaps. List Identified SDGs in Section 1.1 of the Report**

# PERSONNEL QUALIFICATIONS

# Résumé

## Frank R. Poss, IV, REA

Department Manager

### Education

MS in Geology, Emphasis in Hydrogeology, San Diego State University, thesis pending
BA in Geology, Emphasis in Geochemistry, University of California, Santa Barbara, 1983

### Certifications/Registrations/Technical Training

Environmental Professional – Phase I ESA - PSI, Phase II ESA –PSI, Project Management - PSI
Registered Environmental Assessor, #REA05522, California
AHERA Asbestos Building Inspector – #28719 I
PSI IAQ/Mold Inspector

### Professional Experience

Mr. Poss has over 25 years experience in the management of environmental site assessments, groundwater and soil remediation projects, hazardous waste management, and subsurface investigation programs. His experience includes supervision of project and staff level personnel, as well as subcontractors, implementation of QA/QC programs and Health and Safety Programs, contractual negotiations, and budgetary management of projects ranging from $20,000 to over $1,000,000. He serves as the lead modeler for projects should these services is required. He has been using numerical models for two and three-dimensional flow and contaminate transport since 1988. He has utilized models to simulate existing flow conditions and to evaluate effectiveness of various groundwater remediation programs. He was the project manager for over $500,000 of work for the Navy, including projects that involved underground storage tank testing projects, wetlands studies, remedial investigation, data management, underground storage tank surveys, underground storage tank removals and landfill assessments. The projects included work throughout the State of California.

### Representative Phase I/II Environmental Site Assessment Project Experience

- McDonalds; San Jose, California-Project manager for over 50 Phase I/II ESA projects associated with future McDonalds restaurants. Typical Phase I ESA projects included completing site walk-through, aerial photograph review, data search, regulatory interviews, file review, chain-of-title search, and report preparation. Typical Phase II ESA projects included the collecting of soil samples as part of geotechnical studies at the site to verify that site remediation had been completed.
- Bank of America; San Francisco, California-Project manager for over 200 Phase I ESA projects. Site investigation included apartment buildings, strip malls, light industrial, and commercial properties. The Phase I ESAs was typically completed within three weeks of authorization and was completed according to standard protocol.
- Fidelity Federal Bank; Northern California-Project manager for Phase I ESAs for scheduled property acquisition/development. Also provided consultation services as a third-party reviewer for work performed by other consultants for the client. Completed environmental assessments on 64 properties throughout the State of California, including Sacramento and Citrus Heights, within three weeks of authorization. The environmental assessments were completed according to standard protocol and included regulatory record review, site reconnaissance, aerial photograph interpretation, and report preparation.
- Citigroup, California-Project manager for over 100 Phase I ESAs for Citigroup branch and office buildings. The work performed included the completion of a comprehensive asbestos survey of two of the buildings, historical records research, and interviews with on-site personnel, and aerial photograph review.

## Representative Roadway Assessment Project Experience

- State of California Department of Transportation; Richmond, California-Project manager for a wetlands mitigation project for CalTrans on three abandoned landfills adjacent to San Francisco Bay. The project objective was to determine which site would be most suitable for wetlands mitigation based on the volume of contaminated soil to be removed and the potential for soil left in-place to sustain wetland habitat. The project included a soil-gas survey for methane and halogenated volatile organics, soil sampling of each of the landfills, installation of temporary monitoring wells, surface and groundwater sampling, extensive data analyses, and report preparation. The work was conducted under the State of California Department of Toxic Substances Control.
- State of California Department of Transportation; Solano County, California-Project manager for a site investigation for CalTrans for the widening of US-29 in Solano County California. The project objective was to determine whether soil and groundwater generated during construction activities would be handled as hazardous waste. The project included the drilling of over 150 borings along the highway, as well as the collection of over 25 surface water samples.
- State of California Department of Transportation; Emeryville, California-Project manager for a site investigation for CalTrans at the "Maze" (the busiest freeway intersection in Northern California). The project was conducted as part of the seismic retrofit program. The project objective was to evaluate whether soil and groundwater generated during seismic retrofitting would be handled as a hazardous waste. The project included the drilling of over 120 borings and the analyses of these samples for metals, volatile organics, semi-volatile organics, and PCBs.

## Representative Petroleum Project Experience

- Texaco USA; Healdgburg, California-Project manager for installing six monitoring wells, as well as abandoning two existing monitoring wells and one recovery well at the Healdgburg site. The monitoring wells were drilled to identify the horizontal and vertical extent of petroleum hydrocarbon contamination associated with a leaking underground storage tank in a dual aquifer system. The monitoring wells were continuously cored to insure that the well screens were entirely in the upper and lower aquifers. The analytical data was utilized to create a concentration map of petroleum hydrocarbons on a lithologic cross-section to identify contaminant migration pathways.
- Unocal Corporation; San Carlos, California-Project manager for an investigation and remediation program under the jurisdiction of San Mateo County Office of Environmental Health. During an underground pipe refitting at the subject property, soil contamination was noted underneath two of the dispensers. PSI personnel, using on-site vapor meters, differentiated contaminated from clean soil and supervised the excavation of the contaminated soil. PSI drilled conformational borings at site to insure that contaminated soil had been excavated. PSI completed a cost analyses of disposal options for the soil and concluded that disposal at a recycling facility would be the most cost-effective remediation option.
- Secured Capital Corporation; Northern California and Nevada-Project manager for four projects conducted concurrently in Northern California and Nevada associated with the investigation of LUST. The projects were part of a property transaction and were completed within a three-week timeline. The work was conducted at a post office, Pacific Bell yard, and two Pacific Gas and Electric yards. The projects included the drilling of numerous borings and the collection of soil and grab groundwater samples adjacent to USTs.

- State of California Dept of Transportation; Vallejo, California-Project manager for a site investigation, which included the installation of numerous monitoring wells and borings at site. Collected soil samples were used to define the vertical and horizontal extent of soil contamination at the property. As horizontal extent of soil contamination could not be defined by the original set of borings and wells, recommendations on location and number of additional borings and monitoring wells was forwarded to the client. PSI performed a subsequent investigation at the property about one year after the initial project. The additional investigation included the drilling of three additional monitoring wells and the drilling of three additional limited access borings.
- Unocal Corporation; San Leandro, California-Project manager for a vapor extraction and aquifer test at the site to define the characteristics of the aquifer. The results of the vapor extraction and aquifer tests were utilized in a numerical model to identify the optimum number of wells and the pumping rates to remediate the site. The result of the tests and the numerical modeling were used in a feasibility test which included identifying remedial alternatives, selecting a remediation program based on technical acceptability, construction and operational cost, and regulatory acceptance. Permits from local agencies were then obtained and the remedial system constructed.
- Shell Corporation; Brea, California-Project manager for tank removal with the use of a mobile laboratory, soil contamination was confirmed during excavation, soil was transported to a licensed facility. Numerical model of the subsurface was prepared and various remediation alternatives superimposed to identify the most effective solution. A remediation plan was developed and submitted to the appropriate agencies. County, local, and NPDES permits were obtained to implement the remediation plan. A network of subsurface piping linking recovery wells to a centralized treatment facility was established during redevelopment of the property. The groundwater was treated with activated carbon and then discharged into local storm drain. Site now operates as fast food facility with on-going groundwater recovery/treatment.

### Representative Hazardous Waste Project Experience

- Port of Long Beach; Long Beach, California-Project hydrogeologist on a project that included a surface and subsurface investigation to determine the environmental impact of fugitive coke from a storage facility. The investigation included continuous coring, installing wells, soil and groundwater sampling, and analysis of the collected data. The investigation identified copper and other heavy metals in the coke. These metals appeared to have attenuated in the shallow soils and were not identified in the groundwater. The fieldwork included the installation, development, and sampling of groundwater wells. Continuous core samples were also collected during sampling procedure. Data was utilized to estimate leaching potential of heavy metals, identification of environmental pathways/receptors, fate/transport of identified constituents.
- Lyons & Lyons Properties; Paramount, California-Project hydrogeologist on project involving assessment and cleanup of an unlined surface impoundment originally developed to collect surface runoff. Due to the nature of the surrounding industry, an assessment of the pond was initiated prior to the selling of property. Soil samples were collected from the bottom sediments of the impoundment and analyzed for metals, volatile organics, and base neutral extractable to provide broad coverage. Based on the results of the study, a cleanup program was required by the State of California. Prepared remedial action plan, and coordinated/supervised all cleanup activities at site.
- Parker Hannifin; Irvine, California-Project manager on an extensive soil and groundwater investigation to determine the vertical and lateral extent of contamination from chlorinated solvents as well as potential sources of this contamination. The investigation was initiated with an extensive soil-gas survey that identified the sources of contamination as well as the magnitude of the contaminated area. Subsequently wells were installed and groundwater samples made to determine the lateral extent of contamination. The direction of groundwater flow was determined as well as the hydraulic properties of the aquifer. A

geophysical survey was conducted and identified a subsurface stream channel which facilitated the transport of the contamination. A numerical model of the site was constructed to allow superimposition of various remedial alternatives.

- ESA SEQUA; El Cajon, California-Project manager on remediation program that was designed and implemented by PSI with approval from client and the regulatory agencies. Pentochlorophenol and metal contaminated soil was excavated and segregated with the use of a mobile laboratory into non-hazardous, hazardous, and extremely hazardous stockpiles for transport to the appropriate disposal facilities. The property transfer was completed as scheduled and the site is now operational.
- Parker Hannifin; Irvine, California-Project manager for a remedial design and implementation at Parker Hannifin facility. Carbon absorption, air stripping, and Ultraviolet (UV)/Ozone treatments were identified as effective treatment technologies with UV/Ozone as preferred technology based on regulatory acceptance and operational costs. Bench scale tests and a pilot study of two vendors of the technology were conducted to determine the effectiveness of the respective treatment systems. NPDES, air quality, and local permits as well as a remedial action plan were prepared, submitted, and approved to allow implementation of the remediation program. PSI's field services group constructed a subsurface conveyance system, installed pumps in wells, and constructed the treatment site. The final remediation system included UV/Ozone with the discharge polished by activated carbon. To minimize operational costs, implement cost recovery actions, as well as for public relations, options for utilizing the discharge water were developed. These options included irrigation water and supply water for on-site metal plating facility in addition to discharge to local storm drain.
- State of California Department of Transportation; Oakland, California-Project manager for remedial design program for CalTrans for the removal of metal contaminated soil associated with four overpasses in Oakland, California. The remedial design program included establishing limits of contamination, possible remedial alternatives, and possible landfill sites.

**Years experience with other firms: 9**
**Year started with PSI: 1993**

# APPENDIX I

CORNERSTONE
EARTH GROUP

| | |
|---|---|
| Date: | December 22, 2016 |
| Proposal No.: | 411-16-1 |
| Prepared For: | Ms. Tiffany Wilson<br>**RSC ENGINEERING, INC.**<br>2250 Douglas Boulevard, Suite 150<br>Roseville, California 95661 |
| Re: | Limited Phase II Soil Quality Evaluation<br>3141 Taylor Road<br>Loomis, California |

Dear Ms. Wilson:

We are pleased to present this letter summarizing the results of the soil samples collected at 3141 Taylor Road in Loomis, California (Site). This work was performed for RSC Engineering, Inc. in accordance with our December 14, 2016 Agreement (Agreement).

## SITE DESCRIPTION

Based on preliminary information provided by you, approximately 24-acres of the approximately 42-acre property appears to have historically been occupied by orchards. Several residential structures and out building remain on the property, but are currently unoccupied. The site is located in an area with residential developments.

Based on conversations and documents provided by you, we understand that the property owner (United Auburn Indian Community) plans to develop the Site with a private school. The school will include an elementary school, a middle school, a tribal education center, library with pre-kindergarten classrooms and science/cultural arts buildings. A recreation field, garden and paddock/farm area also are planned.

## PURPOSE

The purpose of this work was to evaluate surface soil for impacts associated with historical agricultural activities.

## SOIL SAMPLING

On December 16, 2016, our staff geologist visited the Site to collect 24 near-surface soil samples from across the former agricultural area of the Site, with approximately one sample per acre (Figure 2). Sample frequency of the former agricultural area was selected in accordance with the Department of Toxic Substances Control (DTSC) "Interim Guidance for Sampling Agricultural Fields for School Sites (Second Revision)" (August 26, 2002). Samples were collected from the natural ground surface to a depth of approximately ½ foot using hand-sampling equipment.

Following standard protocols, Cornerstone's staff engineer collected soil samples in new and pre-cleaned 2½ inch by 6-inch stainless steel liners and were taped, capped, and labeled with a unique identification number. All samples were labeled with a unique name and were placed in

an ice chilled cooler and transported under chain of custody documentation to a State certified analytical testing lab.

## LABORATORY ANALYSES

To evaluate the soil quality, the samples were analyzed for organochlorine pesticides (OCPs) (EPA Test Method 8081), and pesticide related metals (arsenic, lead, and mercury) (EPA Test Method 6010/7000). Analytical laboratory reports are presented in Attachment A.

The results were compared to the residential screening levels (DTSC-SL) recommended in the DTSC Office of Human and Ecological Risk (HERO) guidance document Human Health Risk Assessment Note 3 (2016). For parameters and compounds where no DTSC-SLs are established, the detected compounds were compared to the residential Regional Screening Levels (RSLs) established by the USEPA Region 9 (USEPA, May 2016) using a Hazard Quotient (HQ) of 1. Natural background concentrations of arsenic are often well above the health-based RSL of 0.67 mg/kg; however, DTSC generally does not require cleanup of metals in soil to below background levels. Bradford et.al. (1996) estimated that background arsenic concentrations in California soil types range from 0.6 mg/kg to 11 mg/kg. The screening levels and background concentrations used are provided in the attached tables.

Where established, the total concentrations results were also compared to their respective Total Threshold Limit Concentration (TTLC) for determination of a non-RCRA (California) hazardous waste.

## STATISTICAL EVALUATION

To assist in evaluating the reported data, the 95 percent upper confidence limit (UCL) was calculated for arsenic using the USEPA ProUCL Version 5 statistical software (USEPA, 2013). Because of the uncertainty associated with estimating the true average concentration at a site, the 95 percent UCL of the arithmetic mean can be used for this variable. The 95 percent UCL provides reasonable confidence that the true site average concentration will not be underestimated. The 95 percent UCL of a mean is defined as a value that, when calculated repeatedly for randomly drawn subsets of site data, equals or exceeds the true mean 95 percent of the time. The 95 percent UCL of the mean provides a conservative estimate of the average (or mean) concentration. A chemical contaminant is not considered to be present at a level of concern if the calculated 95 percent UCL is less than its respective regulatory threshold concentration (USEPA, 2007).

The calculated UCL concentration is discussed below. ProUCL input and output data sheets are included in Attachment B.

## SUMMARY OF SOIL ANALYTICAL DATA

- Dichlorodiphenyltrichloroethane (DDT) was detected in 22 of 24 soil samples at concentrations up to 0.138 mg/kg. The residential RSL for DDT is 1.9 mg/kg. The DDT detected in the Site's topsoil does not appear to pose a significant risk to human health for the planned school Site use.

- Dichlorodiphenyldichloroethane(DDD) was detected in 2 of 24 soil samples at concentrations up to 0.0.0186 mg/kg. The residential RSL for DDD is 2.2 mg/kg. The DDD detected in the Site's topsoil does not appear to pose a significant risk to human

health for the planned school Site use.

- Dichlorodiphenyldichloroethylene (DDE) was detected in 24 of 24 soil samples at concentrations ranging up to 0.522 mg/kg. The residential RSL for DDE is 1.6 mg/kg. The DDE detected in the Site's topsoil does not appear to pose a significant risk to human health for the planned school Site use.

- Total DDT (the sum of DDT, DDD and DDE) was detected at concentrations of less than 1.0 mg/kg in the 24 soil samples analyzed.

- No other OCPs were detected.

- Lead was detected in 28 of 28 discrete samples ranging from 3.75 mg/kg to 79.8 mg/kg, below the DTSC-SL for lead of 80 mg/kg.

- Arsenic was detected in 24 of 24 samples at concentrations ranging from 4.07 mg/kg and 29.2 mg/kg. The 95% UCL for arsenic was calculated at 11.8 mg/kg.

- Mercury was not detected above the laboratory reporting limits.

## CONCLUSIONS AND RECOMMENDATIONS

Based on limited soil sampling performed, surface soil in the former orchard area does not appear significantly impacted by OCPs, lead or mercury.

Concentrations of arsenic detected exceeded published background levels in several soil samples. We recommend discussing the Site with the DTSC to evaluate their requirements for oversight. Based on our experience with school sites, the DTSC may require the submittal of a Preliminary Endangerment Assessment (PEA) report for their review. Additional soil sampling may be required for the preparation of the PEA, such as collection and analysis of deeper soil samples and background soil samples.

## LIMITATIONS

This letter, an instrument of professional service, was prepared for the sole use of RSC Engineering Inc. and United Auburn Indian Community (UAIC), and may not be reproduced or distributed without written authorization from Cornerstone. The chemical data presented in this report may change over time and are only valid for this time and location. RSC Engineering Inc. and UAIC understand that Cornerstone reviewed and relied on the information presented in these reports and cannot be responsible for their accuracy. Cornerstone makes no warranty, expressed or implied, except that our services have been performed in accordance with the environmental principles generally accepted at this time and location.

## CLOSING

Should you have any questions regarding this letter, or if we may be of further service, please contact us at your convenience.

Sincerely,

CORNERSTONE
EARTH GROUP

**Cornerstone Earth Group, Inc.**

**Peter Langtry, P.G., C.E.G.**
Principal Geologist

| | |
|---|---|
| Attachments: | Figures<br>Data Summary Tables<br>Attachment A: Laboratory Data Sheets<br>Attachment B: Arsenic UCL Calculation Spreadsheet |
| Copies: | Addressee (1 by email) |

## REFERENCES

Cal/EPA. Revised September 2010. *Use of California Human Health Screening Levels (CHHSLs) in Evaluation of Contaminated Properties.*

DTSC and Cal/EPA. Revised August 2002. *Interim Guidance for Sampling Agricultural Fields for School Sites.*

Kearney Foundation of Soil Science. March 1996. *Background Concentrations of Trace and Major Elements in California Soils.*

U.S. EPA. Revised May 2016. *Regional Screening Level (RSL) Summary Table.* http://www.epa.gov/region9/superfund/prg/

CORNERSTONE EARTH GROUP

**Vicinity Map**

**3141 Taylor Road**
**Loomis, CA**

| | |
|---|---|
| Project Number | 411-16-1 |
| Figure Number | Figure 1 |
| Date December 2016 | Drawn By RRN |

0 160 320

APPROXIMATE SCALE (FEET)

**Legend**

Approximate location of soil sample (SS)

Base by Google Earth, dated 7/10/2016
Overlay by RSC Engineering, Topographic Survey, dated October 2016

CORNERSTONE EARTH GROUP

**Site Plan**

3141 Taylor Road
Loomis, CA

| | |
|---|---|
| Project Number | 411-16-1 |
| Figure Number | Figure 2 |
| Date | December 2016 |
| Drawn By | RRN |

CORNERSTONE EARTH GROUP

## DATA SUMMARY TABLE

CORNERSTONE EARTH GROUP

**Table 1. Analytical Results of Selected Soil Samples: OCPs and Metals**
(Concentrations in mg/kg)

| Sample ID | Date | Depth (feet) | 4,4´-DDD | 4,4´-DDE | 4,4´-DDT | DDT Total | Arsenic | Lead | Mercury |
|---|---|---|---|---|---|---|---|---|---|
| SS-1 (0-1/2') | 12/16/2016 | 0-½ | <0.0023 | 0.14 | 0.0201 | 0.1601 | 4.98 | 27.9 | <0.50 |
| SS-2 (0-1/2') | 12/16/2016 | 0-½ | <0.0057 | 0.0291 | 0.0117 | 0.0408 | 8.46 | 15.2 | <0.50 |
| SS-3 (0-1/2') | 12/16/2016 | 0-½ | <0.0023 | 0.0112 | 0.00458 | 0.01578 | 9.07 | 21.7 | <0.50 |
| SS-4 (0-1/2') | 12/16/2016 | 0-½ | <0.002 | 0.0456 | 0.0106 | 0.0562 | **16.2** | 28.2 | <0.50 |
| SS-5 (0-1/2') | 12/16/2016 | 0-½ | <0.0023 | 0.14 | 0.0167 | 0.1567 | 8.54 | 34.6 | <0.50 |
| SS-6 (0-1/2') | 12/16/2016 | 0-½ | <0.002 | 0.043 | 0.0194 | 0.0624 | **13** | 18.1 | <0.50 |
| SS-7 (0-1/2') | 12/16/2016 | 0-½ | <0.0023 | 0.426 | 0.0971 | 0.5231 | **11** | 31.6 | <0.50 |
| SS-8 (0-1/2') | 12/16/2016 | 0-½ | <0.0023 | 0.124 | 0.0265 | 0.1505 | **12.1** | 36.1 | <0.50 |
| SS-9 (0-1/2') | 12/16/2016 | 0-½ | <0.0023 | 0.444 | 0.0623 | 0.5063 | 9.06 | 21 | <0.50 |
| SS-10 (0-1/2') | 12/16/2016 | 0-½ | <0.0023 | 0.0937 | 0.0238 | 0.1175 | 9.56 | 12.3 | <0.50 |
| SS-11 (0-1/2') | 12/16/2016 | 0-½ | <0.002 | 0.00335 | <0.002 | 0.00335 | 4.4 | 3.75 | <0.50 |
| SS-12 (0-1/2') | 12/16/2016 | 0-½ | <0.02 | 0.398 | 0.138 | 0.536 | **29.2** | 79.8 | <0.50 |
| SS-13 (0-1/2') | 12/16/2016 | 0-½ | <0.0017 | 0.0643 | 0.0146 | 0.0789 | 7.22 | 12.5 | <0.50 |
| SS-14 (0-1/2') | 12/16/2016 | 0-½ | 0.0186 | 0.522 | 0.106 | 0.6466 | 6.37 | 23.4 | <0.50 |
| SS-15 (0-1/2') | 12/16/2016 | 0-½ | 0.00694 | 0.0624 | 0.00694 | 0.07628 | 7.11 | 21.2 | <0.50 |
| SS-16 (0-1/2') | 12/16/2016 | 0-½ | <0.0023 | 0.315 | 0.0434 | 0.3584 | **13.8** | 43.1 | <0.50 |
| SS-17 (0-1/2') | 12/16/2016 | 0-½ | <0.0057 | 0.15 | 0.0339 | 0.1839 | **11.5** | 23.3 | <0.50 |
| SS-18 (0-1/2') | 12/16/2016 | 0-½ | <0.0023 | 0.013 | <0.0023 | 0.013 | 4.07 | 9.35 | <0.50 |
| SS-19 (0-1/2') | 12/16/2016 | 0-½ | <0.002 | 0.0112 | 0.00772 | 0.01892 | 10.1 | 18.1 | <0.50 |
| SS-20 (0-1/2') | 12/16/2016 | 0-½ | <0.0023 | 0.0997 | 0.0152 | 0.1149 | 9.65 | 38.8 | <0.50 |
| SS-21 (0-1/2') | 12/16/2016 | 0-½ | <0.0023 | 0.0678 | 0.0114 | 0.0792 | 5.46 | 17.1 | <0.50 |
| SS-22 (0-1/2') | 12/16/2016 | 0-½ | <0.0023 | 0.259 | 0.0579 | 0.3169 | **14.1** | 32.3 | <0.50 |
| SS-23 (0-1/2') | 12/16/2016 | 0-½ | <0.0023 | 0.0228 | 0.0105 | 0.0333 | 8.2 | 12.1 | <0.50 |
| SS-24 (0-1/2') | 12/16/2016 | 0-½ | <0.0023 | 0.0368 | 0.0156 | 0.0524 | 7.27 | 13.5 | <0.50 |
| Screening Criteria | | | 2.3 | 2.0 | 1.9 | 1.0 | 11 | 80 | 1.0 |
| Basis | | | RSL [1] | RSL [1] | RSL [1] | TTLC [2] | BG [3] | DTSC-SL[4] | DTSC-SL[4] |

1 Regional Screening Level (RSL), USEPA Region 9 - May 2016.
2 Total Threshold Limit Concentration - California Code of Regulations, Title 22.
3 Bradford, et. al. March 1996. Background Concentrations of Trace and Major Elements in California Soils. Background range of 0.6 mg/kg to 11 mg/kg, with an upper quartile of 4.7 mg/kg.
4 Recommended Screening Level (SL), HERO Note 3 - June 2016
< Not detected at or above laboratory reporting limit
NE Not Established
**BOLD** Concentration exceeds selected environmental screening criteria

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# ATTACHMENT A – SOIL ANALYTICAL DATASHEETS

Torrent
LABORATORY, INC.

Cornerstone(Walnut Creek)
1270 Springbrook Rd., Ste. 101
Walnut Creek, California 94597
Tel: 925 988 9500
Fax: 925 988 9501

RE: 3141 Taylor Road SQ

Work Order No.: 1612152

Dear Peter Langtry:

Torrent Laboratory, Inc. received 12 sample(s) on December 16, 2016 for the analyses presented in the following Report.

All data for associated QC met EPA or laboratory specification(s) except where noted in the case narrative.

Torrent Laboratory, Inc. is certified by the State of California, ELAP #1991. If you have any questions regarding these test results, please feel free to contact the Project Management Team at (408)263-5258; ext 204.

Patti L Sandrock
QA Officer

December 21, 2016
Date

Torrent LABORATORY, INC.

**Date:** 12/21/2016

**Client:** Cornerstone(Walnut Creek)

**Project:** 3141 Taylor Road SQ

**Work Order:** 1612152

## CASE NARRATIVE

No issues encountered with the receiving, preparation, analysis or reporting of the results associated with this work order.

Unless otherwise indicated in the following narrative, no results have been method and/or field blank corrected.

Reported results relate only to the items/samples tested by the laboratory.

This report shall not be reproduced, except in full, without the written approval of Torrent Analytical, Inc.

Analytical Comments for method EPA 7471, 1612152-001A MSD, QC Analytical Preparation Batch ID 4109, Note:The % recovery for Mercury are outside of laboratory control limits but % RPD is within limits. The associated LCS/LCSD is within both % Recovery and %RPD limits. No corrective action required.

Analytical Comments for method 8081, QC Analytical Preparation Batch ID 4103, Note: MS/MSD did not meet acceptance criteria for % recovery. The associated LCS/LCSD is within both % Recovery and %RPD limits. No corrective action required.

Torrent LABORATORY, INC.

# Sample Result Summary

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date Received:** 12/16/16
**Date Reported:** 12/21/16

**SS-1 (0-1/2')** 1612152-001

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Arsenic | SW6010B | 1 | 0.15 | 1.3 | 4.98 | mg/Kg |
| Lead | SW6010B | 1 | 0.12 | 3.0 | 27.9 | mg/Kg |
| 4,4-DDE | SW8081A | 4 | 0.78 | 8.0 | 140 | ug/Kg |
| 4,4-DDT | SW8081A | 4 | 0.52 | 8.0 | 20.1 | ug/Kg |

**SS-2 (0-1/2')** 1612152-002

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Arsenic | SW6010B | 1 | 0.15 | 1.3 | 8.46 | mg/Kg |
| Lead | SW6010B | 1 | 0.12 | 3.0 | 15.2 | mg/Kg |
| 4,4-DDE | SW8081A | 10 | 1.9 | 20 | 29.1 | ug/Kg |
| 4,4-DDT | SW8081A | 10 | 1.3 | 20 | 11.7 | ug/Kg |

**SS-3 (0-1/2')** 1612152-003

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Arsenic | SW6010B | 1 | 0.15 | 1.3 | 9.07 | mg/Kg |
| Lead | SW6010B | 1 | 0.12 | 3.0 | 21.7 | mg/Kg |
| 4,4-DDE | SW8081A | 4 | 0.78 | 8.0 | 11.2 | ug/Kg |
| 4,4-DDT | SW8081A | 4 | 0.52 | 8.0 | 4.58 | ug/Kg |

**SS-4 (0-1/2')** 1612152-004

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Arsenic | SW6010B | 1 | 0.15 | 1.3 | 16.2 | mg/Kg |
| Lead | SW6010B | 1 | 0.12 | 3.0 | 28.2 | mg/Kg |
| 4,4-DDE | SW8081A | 1 | 0.19 | 2.0 | 45.6 | ug/Kg |
| 4,4-DDT | SW8081A | 1 | 0.13 | 2.0 | 10.6 | ug/Kg |

**SS-5 (0-1/2')** 1612152-005

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Arsenic | SW6010B | 1 | 0.15 | 1.3 | 8.54 | mg/Kg |
| Lead | SW6010B | 1 | 0.12 | 3.0 | 34.6 | mg/Kg |
| 4,4-DDE | SW8081A | 4 | 0.78 | 8.0 | 140 | ug/Kg |
| 4,4-DDT | SW8081A | 4 | 0.52 | 8.0 | 16.7 | ug/Kg |

Torrent LABORATORY, INC.

## Sample Result Summary

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date Received:** 12/16/16
**Date Reported:** 12/21/16

**SS-6 (0-1/2')** 1612152-006

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Arsenic | SW6010B | 1 | 0.15 | 1.3 | 13.0 | mg/Kg |
| Lead | SW6010B | 1 | 0.12 | 3.0 | 18.1 | mg/Kg |
| 4,4-DDE | SW8081A | 1 | 0.19 | 2.0 | 43.0 | ug/Kg |
| 4,4-DDT | SW8081A | 1 | 0.13 | 2.0 | 19.4 | ug/Kg |

**SS-7 (0-1/2')** 1612152-007

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Arsenic | SW6010B | 1 | 0.15 | 1.3 | 11.0 | mg/Kg |
| Lead | SW6010B | 1 | 0.12 | 3.0 | 31.6 | mg/Kg |
| 4,4-DDE | SW8081A | 10 | 1.9 | 20 | 426 | ug/Kg |
| 4,4-DDT | SW8081A | 4 | 0.52 | 8.0 | 97.1 | ug/Kg |

**SS-8 (0-1/2')** 1612152-008

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Arsenic | SW6010B | 1 | 0.15 | 1.3 | 12.1 | mg/Kg |
| Lead | SW6010B | 1 | 0.12 | 3.0 | 36.1 | mg/Kg |
| 4,4-DDE | SW8081A | 4 | 0.78 | 8.0 | 124 | ug/Kg |
| 4,4-DDT | SW8081A | 4 | 0.52 | 8.0 | 26.5 | ug/Kg |

**SS-9 (0-1/2')** 1612152-009

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Arsenic | SW6010B | 1 | 0.15 | 1.3 | 9.06 | mg/Kg |
| Lead | SW6010B | 1 | 0.12 | 3.0 | 21.0 | mg/Kg |
| 4,4-DDE | SW8081A | 10 | 1.9 | 20 | 444 | ug/Kg |
| 4,4-DDT | SW8081A | 4 | 0.52 | 8.0 | 62.3 | ug/Kg |

**SS-10 (0-1/2')** 1612152-010

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Arsenic | SW6010B | 1 | 0.15 | 1.3 | 9.56 | mg/Kg |
| Lead | SW6010B | 1 | 0.12 | 3.0 | 12.3 | mg/Kg |
| 4,4-DDE | SW8081A | 4 | 0.78 | 8.0 | 93.7 | ug/Kg |
| 4,4-DDT | SW8081A | 4 | 0.52 | 8.0 | 23.8 | ug/Kg |

**SS-11 (0-1/2')** 1612152-011

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Arsenic | SW6010B | 1 | 0.15 | 1.3 | 4.40 | mg/Kg |
| Lead | SW6010B | 1 | 0.12 | 3.0 | 3.75 | mg/Kg |
| 4,4-DDE | SW8081A | 1 | 0.19 | 2.0 | 3.35 | ug/Kg |

Torrent LABORATORY, INC.

## Sample Result Summary

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date Received:** 12/16/16
**Date Reported:** 12/21/16

**SS-12 (0-1/2')** 1612152-012

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Arsenic | SW6010B | 1 | 0.15 | 1.3 | 29.2 | mg/Kg |
| Lead | SW6010B | 1 | 0.12 | 3.0 | 79.8 | mg/Kg |
| 4,4-DDE | SW8081A | 10 | 1.9 | 20 | 398 | ug/Kg |
| 4,4-DDT | SW8081A | 10 | 1.3 | 20 | 138 | ug/Kg |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 12/16/16, 2:02 pm
**Date Reported:** 12/21/16

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-1 (0-1/2') | **Lab Sample ID:** | 1612152-001A |
| **Project Name/Location:** | 3141 Taylor Road SQ | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-1 | | |
| **Date/Time Sampled:** | 12/16/16 / 10:15 | | |
| **SDG:** | | | |

**Prep Method:** 3050B — **Prep Batch Date/Time:** 12/19/16 1:30:00PM
**Prep Batch ID:** 4102 — **Prep Analyst:** PPATEL

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | SW6010B | 1 | 0.15 | 1.3 | **4.98** | | mg/Kg | 12/19/16 | 20:16 | PPATEL | 421675 |
| Lead | SW6010B | 1 | 0.12 | 3.0 | **27.9** | | mg/Kg | 12/19/16 | 20:16 | PPATEL | 421675 |

**Prep Method:** 3546_OCP — **Prep Batch Date/Time:** 12/19/16 5:52:00PM
**Prep Batch ID:** 4103 — **Prep Analyst:** SNARASIMHAN

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| alpha-BHC | SW8081A | 4 | 0.51 | 8.0 | ND | | ug/Kg | 12/20/16 | 15:46 | LA | 421705 |
| gamma-BHC (Lindane) | SW8081A | 4 | 0.64 | 8.0 | ND | | ug/Kg | 12/20/16 | 15:46 | LA | 421705 |
| beta-BHC | SW8081A | 4 | 1.3 | 8.0 | ND | | ug/Kg | 12/20/16 | 15:46 | LA | 421705 |
| delta-BHC | SW8081A | 4 | 0.62 | 8.0 | ND | | ug/Kg | 12/20/16 | 15:46 | LA | 421705 |
| Heptachlor | SW8081A | 4 | 0.42 | 8.0 | ND | | ug/Kg | 12/20/16 | 15:46 | LA | 421705 |
| Aldrin | SW8081A | 4 | 0.78 | 8.0 | ND | | ug/Kg | 12/20/16 | 15:46 | LA | 421705 |
| Heptachlor Epoxide | SW8081A | 4 | 0.31 | 8.0 | ND | | ug/Kg | 12/20/16 | 15:46 | LA | 421705 |
| gamma-Chlordane | SW8081A | 4 | 0.65 | 8.0 | ND | | ug/Kg | 12/20/16 | 15:46 | LA | 421705 |
| alpha-Chlordane | SW8081A | 4 | 0.69 | 8.0 | ND | | ug/Kg | 12/20/16 | 15:46 | LA | 421705 |
| 4,4-DDE | SW8081A | 4 | 0.78 | 8.0 | **140** | | ug/Kg | 12/20/16 | 15:46 | LA | 421705 |
| Endosulfan I | SW8081A | 4 | 0.73 | 8.0 | ND | | ug/Kg | 12/20/16 | 15:46 | LA | 421705 |
| Dieldrin | SW8081A | 4 | 0.59 | 8.0 | ND | | ug/Kg | 12/20/16 | 15:46 | LA | 421705 |
| Endrin | SW8081A | 4 | 0.75 | 8.0 | ND | | ug/Kg | 12/20/16 | 15:46 | LA | 421705 |
| 4,4-DDD | SW8081A | 4 | 2.3 | 8.0 | ND | | ug/Kg | 12/20/16 | 15:46 | LA | 421705 |
| Endosulfan II | SW8081A | 4 | 2.3 | 8.0 | ND | | ug/Kg | 12/20/16 | 15:46 | LA | 421705 |
| 4,4-DDT | SW8081A | 4 | 0.52 | 8.0 | **20.1** | | ug/Kg | 12/20/16 | 15:46 | LA | 421705 |
| Endrin Aldehyde | SW8081A | 4 | 0.60 | 8.0 | ND | | ug/Kg | 12/20/16 | 15:46 | LA | 421705 |
| Methoxychlor | SW8081A | 4 | 0.80 | 8.0 | ND | | ug/Kg | 12/20/16 | 15:46 | LA | 421705 |
| Endosulfan Sulfate | SW8081A | 4 | 0.47 | 8.0 | ND | | ug/Kg | 12/20/16 | 15:46 | LA | 421705 |
| Endrin Ketone | SW8081A | 4 | 0.38 | 8.0 | ND | | ug/Kg | 12/20/16 | 15:46 | LA | 421705 |
| Chlordane | SW8081A | 4 | 8.4 | 80 | ND | | ug/Kg | 12/20/16 | 15:46 | LA | 421705 |
| Toxaphene | SW8081A | 4 | 34 | 200 | ND | | ug/Kg | 12/20/16 | 15:46 | LA | 421705 |
| | | | Acceptance Limits | | | | | | | | |
| TCMX (S) | SW8081A | | 70 - 125 | | **92.8** | | ug/Kg | 12/20/16 | 15:46 | LA | 421705 |
| DCBP (S) | SW8081A | | 30 - 135 | | **108** | | ug/Kg | 12/20/16 | 15:46 | LA | 421705 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 12/16/16, 2:02 pm
**Date Reported:** 12/21/16

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-1 (0-1/2') | **Lab Sample ID:** | 1612152-001A |
| **Project Name/Location:** | 3141 Taylor Road SQ | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-1 | | |
| **Date/Time Sampled:** | 12/16/16 / 10:15 | | |
| **SDG:** | | | |

**NOTE:** Sample diluted due to nature of the matrix (dark, viscous extract)

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 12/16/16, 2:02 pm
**Date Reported:** 12/21/16

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-2 (0-1/2') | **Lab Sample ID:** | 1612152-002A |
| **Project Name/Location:** | 3141 Taylor Road SQ | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-1 | | |
| **Date/Time Sampled:** | 12/16/16 / 10:18 | | |
| **SDG:** | | | |

**Prep Method:** 7471BP — **Prep Batch Date/Time:** 12/19/16 1:45:00PM
**Prep Batch ID:** 4109 — **Prep Analyst:** PHUFANO

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.083 | 0.50 | ND | | mg/Kg | 12/20/16 | 11:01 | BJAY | 421679 |

**Prep Method:** 3050B — **Prep Batch Date/Time:** 12/19/16 1:30:00PM
**Prep Batch ID:** 4102 — **Prep Analyst:** PPATEL

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | SW6010B | 1 | 0.15 | 1.3 | **8.46** | | mg/Kg | 12/19/16 | 20:25 | PPATEL | 421675 |
| Lead | SW6010B | 1 | 0.12 | 3.0 | **15.2** | | mg/Kg | 12/19/16 | 20:25 | PPATEL | 421675 |

**Prep Method:** 3546_OCP — **Prep Batch Date/Time:** 12/19/16 5:52:00PM
**Prep Batch ID:** 4103 — **Prep Analyst:** SNARASIMHAN

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| alpha-BHC | SW8081A | 10 | 1.3 | 20 | ND | | ug/Kg | 12/20/16 | 16:01 | LA | 421705 |
| gamma-BHC (Lindane) | SW8081A | 10 | 1.6 | 20 | ND | | ug/Kg | 12/20/16 | 16:01 | LA | 421705 |
| beta-BHC | SW8081A | 10 | 3.2 | 20 | ND | | ug/Kg | 12/20/16 | 16:01 | LA | 421705 |
| delta-BHC | SW8081A | 10 | 1.6 | 20 | ND | | ug/Kg | 12/20/16 | 16:01 | LA | 421705 |
| Heptachlor | SW8081A | 10 | 1.1 | 20 | ND | | ug/Kg | 12/20/16 | 16:01 | LA | 421705 |
| Aldrin | SW8081A | 10 | 2.0 | 20 | ND | | ug/Kg | 12/20/16 | 16:01 | LA | 421705 |
| Heptachlor Epoxide | SW8081A | 10 | 0.78 | 20 | ND | | ug/Kg | 12/20/16 | 16:01 | LA | 421705 |
| gamma-Chlordane | SW8081A | 10 | 1.6 | 20 | ND | | ug/Kg | 12/20/16 | 16:01 | LA | 421705 |
| alpha-Chlordane | SW8081A | 10 | 1.7 | 20 | ND | | ug/Kg | 12/20/16 | 16:01 | LA | 421705 |
| 4,4-DDE | SW8081A | 10 | 1.9 | 20 | **29.1** | | ug/Kg | 12/20/16 | 16:01 | LA | 421705 |
| Endosulfan I | SW8081A | 10 | 1.8 | 20 | ND | | ug/Kg | 12/20/16 | 16:01 | LA | 421705 |
| Dieldrin | SW8081A | 10 | 1.5 | 20 | ND | | ug/Kg | 12/20/16 | 16:01 | LA | 421705 |
| Endrin | SW8081A | 10 | 1.9 | 20 | ND | | ug/Kg | 12/20/16 | 16:01 | LA | 421705 |
| 4,4-DDD | SW8081A | 10 | 5.7 | 20 | ND | | ug/Kg | 12/20/16 | 16:01 | LA | 421705 |
| Endosulfan II | SW8081A | 10 | 5.8 | 20 | ND | | ug/Kg | 12/20/16 | 16:01 | LA | 421705 |
| 4,4-DDT | SW8081A | 10 | 1.3 | 20 | **11.7** | J | ug/Kg | 12/20/16 | 16:01 | LA | 421705 |
| Endrin Aldehyde | SW8081A | 10 | 1.5 | 20 | ND | | ug/Kg | 12/20/16 | 16:01 | LA | 421705 |
| Methoxychlor | SW8081A | 10 | 2.0 | 20 | ND | | ug/Kg | 12/20/16 | 16:01 | LA | 421705 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 12/16/16, 2:02 pm
**Date Reported:** 12/21/16

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-2 (0-1/2') | **Lab Sample ID:** | 1612152-002A |
| **Project Name/Location:** | 3141 Taylor Road SQ | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-1 | | |
| **Date/Time Sampled:** | 12/16/16 / 10:18 | | |
| **SDG:** | | | |

| | | | |
|---|---|---|---|
| **Prep Method:** | 3546_OCP | **Prep Batch Date/Time:** | 12/19/16 5:52:00PM |
| **Prep Batch ID:** | 4103 | **Prep Analyst:** | SNARASIMHAN |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Endosulfan Sulfate | SW8081A | 10 | 1.2 | 20 | ND | | ug/Kg | 12/20/16 | 16:01 | LA | 421705 |
| Endrin Ketone | SW8081A | 10 | 0.94 | 20 | ND | | ug/Kg | 12/20/16 | 16:01 | LA | 421705 |
| Chlordane | SW8081A | 10 | 21 | 200 | ND | | ug/Kg | 12/20/16 | 16:01 | LA | 421705 |
| Toxaphene | SW8081A | 10 | 85 | 500 | ND | | ug/Kg | 12/20/16 | 16:01 | LA | 421705 |
| | | | Acceptance Limits | | | | | | | | |
| TCMX (S) | SW8081A | | 70 - 125 | | **115** | | ug/Kg | 12/20/16 | 16:01 | LA | 421705 |
| DCBP (S) | SW8081A | | 30 - 135 | | **133** | | ug/Kg | 12/20/16 | 16:01 | LA | 421705 |

**NOTE:** Sample diluted due to nature of the matrix (dark, viscous extract)

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 12/16/16, 2:02 pm
**Date Reported:** 12/21/16

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-3 (0-1/2') | **Lab Sample ID:** | 1612152-003A |
| **Project Name/Location:** | 3141 Taylor Road SQ | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-1 | | |
| **Date/Time Sampled:** | 12/16/16 / 10:21 | | |
| **SDG:** | | | |

**Prep Method:** 7471BP — **Prep Batch Date/Time:** 12/19/16 1:45:00PM
**Prep Batch ID:** 4109 — **Prep Analyst:** PHUFANO

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.083 | 0.50 | ND | | mg/Kg | 12/20/16 | 11:03 | BJAY | 421679 |

**Prep Method:** 3050B — **Prep Batch Date/Time:** 12/19/16 1:30:00PM
**Prep Batch ID:** 4102 — **Prep Analyst:** PPATEL

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | SW6010B | 1 | 0.15 | 1.3 | **9.07** | | mg/Kg | 12/19/16 | 20:28 | PPATEL | 421675 |
| Lead | SW6010B | 1 | 0.12 | 3.0 | **21.7** | | mg/Kg | 12/19/16 | 20:28 | PPATEL | 421675 |

**Prep Method:** 3546_OCP — **Prep Batch Date/Time:** 12/19/16 5:52:00PM
**Prep Batch ID:** 4103 — **Prep Analyst:** SNARASIMHAN

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| alpha-BHC | SW8081A | 4 | 0.51 | 8.0 | ND | | ug/Kg | 12/20/16 | 16:16 | LA | 421705 |
| gamma-BHC (Lindane) | SW8081A | 4 | 0.64 | 8.0 | ND | | ug/Kg | 12/20/16 | 16:16 | LA | 421705 |
| beta-BHC | SW8081A | 4 | 1.3 | 8.0 | ND | | ug/Kg | 12/20/16 | 16:16 | LA | 421705 |
| delta-BHC | SW8081A | 4 | 0.62 | 8.0 | ND | | ug/Kg | 12/20/16 | 16:16 | LA | 421705 |
| Heptachlor | SW8081A | 4 | 0.42 | 8.0 | ND | | ug/Kg | 12/20/16 | 16:16 | LA | 421705 |
| Aldrin | SW8081A | 4 | 0.78 | 8.0 | ND | | ug/Kg | 12/20/16 | 16:16 | LA | 421705 |
| Heptachlor Epoxide | SW8081A | 4 | 0.31 | 8.0 | ND | | ug/Kg | 12/20/16 | 16:16 | LA | 421705 |
| gamma-Chlordane | SW8081A | 4 | 0.65 | 8.0 | ND | | ug/Kg | 12/20/16 | 16:16 | LA | 421705 |
| alpha-Chlordane | SW8081A | 4 | 0.69 | 8.0 | ND | | ug/Kg | 12/20/16 | 16:16 | LA | 421705 |
| 4,4-DDE | SW8081A | 4 | 0.78 | 8.0 | **11.2** | | ug/Kg | 12/20/16 | 16:16 | LA | 421705 |
| Endosulfan I | SW8081A | 4 | 0.73 | 8.0 | ND | | ug/Kg | 12/20/16 | 16:16 | LA | 421705 |
| Dieldrin | SW8081A | 4 | 0.59 | 8.0 | ND | | ug/Kg | 12/20/16 | 16:16 | LA | 421705 |
| Endrin | SW8081A | 4 | 0.75 | 8.0 | ND | | ug/Kg | 12/20/16 | 16:16 | LA | 421705 |
| 4,4-DDD | SW8081A | 4 | 2.3 | 8.0 | ND | | ug/Kg | 12/20/16 | 16:16 | LA | 421705 |
| Endosulfan II | SW8081A | 4 | 2.3 | 8.0 | ND | | ug/Kg | 12/20/16 | 16:16 | LA | 421705 |
| 4,4-DDT | SW8081A | 4 | 0.52 | 8.0 | **4.58** | J | ug/Kg | 12/20/16 | 16:16 | LA | 421705 |
| Endrin Aldehyde | SW8081A | 4 | 0.60 | 8.0 | ND | | ug/Kg | 12/20/16 | 16:16 | LA | 421705 |
| Methoxychlor | SW8081A | 4 | 0.80 | 8.0 | ND | | ug/Kg | 12/20/16 | 16:16 | LA | 421705 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 12/16/16, 2:02 pm
**Date Reported:** 12/21/16

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-3 (0-1/2') | **Lab Sample ID:** | 1612152-003A |
| **Project Name/Location:** | 3141 Taylor Road SQ | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-1 | | |
| **Date/Time Sampled:** | 12/16/16 / 10:21 | | |
| **SDG:** | | | |

| | | | |
|---|---|---|---|
| **Prep Method:** | 3546_OCP | **Prep Batch Date/Time:** | 12/19/16 5:52:00PM |
| **Prep Batch ID:** | 4103 | **Prep Analyst:** | SNARASIMHAN |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Endosulfan Sulfate | SW8081A | 4 | 0.47 | 8.0 | ND | | ug/Kg | 12/20/16 | 16:16 | LA | 421705 |
| Endrin Ketone | SW8081A | 4 | 0.38 | 8.0 | ND | | ug/Kg | 12/20/16 | 16:16 | LA | 421705 |
| Chlordane | SW8081A | 4 | 8.4 | 80 | ND | | ug/Kg | 12/20/16 | 16:16 | LA | 421705 |
| Toxaphene | SW8081A | 4 | 34 | 200 | ND | | ug/Kg | 12/20/16 | 16:16 | LA | 421705 |
| | | | Acceptance Limits | | | | | | | | |
| TCMX (S) | SW8081A | | 70 - 125 | | **92.0** | | ug/Kg | 12/20/16 | 16:16 | LA | 421705 |
| DCBP (S) | SW8081A | | 30 - 135 | | **105** | | ug/Kg | 12/20/16 | 16:16 | LA | 421705 |

**NOTE:** Sample diluted due to nature of the matrix (dark, viscous extract)

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 12/16/16, 2:02 pm
**Date Reported:** 12/21/16

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-4 (0-1/2') | **Lab Sample ID:** | 1612152-004A |
| **Project Name/Location:** | 3141 Taylor Road SQ | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-1 | | |
| **Date/Time Sampled:** | 12/16/16 / 10:25 | | |
| **SDG:** | | | |

**Prep Method:** 7471BP — **Prep Batch Date/Time:** 12/19/16 1:45:00PM
**Prep Batch ID:** 4109 — **Prep Analyst:** PHUFANO

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.083 | 0.50 | ND | | mg/Kg | 12/20/16 | 11:06 | BJAY | 421679 |

**Prep Method:** 3050B — **Prep Batch Date/Time:** 12/19/16 1:30:00PM
**Prep Batch ID:** 4102 — **Prep Analyst:** PPATEL

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | SW6010B | 1 | 0.15 | 1.3 | **16.2** | | mg/Kg | 12/19/16 | 20:31 | PPATEL | 421675 |
| Lead | SW6010B | 1 | 0.12 | 3.0 | **28.2** | | mg/Kg | 12/19/16 | 20:31 | PPATEL | 421675 |

**Prep Method:** 3546_OCP — **Prep Batch Date/Time:** 12/19/16 5:52:00PM
**Prep Batch ID:** 4103 — **Prep Analyst:** SNARASIMHAN

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| alpha-BHC | SW8081A | 1 | 0.13 | 2.0 | ND | | ug/Kg | 12/20/16 | 16:31 | LA | 421705 |
| gamma-BHC (Lindane) | SW8081A | 1 | 0.16 | 2.0 | ND | | ug/Kg | 12/20/16 | 16:31 | LA | 421705 |
| beta-BHC | SW8081A | 1 | 0.32 | 2.0 | ND | | ug/Kg | 12/20/16 | 16:31 | LA | 421705 |
| delta-BHC | SW8081A | 1 | 0.16 | 2.0 | ND | | ug/Kg | 12/20/16 | 16:31 | LA | 421705 |
| Heptachlor | SW8081A | 1 | 0.11 | 2.0 | ND | | ug/Kg | 12/20/16 | 16:31 | LA | 421705 |
| Aldrin | SW8081A | 1 | 0.20 | 2.0 | ND | | ug/Kg | 12/20/16 | 16:31 | LA | 421705 |
| Heptachlor Epoxide | SW8081A | 1 | 0.078 | 2.0 | ND | | ug/Kg | 12/20/16 | 16:31 | LA | 421705 |
| gamma-Chlordane | SW8081A | 1 | 0.16 | 2.0 | ND | | ug/Kg | 12/20/16 | 16:31 | LA | 421705 |
| alpha-Chlordane | SW8081A | 1 | 0.17 | 2.0 | ND | | ug/Kg | 12/20/16 | 16:31 | LA | 421705 |
| 4,4-DDE | SW8081A | 1 | 0.19 | 2.0 | **45.6** | | ug/Kg | 12/20/16 | 16:31 | LA | 421705 |
| Endosulfan I | SW8081A | 1 | 0.18 | 2.0 | ND | | ug/Kg | 12/20/16 | 16:31 | LA | 421705 |
| Dieldrin | SW8081A | 1 | 0.15 | 2.0 | ND | | ug/Kg | 12/20/16 | 16:31 | LA | 421705 |
| Endrin | SW8081A | 1 | 0.19 | 2.0 | ND | | ug/Kg | 12/20/16 | 16:31 | LA | 421705 |
| 4,4-DDD | SW8081A | 1 | 0.57 | 2.0 | ND | | ug/Kg | 12/20/16 | 16:31 | LA | 421705 |
| Endosulfan II | SW8081A | 1 | 0.58 | 2.0 | ND | | ug/Kg | 12/20/16 | 16:31 | LA | 421705 |
| 4,4-DDT | SW8081A | 1 | 0.13 | 2.0 | **10.6** | | ug/Kg | 12/20/16 | 16:31 | LA | 421705 |
| Endrin Aldehyde | SW8081A | 1 | 0.15 | 2.0 | ND | | ug/Kg | 12/20/16 | 16:31 | LA | 421705 |
| Methoxychlor | SW8081A | 1 | 0.20 | 2.0 | ND | | ug/Kg | 12/20/16 | 16:31 | LA | 421705 |
| Endosulfan Sulfate | SW8081A | 1 | 0.12 | 2.0 | ND | | ug/Kg | 12/20/16 | 16:31 | LA | 421705 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 12/16/16, 2:02 pm
**Date Reported:** 12/21/16

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-4 (0-1/2') | **Lab Sample ID:** | 1612152-004A |
| **Project Name/Location:** | 3141 Taylor Road SQ | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-1 | | |
| **Date/Time Sampled:** | 12/16/16 / 10:25 | | |
| **SDG:** | | | |

| | | | |
|---|---|---|---|
| **Prep Method:** | 3546_OCP | **Prep Batch Date/Time:** | 12/19/16 5:52:00PM |
| **Prep Batch ID:** | 4103 | **Prep Analyst:** | SNARASIMHAN |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Endrin Ketone | SW8081A | 1 | 0.094 | 2.0 | ND | | ug/Kg | 12/20/16 | 16:31 | LA | 421705 |
| Chlordane | SW8081A | 1 | 2.1 | 20 | ND | | ug/Kg | 12/20/16 | 16:31 | LA | 421705 |
| Toxaphene | SW8081A | 1 | 8.5 | 50 | ND | | ug/Kg | 12/20/16 | 16:31 | LA | 421705 |
| | | | Acceptance Limits | | | | | | | | |
| TCMX (S) | SW8081A | | 70 - 125 | | **79.2** | | ug/Kg | 12/20/16 | 16:31 | LA | 421705 |
| DCBP (S) | SW8081A | | 30 - 135 | | **90.2** | | ug/Kg | 12/20/16 | 16:31 | LA | 421705 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 12/16/16, 2:02 pm
**Date Reported:** 12/21/16

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-5 (0-1/2') | **Lab Sample ID:** | 1612152-005A |
| **Project Name/Location:** | 3141 Taylor Road SQ | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-1 | | |
| **Date/Time Sampled:** | 12/16/16 / 10:28 | | |
| **SDG:** | | | |

**Prep Method:** 7471BP — **Prep Batch Date/Time:** 12/19/16 1:45:00PM
**Prep Batch ID:** 4109 — **Prep Analyst:** PHUFANO

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.083 | 0.50 | ND | | mg/Kg | 12/20/16 | 11:08 | BJAY | 421679 |

**Prep Method:** 3050B — **Prep Batch Date/Time:** 12/19/16 1:30:00PM
**Prep Batch ID:** 4102 — **Prep Analyst:** PPATEL

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | SW6010B | 1 | 0.15 | 1.3 | **8.54** | | mg/Kg | 12/19/16 | 20:34 | PPATEL | 421675 |
| Lead | SW6010B | 1 | 0.12 | 3.0 | **34.6** | | mg/Kg | 12/19/16 | 20:34 | PPATEL | 421675 |

**Prep Method:** 3546_OCP — **Prep Batch Date/Time:** 12/19/16 5:52:00PM
**Prep Batch ID:** 4103 — **Prep Analyst:** SNARASIMHAN

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| alpha-BHC | SW8081A | 4 | 0.51 | 8.0 | ND | | ug/Kg | 12/20/16 | 16:47 | LA | 421705 |
| gamma-BHC (Lindane) | SW8081A | 4 | 0.64 | 8.0 | ND | | ug/Kg | 12/20/16 | 16:47 | LA | 421705 |
| beta-BHC | SW8081A | 4 | 1.3 | 8.0 | ND | | ug/Kg | 12/20/16 | 16:47 | LA | 421705 |
| delta-BHC | SW8081A | 4 | 0.62 | 8.0 | ND | | ug/Kg | 12/20/16 | 16:47 | LA | 421705 |
| Heptachlor | SW8081A | 4 | 0.42 | 8.0 | ND | | ug/Kg | 12/20/16 | 16:47 | LA | 421705 |
| Aldrin | SW8081A | 4 | 0.78 | 8.0 | ND | | ug/Kg | 12/20/16 | 16:47 | LA | 421705 |
| Heptachlor Epoxide | SW8081A | 4 | 0.31 | 8.0 | ND | | ug/Kg | 12/20/16 | 16:47 | LA | 421705 |
| gamma-Chlordane | SW8081A | 4 | 0.65 | 8.0 | ND | | ug/Kg | 12/20/16 | 16:47 | LA | 421705 |
| alpha-Chlordane | SW8081A | 4 | 0.69 | 8.0 | ND | | ug/Kg | 12/20/16 | 16:47 | LA | 421705 |
| 4,4-DDE | SW8081A | 4 | 0.78 | 8.0 | **140** | | ug/Kg | 12/20/16 | 16:47 | LA | 421705 |
| Endosulfan I | SW8081A | 4 | 0.73 | 8.0 | ND | | ug/Kg | 12/20/16 | 16:47 | LA | 421705 |
| Dieldrin | SW8081A | 4 | 0.59 | 8.0 | ND | | ug/Kg | 12/20/16 | 16:47 | LA | 421705 |
| Endrin | SW8081A | 4 | 0.75 | 8.0 | ND | | ug/Kg | 12/20/16 | 16:47 | LA | 421705 |
| 4,4-DDD | SW8081A | 4 | 2.3 | 8.0 | ND | | ug/Kg | 12/20/16 | 16:47 | LA | 421705 |
| Endosulfan II | SW8081A | 4 | 2.3 | 8.0 | ND | | ug/Kg | 12/20/16 | 16:47 | LA | 421705 |
| 4,4-DDT | SW8081A | 4 | 0.52 | 8.0 | **16.7** | | ug/Kg | 12/20/16 | 16:47 | LA | 421705 |
| Endrin Aldehyde | SW8081A | 4 | 0.60 | 8.0 | ND | | ug/Kg | 12/20/16 | 16:47 | LA | 421705 |
| Methoxychlor | SW8081A | 4 | 0.80 | 8.0 | ND | | ug/Kg | 12/20/16 | 16:47 | LA | 421705 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 12/16/16, 2:02 pm
**Date Reported:** 12/21/16

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-5 (0-1/2') | **Lab Sample ID:** | 1612152-005A |
| **Project Name/Location:** | 3141 Taylor Road SQ | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-1 | | |
| **Date/Time Sampled:** | 12/16/16 / 10:28 | | |
| **SDG:** | | | |

| | | | |
|---|---|---|---|
| **Prep Method:** | 3546_OCP | **Prep Batch Date/Time:** | 12/19/16 5:52:00PM |
| **Prep Batch ID:** | 4103 | **Prep Analyst:** | SNARASIMHAN |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Endosulfan Sulfate | SW8081A | 4 | 0.47 | 8.0 | ND | | ug/Kg | 12/20/16 | 16:47 | LA | 421705 |
| Endrin Ketone | SW8081A | 4 | 0.38 | 8.0 | ND | | ug/Kg | 12/20/16 | 16:47 | LA | 421705 |
| Chlordane | SW8081A | 4 | 8.4 | 80 | ND | | ug/Kg | 12/20/16 | 16:47 | LA | 421705 |
| Toxaphene | SW8081A | 4 | 34 | 200 | ND | | ug/Kg | 12/20/16 | 16:47 | LA | 421705 |
| | | | Acceptance Limits | | | | | | | | |
| TCMX (S) | SW8081A | | 70 - 125 | | **94.1** | | ug/Kg | 12/20/16 | 16:47 | LA | 421705 |
| DCBP (S) | SW8081A | | 30 - 135 | | **104** | | ug/Kg | 12/20/16 | 16:47 | LA | 421705 |

**NOTE:** Sample diluted due to nature of the matrix (dark, viscous extract)

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 12/16/16, 2:02 pm
**Date Reported:** 12/21/16

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-6 (0-1/2') | **Lab Sample ID:** | 1612152-006A |
| **Project Name/Location:** | 3141 Taylor Road SQ | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-1 | | |
| **Date/Time Sampled:** | 12/16/16 / 10:39 | | |
| **SDG:** | | | |

**Prep Method:** 7471BP — **Prep Batch Date/Time:** 12/19/16 1:45:00PM
**Prep Batch ID:** 4109 — **Prep Analyst:** PHUFANO

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.083 | 0.50 | ND | | mg/Kg | 12/20/16 | 11:14 | BJAY | 421679 |

**Prep Method:** 3050B — **Prep Batch Date/Time:** 12/19/16 1:30:00PM
**Prep Batch ID:** 4102 — **Prep Analyst:** PPATEL

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | SW6010B | 1 | 0.15 | 1.3 | **13.0** | | mg/Kg | 12/19/16 | 20:42 | PPATEL | 421675 |
| Lead | SW6010B | 1 | 0.12 | 3.0 | **18.1** | | mg/Kg | 12/19/16 | 20:42 | PPATEL | 421675 |

**Prep Method:** 3546_OCP — **Prep Batch Date/Time:** 12/19/16 5:52:00PM
**Prep Batch ID:** 4103 — **Prep Analyst:** SNARASIMHAN

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| alpha-BHC | SW8081A | 1 | 0.13 | 2.0 | ND | | ug/Kg | 12/20/16 | 17:02 | LA | 421705 |
| gamma-BHC (Lindane) | SW8081A | 1 | 0.16 | 2.0 | ND | | ug/Kg | 12/20/16 | 17:02 | LA | 421705 |
| beta-BHC | SW8081A | 1 | 0.32 | 2.0 | ND | | ug/Kg | 12/20/16 | 17:02 | LA | 421705 |
| delta-BHC | SW8081A | 1 | 0.16 | 2.0 | ND | | ug/Kg | 12/20/16 | 17:02 | LA | 421705 |
| Heptachlor | SW8081A | 1 | 0.11 | 2.0 | ND | | ug/Kg | 12/20/16 | 17:02 | LA | 421705 |
| Aldrin | SW8081A | 1 | 0.20 | 2.0 | ND | | ug/Kg | 12/20/16 | 17:02 | LA | 421705 |
| Heptachlor Epoxide | SW8081A | 1 | 0.078 | 2.0 | ND | | ug/Kg | 12/20/16 | 17:02 | LA | 421705 |
| gamma-Chlordane | SW8081A | 1 | 0.16 | 2.0 | ND | | ug/Kg | 12/20/16 | 17:02 | LA | 421705 |
| alpha-Chlordane | SW8081A | 1 | 0.17 | 2.0 | ND | | ug/Kg | 12/20/16 | 17:02 | LA | 421705 |
| 4,4-DDE | SW8081A | 1 | 0.19 | 2.0 | **43.0** | | ug/Kg | 12/20/16 | 17:02 | LA | 421705 |
| Endosulfan I | SW8081A | 1 | 0.18 | 2.0 | ND | | ug/Kg | 12/20/16 | 17:02 | LA | 421705 |
| Dieldrin | SW8081A | 1 | 0.15 | 2.0 | ND | | ug/Kg | 12/20/16 | 17:02 | LA | 421705 |
| Endrin | SW8081A | 1 | 0.19 | 2.0 | ND | | ug/Kg | 12/20/16 | 17:02 | LA | 421705 |
| 4,4-DDD | SW8081A | 1 | 0.57 | 2.0 | ND | | ug/Kg | 12/20/16 | 17:02 | LA | 421705 |
| Endosulfan II | SW8081A | 1 | 0.58 | 2.0 | ND | | ug/Kg | 12/20/16 | 17:02 | LA | 421705 |
| 4,4-DDT | SW8081A | 1 | 0.13 | 2.0 | **19.4** | | ug/Kg | 12/20/16 | 17:02 | LA | 421705 |
| Endrin Aldehyde | SW8081A | 1 | 0.15 | 2.0 | ND | | ug/Kg | 12/20/16 | 17:02 | LA | 421705 |
| Methoxychlor | SW8081A | 1 | 0.20 | 2.0 | ND | | ug/Kg | 12/20/16 | 17:02 | LA | 421705 |
| Endosulfan Sulfate | SW8081A | 1 | 0.12 | 2.0 | ND | | ug/Kg | 12/20/16 | 17:02 | LA | 421705 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 12/16/16, 2:02 pm
**Date Reported:** 12/21/16

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-6 (0-1/2') | **Lab Sample ID:** | 1612152-006A |
| **Project Name/Location:** | 3141 Taylor Road SQ | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-1 | | |
| **Date/Time Sampled:** | 12/16/16 / 10:39 | | |
| **SDG:** | | | |

| | | | |
|---|---|---|---|
| **Prep Method:** | 3546_OCP | **Prep Batch Date/Time:** | 12/19/16 5:52:00PM |
| **Prep Batch ID:** | 4103 | **Prep Analyst:** | SNARASIMHAN |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Endrin Ketone | SW8081A | 1 | 0.094 | 2.0 | ND | | ug/Kg | 12/20/16 | 17:02 | LA | 421705 |
| Chlordane | SW8081A | 1 | 2.1 | 20 | ND | | ug/Kg | 12/20/16 | 17:02 | LA | 421705 |
| Toxaphene | SW8081A | 1 | 8.5 | 50 | ND | | ug/Kg | 12/20/16 | 17:02 | LA | 421705 |
| | | | Acceptance Limits | | | | | | | | |
| TCMX (S) | SW8081A | | 70 - 125 | | **80.4** | | ug/Kg | 12/20/16 | 17:02 | LA | 421705 |
| DCBP (S) | SW8081A | | 30 - 135 | | **92.7** | | ug/Kg | 12/20/16 | 17:02 | LA | 421705 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 12/16/16, 2:02 pm
**Date Reported:** 12/21/16

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-7 (0-1/2') | **Lab Sample ID:** | 1612152-007A |
| **Project Name/Location:** | 3141 Taylor Road SQ | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-1 | | |
| **Date/Time Sampled:** | 12/16/16 / 10:42 | | |
| **SDG:** | | | |

**Prep Method:** 7471BP — **Prep Batch Date/Time:** 12/19/16 1:45:00PM
**Prep Batch ID:** 4109 — **Prep Analyst:** PHUFANO

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.083 | 0.50 | ND | | mg/Kg | 12/20/16 | 11:16 | BJAY | 421679 |

**Prep Method:** 3050B — **Prep Batch Date/Time:** 12/19/16 1:30:00PM
**Prep Batch ID:** 4102 — **Prep Analyst:** PPATEL

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | SW6010B | 1 | 0.15 | 1.3 | **11.0** | | mg/Kg | 12/19/16 | 20:45 | PPATEL | 421675 |
| Lead | SW6010B | 1 | 0.12 | 3.0 | **31.6** | | mg/Kg | 12/19/16 | 20:45 | PPATEL | 421675 |

**Prep Method:** 3546_OCP — **Prep Batch Date/Time:** 12/19/16 5:52:00PM
**Prep Batch ID:** 4103 — **Prep Analyst:** SNARASIMHAN

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| alpha-BHC | SW8081A | 4 | 0.51 | 8.0 | ND | | ug/Kg | 12/20/16 | 17:17 | LA | 421705 |
| gamma-BHC (Lindane) | SW8081A | 4 | 0.64 | 8.0 | ND | | ug/Kg | 12/20/16 | 17:17 | LA | 421705 |
| beta-BHC | SW8081A | 4 | 1.3 | 8.0 | ND | | ug/Kg | 12/20/16 | 17:17 | LA | 421705 |
| delta-BHC | SW8081A | 4 | 0.62 | 8.0 | ND | | ug/Kg | 12/20/16 | 17:17 | LA | 421705 |
| Heptachlor | SW8081A | 4 | 0.42 | 8.0 | ND | | ug/Kg | 12/20/16 | 17:17 | LA | 421705 |
| Aldrin | SW8081A | 4 | 0.78 | 8.0 | ND | | ug/Kg | 12/20/16 | 17:17 | LA | 421705 |
| Heptachlor Epoxide | SW8081A | 4 | 0.31 | 8.0 | ND | | ug/Kg | 12/20/16 | 17:17 | LA | 421705 |
| gamma-Chlordane | SW8081A | 4 | 0.65 | 8.0 | ND | | ug/Kg | 12/20/16 | 17:17 | LA | 421705 |
| alpha-Chlordane | SW8081A | 4 | 0.69 | 8.0 | ND | | ug/Kg | 12/20/16 | 17:17 | LA | 421705 |
| Endosulfan I | SW8081A | 4 | 0.73 | 8.0 | ND | | ug/Kg | 12/20/16 | 17:17 | LA | 421705 |
| Dieldrin | SW8081A | 4 | 0.59 | 8.0 | ND | | ug/Kg | 12/20/16 | 17:17 | LA | 421705 |
| Endrin | SW8081A | 4 | 0.75 | 8.0 | ND | | ug/Kg | 12/20/16 | 17:17 | LA | 421705 |
| 4,4-DDD | SW8081A | 4 | 2.3 | 8.0 | ND | | ug/Kg | 12/20/16 | 17:17 | LA | 421705 |
| Endosulfan II | SW8081A | 4 | 2.3 | 8.0 | ND | | ug/Kg | 12/20/16 | 17:17 | LA | 421705 |
| 4,4-DDT | SW8081A | 4 | 0.52 | 8.0 | **97.1** | | ug/Kg | 12/20/16 | 17:17 | LA | 421705 |
| Endrin Aldehyde | SW8081A | 4 | 0.60 | 8.0 | ND | | ug/Kg | 12/20/16 | 17:17 | LA | 421705 |
| Methoxychlor | SW8081A | 4 | 0.80 | 8.0 | ND | | ug/Kg | 12/20/16 | 17:17 | LA | 421705 |
| Endosulfan Sulfate | SW8081A | 4 | 0.47 | 8.0 | ND | | ug/Kg | 12/20/16 | 17:17 | LA | 421705 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 12/16/16, 2:02 pm
**Date Reported:** 12/21/16

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-7 (0-1/2') | **Lab Sample ID:** | 1612152-007A |
| **Project Name/Location:** | 3141 Taylor Road SQ | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-1 | | |
| **Date/Time Sampled:** | 12/16/16 / 10:42 | | |
| **SDG:** | | | |

**Prep Method:** 3546_OCP
**Prep Batch ID:** 4103
**Prep Batch Date/Time:** 12/19/16 5:52:00PM
**Prep Analyst:** SNARASIMHAN

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Endrin Ketone | SW8081A | 4 | 0.38 | 8.0 | ND | | ug/Kg | 12/20/16 | 17:17 | LA | 421705 |
| Chlordane | SW8081A | 4 | 8.4 | 80 | ND | | ug/Kg | 12/20/16 | 17:17 | LA | 421705 |
| Toxaphene | SW8081A | 4 | 34 | 200 | ND | | ug/Kg | 12/20/16 | 17:17 | LA | 421705 |
| | | | Acceptance Limits | | | | | | | | |
| TCMX (S) | SW8081A | | 70 - 125 | | **91.3** | | ug/Kg | 12/20/16 | 17:17 | LA | 421705 |
| DCBP (S) | SW8081A | | 30 - 135 | | **110** | | ug/Kg | 12/20/16 | 17:17 | LA | 421705 |

**NOTE:** Sample diluted due to nature of the matrix (dark, viscous extract)

**Prep Method:** 3546_OCP
**Prep Batch ID:** 4103
**Prep Batch Date/Time:** 12/19/16 5:52:00PM
**Prep Analyst:** SNARASIMHAN

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 4,4-DDE | SW8081A | 10 | 1.9 | 20 | **426** | | ug/Kg | 12/20/16 | 17:32 | LA | 421705 |

**NOTE:** Sample diluted due to nature of the matrix (dark, viscous extract)

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 12/16/16, 2:02 pm
**Date Reported:** 12/21/16

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-8 (0-1/2') | **Lab Sample ID:** | 1612152-008A |
| **Project Name/Location:** | 3141 Taylor Road SQ | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-1 | | |
| **Date/Time Sampled:** | 12/16/16 / 10:48 | | |
| **SDG:** | | | |

**Prep Method:** 7471BP — **Prep Batch Date/Time:** 12/19/16 1:45:00PM
**Prep Batch ID:** 4109 — **Prep Analyst:** PHUFANO

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.083 | 0.50 | ND | | mg/Kg | 12/20/16 | 11:18 | BJAY | 421679 |

**Prep Method:** 3050B — **Prep Batch Date/Time:** 12/19/16 1:30:00PM
**Prep Batch ID:** 4102 — **Prep Analyst:** PPATEL

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | SW6010B | 1 | 0.15 | 1.3 | **12.1** | | mg/Kg | 12/19/16 | 20:48 | PPATEL | 421675 |
| Lead | SW6010B | 1 | 0.12 | 3.0 | **36.1** | | mg/Kg | 12/19/16 | 20:48 | PPATEL | 421675 |

**Prep Method:** 3546_OCP — **Prep Batch Date/Time:** 12/19/16 5:52:00PM
**Prep Batch ID:** 4103 — **Prep Analyst:** SNARASIMHAN

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| alpha-BHC | SW8081A | 4 | 0.51 | 8.0 | ND | | ug/Kg | 12/20/16 | 17:47 | LA | 421705 |
| gamma-BHC (Lindane) | SW8081A | 4 | 0.64 | 8.0 | ND | | ug/Kg | 12/20/16 | 17:47 | LA | 421705 |
| beta-BHC | SW8081A | 4 | 1.3 | 8.0 | ND | | ug/Kg | 12/20/16 | 17:47 | LA | 421705 |
| delta-BHC | SW8081A | 4 | 0.62 | 8.0 | ND | | ug/Kg | 12/20/16 | 17:47 | LA | 421705 |
| Heptachlor | SW8081A | 4 | 0.42 | 8.0 | ND | | ug/Kg | 12/20/16 | 17:47 | LA | 421705 |
| Aldrin | SW8081A | 4 | 0.78 | 8.0 | ND | | ug/Kg | 12/20/16 | 17:47 | LA | 421705 |
| Heptachlor Epoxide | SW8081A | 4 | 0.31 | 8.0 | ND | | ug/Kg | 12/20/16 | 17:47 | LA | 421705 |
| gamma-Chlordane | SW8081A | 4 | 0.65 | 8.0 | ND | | ug/Kg | 12/20/16 | 17:47 | LA | 421705 |
| alpha-Chlordane | SW8081A | 4 | 0.69 | 8.0 | ND | | ug/Kg | 12/20/16 | 17:47 | LA | 421705 |
| 4,4-DDE | SW8081A | 4 | 0.78 | 8.0 | **124** | | ug/Kg | 12/20/16 | 17:47 | LA | 421705 |
| Endosulfan I | SW8081A | 4 | 0.73 | 8.0 | ND | | ug/Kg | 12/20/16 | 17:47 | LA | 421705 |
| Dieldrin | SW8081A | 4 | 0.59 | 8.0 | ND | | ug/Kg | 12/20/16 | 17:47 | LA | 421705 |
| Endrin | SW8081A | 4 | 0.75 | 8.0 | ND | | ug/Kg | 12/20/16 | 17:47 | LA | 421705 |
| 4,4-DDD | SW8081A | 4 | 2.3 | 8.0 | ND | | ug/Kg | 12/20/16 | 17:47 | LA | 421705 |
| Endosulfan II | SW8081A | 4 | 2.3 | 8.0 | ND | | ug/Kg | 12/20/16 | 17:47 | LA | 421705 |
| 4,4-DDT | SW8081A | 4 | 0.52 | 8.0 | **26.5** | | ug/Kg | 12/20/16 | 17:47 | LA | 421705 |
| Endrin Aldehyde | SW8081A | 4 | 0.60 | 8.0 | ND | | ug/Kg | 12/20/16 | 17:47 | LA | 421705 |
| Methoxychlor | SW8081A | 4 | 0.80 | 8.0 | ND | | ug/Kg | 12/20/16 | 17:47 | LA | 421705 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 12/16/16, 2:02 pm
**Date Reported:** 12/21/16

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-8 (0-1/2') | **Lab Sample ID:** | 1612152-008A |
| **Project Name/Location:** | 3141 Taylor Road SQ | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-1 | | |
| **Date/Time Sampled:** | 12/16/16 / 10:48 | | |
| **SDG:** | | | |

| | | | |
|---|---|---|---|
| **Prep Method:** | 3546_OCP | **Prep Batch Date/Time:** | 12/19/16 5:52:00PM |
| **Prep Batch ID:** | 4103 | **Prep Analyst:** | SNARASIMHAN |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Endosulfan Sulfate | SW8081A | 4 | 0.47 | 8.0 | ND | | ug/Kg | 12/20/16 | 17:47 | LA | 421705 |
| Endrin Ketone | SW8081A | 4 | 0.38 | 8.0 | ND | | ug/Kg | 12/20/16 | 17:47 | LA | 421705 |
| Chlordane | SW8081A | 4 | 8.4 | 80 | ND | | ug/Kg | 12/20/16 | 17:47 | LA | 421705 |
| Toxaphene | SW8081A | 4 | 34 | 200 | ND | | ug/Kg | 12/20/16 | 17:47 | LA | 421705 |
| | | | Acceptance Limits | | | | | | | | |
| TCMX (S) | SW8081A | | 70 - 125 | | **101** | | ug/Kg | 12/20/16 | 17:47 | LA | 421705 |
| DCBP (S) | SW8081A | | 30 - 135 | | **102** | | ug/Kg | 12/20/16 | 17:47 | LA | 421705 |

**NOTE:** Sample diluted due to nature of the matrix (dark, viscous extract)

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 12/16/16, 2:02 pm
**Date Reported:** 12/21/16

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-9 (0-1/2') | **Lab Sample ID:** | 1612152-009A |
| **Project Name/Location:** | 3141 Taylor Road SQ | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-1 | | |
| **Date/Time Sampled:** | 12/16/16 / 10:51 | | |
| **SDG:** | | | |

**Prep Method:** 7471BP — **Prep Batch Date/Time:** 12/19/16 1:45:00PM
**Prep Batch ID:** 4109 — **Prep Analyst:** PHUFANO

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.083 | 0.50 | ND | | mg/Kg | 12/20/16 | 11:20 | BJAY | 421679 |

**Prep Method:** 3050B — **Prep Batch Date/Time:** 12/19/16 1:30:00PM
**Prep Batch ID:** 4102 — **Prep Analyst:** PPATEL

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | SW6010B | 1 | 0.15 | 1.3 | **9.06** | | mg/Kg | 12/19/16 | 20:51 | PPATEL | 421675 |
| Lead | SW6010B | 1 | 0.12 | 3.0 | **21.0** | | mg/Kg | 12/19/16 | 20:51 | PPATEL | 421675 |

**Prep Method:** 3546_OCP — **Prep Batch Date/Time:** 12/19/16 5:52:00PM
**Prep Batch ID:** 4103 — **Prep Analyst:** SNARASIMHAN

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| alpha-BHC | SW8081A | 4 | 0.51 | 8.0 | ND | | ug/Kg | 12/20/16 | 18:03 | LA | 421705 |
| gamma-BHC (Lindane) | SW8081A | 4 | 0.64 | 8.0 | ND | | ug/Kg | 12/20/16 | 18:03 | LA | 421705 |
| beta-BHC | SW8081A | 4 | 1.3 | 8.0 | ND | | ug/Kg | 12/20/16 | 18:03 | LA | 421705 |
| delta-BHC | SW8081A | 4 | 0.62 | 8.0 | ND | | ug/Kg | 12/20/16 | 18:03 | LA | 421705 |
| Heptachlor | SW8081A | 4 | 0.42 | 8.0 | ND | | ug/Kg | 12/20/16 | 18:03 | LA | 421705 |
| Aldrin | SW8081A | 4 | 0.78 | 8.0 | ND | | ug/Kg | 12/20/16 | 18:03 | LA | 421705 |
| Heptachlor Epoxide | SW8081A | 4 | 0.31 | 8.0 | ND | | ug/Kg | 12/20/16 | 18:03 | LA | 421705 |
| gamma-Chlordane | SW8081A | 4 | 0.65 | 8.0 | ND | | ug/Kg | 12/20/16 | 18:03 | LA | 421705 |
| alpha-Chlordane | SW8081A | 4 | 0.69 | 8.0 | ND | | ug/Kg | 12/20/16 | 18:03 | LA | 421705 |
| Endosulfan I | SW8081A | 4 | 0.73 | 8.0 | ND | | ug/Kg | 12/20/16 | 18:03 | LA | 421705 |
| Dieldrin | SW8081A | 4 | 0.59 | 8.0 | ND | | ug/Kg | 12/20/16 | 18:03 | LA | 421705 |
| Endrin | SW8081A | 4 | 0.75 | 8.0 | ND | | ug/Kg | 12/20/16 | 18:03 | LA | 421705 |
| 4,4-DDD | SW8081A | 4 | 2.3 | 8.0 | ND | | ug/Kg | 12/20/16 | 18:03 | LA | 421705 |
| Endosulfan II | SW8081A | 4 | 2.3 | 8.0 | ND | | ug/Kg | 12/20/16 | 18:03 | LA | 421705 |
| 4,4-DDT | SW8081A | 4 | 0.52 | 8.0 | **62.3** | | ug/Kg | 12/20/16 | 18:03 | LA | 421705 |
| Endrin Aldehyde | SW8081A | 4 | 0.60 | 8.0 | ND | | ug/Kg | 12/20/16 | 18:03 | LA | 421705 |
| Methoxychlor | SW8081A | 4 | 0.80 | 8.0 | ND | | ug/Kg | 12/20/16 | 18:03 | LA | 421705 |
| Endosulfan Sulfate | SW8081A | 4 | 0.47 | 8.0 | ND | | ug/Kg | 12/20/16 | 18:03 | LA | 421705 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 12/16/16, 2:02 pm
**Date Reported:** 12/21/16

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-9 (0-1/2') | **Lab Sample ID:** | 1612152-009A |
| **Project Name/Location:** | 3141 Taylor Road SQ | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-1 | | |
| **Date/Time Sampled:** | 12/16/16 / 10:51 | | |
| **SDG:** | | | |

**Prep Method:** 3546_OCP
**Prep Batch ID:** 4103
**Prep Batch Date/Time:** 12/19/16 5:52:00PM
**Prep Analyst:** SNARASIMHAN

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Endrin Ketone | SW8081A | 4 | 0.38 | 8.0 | ND | | ug/Kg | 12/20/16 | 18:03 | LA | 421705 |
| Chlordane | SW8081A | 4 | 8.4 | 80 | ND | | ug/Kg | 12/20/16 | 18:03 | LA | 421705 |
| Toxaphene | SW8081A | 4 | 34 | 200 | ND | | ug/Kg | 12/20/16 | 18:03 | LA | 421705 |
| | | | Acceptance Limits | | | | | | | | |
| TCMX (S) | SW8081A | | 70 - 125 | | **95.0** | | ug/Kg | 12/20/16 | 18:03 | LA | 421705 |
| DCBP (S) | SW8081A | | 30 - 135 | | **104** | | ug/Kg | 12/20/16 | 18:03 | LA | 421705 |

**NOTE:** Sample diluted due to nature of the matrix (dark, viscous extract)

**Prep Method:** 3546_OCP
**Prep Batch ID:** 4103
**Prep Batch Date/Time:** 12/19/16 5:52:00PM
**Prep Analyst:** SNARASIMHAN

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 4,4-DDE | SW8081A | 10 | 1.9 | 20 | **444** | | ug/Kg | 12/20/16 | 19:03 | LA | 421705 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 12/16/16, 2:02 pm
**Date Reported:** 12/21/16

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-10 (0-1/2') | **Lab Sample ID:** | 1612152-010A |
| **Project Name/Location:** | 3141 Taylor Road SQ | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-1 | | |
| **Date/Time Sampled:** | 12/16/16 / 10:56 | | |
| **SDG:** | | | |

**Prep Method:** 7471BP — **Prep Batch Date/Time:** 12/19/16 1:45:00PM
**Prep Batch ID:** 4109 — **Prep Analyst:** PHUFANO

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.083 | 0.50 | ND | | mg/Kg | 12/20/16 | 11:22 | BJAY | 421679 |

**Prep Method:** 3050B — **Prep Batch Date/Time:** 12/19/16 1:30:00PM
**Prep Batch ID:** 4102 — **Prep Analyst:** PPATEL

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | SW6010B | 1 | 0.15 | 1.3 | **9.56** | | mg/Kg | 12/19/16 | 20:54 | PPATEL | 421675 |
| Lead | SW6010B | 1 | 0.12 | 3.0 | **12.3** | | mg/Kg | 12/19/16 | 20:54 | PPATEL | 421675 |

**Prep Method:** 3546_OCP — **Prep Batch Date/Time:** 12/19/16 5:52:00PM
**Prep Batch ID:** 4103 — **Prep Analyst:** SNARASIMHAN

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| alpha-BHC | SW8081A | 4 | 0.51 | 8.0 | ND | | ug/Kg | 12/20/16 | 19:48 | LA | 421705 |
| gamma-BHC (Lindane) | SW8081A | 4 | 0.64 | 8.0 | ND | | ug/Kg | 12/20/16 | 19:48 | LA | 421705 |
| beta-BHC | SW8081A | 4 | 1.3 | 8.0 | ND | | ug/Kg | 12/20/16 | 19:48 | LA | 421705 |
| delta-BHC | SW8081A | 4 | 0.62 | 8.0 | ND | | ug/Kg | 12/20/16 | 19:48 | LA | 421705 |
| Heptachlor | SW8081A | 4 | 0.42 | 8.0 | ND | | ug/Kg | 12/20/16 | 19:48 | LA | 421705 |
| Aldrin | SW8081A | 4 | 0.78 | 8.0 | ND | | ug/Kg | 12/20/16 | 19:48 | LA | 421705 |
| Heptachlor Epoxide | SW8081A | 4 | 0.31 | 8.0 | ND | | ug/Kg | 12/20/16 | 19:48 | LA | 421705 |
| gamma-Chlordane | SW8081A | 4 | 0.65 | 8.0 | ND | | ug/Kg | 12/20/16 | 19:48 | LA | 421705 |
| alpha-Chlordane | SW8081A | 4 | 0.69 | 8.0 | ND | | ug/Kg | 12/20/16 | 19:48 | LA | 421705 |
| 4,4-DDE | SW8081A | 4 | 0.78 | 8.0 | **93.7** | | ug/Kg | 12/20/16 | 19:48 | LA | 421705 |
| Endosulfan I | SW8081A | 4 | 0.73 | 8.0 | ND | | ug/Kg | 12/20/16 | 19:48 | LA | 421705 |
| Dieldrin | SW8081A | 4 | 0.59 | 8.0 | ND | | ug/Kg | 12/20/16 | 19:48 | LA | 421705 |
| Endrin | SW8081A | 4 | 0.75 | 8.0 | ND | | ug/Kg | 12/20/16 | 19:48 | LA | 421705 |
| 4,4-DDD | SW8081A | 4 | 2.3 | 8.0 | ND | J | ug/Kg | 12/20/16 | 19:48 | LA | 421705 |
| Endosulfan II | SW8081A | 4 | 2.3 | 8.0 | ND | | ug/Kg | 12/20/16 | 19:48 | LA | 421705 |
| 4,4-DDT | SW8081A | 4 | 0.52 | 8.0 | **23.8** | | ug/Kg | 12/20/16 | 19:48 | LA | 421705 |
| Endrin Aldehyde | SW8081A | 4 | 0.60 | 8.0 | ND | | ug/Kg | 12/20/16 | 19:48 | LA | 421705 |
| Methoxychlor | SW8081A | 4 | 0.80 | 8.0 | ND | | ug/Kg | 12/20/16 | 19:48 | LA | 421705 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 12/16/16, 2:02 pm
**Date Reported:** 12/21/16

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-10 (0-1/2') | **Lab Sample ID:** | 1612152-010A |
| **Project Name/Location:** | 3141 Taylor Road SQ | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-1 | | |
| **Date/Time Sampled:** | 12/16/16 / 10:56 | | |
| **SDG:** | | | |

| | | | |
|---|---|---|---|
| **Prep Method:** | 3546_OCP | **Prep Batch Date/Time:** | 12/19/16 5:52:00PM |
| **Prep Batch ID:** | 4103 | **Prep Analyst:** | SNARASIMHAN |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Endosulfan Sulfate | SW8081A | 4 | 0.47 | 8.0 | ND | | ug/Kg | 12/20/16 | 19:48 | LA | 421705 |
| Endrin Ketone | SW8081A | 4 | 0.38 | 8.0 | ND | | ug/Kg | 12/20/16 | 19:48 | LA | 421705 |
| Chlordane | SW8081A | 4 | 8.4 | 80 | ND | | ug/Kg | 12/20/16 | 19:48 | LA | 421705 |
| Toxaphene | SW8081A | 4 | 34 | 200 | ND | | ug/Kg | 12/20/16 | 19:48 | LA | 421705 |
| | | | Acceptance Limits | | | | | | | | |
| TCMX (S) | SW8081A | | 70 - 125 | | **90.9** | | ug/Kg | 12/20/16 | 19:48 | LA | 421705 |
| DCBP (S) | SW8081A | | 30 - 135 | | **103** | | ug/Kg | 12/20/16 | 19:48 | LA | 421705 |

**NOTE:** Sample diluted due to nature of the matrix (dark, viscous extract)

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 12/16/16, 2:02 pm
**Date Reported:** 12/21/16

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-11 (0-1/2') | **Lab Sample ID:** | 1612152-011A |
| **Project Name/Location:** | 3141 Taylor Road SQ | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-1 | | |
| **Date/Time Sampled:** | 12/16/16 / 11:02 | | |
| **SDG:** | | | |

**Prep Method:** 7471BP — **Prep Batch Date/Time:** 12/19/16 1:45:00PM
**Prep Batch ID:** 4109 — **Prep Analyst:** PHUFANO

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.083 | 0.50 | ND | | mg/Kg | 12/20/16 | 11:24 | BJAY | 421679 |

**Prep Method:** 3050B — **Prep Batch Date/Time:** 12/19/16 1:30:00PM
**Prep Batch ID:** 4102 — **Prep Analyst:** PPATEL

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | SW6010B | 1 | 0.15 | 1.3 | **4.40** | | mg/Kg | 12/19/16 | 20:57 | PPATEL | 421675 |
| Lead | SW6010B | 1 | 0.12 | 3.0 | **3.75** | | mg/Kg | 12/19/16 | 20:57 | PPATEL | 421675 |

**Prep Method:** 3546_OCP — **Prep Batch Date/Time:** 12/19/16 5:52:00PM
**Prep Batch ID:** 4103 — **Prep Analyst:** SNARASIMHAN

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| alpha-BHC | SW8081A | 1 | 0.13 | 2.0 | ND | | ug/Kg | 12/20/16 | 20:03 | LA | 421705 |
| gamma-BHC (Lindane) | SW8081A | 1 | 0.16 | 2.0 | ND | | ug/Kg | 12/20/16 | 20:03 | LA | 421705 |
| beta-BHC | SW8081A | 1 | 0.32 | 2.0 | ND | | ug/Kg | 12/20/16 | 20:03 | LA | 421705 |
| delta-BHC | SW8081A | 1 | 0.16 | 2.0 | ND | | ug/Kg | 12/20/16 | 20:03 | LA | 421705 |
| Heptachlor | SW8081A | 1 | 0.11 | 2.0 | ND | | ug/Kg | 12/20/16 | 20:03 | LA | 421705 |
| Aldrin | SW8081A | 1 | 0.20 | 2.0 | ND | | ug/Kg | 12/20/16 | 20:03 | LA | 421705 |
| Heptachlor Epoxide | SW8081A | 1 | 0.078 | 2.0 | ND | | ug/Kg | 12/20/16 | 20:03 | LA | 421705 |
| gamma-Chlordane | SW8081A | 1 | 0.16 | 2.0 | ND | | ug/Kg | 12/20/16 | 20:03 | LA | 421705 |
| alpha-Chlordane | SW8081A | 1 | 0.17 | 2.0 | ND | | ug/Kg | 12/20/16 | 20:03 | LA | 421705 |
| 4,4-DDE | SW8081A | 1 | 0.19 | 2.0 | **3.35** | | ug/Kg | 12/20/16 | 20:03 | LA | 421705 |
| Endosulfan I | SW8081A | 1 | 0.18 | 2.0 | ND | | ug/Kg | 12/20/16 | 20:03 | LA | 421705 |
| Dieldrin | SW8081A | 1 | 0.15 | 2.0 | ND | | ug/Kg | 12/20/16 | 20:03 | LA | 421705 |
| Endrin | SW8081A | 1 | 0.19 | 2.0 | ND | | ug/Kg | 12/20/16 | 20:03 | LA | 421705 |
| 4,4-DDD | SW8081A | 1 | 0.57 | 2.0 | ND | | ug/Kg | 12/20/16 | 20:03 | LA | 421705 |
| Endosulfan II | SW8081A | 1 | 0.58 | 2.0 | ND | | ug/Kg | 12/20/16 | 20:03 | LA | 421705 |
| 4,4-DDT | SW8081A | 1 | 0.13 | 2.0 | ND | | ug/Kg | 12/20/16 | 20:03 | LA | 421705 |
| Endrin Aldehyde | SW8081A | 1 | 0.15 | 2.0 | ND | | ug/Kg | 12/20/16 | 20:03 | LA | 421705 |
| Methoxychlor | SW8081A | 1 | 0.20 | 2.0 | ND | | ug/Kg | 12/20/16 | 20:03 | LA | 421705 |
| Endosulfan Sulfate | SW8081A | 1 | 0.12 | 2.0 | ND | | ug/Kg | 12/20/16 | 20:03 | LA | 421705 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 12/16/16, 2:02 pm
**Date Reported:** 12/21/16

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-11 (0-1/2') | **Lab Sample ID:** | 1612152-011A |
| **Project Name/Location:** | 3141 Taylor Road SQ | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-1 | | |
| **Date/Time Sampled:** | 12/16/16 / 11:02 | | |
| **SDG:** | | | |

| | | | |
|---|---|---|---|
| **Prep Method:** | 3546_OCP | **Prep Batch Date/Time:** | 12/19/16 5:52:00PM |
| **Prep Batch ID:** | 4103 | **Prep Analyst:** | SNARASIMHAN |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Endrin Ketone | SW8081A | 1 | 0.094 | 2.0 | ND | | ug/Kg | 12/20/16 | 20:03 | LA | 421705 |
| Chlordane | SW8081A | 1 | 2.1 | 20 | ND | | ug/Kg | 12/20/16 | 20:03 | LA | 421705 |
| Toxaphene | SW8081A | 1 | 8.5 | 50 | ND | | ug/Kg | 12/20/16 | 20:03 | LA | 421705 |
| | | | Acceptance Limits | | | | | | | | |
| TCMX (S) | SW8081A | | 70 - 125 | | **78.2** | | ug/Kg | 12/20/16 | 20:03 | LA | 421705 |
| DCBP (S) | SW8081A | | 30 - 135 | | **93.8** | | ug/Kg | 12/20/16 | 20:03 | LA | 421705 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 12/16/16, 2:02 pm
**Date Reported:** 12/21/16

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-12 (0-1/2') | **Lab Sample ID:** | 1612152-012A |
| **Project Name/Location:** | 3141 Taylor Road SQ | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-1 | | |
| **Date/Time Sampled:** | 12/16/16 / 11:06 | | |
| **SDG:** | | | |

**Prep Method:** 7471BP — **Prep Batch Date/Time:** 12/19/16 1:45:00PM
**Prep Batch ID:** 4109 — **Prep Analyst:** PHUFANO

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.083 | 0.50 | ND | | mg/Kg | 12/20/16 | 11:26 | BJAY | 421679 |

**Prep Method:** 3050B — **Prep Batch Date/Time:** 12/19/16 1:30:00PM
**Prep Batch ID:** 4102 — **Prep Analyst:** PPATEL

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | SW6010B | 1 | 0.15 | 1.3 | **29.2** | | mg/Kg | 12/19/16 | 21:00 | PPATEL | 421675 |
| Lead | SW6010B | 1 | 0.12 | 3.0 | **79.8** | | mg/Kg | 12/19/16 | 21:00 | PPATEL | 421675 |

**Prep Method:** 3546_OCP — **Prep Batch Date/Time:** 12/19/16 5:52:00PM
**Prep Batch ID:** 4103 — **Prep Analyst:** SNARASIMHAN

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| alpha-BHC | SW8081A | 10 | 1.3 | 20 | ND | | ug/Kg | 12/20/16 | 20:34 | LA | 421705 |
| gamma-BHC (Lindane) | SW8081A | 10 | 1.6 | 20 | ND | | ug/Kg | 12/20/16 | 20:34 | LA | 421705 |
| beta-BHC | SW8081A | 10 | 3.2 | 20 | ND | | ug/Kg | 12/20/16 | 20:34 | LA | 421705 |
| delta-BHC | SW8081A | 10 | 1.6 | 20 | ND | | ug/Kg | 12/20/16 | 20:34 | LA | 421705 |
| Heptachlor | SW8081A | 10 | 1.1 | 20 | ND | | ug/Kg | 12/20/16 | 20:34 | LA | 421705 |
| Aldrin | SW8081A | 10 | 2.0 | 20 | ND | | ug/Kg | 12/20/16 | 20:34 | LA | 421705 |
| Heptachlor Epoxide | SW8081A | 10 | 0.78 | 20 | ND | | ug/Kg | 12/20/16 | 20:34 | LA | 421705 |
| gamma-Chlordane | SW8081A | 10 | 1.6 | 20 | ND | | ug/Kg | 12/20/16 | 20:34 | LA | 421705 |
| alpha-Chlordane | SW8081A | 10 | 1.7 | 20 | ND | | ug/Kg | 12/20/16 | 20:34 | LA | 421705 |
| 4,4-DDE | SW8081A | 10 | 1.9 | 20 | **398** | | ug/Kg | 12/20/16 | 20:34 | LA | 421705 |
| Endosulfan I | SW8081A | 10 | 1.8 | 20 | ND | | ug/Kg | 12/20/16 | 20:34 | LA | 421705 |
| Dieldrin | SW8081A | 10 | 1.5 | 20 | ND | | ug/Kg | 12/20/16 | 20:34 | LA | 421705 |
| Endrin | SW8081A | 10 | 1.9 | 20 | ND | | ug/Kg | 12/20/16 | 20:34 | LA | 421705 |
| 4,4-DDD | SW8081A | 10 | 5.7 | 20 | ND | | ug/Kg | 12/20/16 | 20:34 | LA | 421705 |
| Endosulfan II | SW8081A | 10 | 5.8 | 20 | ND | | ug/Kg | 12/20/16 | 20:34 | LA | 421705 |
| 4,4-DDT | SW8081A | 10 | 1.3 | 20 | **138** | | ug/Kg | 12/20/16 | 20:34 | LA | 421705 |
| Endrin Aldehyde | SW8081A | 10 | 1.5 | 20 | ND | | ug/Kg | 12/20/16 | 20:34 | LA | 421705 |
| Methoxychlor | SW8081A | 10 | 2.0 | 20 | ND | | ug/Kg | 12/20/16 | 20:34 | LA | 421705 |
| Endosulfan Sulfate | SW8081A | 10 | 1.2 | 20 | ND | | ug/Kg | 12/20/16 | 20:34 | LA | 421705 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 12/16/16, 2:02 pm
**Date Reported:** 12/21/16

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-12 (0-1/2') | **Lab Sample ID:** | 1612152-012A |
| **Project Name/Location:** | 3141 Taylor Road SQ | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-1 | | |
| **Date/Time Sampled:** | 12/16/16 / 11:06 | | |
| **SDG:** | | | |

| | | | |
|---|---|---|---|
| **Prep Method:** | 3546_OCP | **Prep Batch Date/Time:** | 12/19/16 5:52:00PM |
| **Prep Batch ID:** | 4103 | **Prep Analyst:** | SNARASIMHAN |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Endrin Ketone | SW8081A | 10 | 0.94 | 20 | ND | | ug/Kg | 12/20/16 | 20:34 | LA | 421705 |
| Chlordane | SW8081A | 10 | 21 | 200 | ND | | ug/Kg | 12/20/16 | 20:34 | LA | 421705 |
| Toxaphene | SW8081A | 10 | 85 | 500 | ND | | ug/Kg | 12/20/16 | 20:34 | LA | 421705 |
| | | | Acceptance Limits | | | | | | | | |
| TCMX (S) | SW8081A | | 70 - 125 | | **109** | | ug/Kg | 12/20/16 | 20:34 | LA | 421705 |
| DCBP (S) | SW8081A | | 30 - 135 | | **120** | | ug/Kg | 12/20/16 | 20:34 | LA | 421705 |

Torrent LABORATORY, INC.

# MB Summary Report

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1612152 | **Prep Method:** | 3050B | **Prep Date:** | 12/19/16 | **Prep Batch:** | 4102 |
| **Matrix:** | Soil | **Analytical Method:** | SW6010B | **Analyzed Date:** | 12/19/2016 | **Analytical Batch:** | 421675 |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Lab Qualifier |
|---|---|---|---|---|
| Arsenic | 0.15 | 1.30 | ND | |
| Lead | 0.10 | 1.30 | 0.26 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1612152 | **Prep Method:** | 3546_OCP | **Prep Date:** | 12/19/16 | **Prep Batch:** | 4103 |
| **Matrix:** | Soil | **Analytical Method:** | SW8081A | **Analyzed Date:** | 12/19/2016 | **Analytical Batch:** | 421704 |
| **Units:** | ug/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Lab Qualifier |
|---|---|---|---|---|
| alpha-BHC | 0.13 | 2.0 | ND | |
| gamma-BHC (Lindane) | 0.16 | 2.0 | ND | |
| beta-BHC | 0.32 | 2.0 | ND | |
| delta-BHC | 0.16 | 2.0 | ND | |
| Heptachlor | 0.11 | 2.0 | ND | |
| Aldrin | 0.20 | 2.0 | ND | |
| Heptachlor Epoxide | 0.078 | 2.0 | ND | |
| gamma-Chlordane | 0.16 | 2.0 | ND | |
| alpha-Chlordane | 0.17 | 2.0 | ND | |
| 4,4-DDE | 0.19 | 2.0 | ND | |
| Endosulfan I | 0.18 | 2.0 | 0.183 | |
| Dieldrin | 0.15 | 2.0 | ND | |
| Endrin | 0.19 | 2.0 | ND | |
| 4,4-DDD | 0.57 | 2.0 | ND | |
| Endosulfan II | 0.58 | 2.0 | ND | |
| 4,4-DDT | 0.13 | 2.0 | ND | |
| Endrin Aldehyde | 0.15 | 2.0 | ND | |
| Methoxychlor | 0.20 | 2.0 | ND | |
| Endosulfan Sulfate | 0.12 | 2.0 | ND | |
| Endrin Ketone | 0.094 | 2.0 | ND | |
| Chlordane | 2.1 | 20 | ND | |
| Toxaphene | 8.5 | 50 | ND | |
| TCMX (S) | | | 80.0 | |
| DCBP (S) | | | 95.1 | |

Torrent LABORATORY, INC.

# MB Summary Report

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1612152 | **Prep Method:** | 7471BP | **Prep Date:** | 12/19/16 | **Prep Batch:** | 4109 |
| **Matrix:** | Soil | **Analytical Method:** | SW7471B | **Analyzed Date:** | 12/20/2016 | **Analytical Batch:** | 421679 |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Lab Qualifier |
|---|---|---|---|---|
| Mercury | 0.083 | 0.50 | ND | |

Torrent LABORATORY, INC.

# LCS/LCSD Summary Report

*Raw values are used in quality control assessment.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1612152 | **Prep Method:** | 3050B | **Prep Date:** | 12/19/16 | **Prep Batch:** | 4102 |
| **Matrix:** | Soil | **Analytical Method:** | SW6010B | **Analyzed Date:** | 12/19/2016 | **Analytical Batch:** | 421675 |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Spike Conc. | LCS % Recovery | LCSD % Recovery | LCS/LCSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 0.15 | 1.30 | ND | 50 | 93.3 | 91.4 | 2.16 | 80 - 120 | 30 | |
| Lead | 0.10 | 3.00 | 0.26 | 50 | 96.2 | 99.2 | 3.07 | 80 - 120 | 30 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1612152 | **Prep Method:** | 3546_OCP | **Prep Date:** | 12/19/16 | **Prep Batch:** | 4103 |
| **Matrix:** | Soil | **Analytical Method:** | SW8081A | **Analyzed Date:** | 12/19/2016 | **Analytical Batch:** | 421704 |
| **Units:** | ug/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Spike Conc. | LCS % Recovery | LCSD % Recovery | LCS/LCSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| gamma-BHC (Lindane) | 0.16 | 2.0 | ND | 40 | 88.5 | 86.5 | 2.29 | 25 - 135 | 30 | |
| Heptachlor | 0.11 | 2.0 | ND | 40 | 86.2 | 84.0 | 2.64 | 40 - 130 | 30 | |
| Aldrin | 0.20 | 2.0 | ND | 40 | 85.3 | 83.9 | 1.48 | 25 - 140 | 30 | |
| Dieldrin | 0.15 | 2.0 | ND | 40 | 82.5 | 81.9 | 0.608 | 60 - 130 | 30 | |
| Endrin | 0.19 | 2.0 | ND | 40 | 92.2 | 92.4 | 0.271 | 55 - 135 | 30 | |
| 4,4-DDT | 0.13 | 2.0 | ND | 40 | 90.5 | 89.3 | 1.39 | 45 - 140 | 30 | |
| TCMX (S) | | | | 100 | 80.2 | 77.3 | | 70 - 125 | | |
| DCBP (S) | | | | 100 | 97.3 | 86.7 | | 30 - 135 | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1612152 | **Prep Method:** | 7471BP | **Prep Date:** | 12/19/16 | **Prep Batch:** | 4109 |
| **Matrix:** | Soil | **Analytical Method:** | SW7471B | **Analyzed Date:** | 12/20/2016 | **Analytical Batch:** | 421679 |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Spike Conc. | LCS % Recovery | LCSD % Recovery | LCS/LCSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.047 | 0.50 | ND | 1.25 | 94.3 | 93.1 | 1.71 | 80 - 120 | 30 | |

Torrent LABORATORY, INC.

# MS/MSD Summary Report

*Raw values are used in quality control assessment.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1612152 | **Prep Method:** | 3050B | **Prep Date:** | 12/19/16 | **Prep Batch:** | 4102 |
| **Matrix:** | **Soil** | **Analytical Method:** | | **Analyzed Date:** | | **Analytical Batch:** | 421675 |
| **Spiked Sample:** | 1612152-001A | | | | | | |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Sample Conc. | Spike Conc. | MS % Recovery | MSD % Recovery | MS/MSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 0.150 | 1.30 | 4.98 | 50 | 101 | 99.4 | 1.09 | 75 - 125 | 30 | |
| Lead | 0.120 | 3.00 | 27.9 | 50 | 95.5 | 98.5 | 1.96 | 75 - 125 | 30 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1612152 | **Prep Method:** | 3546_OCP | **Prep Date:** | 12/19/16 | **Prep Batch:** | 4103 |
| **Matrix:** | **Soil** | **Analytical Method:** | | **Analyzed Date:** | | **Analytical Batch:** | 421705 |
| **Spiked Sample:** | 1612152-012A | | | | | | |
| **Units:** | ug/Kg | | | | | | |

| Parameters | MDL | PQL | Sample Conc. | Spike Conc. | MS % Recovery | MSD % Recovery | MS/MSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| gamma-BHC (Lindane) | 1.59 | 20.0 | ND | 40 | 129 | 136 | 5.29 | 25 - 135 | 30 | S |
| Heptachlor | 1.05 | 20.0 | ND | 40 | 110 | 143 | 7.33 | 40 - 130 | 30 | S |
| Aldrin | 1.95 | 20.0 | ND | 40 | 130 | 134 | 2.66 | 25 - 140 | 30 | |
| Dieldrin | 1.48 | 20.0 | ND | 40 | 119 | 122 | 2.69 | 60 - 130 | 30 | |
| Endrin | 1.88 | 20.0 | ND | 40 | 115 | 144 | 4.79 | 55 - 135 | 30 | S |
| 4,4-DDT | 1.29 | 20.0 | ND | 40 | 162 | 150 | 12.9 | 45 - 140 | 30 | S |
| TCMX (S) | | | | 100 | 117 | 118 | | 70 - 125 | | |
| DCBP (S) | | | | 100 | 134 | 142 | | 30 - 135 | | S |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1612152 | **Prep Method:** | 7471BP | **Prep Date:** | 12/19/16 | **Prep Batch:** | 4109 |
| **Matrix:** | **Soil** | **Analytical Method:** | | **Analyzed Date:** | | **Analytical Batch:** | 421679 |
| **Spiked Sample:** | 1612152-001A | | | | | | |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Sample Conc. | Spike Conc. | MS % Recovery | MSD % Recovery | MS/MSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.047 | 0.50 | ND | 1.25 | 75.0 | 85.4 | 14.3 | 75 - 125 | 30 | |

Torrent LABORATORY, INC.

# Laboratory Qualifiers and Definitions

## DEFINITIONS:

| |
|---|
| **Accuracy/Bias (% Recovery)** - The closeness of agreement between an observed value and an accepted reference value. |
| **Blank (Method/Preparation Blank)** -MB/PB - An analyte-free matrix to which all reagents are added in the same volumes/proportions as used in sample processing. The method blank is used to document contamination resulting from the analytical process. |
| **Duplicate** - a field sample and/or laboratory QC sample prepared in duplicate following all of the same processes and procedures used on the original sample (sample duplicate, LCSD, MSD) |
| **Laboratory Control Sample (LCS ad LCSD)** - A known matrix spiked with compounds representative of the target analyte(s). This is used to document laboratory performance. |
| **Matrix** - the component or substrate that contains the analyte of interest (e.g., - groundwater, sediment, soil, waste water, etc) |
| **Matrix Spike (MS/MSD)** - Client sample spiked with identical concentrations of target analyte (s). The spiking occurs prior to the sample preparation and analysis. They are used to document the precision and bias of a method in a given sample matrix. |
| **Method Detection Limit (MDL)** - the minimum concentration of a substance that can be measured and reported with a 99% confidence that the analyte concentration is greater than zero |
| **Practical Quantitation Limit/Reporting Limit/Limit of Quantitation (PQL/RL/LOQ)** - a laboratory determined value at 2 to 5 times above the MDL that can be reproduced in a manner that results in a 99% confidence level that the result is both accurate and precise. PQLs/RLs/LODs reflect all preparation factors and/or dilution factors that have been applied to the sample during the preparation and/or analytical processes. |
| **Precision (%RPD)** - The agreement among a set of replicate/duplicate measurements without regard to known value of the replicates |
| **Surrogate (S) or (Surr)** - An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples. Surrogates are used in most organic analysis to demonstrate matrix compatibility with the chosen method of analysis |
| **Tentatively Identified Compound (TIC)** - A compound not contained within the analytical calibration standards but present in the GCMS library of defined compounds. When the library is searched for an unknown compound, it can frequently give a tentative identification to the compound based on retention time and primary and secondary ion match. TICs are reported as estimates and are candidates for further investigation. |
| **Units:** the unit of measure used to express the reported result - **mg/L** and ***mg/Kg*** (equivalent to PPM - parts per million in **liquid** and ***solid***), **ug/L** and ***ug/Kg*** (equivalent to PPB - parts per billion in **liquid** and ***solid***), **ug/m3**, ***mg/m3***, **ppbv** and ***ppmv*** (all units of measure for reporting concentrations in air), **%** ( equivalent to 10000 ppm or 1,000,000 ppb), **ug/Wipe** ( concentration found on the surface of a single Wipe usually taken over a 100cm2 surface) |

## LABORATORY QUALIFIERS:

| |
|---|
| **B** - Indicates when the analyte is found in the associated method or preparation blank |
| **D** - Surrogate is not recoverable due to the necessary dilution of the sample |
| **E** - Indicates the reportable value is outside of the calibration range of the instrument but within the linear range of the instrument (unless otherwise noted) Values reported with an E qualifier should be considered as estimated. |
| **H**- Indicates that the recommended holding time for the analyte or compound has been exceeded |
| **J**- Indicates a value between the method MDL and PQL and that the reported concentration should be considered as estimated rather the quantitative |
| **NA** - Not Analyzed |
| **N/A** - Not Applicable |
| **ND** - Not Detected at a concentration greater than the PQL/RL or, if reported to the MDL, at greater than the MDL. |
| **NR** - Not recoverable - a matrix spike concentration is not recoverable due to a concentration within the original sample that is greater than four times the spike concentration added |
| **R**- The % RPD between a duplicate set of samples is outside of the absolute values established by laboratory control charts |
| **S**- Spike recovery is outside of established method and/or laboratory control limits. Further explanation of the use of this qualifier should be included within a case narrative |
| **X** -Used to indicate that a value based on pattern identification is within the pattern range but not typical of the pattern found in standards. Further explanation may or may not be provided within the sample footnote and/or the case narrative. |

483 Sinclair Frontage Rd., Milpitas, CA 95035 | tel: 408.263.5258 | fax: 408.263.8293 | www.torrentlab.com

Torrent LABORATORY, INC.

# Sample Receipt Checklist

Client Name: Cornerstone(Walnut Creek)

Project Name: 3141 Taylor Road SQ

Work Order No.: 1612152

Date and Time Received: 12/16/2016 2:02:00PM

Received By: Lorna Imbat

Physically Logged By: Lorna Imbat

Checklist Completed By:

Carrier Name: Client Drop Off

## Chain of Custody (COC) Information

| | |
|---|---|
| Chain of custody present? | Yes |
| Chain of custody signed when relinquished and received? | Yes |
| Chain of custody agrees with sample labels? | Yes |
| Custody seals intact on sample bottles? | Not Present |

## Sample Receipt Information

| | |
|---|---|
| Custody seals intact on shipping container/cooler? | Not Present |
| Shipping Container/Cooler In Good Condition? | Yes |
| Samples in proper container/bottle? | Yes |
| Samples containers intact? | Yes |
| Sufficient sample volume for indicated test? | Yes |

## Sample Preservation and Hold Time (HT) Information

| | | | | |
|---|---|---|---|---|
| All samples received within holding time? | Yes | | | |
| Container/Temp Blank temperature in compliance? | Yes | Temperature: | 2.0 | °C |
| Water-VOA vials have zero headspace? | No VOA vials submitted | | | |
| Water-pH acceptable upon receipt? | N/A | | | |

pH Checked by: n/a

pH Adjusted by: n/a

**Comments:**

Torrent LABORATORY, INC.

# Login Summary Report

**Client ID:** TL5508 Cornerstone(Walnut Creek)
**Project Name:** 3141 Taylor Road SQ
**Project # :** 411-16-1
**Report Due Date:** 12/21/2016

**QC Level:** II
**TAT Requested:** 3 Day Std:3
**Date Received:** 12/16/2016
**Time Received:** 2:02 pm

**Comments:**
**Work Order # :** ***1612152***

| WO Sample ID | Client Sample ID | Collection Date/Time | Matrix | Scheduled Disposal | Sample On Hold | Test On Hold | Requested Tests | Subbed |
|---|---|---|---|---|---|---|---|---|
| 1612152-001A | SS-1 (0-1/2') | 12/16/16 10:15 | Soil | 06/14/17 | | | Met_S_AsPb<br>Hg_S_7471B | |
| 1612152-002A | SS-2 (0-1/2') | 12/16/16 10:18 | Soil | 06/14/17 | | | Hg_S_7471B<br>Met_S_AsPb | |
| 1612152-003A | SS-3 (0-1/2') | 12/16/16 10:21 | Soil | 06/14/17 | | | Hg_S_7471B<br>Met_S_AsPb | |
| 1612152-004A | SS-4 (0-1/2') | 12/16/16 10:25 | Soil | 06/14/17 | | | Hg_S_7471B<br>Pest_S_8081OCP<br>Met_S_AsPb | |
| 1612152-005A | SS-5 (0-1/2') | 12/16/16 10:28 | Soil | 06/14/17 | | | Hg_S_7471B<br>Met_S_AsPb | |
| 1612152-006A | SS-6 (0-1/2') | 12/16/16 10:39 | Soil | 06/14/17 | | | Hg_S_7471B<br>Pest_S_8081OCP<br>Met_S_AsPb | |
| 1612152-007A | SS-7 (0-1/2') | 12/16/16 10:42 | Soil | 06/14/17 | | | Hg_S_7471B<br>Met_S_AsPb | |
| 1612152-008A | SS-8 (0-1/2') | 12/16/16 10:48 | Soil | 06/14/17 | | | Hg_S_7471B<br>Met_S_AsPb | |
| 1612152-009A | SS-9 (0-1/2') | 12/16/16 10:51 | Soil | 06/14/17 | | | Hg_S_7471B<br>Met_S_AsPb | |
| 1612152-010A | SS-10 (0-1/2') | 12/16/16 10:56 | Soil | 06/14/17 | | | Hg_S_7471B<br>Met_S_AsPb | |
| 1612152-011A | SS-11 (0-1/2') | 12/16/16 11:02 | Soil | 06/14/17 | | | Hg_S_7471B<br>Met_S_AsPb<br>Pest_S_8081OCP | |
| 1612152-012A | SS-12 (0-1/2') | 12/16/16 11:06 | Soil | 06/14/17 | | | | |

Torrent LABORATORY, INC.

# Login Summary Report

| | | | | |
|---|---|---|---|---|
| **Client ID:** | TL5508 | Cornerstone(Walnut Creek) | **QC Level:** | II |
| **Project Name:** | 3141 Taylor Road SQ | | **TAT Requested:** | 3 Day Std:3 |
| **Project # :** | 411-16-1 | | **Date Received:** | 12/16/2016 |
| **Report Due Date:** | 12/21/2016 | | **Time Received:** | 2:02 pm |

**Comments:**

**Work Order # :** ***1612152***

| WO Sample ID | Client Sample ID | Collection Date/Time | Matrix | Scheduled Disposal | Sample On Hold | Test On Hold | Requested Tests | Subbed |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | Hg_S_7471B<br>Met_S_AsPb<br>Pest_S_8081OCP | |

Torrent LABORATORY, INC.

CORNERSTONE EARTH GROUP

# Chain of Custody Record

1612152

| | | | |
|---|---|---|---|
| | Project Manager: Peter Langtry | Site Sampler: | Date: 12/16/2016 |
| Cornerstone Earth Group, Inc. | Tel/Fax: 925-988-9500 ext. 11 | Lab Contact: | Lab: Torrent Laboratory Inc |
| 1259 Oakmead Pkwy | Analysis Turnaround Time | | |
| Sunnyvale, California 94085 | | | |
| (408) 245-4600 Phone | TAT if different from Below _____ | | |
| (408) 245-4620 FAX | ☐ 1 week | | |
| Project Name: 3141 Taylor Road SQ | ■ 3 days | | |
| Site: Loomis, CA | ☐ 2 days | | |
| Project Number: 411-16-1 | ☐ 1 day | | |

COC No: 1 of 2 COCs

Laboratory's Job No.

| Sample Identification | Sample Date | Sample Time | Sample Type | Matrix | # of Cont. | Filtered Sample | OCPs (EPA 8081) | Arsenic, Lead & Mercury (EPA 6010/7000) | Laboratory's Sample Specific Notes: |
|---|---|---|---|---|---|---|---|---|---|
| SS-1 (0-½') | 12/16/2016 | 10:15 | Liner | Soil | 1 | | X | X | -001A |
| SS-2 (0-½') | 12/16/2016 | 10:18 | Liner | Soil | 1 | | X | X | -002A |
| SS-3 (0-½') | 12/16/2016 | 10:21 | Liner | Soil | 1 | | X | X | -003A |
| SS-4 (0-½') | 12/16/2016 | 10:25 | Liner | Soil | 1 | | X | X | -004A |
| SS-5 (0-½') | 12/16/2016 | 10:28 | Liner | Soil | 1 | | X | X | -005A |
| SS-6 (0-½') | 12/16/2016 | 10:39 | Liner | Soil | 1 | | X | X | -006A |
| SS-7 (0-½') | 12/16/2016 | 10:42 | Liner | Soil | 1 | | X | X | -007A |
| SS-8 (0-½') | 12/16/2016 | 10:48 | Liner | Soil | 1 | | X | X | -008A |
| SS-9 (0-½') | 12/16/2016 | 10:51 | Liner | Soil | 1 | | X | X | -009A |
| SS-10 (0-½') | 12/16/2016 | 10:56 | Liner | Soil | 1 | | X | X | -010A |
| SS-11 (0-½') | 12/16/2016 | 11:02 | Liner | Soil | 1 | | X | X | -011A |
| SS-12 (0-½') | 12/16/2016 | 11:06 | Liner | Soil | 1 | | X | X | -012A |

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

*Possible Hazard Identification*
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ■ *Unknown*

*Sample Disposal*
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Special Instructions/QC Requirements & Comments: If additional sample is needed, please use the liner. If marked:

| | | | | | |
|---|---|---|---|---|---|
| Relinquished by: | Company: Cornerstone Earth Group | Date/Time: 1422 12/16/2016 | Received by: L. D. Imbat | Company: Torrent Laboratory, Inc. | Date/Time: 12/ /2016 12-16-16 1402 |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |

D/U Temp 2°C #1

Torrent LABORATORY, INC.

Cornerstone(Walnut Creek)
1270 Springbrook Rd., Ste. 101
Walnut Creek, California 94597
Tel: 925 988 9500
Fax: 925 988 9501

RE: 3141 Taylor Road SQ

Work Order No.: 1612153

Dear Peter Langtry:

Torrent Laboratory, Inc. received 12 sample(s) on December 16, 2016 for the analyses presented in the following Report.

All data for associated QC met EPA or laboratory specification(s) except where noted in the case narrative.

Torrent Laboratory, Inc. is certified by the State of California, ELAP #1991. If you have any questions regarding these test results, please feel free to contact the Project Management Team at (408)263-5258; ext 204.

Patti L Sandrock
QA Officer

December 21, 2016
Date

Torrent LABORATORY, INC.

**Date:** 12/21/2016

**Client:** Cornerstone(Walnut Creek)

**Project:** 3141 Taylor Road SQ

**Work Order:** 1612153

## CASE NARRATIVE

No issues encountered with the receiving, preparation, analysis or reporting of the results associated with this work order.

Unless otherwise indicated in the following narrative, no results have been method and/or field blank corrected.

Reported results relate only to the items/samples tested by the laboratory.

This report shall not be reproduced, except in full, without the written approval of Torrent Analytical, Inc.

Torrent LABORATORY, INC.

# Sample Result Summary

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date Received:** 12/16/16
**Date Reported:** 12/21/16

**SS-13 (0-1/2')** 1612153-001

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Arsenic | SW6010B | 1 | 0.15 | 1.3 | 7.22 | mg/Kg |
| Lead | SW6010B | 1 | 0.12 | 3.0 | 12.5 | mg/Kg |
| 4,4-DDE | SW8081A | 3 | 0.58 | 6.0 | 64.3 | ug/Kg |
| 4,4-DDT | SW8081A | 3 | 0.39 | 6.0 | 14.6 | ug/Kg |

**SS-14 (0-1/2')** 1612153-002

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Arsenic | SW6010B | 1 | 0.15 | 1.3 | 6.37 | mg/Kg |
| Lead | SW6010B | 1 | 0.12 | 3.0 | 23.4 | mg/Kg |
| 4,4-DDE | SW8081A | 10 | 1.9 | 20 | 522 | ug/Kg |
| 4,4-DDD | SW8081A | 10 | 5.7 | 20 | 18.6 | ug/Kg |
| 4,4-DDT | SW8081A | 10 | 1.3 | 20 | 106 | ug/Kg |

**SS-15 (0-1/2')** 1612153-003

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Arsenic | SW6010B | 1 | 0.15 | 1.3 | 7.11 | mg/Kg |
| Lead | SW6010B | 1 | 0.12 | 3.0 | 21.2 | mg/Kg |
| 4,4-DDE | SW8081A | 10 | 1.9 | 20 | 62.4 | ug/Kg |
| 4,4-DDD | SW8081A | 10 | 5.7 | 20 | 6.94 | ug/Kg |
| 4,4-DDT | SW8081A | 10 | 1.3 | 20 | 6.94 | ug/Kg |

**SS-16 (0-1/2')** 1612153-004

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Arsenic | SW6010B | 1 | 0.15 | 1.3 | 13.8 | mg/Kg |
| Lead | SW6010B | 1 | 0.12 | 3.0 | 43.1 | mg/Kg |
| 4,4-DDE | SW8081A | 10 | 1.9 | 20 | 315 | ug/Kg |
| 4,4-DDT | SW8081A | 4 | 0.52 | 8.0 | 43.4 | ug/Kg |

**SS-17 (0-1/2')** 1612153-005

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Arsenic | SW6010B | 1 | 0.15 | 1.3 | 11.5 | mg/Kg |
| Lead | SW6010B | 1 | 0.12 | 3.0 | 23.3 | mg/Kg |
| 4,4-DDE | SW8081A | 10 | 1.9 | 20 | 150 | ug/Kg |
| 4,4-DDT | SW8081A | 10 | 1.3 | 20 | 33.9 | ug/Kg |

Torrent LABORATORY, INC.

## Sample Result Summary

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date Received:** 12/16/16
**Date Reported:** 12/21/16

**SS-18 (0-1/2')** 1612153-006

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Arsenic | SW6010B | 1 | 0.15 | 1.3 | 4.07 | mg/Kg |
| Lead | SW6010B | 1 | 0.12 | 3.0 | 9.35 | mg/Kg |
| 4,4-DDE | SW8081A | 4 | 0.78 | 8.0 | 13.0 | ug/Kg |

**SS-19 (0-1/2')** 1612153-007

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Arsenic | SW6010B | 1 | 0.15 | 1.3 | 10.1 | mg/Kg |
| Lead | SW6010B | 1 | 0.12 | 3.0 | 18.1 | mg/Kg |
| 4,4-DDE | SW8081A | 1 | 0.19 | 2.0 | 11.2 | ug/Kg |
| 4,4-DDT | SW8081A | 1 | 0.13 | 2.0 | 7.72 | ug/Kg |

**SS-20 (0-1/2')** 1612153-008

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Arsenic | SW6010B | 1 | 0.15 | 1.3 | 9.65 | mg/Kg |
| Lead | SW6010B | 1 | 0.12 | 3.0 | 38.8 | mg/Kg |
| 4,4-DDE | SW8081A | 4 | 0.78 | 8.0 | 97.7 | ug/Kg |
| 4,4-DDT | SW8081A | 4 | 0.52 | 8.0 | 15.2 | ug/Kg |

**SS-21 (0-1/2')** 1612153-009

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Arsenic | SW6010B | 1 | 0.15 | 1.3 | 5.46 | mg/Kg |
| Lead | SW6010B | 1 | 0.12 | 3.0 | 17.1 | mg/Kg |
| 4,4-DDE | SW8081A | 4 | 0.78 | 8.0 | 67.8 | ug/Kg |
| 4,4-DDT | SW8081A | 4 | 0.52 | 8.0 | 11.4 | ug/Kg |

**SS-22 (0-1/2')** 1612153-010

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Arsenic | SW6010B | 1 | 0.15 | 1.3 | 14.1 | mg/Kg |
| Lead | SW6010B | 1 | 0.12 | 3.0 | 32.3 | mg/Kg |
| 4,4-DDE | SW8081A | 10 | 1.9 | 20 | 259 | ug/Kg |
| 4,4-DDT | SW8081A | 4 | 0.52 | 8.0 | 57.9 | ug/Kg |

**SS-23 (0-1/2')** 1612153-011

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Arsenic | SW6010B | 1 | 0.15 | 1.3 | 8.20 | mg/Kg |
| Lead | SW6010B | 1 | 0.12 | 3.0 | 12.1 | mg/Kg |
| 4,4-DDE | SW8081A | 4 | 0.78 | 8.0 | 22.8 | ug/Kg |
| 4,4-DDT | SW8081A | 4 | 0.52 | 8.0 | 10.5 | ug/Kg |

Torrent LABORATORY, INC.

## Sample Result Summary

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date Received:** 12/16/16
**Date Reported:** 12/21/16

**SS-24 (0-1/2')** 1612153-012

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Arsenic | SW6010B | 1 | 0.15 | 1.3 | 7.27 | mg/Kg |
| Lead | SW6010B | 1 | 0.12 | 3.0 | 13.5 | mg/Kg |
| 4,4-DDE | SW8081A | 4 | 0.78 | 8.0 | 36.8 | ug/Kg |
| 4,4-DDT | SW8081A | 4 | 0.52 | 8.0 | 15.6 | ug/Kg |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 12/16/16, 2:02 pm
**Date Reported:** 12/21/16

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-13 (0-1/2') | **Lab Sample ID:** | 1612153-001A |
| **Project Name/Location:** | 3141 Taylor Road SQ | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-1 | | |
| **Date/Time Sampled:** | 12/16/16 / 11:12 | | |
| **SDG:** | | | |

**Prep Method:** 7471BP — **Prep Batch Date/Time:** 12/19/16 1:45:00PM
**Prep Batch ID:** 4109 — **Prep Analyst:** PHUFANO

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.083 | 0.50 | ND | | mg/Kg | 12/20/16 | 11:28 | BJAY | 421679 |

**Prep Method:** 3050B — **Prep Batch Date/Time:** 12/19/16 1:30:00PM
**Prep Batch ID:** 4102 — **Prep Analyst:** PPATEL

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | SW6010B | 1 | 0.15 | 1.3 | **7.22** | | mg/Kg | 12/19/16 | 21:03 | PPATEL | 421675 |
| Lead | SW6010B | 1 | 0.12 | 3.0 | **12.5** | | mg/Kg | 12/19/16 | 21:03 | PPATEL | 421675 |

**Prep Method:** 3546_OCP — **Prep Batch Date/Time:** 12/19/16 5:52:00PM
**Prep Batch ID:** 4103 — **Prep Analyst:** SNARASIMHAN

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| alpha-BHC | SW8081A | 3 | 0.38 | 6.0 | ND | | ug/Kg | 12/20/16 | 21:19 | LA | 421705 |
| gamma-BHC (Lindane) | SW8081A | 3 | 0.48 | 6.0 | ND | | ug/Kg | 12/20/16 | 21:19 | LA | 421705 |
| beta-BHC | SW8081A | 3 | 0.95 | 6.0 | ND | | ug/Kg | 12/20/16 | 21:19 | LA | 421705 |
| delta-BHC | SW8081A | 3 | 0.47 | 6.0 | ND | | ug/Kg | 12/20/16 | 21:19 | LA | 421705 |
| Heptachlor | SW8081A | 3 | 0.32 | 6.0 | ND | | ug/Kg | 12/20/16 | 21:19 | LA | 421705 |
| Aldrin | SW8081A | 3 | 0.59 | 6.0 | ND | | ug/Kg | 12/20/16 | 21:19 | LA | 421705 |
| Heptachlor Epoxide | SW8081A | 3 | 0.23 | 6.0 | ND | | ug/Kg | 12/20/16 | 21:19 | LA | 421705 |
| gamma-Chlordane | SW8081A | 3 | 0.49 | 6.0 | ND | | ug/Kg | 12/20/16 | 21:19 | LA | 421705 |
| alpha-Chlordane | SW8081A | 3 | 0.52 | 6.0 | ND | | ug/Kg | 12/20/16 | 21:19 | LA | 421705 |
| 4,4-DDE | SW8081A | 3 | 0.58 | 6.0 | **64.3** | | ug/Kg | 12/20/16 | 21:19 | LA | 421705 |
| Endosulfan I | SW8081A | 3 | 0.55 | 6.0 | ND | | ug/Kg | 12/20/16 | 21:19 | LA | 421705 |
| Dieldrin | SW8081A | 3 | 0.44 | 6.0 | ND | | ug/Kg | 12/20/16 | 21:19 | LA | 421705 |
| Endrin | SW8081A | 3 | 0.56 | 6.0 | ND | | ug/Kg | 12/20/16 | 21:19 | LA | 421705 |
| 4,4-DDD | SW8081A | 3 | 1.7 | 6.0 | ND | | ug/Kg | 12/20/16 | 21:19 | LA | 421705 |
| Endosulfan II | SW8081A | 3 | 1.7 | 6.0 | ND | | ug/Kg | 12/20/16 | 21:19 | LA | 421705 |
| 4,4-DDT | SW8081A | 3 | 0.39 | 6.0 | **14.6** | | ug/Kg | 12/20/16 | 21:19 | LA | 421705 |
| Endrin Aldehyde | SW8081A | 3 | 0.45 | 6.0 | ND | | ug/Kg | 12/20/16 | 21:19 | LA | 421705 |
| Methoxychlor | SW8081A | 3 | 0.60 | 6.0 | ND | | ug/Kg | 12/20/16 | 21:19 | LA | 421705 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 12/16/16, 2:02 pm
**Date Reported:** 12/21/16

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-13 (0-1/2') | **Lab Sample ID:** | 1612153-001A |
| **Project Name/Location:** | 3141 Taylor Road SQ | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-1 | | |
| **Date/Time Sampled:** | 12/16/16 / 11:12 | | |
| **SDG:** | | | |

| | | | |
|---|---|---|---|
| **Prep Method:** | 3546_OCP | **Prep Batch Date/Time:** | 12/19/16 5:52:00PM |
| **Prep Batch ID:** | 4103 | **Prep Analyst:** | SNARASIMHAN |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Endosulfan Sulfate | SW8081A | 3 | 0.35 | 6.0 | ND | | ug/Kg | 12/20/16 | 21:19 | LA | 421705 |
| Endrin Ketone | SW8081A | 3 | 0.28 | 6.0 | ND | | ug/Kg | 12/20/16 | 21:19 | LA | 421705 |
| Chlordane | SW8081A | 3 | 6.3 | 60 | ND | | ug/Kg | 12/20/16 | 21:19 | LA | 421705 |
| Toxaphene | SW8081A | 3 | 26 | 150 | ND | | ug/Kg | 12/20/16 | 21:19 | LA | 421705 |
| | | | Acceptance Limits | | | | | | | | |
| TCMX (S) | SW8081A | | 70 - 125 | | **82.2** | | ug/Kg | 12/20/16 | 21:19 | LA | 421705 |
| DCBP (S) | SW8081A | | 30 - 135 | | **123** | | ug/Kg | 12/20/16 | 21:19 | LA | 421705 |

**NOTE:** Sample diluted due to nature of the matrix (dark, viscous extract)

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 12/16/16, 2:02 pm
**Date Reported:** 12/21/16

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-14 (0-1/2') | **Lab Sample ID:** | 1612153-002A |
| **Project Name/Location:** | 3141 Taylor Road SQ | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-1 | | |
| **Date/Time Sampled:** | 12/16/16 / 11:26 | | |
| **SDG:** | | | |

**Prep Method:** 7471BP — **Prep Batch Date/Time:** 12/19/16 1:45:00PM
**Prep Batch ID:** 4109 — **Prep Analyst:** PHUFANO

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.083 | 0.50 | ND | | mg/Kg | 12/20/16 | 11:30 | BJAY | 421679 |

**Prep Method:** 3050B — **Prep Batch Date/Time:** 12/19/16 1:30:00PM
**Prep Batch ID:** 4102 — **Prep Analyst:** PPATEL

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | SW6010B | 1 | 0.15 | 1.3 | **6.37** | | mg/Kg | 12/19/16 | 21:05 | PPATEL | 421675 |
| Lead | SW6010B | 1 | 0.12 | 3.0 | **23.4** | | mg/Kg | 12/19/16 | 21:05 | PPATEL | 421675 |

**Prep Method:** 3546_OCP — **Prep Batch Date/Time:** 12/19/16 5:52:00PM
**Prep Batch ID:** 4103 — **Prep Analyst:** SNARASIMHAN

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| alpha-BHC | SW8081A | 10 | 1.3 | 20 | ND | | ug/Kg | 12/20/16 | 21:34 | LA | 421705 |
| gamma-BHC (Lindane) | SW8081A | 10 | 1.6 | 20 | ND | | ug/Kg | 12/20/16 | 21:34 | LA | 421705 |
| beta-BHC | SW8081A | 10 | 3.2 | 20 | ND | | ug/Kg | 12/20/16 | 21:34 | LA | 421705 |
| delta-BHC | SW8081A | 10 | 1.6 | 20 | ND | | ug/Kg | 12/20/16 | 21:34 | LA | 421705 |
| Heptachlor | SW8081A | 10 | 1.1 | 20 | ND | | ug/Kg | 12/20/16 | 21:34 | LA | 421705 |
| Aldrin | SW8081A | 10 | 2.0 | 20 | ND | | ug/Kg | 12/20/16 | 21:34 | LA | 421705 |
| Heptachlor Epoxide | SW8081A | 10 | 0.78 | 20 | ND | | ug/Kg | 12/20/16 | 21:34 | LA | 421705 |
| gamma-Chlordane | SW8081A | 10 | 1.6 | 20 | ND | | ug/Kg | 12/20/16 | 21:34 | LA | 421705 |
| alpha-Chlordane | SW8081A | 10 | 1.7 | 20 | ND | | ug/Kg | 12/20/16 | 21:34 | LA | 421705 |
| 4,4-DDE | SW8081A | 10 | 1.9 | 20 | **522** | | ug/Kg | 12/20/16 | 21:34 | LA | 421705 |
| Endosulfan I | SW8081A | 10 | 1.8 | 20 | ND | | ug/Kg | 12/20/16 | 21:34 | LA | 421705 |
| Dieldrin | SW8081A | 10 | 1.5 | 20 | ND | | ug/Kg | 12/20/16 | 21:34 | LA | 421705 |
| Endrin | SW8081A | 10 | 1.9 | 20 | ND | | ug/Kg | 12/20/16 | 21:34 | LA | 421705 |
| 4,4-DDD | SW8081A | 10 | 5.7 | 20 | **18.6** | J | ug/Kg | 12/20/16 | 21:34 | LA | 421705 |
| Endosulfan II | SW8081A | 10 | 5.8 | 20 | ND | | ug/Kg | 12/20/16 | 21:34 | LA | 421705 |
| 4,4-DDT | SW8081A | 10 | 1.3 | 20 | **106** | | ug/Kg | 12/20/16 | 21:34 | LA | 421705 |
| Endrin Aldehyde | SW8081A | 10 | 1.5 | 20 | ND | | ug/Kg | 12/20/16 | 21:34 | LA | 421705 |
| Methoxychlor | SW8081A | 10 | 2.0 | 20 | ND | | ug/Kg | 12/20/16 | 21:34 | LA | 421705 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 12/16/16, 2:02 pm
**Date Reported:** 12/21/16

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-14 (0-1/2') | **Lab Sample ID:** | 1612153-002A |
| **Project Name/Location:** | 3141 Taylor Road SQ | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-1 | | |
| **Date/Time Sampled:** | 12/16/16 / 11:26 | | |
| **SDG:** | | | |

| | | | |
|---|---|---|---|
| **Prep Method:** | 3546_OCP | **Prep Batch Date/Time:** | 12/19/16 5:52:00PM |
| **Prep Batch ID:** | 4103 | **Prep Analyst:** | SNARASIMHAN |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Endosulfan Sulfate | SW8081A | 10 | 1.2 | 20 | ND | | ug/Kg | 12/20/16 | 21:34 | LA | 421705 |
| Endrin Ketone | SW8081A | 10 | 0.94 | 20 | ND | | ug/Kg | 12/20/16 | 21:34 | LA | 421705 |
| Chlordane | SW8081A | 10 | 21 | 200 | ND | | ug/Kg | 12/20/16 | 21:34 | LA | 421705 |
| Toxaphene | SW8081A | 10 | 85 | 500 | ND | | ug/Kg | 12/20/16 | 21:34 | LA | 421705 |
| | | | Acceptance Limits | | | | | | | | |
| TCMX (S) | SW8081A | | 70 - 125 | | **111** | | ug/Kg | 12/20/16 | 21:34 | LA | 421705 |
| DCBP (S) | SW8081A | | 30 - 135 | | **127** | | ug/Kg | 12/20/16 | 21:34 | LA | 421705 |

**NOTE:** Sample diluted due to nature of the matrix (dark, viscous extract)

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 12/16/16, 2:02 pm
**Date Reported:** 12/21/16

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-15 (0-1/2') | **Lab Sample ID:** | 1612153-003A |
| **Project Name/Location:** | 3141 Taylor Road SQ | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-1 | | |
| **Date/Time Sampled:** | 12/16/16 / 11:23 | | |
| **SDG:** | | | |

**Prep Method:** 7471BP — **Prep Batch Date/Time:** 12/19/16 1:45:00PM
**Prep Batch ID:** 4109 — **Prep Analyst:** PHUFANO

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.083 | 0.50 | ND | | mg/Kg | 12/20/16 | 11:32 | BJAY | 421679 |

**Prep Method:** 3050B — **Prep Batch Date/Time:** 12/19/16 1:30:00PM
**Prep Batch ID:** 4102 — **Prep Analyst:** PPATEL

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | SW6010B | 1 | 0.15 | 1.3 | **7.11** | | mg/Kg | 12/19/16 | 21:08 | PPATEL | 421675 |
| Lead | SW6010B | 1 | 0.12 | 3.0 | **21.2** | | mg/Kg | 12/19/16 | 21:08 | PPATEL | 421675 |

**Prep Method:** 3546_OCP — **Prep Batch Date/Time:** 12/19/16 5:52:00PM
**Prep Batch ID:** 4103 — **Prep Analyst:** SNARASIMHAN

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| alpha-BHC | SW8081A | 10 | 1.3 | 20 | ND | | ug/Kg | 12/21/16 | 14:34 | LA | 421708 |
| gamma-BHC (Lindane) | SW8081A | 10 | 1.6 | 20 | ND | | ug/Kg | 12/21/16 | 14:34 | LA | 421708 |
| beta-BHC | SW8081A | 10 | 3.2 | 20 | ND | | ug/Kg | 12/21/16 | 14:34 | LA | 421708 |
| delta-BHC | SW8081A | 10 | 1.6 | 20 | ND | | ug/Kg | 12/21/16 | 14:34 | LA | 421708 |
| Heptachlor | SW8081A | 10 | 1.1 | 20 | ND | | ug/Kg | 12/21/16 | 14:34 | LA | 421708 |
| Aldrin | SW8081A | 10 | 2.0 | 20 | ND | | ug/Kg | 12/21/16 | 14:34 | LA | 421708 |
| Heptachlor Epoxide | SW8081A | 10 | 0.78 | 20 | ND | | ug/Kg | 12/21/16 | 14:34 | LA | 421708 |
| gamma-Chlordane | SW8081A | 10 | 1.6 | 20 | ND | | ug/Kg | 12/21/16 | 14:34 | LA | 421708 |
| alpha-Chlordane | SW8081A | 10 | 1.7 | 20 | ND | | ug/Kg | 12/21/16 | 14:34 | LA | 421708 |
| 4,4-DDE | SW8081A | 10 | 1.9 | 20 | **62.4** | | ug/Kg | 12/21/16 | 14:34 | LA | 421708 |
| Endosulfan I | SW8081A | 10 | 1.8 | 20 | ND | | ug/Kg | 12/21/16 | 14:34 | LA | 421708 |
| Dieldrin | SW8081A | 10 | 1.5 | 20 | ND | | ug/Kg | 12/21/16 | 14:34 | LA | 421708 |
| Endrin | SW8081A | 10 | 1.9 | 20 | ND | | ug/Kg | 12/21/16 | 14:34 | LA | 421708 |
| 4,4-DDD | SW8081A | 10 | 5.7 | 20 | **6.94** | J | ug/Kg | 12/21/16 | 14:34 | LA | 421708 |
| Endosulfan II | SW8081A | 10 | 5.8 | 20 | ND | | ug/Kg | 12/21/16 | 14:34 | LA | 421708 |
| 4,4-DDT | SW8081A | 10 | 1.3 | 20 | **6.94** | J | ug/Kg | 12/21/16 | 14:34 | LA | 421708 |
| Endrin Aldehyde | SW8081A | 10 | 1.5 | 20 | ND | | ug/Kg | 12/21/16 | 14:34 | LA | 421708 |
| Methoxychlor | SW8081A | 10 | 2.0 | 20 | ND | | ug/Kg | 12/21/16 | 14:34 | LA | 421708 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 12/16/16, 2:02 pm
**Date Reported:** 12/21/16

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-15 (0-1/2') | **Lab Sample ID:** | 1612153-003A |
| **Project Name/Location:** | 3141 Taylor Road SQ | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-1 | | |
| **Date/Time Sampled:** | 12/16/16 / 11:23 | | |
| **SDG:** | | | |

| | | | |
|---|---|---|---|
| **Prep Method:** | 3546_OCP | **Prep Batch Date/Time:** | 12/19/16 5:52:00PM |
| **Prep Batch ID:** | 4103 | **Prep Analyst:** | SNARASIMHAN |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Endosulfan Sulfate | SW8081A | 10 | 1.2 | 20 | ND | | ug/Kg | 12/21/16 | 14:34 | LA | 421708 |
| Endrin Ketone | SW8081A | 10 | 0.94 | 20 | ND | | ug/Kg | 12/21/16 | 14:34 | LA | 421708 |
| Chlordane | SW8081A | 10 | 21 | 200 | ND | | ug/Kg | 12/21/16 | 14:34 | LA | 421708 |
| Toxaphene | SW8081A | 10 | 85 | 500 | ND | | ug/Kg | 12/21/16 | 14:34 | LA | 421708 |
| | | | Acceptance Limits | | | | | | | | |
| TCMX (S) | SW8081A | | 70 - 125 | | **119** | | ug/Kg | 12/21/16 | 14:34 | LA | 421708 |
| DCBP (S) | SW8081A | | 30 - 135 | | **114** | | ug/Kg | 12/21/16 | 14:34 | LA | 421708 |

**NOTE:** Sample diluted due to nature of the matrix (dark, viscous extract)

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 12/16/16, 2:02 pm
**Date Reported:** 12/21/16

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-16 (0-1/2') | **Lab Sample ID:** | 1612153-004A |
| **Project Name/Location:** | 3141 Taylor Road SQ | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-1 | | |
| **Date/Time Sampled:** | 12/16/16 / 11:19 | | |
| **SDG:** | | | |

**Prep Method:** 7471BP — **Prep Batch Date/Time:** 12/19/16 1:45:00PM
**Prep Batch ID:** 4109 — **Prep Analyst:** PHUFANO

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.083 | 0.50 | ND | | mg/Kg | 12/20/16 | 11:38 | BJAY | 421679 |

**Prep Method:** 3050B — **Prep Batch Date/Time:** 12/19/16 1:30:00PM
**Prep Batch ID:** 4102 — **Prep Analyst:** PPATEL

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | SW6010B | 1 | 0.15 | 1.3 | **13.8** | | mg/Kg | 12/19/16 | 21:19 | PPATEL | 421675 |
| Lead | SW6010B | 1 | 0.12 | 3.0 | **43.1** | | mg/Kg | 12/19/16 | 21:19 | PPATEL | 421675 |

**Prep Method:** 3546_OCP — **Prep Batch Date/Time:** 12/19/16 5:52:00PM
**Prep Batch ID:** 4103 — **Prep Analyst:** SNARASIMHAN

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| alpha-BHC | SW8081A | 4 | 0.51 | 8.0 | ND | | ug/Kg | 12/21/16 | 15:04 | LA | 421708 |
| gamma-BHC (Lindane) | SW8081A | 4 | 0.64 | 8.0 | ND | | ug/Kg | 12/21/16 | 15:04 | LA | 421708 |
| beta-BHC | SW8081A | 4 | 1.3 | 8.0 | ND | | ug/Kg | 12/21/16 | 15:04 | LA | 421708 |
| delta-BHC | SW8081A | 4 | 0.62 | 8.0 | ND | | ug/Kg | 12/21/16 | 15:04 | LA | 421708 |
| Heptachlor | SW8081A | 4 | 0.42 | 8.0 | ND | | ug/Kg | 12/21/16 | 15:04 | LA | 421708 |
| Aldrin | SW8081A | 4 | 0.78 | 8.0 | ND | | ug/Kg | 12/21/16 | 15:04 | LA | 421708 |
| Heptachlor Epoxide | SW8081A | 4 | 0.31 | 8.0 | ND | | ug/Kg | 12/21/16 | 15:04 | LA | 421708 |
| gamma-Chlordane | SW8081A | 4 | 0.65 | 8.0 | ND | | ug/Kg | 12/21/16 | 15:04 | LA | 421708 |
| alpha-Chlordane | SW8081A | 4 | 0.69 | 8.0 | ND | | ug/Kg | 12/21/16 | 15:04 | LA | 421708 |
| Endosulfan I | SW8081A | 4 | 0.73 | 8.0 | ND | | ug/Kg | 12/21/16 | 15:04 | LA | 421708 |
| Dieldrin | SW8081A | 4 | 0.59 | 8.0 | ND | | ug/Kg | 12/21/16 | 15:04 | LA | 421708 |
| Endrin | SW8081A | 4 | 0.75 | 8.0 | ND | | ug/Kg | 12/21/16 | 15:04 | LA | 421708 |
| 4,4-DDD | SW8081A | 4 | 2.3 | 8.0 | ND | | ug/Kg | 12/21/16 | 15:04 | LA | 421708 |
| Endosulfan II | SW8081A | 4 | 2.3 | 8.0 | ND | | ug/Kg | 12/21/16 | 15:04 | LA | 421708 |
| 4,4-DDT | SW8081A | 4 | 0.52 | 8.0 | **43.4** | | ug/Kg | 12/21/16 | 15:04 | LA | 421708 |
| Endrin Aldehyde | SW8081A | 4 | 0.60 | 8.0 | ND | | ug/Kg | 12/21/16 | 15:04 | LA | 421708 |
| Methoxychlor | SW8081A | 4 | 0.80 | 8.0 | ND | | ug/Kg | 12/21/16 | 15:04 | LA | 421708 |
| Endosulfan Sulfate | SW8081A | 4 | 0.47 | 8.0 | ND | | ug/Kg | 12/21/16 | 15:04 | LA | 421708 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 12/16/16, 2:02 pm
**Date Reported:** 12/21/16

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-16 (0-1/2') | **Lab Sample ID:** | 1612153-004A |
| **Project Name/Location:** | 3141 Taylor Road SQ | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-1 | | |
| **Date/Time Sampled:** | 12/16/16 / 11:19 | | |
| **SDG:** | | | |

**Prep Method:** 3546_OCP
**Prep Batch ID:** 4103
**Prep Batch Date/Time:** 12/19/16 5:52:00PM
**Prep Analyst:** SNARASIMHAN

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Endrin Ketone | SW8081A | 4 | 0.38 | 8.0 | ND | | ug/Kg | 12/21/16 | 15:04 | LA | 421708 |
| Chlordane | SW8081A | 4 | 8.4 | 80 | ND | | ug/Kg | 12/21/16 | 15:04 | LA | 421708 |
| Toxaphene | SW8081A | 4 | 34 | 200 | ND | | ug/Kg | 12/21/16 | 15:04 | LA | 421708 |
| | | | Acceptance Limits | | | | | | | | |
| TCMX (S) | SW8081A | | 70 - 125 | | **97.1** | | ug/Kg | 12/21/16 | 15:04 | LA | 421708 |
| DCBP (S) | SW8081A | | 30 - 135 | | **107** | | ug/Kg | 12/21/16 | 15:04 | LA | 421708 |

**Prep Method:** 3546_OCP
**Prep Batch ID:** 4103
**Prep Batch Date/Time:** 12/19/16 5:52:00PM
**Prep Analyst:** SNARASIMHAN

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 4,4-DDE | SW8081A | 10 | 1.9 | 20 | **315** | | ug/Kg | 12/21/16 | 17:13 | LA | 421708 |

**NOTE:** Sample diluted due to nature of the matrix (dark, viscous extract)

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 12/16/16, 2:02 pm
**Date Reported:** 12/21/16

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-17 (0-1/2') | **Lab Sample ID:** | 1612153-005A |
| **Project Name/Location:** | 3141 Taylor Road SQ | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-1 | | |
| **Date/Time Sampled:** | 12/16/16 / 10:00 | | |
| **SDG:** | | | |

**Prep Method:** 7471BP — **Prep Batch Date/Time:** 12/19/16 1:45:00PM
**Prep Batch ID:** 4109 — **Prep Analyst:** PHUFANO

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.083 | 0.50 | ND | | mg/Kg | 12/20/16 | 11:40 | BJAY | 421679 |

**Prep Method:** 3050B — **Prep Batch Date/Time:** 12/19/16 1:30:00PM
**Prep Batch ID:** 4102 — **Prep Analyst:** PPATEL

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | SW6010B | 1 | 0.15 | 1.3 | **11.5** | | mg/Kg | 12/19/16 | 21:21 | PPATEL | 421675 |
| Lead | SW6010B | 1 | 0.12 | 3.0 | **23.3** | | mg/Kg | 12/19/16 | 21:21 | PPATEL | 421675 |

**Prep Method:** 3546_OCP — **Prep Batch Date/Time:** 12/19/16 5:52:00PM
**Prep Batch ID:** 4103 — **Prep Analyst:** SNARASIMHAN

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| alpha-BHC | SW8081A | 10 | 1.3 | 20 | ND | | ug/Kg | 12/21/16 | 17:29 | LA | 421708 |
| gamma-BHC (Lindane) | SW8081A | 10 | 1.6 | 20 | ND | | ug/Kg | 12/21/16 | 17:29 | LA | 421708 |
| beta-BHC | SW8081A | 10 | 3.2 | 20 | ND | | ug/Kg | 12/21/16 | 17:29 | LA | 421708 |
| delta-BHC | SW8081A | 10 | 1.6 | 20 | ND | | ug/Kg | 12/21/16 | 17:29 | LA | 421708 |
| Heptachlor | SW8081A | 10 | 1.1 | 20 | ND | | ug/Kg | 12/21/16 | 17:29 | LA | 421708 |
| Aldrin | SW8081A | 10 | 2.0 | 20 | ND | | ug/Kg | 12/21/16 | 17:29 | LA | 421708 |
| Heptachlor Epoxide | SW8081A | 10 | 0.78 | 20 | ND | | ug/Kg | 12/21/16 | 17:29 | LA | 421708 |
| gamma-Chlordane | SW8081A | 10 | 1.6 | 20 | ND | | ug/Kg | 12/21/16 | 17:29 | LA | 421708 |
| alpha-Chlordane | SW8081A | 10 | 1.7 | 20 | ND | | ug/Kg | 12/21/16 | 17:29 | LA | 421708 |
| 4,4-DDE | SW8081A | 10 | 1.9 | 20 | **150** | | ug/Kg | 12/21/16 | 17:29 | LA | 421708 |
| Endosulfan I | SW8081A | 10 | 1.8 | 20 | ND | | ug/Kg | 12/21/16 | 17:29 | LA | 421708 |
| Dieldrin | SW8081A | 10 | 1.5 | 20 | ND | | ug/Kg | 12/21/16 | 17:29 | LA | 421708 |
| Endrin | SW8081A | 10 | 1.9 | 20 | ND | | ug/Kg | 12/21/16 | 17:29 | LA | 421708 |
| 4,4-DDD | SW8081A | 10 | 5.7 | 20 | ND | | ug/Kg | 12/21/16 | 17:29 | LA | 421708 |
| Endosulfan II | SW8081A | 10 | 5.8 | 20 | ND | | ug/Kg | 12/21/16 | 17:29 | LA | 421708 |
| 4,4-DDT | SW8081A | 10 | 1.3 | 20 | **33.9** | | ug/Kg | 12/21/16 | 17:29 | LA | 421708 |
| Endrin Aldehyde | SW8081A | 10 | 1.5 | 20 | ND | | ug/Kg | 12/21/16 | 17:29 | LA | 421708 |
| Methoxychlor | SW8081A | 10 | 2.0 | 20 | ND | | ug/Kg | 12/21/16 | 17:29 | LA | 421708 |
| Endosulfan Sulfate | SW8081A | 10 | 1.2 | 20 | ND | | ug/Kg | 12/21/16 | 17:29 | LA | 421708 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 12/16/16, 2:02 pm
**Date Reported:** 12/21/16

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-17 (0-1/2') | **Lab Sample ID:** | 1612153-005A |
| **Project Name/Location:** | 3141 Taylor Road SQ | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-1 | | |
| **Date/Time Sampled:** | 12/16/16 / 10:00 | | |
| **SDG:** | | | |

| | | | |
|---|---|---|---|
| **Prep Method:** | 3546_OCP | **Prep Batch Date/Time:** | 12/19/16 5:52:00PM |
| **Prep Batch ID:** | 4103 | **Prep Analyst:** | SNARASIMHAN |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Endrin Ketone | SW8081A | 10 | 0.94 | 20 | ND | | ug/Kg | 12/21/16 | 17:29 | LA | 421708 |
| Chlordane | SW8081A | 10 | 21 | 200 | ND | | ug/Kg | 12/21/16 | 17:29 | LA | 421708 |
| Toxaphene | SW8081A | 10 | 85 | 500 | ND | | ug/Kg | 12/21/16 | 17:29 | LA | 421708 |
| | | | Acceptance Limits | | | | | | | | |
| TCMX (S) | SW8081A | | 70 - 125 | | **118** | | ug/Kg | 12/21/16 | 17:29 | LA | 421708 |
| DCBP (S) | SW8081A | | 30 - 135 | | **131** | | ug/Kg | 12/21/16 | 17:29 | LA | 421708 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 12/16/16, 2:02 pm
**Date Reported:** 12/21/16

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-18 (0-1/2') | **Lab Sample ID:** | 1612153-006A |
| **Project Name/Location:** | 3141 Taylor Road SQ | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-1 | | |
| **Date/Time Sampled:** | 12/16/16 / 9:55 | | |
| **SDG:** | | | |

**Prep Method:** 7471BP — **Prep Batch Date/Time:** 12/19/16 1:45:00PM
**Prep Batch ID:** 4109 — **Prep Analyst:** PHUFANO

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.083 | 0.50 | ND | | mg/Kg | 12/20/16 | 11:42 | BJAY | 421679 |

**Prep Method:** 3050B — **Prep Batch Date/Time:** 12/19/16 1:30:00PM
**Prep Batch ID:** 4102 — **Prep Analyst:** PPATEL

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | SW6010B | 1 | 0.15 | 1.3 | **4.07** | | mg/Kg | 12/19/16 | 21:24 | PPATEL | 421675 |
| Lead | SW6010B | 1 | 0.12 | 3.0 | **9.35** | | mg/Kg | 12/19/16 | 21:24 | PPATEL | 421675 |

**Prep Method:** 3546_OCP — **Prep Batch Date/Time:** 12/19/16 5:52:00PM
**Prep Batch ID:** 4103 — **Prep Analyst:** SNARASIMHAN

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| alpha-BHC | SW8081A | 4 | 0.51 | 8.0 | ND | | ug/Kg | 12/21/16 | 17:44 | LA | 421708 |
| gamma-BHC (Lindane) | SW8081A | 4 | 0.64 | 8.0 | ND | | ug/Kg | 12/21/16 | 17:44 | LA | 421708 |
| beta-BHC | SW8081A | 4 | 1.3 | 8.0 | ND | | ug/Kg | 12/21/16 | 17:44 | LA | 421708 |
| delta-BHC | SW8081A | 4 | 0.62 | 8.0 | ND | | ug/Kg | 12/21/16 | 17:44 | LA | 421708 |
| Heptachlor | SW8081A | 4 | 0.42 | 8.0 | ND | | ug/Kg | 12/21/16 | 17:44 | LA | 421708 |
| Aldrin | SW8081A | 4 | 0.78 | 8.0 | ND | | ug/Kg | 12/21/16 | 17:44 | LA | 421708 |
| Heptachlor Epoxide | SW8081A | 4 | 0.31 | 8.0 | ND | | ug/Kg | 12/21/16 | 17:44 | LA | 421708 |
| gamma-Chlordane | SW8081A | 4 | 0.65 | 8.0 | ND | | ug/Kg | 12/21/16 | 17:44 | LA | 421708 |
| alpha-Chlordane | SW8081A | 4 | 0.69 | 8.0 | ND | | ug/Kg | 12/21/16 | 17:44 | LA | 421708 |
| 4,4-DDE | SW8081A | 4 | 0.78 | 8.0 | **13.0** | | ug/Kg | 12/21/16 | 17:44 | LA | 421708 |
| Endosulfan I | SW8081A | 4 | 0.73 | 8.0 | ND | | ug/Kg | 12/21/16 | 17:44 | LA | 421708 |
| Dieldrin | SW8081A | 4 | 0.59 | 8.0 | ND | | ug/Kg | 12/21/16 | 17:44 | LA | 421708 |
| Endrin | SW8081A | 4 | 0.75 | 8.0 | ND | | ug/Kg | 12/21/16 | 17:44 | LA | 421708 |
| 4,4-DDD | SW8081A | 4 | 2.3 | 8.0 | ND | | ug/Kg | 12/21/16 | 17:44 | LA | 421708 |
| Endosulfan II | SW8081A | 4 | 2.3 | 8.0 | ND | | ug/Kg | 12/21/16 | 17:44 | LA | 421708 |
| 4,4-DDT | SW8081A | 4 | 0.52 | 8.0 | ND | | ug/Kg | 12/21/16 | 17:44 | LA | 421708 |
| Endrin Aldehyde | SW8081A | 4 | 0.60 | 8.0 | ND | | ug/Kg | 12/21/16 | 17:44 | LA | 421708 |
| Methoxychlor | SW8081A | 4 | 0.80 | 8.0 | ND | | ug/Kg | 12/21/16 | 17:44 | LA | 421708 |
| Endosulfan Sulfate | SW8081A | 4 | 0.47 | 8.0 | ND | | ug/Kg | 12/21/16 | 17:44 | LA | 421708 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 12/16/16, 2:02 pm
**Date Reported:** 12/21/16

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-18 (0-1/2') | **Lab Sample ID:** | 1612153-006A |
| **Project Name/Location:** | 3141 Taylor Road SQ | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-1 | | |
| **Date/Time Sampled:** | 12/16/16 / 9:55 | | |
| **SDG:** | | | |

| | | | |
|---|---|---|---|
| **Prep Method:** | 3546_OCP | **Prep Batch Date/Time:** | 12/19/16 5:52:00PM |
| **Prep Batch ID:** | 4103 | **Prep Analyst:** | SNARASIMHAN |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Endrin Ketone | SW8081A | 4 | 0.38 | 8.0 | ND | | ug/Kg | 12/21/16 | 17:44 | LA | 421708 |
| Chlordane | SW8081A | 4 | 8.4 | 80 | ND | | ug/Kg | 12/21/16 | 17:44 | LA | 421708 |
| Toxaphene | SW8081A | 4 | 34 | 200 | ND | | ug/Kg | 12/21/16 | 17:44 | LA | 421708 |
| | | | Acceptance Limits | | | | | | | | |
| TCMX (S) | SW8081A | | 70 - 125 | | **89.8** | | ug/Kg | 12/21/16 | 17:44 | LA | 421708 |
| DCBP (S) | SW8081A | | 30 - 135 | | **115** | | ug/Kg | 12/21/16 | 17:44 | LA | 421708 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 12/16/16, 2:02 pm
**Date Reported:** 12/21/16

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-19 (0-1/2') | **Lab Sample ID:** | 1612153-007A |
| **Project Name/Location:** | 3141 Taylor Road SQ | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-1 | | |
| **Date/Time Sampled:** | 12/16/16 / 9:43 | | |
| **SDG:** | | | |

**Prep Method:** 7471BP — **Prep Batch Date/Time:** 12/19/16 1:45:00PM
**Prep Batch ID:** 4109 — **Prep Analyst:** PHUFANO

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.083 | 0.50 | ND | | mg/Kg | 12/20/16 | 11:44 | BJAY | 421679 |

**Prep Method:** 3050B — **Prep Batch Date/Time:** 12/19/16 1:30:00PM
**Prep Batch ID:** 4102 — **Prep Analyst:** PPATEL

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | SW6010B | 1 | 0.15 | 1.3 | **10.1** | | mg/Kg | 12/19/16 | 21:28 | PPATEL | 421675 |
| Lead | SW6010B | 1 | 0.12 | 3.0 | **18.1** | | mg/Kg | 12/19/16 | 21:28 | PPATEL | 421675 |

**Prep Method:** 3546_OCP — **Prep Batch Date/Time:** 12/19/16 5:52:00PM
**Prep Batch ID:** 4103 — **Prep Analyst:** SNARASIMHAN

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| alpha-BHC | SW8081A | 1 | 0.13 | 2.0 | ND | | ug/Kg | 12/21/16 | 17:59 | LA | 421708 |
| gamma-BHC (Lindane) | SW8081A | 1 | 0.16 | 2.0 | ND | | ug/Kg | 12/21/16 | 17:59 | LA | 421708 |
| beta-BHC | SW8081A | 1 | 0.32 | 2.0 | ND | | ug/Kg | 12/21/16 | 17:59 | LA | 421708 |
| delta-BHC | SW8081A | 1 | 0.16 | 2.0 | ND | | ug/Kg | 12/21/16 | 17:59 | LA | 421708 |
| Heptachlor | SW8081A | 1 | 0.11 | 2.0 | ND | | ug/Kg | 12/21/16 | 17:59 | LA | 421708 |
| Aldrin | SW8081A | 1 | 0.20 | 2.0 | ND | | ug/Kg | 12/21/16 | 17:59 | LA | 421708 |
| Heptachlor Epoxide | SW8081A | 1 | 0.078 | 2.0 | ND | | ug/Kg | 12/21/16 | 17:59 | LA | 421708 |
| gamma-Chlordane | SW8081A | 1 | 0.16 | 2.0 | ND | | ug/Kg | 12/21/16 | 17:59 | LA | 421708 |
| alpha-Chlordane | SW8081A | 1 | 0.17 | 2.0 | ND | | ug/Kg | 12/21/16 | 17:59 | LA | 421708 |
| 4,4-DDE | SW8081A | 1 | 0.19 | 2.0 | **11.2** | | ug/Kg | 12/21/16 | 17:59 | LA | 421708 |
| Endosulfan I | SW8081A | 1 | 0.18 | 2.0 | ND | | ug/Kg | 12/21/16 | 17:59 | LA | 421708 |
| Dieldrin | SW8081A | 1 | 0.15 | 2.0 | ND | | ug/Kg | 12/21/16 | 17:59 | LA | 421708 |
| Endrin | SW8081A | 1 | 0.19 | 2.0 | ND | | ug/Kg | 12/21/16 | 17:59 | LA | 421708 |
| 4,4-DDD | SW8081A | 1 | 0.57 | 2.0 | ND | | ug/Kg | 12/21/16 | 17:59 | LA | 421708 |
| Endosulfan II | SW8081A | 1 | 0.58 | 2.0 | ND | | ug/Kg | 12/21/16 | 17:59 | LA | 421708 |
| 4,4-DDT | SW8081A | 1 | 0.13 | 2.0 | **7.72** | | ug/Kg | 12/21/16 | 17:59 | LA | 421708 |
| Endrin Aldehyde | SW8081A | 1 | 0.15 | 2.0 | ND | | ug/Kg | 12/21/16 | 17:59 | LA | 421708 |
| Methoxychlor | SW8081A | 1 | 0.20 | 2.0 | ND | | ug/Kg | 12/21/16 | 17:59 | LA | 421708 |
| Endosulfan Sulfate | SW8081A | 1 | 0.12 | 2.0 | ND | | ug/Kg | 12/21/16 | 17:59 | LA | 421708 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 12/16/16, 2:02 pm
**Date Reported:** 12/21/16

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-19 (0-1/2') | **Lab Sample ID:** | 1612153-007A |
| **Project Name/Location:** | 3141 Taylor Road SQ | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-1 | | |
| **Date/Time Sampled:** | 12/16/16 / 9:43 | | |
| **SDG:** | | | |

| | | | |
|---|---|---|---|
| **Prep Method:** | 3546_OCP | **Prep Batch Date/Time:** | 12/19/16 5:52:00PM |
| **Prep Batch ID:** | 4103 | **Prep Analyst:** | SNARASIMHAN |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Endrin Ketone | SW8081A | 1 | 0.094 | 2.0 | ND | | ug/Kg | 12/21/16 | 17:59 | LA | 421708 |
| Chlordane | SW8081A | 1 | 2.1 | 20 | ND | | ug/Kg | 12/21/16 | 17:59 | LA | 421708 |
| Toxaphene | SW8081A | 1 | 8.5 | 50 | ND | | ug/Kg | 12/21/16 | 17:59 | LA | 421708 |
| | | | Acceptance Limits | | | | | | | | |
| TCMX (S) | SW8081A | | 70 - 125 | | **78.6** | | ug/Kg | 12/21/16 | 17:59 | LA | 421708 |
| DCBP (S) | SW8081A | | 30 - 135 | | **94.6** | | ug/Kg | 12/21/16 | 17:59 | LA | 421708 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 12/16/16, 2:02 pm
**Date Reported:** 12/21/16

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-20 (0-1/2') | **Lab Sample ID:** | 1612153-008A |
| **Project Name/Location:** | 3141 Taylor Road SQ | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-1 | | |
| **Date/Time Sampled:** | 12/16/16 / 9:38 | | |
| **SDG:** | | | |

**Prep Method:** 7471BP — **Prep Batch Date/Time:** 12/19/16 6:00:00PM
**Prep Batch ID:** 4110 — **Prep Analyst:** PHUFANO

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.083 | 0.50 | ND | | mg/Kg | 12/20/16 | 12:27 | BJAY | 421680 |

**Prep Method:** 3050B — **Prep Batch Date/Time:** 12/19/16 6:10:00PM
**Prep Batch ID:** 4123 — **Prep Analyst:** PHUFANO

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | SW6010B | 1 | 0.15 | 1.3 | **9.65** | | mg/Kg | 12/20/16 | 23:00 | PPATEL | 421690 |
| Lead | SW6010B | 1 | 0.12 | 3.0 | **38.8** | | mg/Kg | 12/20/16 | 23:00 | PPATEL | 421690 |

**Prep Method:** 3546_OCP — **Prep Batch Date/Time:** 12/19/16 5:52:00PM
**Prep Batch ID:** 4103 — **Prep Analyst:** SNARASIMHAN

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| alpha-BHC | SW8081A | 4 | 0.51 | 8.0 | ND | | ug/Kg | 12/21/16 | 12:44 | LA | 421708 |
| gamma-BHC (Lindane) | SW8081A | 4 | 0.64 | 8.0 | ND | | ug/Kg | 12/21/16 | 12:44 | LA | 421708 |
| beta-BHC | SW8081A | 4 | 1.3 | 8.0 | ND | | ug/Kg | 12/21/16 | 12:44 | LA | 421708 |
| delta-BHC | SW8081A | 4 | 0.62 | 8.0 | ND | | ug/Kg | 12/21/16 | 12:44 | LA | 421708 |
| Heptachlor | SW8081A | 4 | 0.42 | 8.0 | ND | | ug/Kg | 12/21/16 | 12:44 | LA | 421708 |
| Aldrin | SW8081A | 4 | 0.78 | 8.0 | ND | | ug/Kg | 12/21/16 | 12:44 | LA | 421708 |
| Heptachlor Epoxide | SW8081A | 4 | 0.31 | 8.0 | ND | | ug/Kg | 12/21/16 | 12:44 | LA | 421708 |
| gamma-Chlordane | SW8081A | 4 | 0.65 | 8.0 | ND | | ug/Kg | 12/21/16 | 12:44 | LA | 421708 |
| alpha-Chlordane | SW8081A | 4 | 0.69 | 8.0 | ND | | ug/Kg | 12/21/16 | 12:44 | LA | 421708 |
| 4,4-DDE | SW8081A | 4 | 0.78 | 8.0 | **97.7** | | ug/Kg | 12/21/16 | 12:44 | LA | 421708 |
| Endosulfan I | SW8081A | 4 | 0.73 | 8.0 | ND | | ug/Kg | 12/21/16 | 12:44 | LA | 421708 |
| Dieldrin | SW8081A | 4 | 0.59 | 8.0 | ND | | ug/Kg | 12/21/16 | 12:44 | LA | 421708 |
| Endrin | SW8081A | 4 | 0.75 | 8.0 | ND | | ug/Kg | 12/21/16 | 12:44 | LA | 421708 |
| 4,4-DDD | SW8081A | 4 | 2.3 | 8.0 | ND | | ug/Kg | 12/21/16 | 12:44 | LA | 421708 |
| Endosulfan II | SW8081A | 4 | 2.3 | 8.0 | ND | | ug/Kg | 12/21/16 | 12:44 | LA | 421708 |
| 4,4-DDT | SW8081A | 4 | 0.52 | 8.0 | **15.2** | | ug/Kg | 12/21/16 | 12:44 | LA | 421708 |
| Endrin Aldehyde | SW8081A | 4 | 0.60 | 8.0 | ND | | ug/Kg | 12/21/16 | 12:44 | LA | 421708 |
| Methoxychlor | SW8081A | 4 | 0.80 | 8.0 | ND | | ug/Kg | 12/21/16 | 12:44 | LA | 421708 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 12/16/16, 2:02 pm
**Date Reported:** 12/21/16

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-20 (0-1/2') | **Lab Sample ID:** | 1612153-008A |
| **Project Name/Location:** | 3141 Taylor Road SQ | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-1 | | |
| **Date/Time Sampled:** | 12/16/16 / 9:38 | | |
| **SDG:** | | | |

| | | | |
|---|---|---|---|
| **Prep Method:** | 3546_OCP | **Prep Batch Date/Time:** | 12/19/16 5:52:00PM |
| **Prep Batch ID:** | 4103 | **Prep Analyst:** | SNARASIMHAN |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Endosulfan Sulfate | SW8081A | 4 | 0.47 | 8.0 | ND | | ug/Kg | 12/21/16 | 12:44 | LA | 421708 |
| Endrin Ketone | SW8081A | 4 | 0.38 | 8.0 | ND | | ug/Kg | 12/21/16 | 12:44 | LA | 421708 |
| Chlordane | SW8081A | 4 | 8.4 | 80 | ND | | ug/Kg | 12/21/16 | 12:44 | LA | 421708 |
| Toxaphene | SW8081A | 4 | 34 | 200 | ND | | ug/Kg | 12/21/16 | 12:44 | LA | 421708 |
| | | | Acceptance Limits | | | | | | | | |
| TCMX (S) | SW8081A | | 70 - 125 | | **97.3** | | ug/Kg | 12/21/16 | 12:44 | LA | 421708 |
| DCBP (S) | SW8081A | | 30 - 135 | | **111** | | ug/Kg | 12/21/16 | 12:44 | LA | 421708 |

**NOTE:** S-surrogate outside of control limits due to possible matrix interference

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 12/16/16, 2:02 pm
**Date Reported:** 12/21/16

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-21 (0-1/2') | **Lab Sample ID:** | 1612153-009A |
| **Project Name/Location:** | 3141 Taylor Road SQ | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-1 | | |
| **Date/Time Sampled:** | 12/16/16 / 9:34 | | |
| **SDG:** | | | |

**Prep Method:** 7471BP — **Prep Batch Date/Time:** 12/19/16 6:00:00PM
**Prep Batch ID:** 4110 — **Prep Analyst:** PHUFANO

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.083 | 0.50 | ND | | mg/Kg | 12/20/16 | 12:29 | BJAY | 421680 |

**Prep Method:** 3050B — **Prep Batch Date/Time:** 12/19/16 6:10:00PM
**Prep Batch ID:** 4123 — **Prep Analyst:** PHUFANO

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | SW6010B | 1 | 0.15 | 1.3 | **5.46** | | mg/Kg | 12/20/16 | 23:03 | PPATEL | 421690 |
| Lead | SW6010B | 1 | 0.12 | 3.0 | **17.1** | | mg/Kg | 12/20/16 | 23:03 | PPATEL | 421690 |

**Prep Method:** 3546_OCP — **Prep Batch Date/Time:** 12/20/16 6:35:00PM
**Prep Batch ID:** 4129 — **Prep Analyst:** SNARASIMHAN

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| alpha-BHC | SW8081A | 4 | 0.51 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:00 | LA | 421708 |
| gamma-BHC (Lindane) | SW8081A | 4 | 0.64 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:00 | LA | 421708 |
| beta-BHC | SW8081A | 4 | 1.3 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:00 | LA | 421708 |
| delta-BHC | SW8081A | 4 | 0.62 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:00 | LA | 421708 |
| Heptachlor | SW8081A | 4 | 0.42 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:00 | LA | 421708 |
| Aldrin | SW8081A | 4 | 0.78 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:00 | LA | 421708 |
| Heptachlor Epoxide | SW8081A | 4 | 0.31 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:00 | LA | 421708 |
| gamma-Chlordane | SW8081A | 4 | 0.65 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:00 | LA | 421708 |
| alpha-Chlordane | SW8081A | 4 | 0.69 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:00 | LA | 421708 |
| 4,4-DDE | SW8081A | 4 | 0.78 | 8.0 | **67.8** | | ug/Kg | 12/21/16 | 13:00 | LA | 421708 |
| Endosulfan I | SW8081A | 4 | 0.73 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:00 | LA | 421708 |
| Dieldrin | SW8081A | 4 | 0.59 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:00 | LA | 421708 |
| Endrin | SW8081A | 4 | 0.75 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:00 | LA | 421708 |
| 4,4-DDD | SW8081A | 4 | 2.3 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:00 | LA | 421708 |
| Endosulfan II | SW8081A | 4 | 2.3 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:00 | LA | 421708 |
| 4,4-DDT | SW8081A | 4 | 0.52 | 8.0 | **11.4** | | ug/Kg | 12/21/16 | 13:00 | LA | 421708 |
| Endrin Aldehyde | SW8081A | 4 | 0.60 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:00 | LA | 421708 |
| Methoxychlor | SW8081A | 4 | 0.80 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:00 | LA | 421708 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 12/16/16, 2:02 pm
**Date Reported:** 12/21/16

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-21 (0-1/2') | **Lab Sample ID:** | 1612153-009A |
| **Project Name/Location:** | 3141 Taylor Road SQ | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-1 | | |
| **Date/Time Sampled:** | 12/16/16 / 9:34 | | |
| **SDG:** | | | |

| | | | |
|---|---|---|---|
| **Prep Method:** | 3546_OCP | **Prep Batch Date/Time:** | 12/20/16 6:35:00PM |
| **Prep Batch ID:** | 4129 | **Prep Analyst:** | SNARASIMHAN |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Endosulfan Sulfate | SW8081A | 4 | 0.47 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:00 | LA | 421708 |
| Endrin Ketone | SW8081A | 4 | 0.38 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:00 | LA | 421708 |
| Chlordane | SW8081A | 4 | 8.4 | 80 | ND | | ug/Kg | 12/21/16 | 13:00 | LA | 421708 |
| Toxaphene | SW8081A | 4 | 34 | 200 | ND | | ug/Kg | 12/21/16 | 13:00 | LA | 421708 |
| | | | Acceptance Limits | | | | | | | | |
| TCMX (S) | SW8081A | | 70 - 125 | | **95.0** | | ug/Kg | 12/21/16 | 13:00 | LA | 421708 |
| DCBP (S) | SW8081A | | 30 - 135 | | **110** | | ug/Kg | 12/21/16 | 13:00 | LA | 421708 |

**NOTE:** Sample diluted due to nature of the matrix (dark, viscous extract)

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 12/16/16, 2:02 pm
**Date Reported:** 12/21/16

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-22 (0-1/2') | **Lab Sample ID:** | 1612153-010A |
| **Project Name/Location:** | 3141 Taylor Road SQ | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-1 | | |
| **Date/Time Sampled:** | 12/16/16 / 9:26 | | |
| **SDG:** | | | |

**Prep Method:** 7471BP — **Prep Batch Date/Time:** 12/19/16 6:00:00PM
**Prep Batch ID:** 4110 — **Prep Analyst:** PHUFANO

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.083 | 0.50 | ND | | mg/Kg | 12/20/16 | 12:31 | BJAY | 421680 |

**Prep Method:** 3050B — **Prep Batch Date/Time:** 12/19/16 6:10:00PM
**Prep Batch ID:** 4123 — **Prep Analyst:** PHUFANO

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | SW6010B | 1 | 0.15 | 1.3 | **14.1** | | mg/Kg | 12/20/16 | 23:06 | PPATEL | 421690 |
| Lead | SW6010B | 1 | 0.12 | 3.0 | **32.3** | | mg/Kg | 12/20/16 | 23:06 | PPATEL | 421690 |

**Prep Method:** 3546_OCP — **Prep Batch Date/Time:** 12/20/16 6:35:00PM
**Prep Batch ID:** 4129 — **Prep Analyst:** SNARASIMHAN

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| alpha-BHC | SW8081A | 4 | 0.51 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:15 | LA | 421708 |
| gamma-BHC (Lindane) | SW8081A | 4 | 0.64 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:15 | LA | 421708 |
| beta-BHC | SW8081A | 4 | 1.3 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:15 | LA | 421708 |
| delta-BHC | SW8081A | 4 | 0.62 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:15 | LA | 421708 |
| Heptachlor | SW8081A | 4 | 0.42 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:15 | LA | 421708 |
| Aldrin | SW8081A | 4 | 0.78 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:15 | LA | 421708 |
| Heptachlor Epoxide | SW8081A | 4 | 0.31 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:15 | LA | 421708 |
| gamma-Chlordane | SW8081A | 4 | 0.65 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:15 | LA | 421708 |
| alpha-Chlordane | SW8081A | 4 | 0.69 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:15 | LA | 421708 |
| Endosulfan I | SW8081A | 4 | 0.73 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:15 | LA | 421708 |
| Dieldrin | SW8081A | 4 | 0.59 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:15 | LA | 421708 |
| Endrin | SW8081A | 4 | 0.75 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:15 | LA | 421708 |
| 4,4-DDD | SW8081A | 4 | 2.3 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:15 | LA | 421708 |
| Endosulfan II | SW8081A | 4 | 2.3 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:15 | LA | 421708 |
| 4,4-DDT | SW8081A | 4 | 0.52 | 8.0 | **57.9** | | ug/Kg | 12/21/16 | 13:15 | LA | 421708 |
| Endrin Aldehyde | SW8081A | 4 | 0.60 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:15 | LA | 421708 |
| Methoxychlor | SW8081A | 4 | 0.80 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:15 | LA | 421708 |
| Endosulfan Sulfate | SW8081A | 4 | 0.47 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:15 | LA | 421708 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 12/16/16, 2:02 pm
**Date Reported:** 12/21/16

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-22 (0-1/2') | **Lab Sample ID:** | 1612153-010A |
| **Project Name/Location:** | 3141 Taylor Road SQ | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-1 | | |
| **Date/Time Sampled:** | 12/16/16 / 9:26 | | |
| **SDG:** | | | |

**Prep Method:** 3546_OCP
**Prep Batch ID:** 4129
**Prep Batch Date/Time:** 12/20/16 6:35:00PM
**Prep Analyst:** SNARASIMHAN

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Endrin Ketone | SW8081A | 4 | 0.38 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:15 | LA | 421708 |
| Chlordane | SW8081A | 4 | 8.4 | 80 | ND | | ug/Kg | 12/21/16 | 13:15 | LA | 421708 |
| Toxaphene | SW8081A | 4 | 34 | 200 | ND | | ug/Kg | 12/21/16 | 13:15 | LA | 421708 |
| | | | Acceptance Limits | | | | | | | | |
| TCMX (S) | SW8081A | | 70 - 125 | | **100** | | ug/Kg | 12/21/16 | 13:15 | LA | 421708 |
| DCBP (S) | SW8081A | | 30 - 135 | | **115** | | ug/Kg | 12/21/16 | 13:15 | LA | 421708 |

**NOTE:** Sample diluted due to nature of the matrix (dark, viscous extract)

**Prep Method:** 3546_OCP
**Prep Batch ID:** 4129
**Prep Batch Date/Time:** 12/20/16 6:35:00PM
**Prep Analyst:** SNARASIMHAN

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 4,4-DDE | SW8081A | 10 | 1.9 | 20 | **259** | | ug/Kg | 12/21/16 | 18:14 | LA | 421708 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 12/16/16, 2:02 pm
**Date Reported:** 12/21/16

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-23 (0-1/2') | **Lab Sample ID:** | 1612153-011A |
| **Project Name/Location:** | 3141 Taylor Road SQ | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-1 | | |
| **Date/Time Sampled:** | 12/16/16 / 9:23 | | |
| **SDG:** | | | |

**Prep Method:** 7471BP — **Prep Batch Date/Time:** 12/19/16 6:00:00PM
**Prep Batch ID:** 4110 — **Prep Analyst:** PHUFANO

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.083 | 0.50 | ND | | mg/Kg | 12/20/16 | 12:33 | BJAY | 421680 |

**Prep Method:** 3050B — **Prep Batch Date/Time:** 12/19/16 6:10:00PM
**Prep Batch ID:** 4123 — **Prep Analyst:** PHUFANO

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | SW6010B | 1 | 0.15 | 1.3 | **8.20** | | mg/Kg | 12/20/16 | 23:08 | PPATEL | 421690 |
| Lead | SW6010B | 1 | 0.12 | 3.0 | **12.1** | | mg/Kg | 12/20/16 | 23:08 | PPATEL | 421690 |

**Prep Method:** 3546_OCP — **Prep Batch Date/Time:** 12/20/16 6:35:00PM
**Prep Batch ID:** 4129 — **Prep Analyst:** SNARASIMHAN

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| alpha-BHC | SW8081A | 4 | 0.51 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:30 | LA | 421708 |
| gamma-BHC (Lindane) | SW8081A | 4 | 0.64 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:30 | LA | 421708 |
| beta-BHC | SW8081A | 4 | 1.3 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:30 | LA | 421708 |
| delta-BHC | SW8081A | 4 | 0.62 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:30 | LA | 421708 |
| Heptachlor | SW8081A | 4 | 0.42 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:30 | LA | 421708 |
| Aldrin | SW8081A | 4 | 0.78 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:30 | LA | 421708 |
| Heptachlor Epoxide | SW8081A | 4 | 0.31 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:30 | LA | 421708 |
| gamma-Chlordane | SW8081A | 4 | 0.65 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:30 | LA | 421708 |
| alpha-Chlordane | SW8081A | 4 | 0.69 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:30 | LA | 421708 |
| 4,4-DDE | SW8081A | 4 | 0.78 | 8.0 | **22.8** | | ug/Kg | 12/21/16 | 13:30 | LA | 421708 |
| Endosulfan I | SW8081A | 4 | 0.73 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:30 | LA | 421708 |
| Dieldrin | SW8081A | 4 | 0.59 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:30 | LA | 421708 |
| Endrin | SW8081A | 4 | 0.75 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:30 | LA | 421708 |
| 4,4-DDD | SW8081A | 4 | 2.3 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:30 | LA | 421708 |
| Endosulfan II | SW8081A | 4 | 2.3 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:30 | LA | 421708 |
| 4,4-DDT | SW8081A | 4 | 0.52 | 8.0 | **10.5** | | ug/Kg | 12/21/16 | 13:30 | LA | 421708 |
| Endrin Aldehyde | SW8081A | 4 | 0.60 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:30 | LA | 421708 |
| Methoxychlor | SW8081A | 4 | 0.80 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:30 | LA | 421708 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 12/16/16, 2:02 pm
**Date Reported:** 12/21/16

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-23 (0-1/2') | **Lab Sample ID:** | 1612153-011A |
| **Project Name/Location:** | 3141 Taylor Road SQ | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-1 | | |
| **Date/Time Sampled:** | 12/16/16 / 9:23 | | |
| **SDG:** | | | |

| | | | |
|---|---|---|---|
| **Prep Method:** | 3546_OCP | **Prep Batch Date/Time:** | 12/20/16 6:35:00PM |
| **Prep Batch ID:** | 4129 | **Prep Analyst:** | SNARASIMHAN |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Endosulfan Sulfate | SW8081A | 4 | 0.47 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:30 | LA | 421708 |
| Endrin Ketone | SW8081A | 4 | 0.38 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:30 | LA | 421708 |
| Chlordane | SW8081A | 4 | 8.4 | 80 | ND | | ug/Kg | 12/21/16 | 13:30 | LA | 421708 |
| Toxaphene | SW8081A | 4 | 34 | 200 | ND | | ug/Kg | 12/21/16 | 13:30 | LA | 421708 |
| | | | Acceptance Limits | | | | | | | | |
| TCMX (S) | SW8081A | | 70 - 125 | | **90.4** | | ug/Kg | 12/21/16 | 13:30 | LA | 421708 |
| DCBP (S) | SW8081A | | 30 - 135 | | **104** | | ug/Kg | 12/21/16 | 13:30 | LA | 421708 |

**NOTE:** Sample diluted due to nature of the matrix (dark, viscous extract)

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 12/16/16, 2:02 pm
**Date Reported:** 12/21/16

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-24 (0-1/2') | **Lab Sample ID:** | 1612153-012A |
| **Project Name/Location:** | 3141 Taylor Road SQ | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-1 | | |
| **Date/Time Sampled:** | 12/16/16 / 9:20 | | |
| **SDG:** | | | |

**Prep Method:** 7471BP — **Prep Batch Date/Time:** 12/19/16 6:00:00PM
**Prep Batch ID:** 4110 — **Prep Analyst:** PHUFANO

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.083 | 0.50 | ND | | mg/Kg | 12/20/16 | 12:35 | BJAY | 421680 |

**Prep Method:** 3050B — **Prep Batch Date/Time:** 12/19/16 6:10:00PM
**Prep Batch ID:** 4123 — **Prep Analyst:** PHUFANO

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | SW6010B | 1 | 0.15 | 1.3 | **7.27** | | mg/Kg | 12/20/16 | 23:18 | PPATEL | 421690 |
| Lead | SW6010B | 1 | 0.12 | 3.0 | **13.5** | | mg/Kg | 12/20/16 | 23:18 | PPATEL | 421690 |

**Prep Method:** 3546_OCP — **Prep Batch Date/Time:** 12/20/16 6:35:00PM
**Prep Batch ID:** 4129 — **Prep Analyst:** SNARASIMHAN

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| alpha-BHC | SW8081A | 4 | 0.51 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:45 | LA | 421708 |
| gamma-BHC (Lindane) | SW8081A | 4 | 0.64 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:45 | LA | 421708 |
| beta-BHC | SW8081A | 4 | 1.3 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:45 | LA | 421708 |
| delta-BHC | SW8081A | 4 | 0.62 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:45 | LA | 421708 |
| Heptachlor | SW8081A | 4 | 0.42 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:45 | LA | 421708 |
| Aldrin | SW8081A | 4 | 0.78 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:45 | LA | 421708 |
| Heptachlor Epoxide | SW8081A | 4 | 0.31 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:45 | LA | 421708 |
| gamma-Chlordane | SW8081A | 4 | 0.65 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:45 | LA | 421708 |
| alpha-Chlordane | SW8081A | 4 | 0.69 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:45 | LA | 421708 |
| 4,4-DDE | SW8081A | 4 | 0.78 | 8.0 | **36.8** | | ug/Kg | 12/21/16 | 13:45 | LA | 421708 |
| Endosulfan I | SW8081A | 4 | 0.73 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:45 | LA | 421708 |
| Dieldrin | SW8081A | 4 | 0.59 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:45 | LA | 421708 |
| Endrin | SW8081A | 4 | 0.75 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:45 | LA | 421708 |
| 4,4-DDD | SW8081A | 4 | 2.3 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:45 | LA | 421708 |
| Endosulfan II | SW8081A | 4 | 2.3 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:45 | LA | 421708 |
| 4,4-DDT | SW8081A | 4 | 0.52 | 8.0 | **15.6** | | ug/Kg | 12/21/16 | 13:45 | LA | 421708 |
| Endrin Aldehyde | SW8081A | 4 | 0.60 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:45 | LA | 421708 |
| Methoxychlor | SW8081A | 4 | 0.80 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:45 | LA | 421708 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 12/16/16, 2:02 pm
**Date Reported:** 12/21/16

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-24 (0-1/2') | **Lab Sample ID:** | 1612153-012A |
| **Project Name/Location:** | 3141 Taylor Road SQ | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-1 | | |
| **Date/Time Sampled:** | 12/16/16 / 9:20 | | |
| **SDG:** | | | |

| | | | |
|---|---|---|---|
| **Prep Method:** | 3546_OCP | **Prep Batch Date/Time:** | 12/20/16 6:35:00PM |
| **Prep Batch ID:** | 4129 | **Prep Analyst:** | SNARASIMHAN |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Endosulfan Sulfate | SW8081A | 4 | 0.47 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:45 | LA | 421708 |
| Endrin Ketone | SW8081A | 4 | 0.38 | 8.0 | ND | | ug/Kg | 12/21/16 | 13:45 | LA | 421708 |
| Chlordane | SW8081A | 4 | 8.4 | 80 | ND | | ug/Kg | 12/21/16 | 13:45 | LA | 421708 |
| Toxaphene | SW8081A | 4 | 34 | 200 | ND | | ug/Kg | 12/21/16 | 13:45 | LA | 421708 |
| | | | Acceptance Limits | | | | | | | | |
| TCMX (S) | SW8081A | | 70 - 125 | | **96.1** | | ug/Kg | 12/21/16 | 13:45 | LA | 421708 |
| DCBP (S) | SW8081A | | 30 - 135 | | **108** | | ug/Kg | 12/21/16 | 13:45 | LA | 421708 |

**NOTE:** Sample diluted due to nature of the matrix (dark, viscous extract)

Torrent LABORATORY, INC.

# MB Summary Report

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1612153 | **Prep Method:** | 3050B | **Prep Date:** | 12/19/16 | **Prep Batch:** | 4102 |
| **Matrix:** | Soil | **Analytical Method:** | SW6010B | **Analyzed Date:** | 12/19/2016 | **Analytical Batch:** | 421675 |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Lab Qualifier |
|---|---|---|---|---|
| Arsenic | 0.15 | 1.30 | ND | |
| Lead | 0.10 | 1.30 | 0.26 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1612153 | **Prep Method:** | 3546_OCP | **Prep Date:** | 12/19/16 | **Prep Batch:** | 4103 |
| **Matrix:** | Soil | **Analytical Method:** | SW8081A | **Analyzed Date:** | 12/19/2016 | **Analytical Batch:** | 421704 |
| **Units:** | ug/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Lab Qualifier |
|---|---|---|---|---|
| alpha-BHC | 0.13 | 2.0 | ND | |
| gamma-BHC (Lindane) | 0.16 | 2.0 | ND | |
| beta-BHC | 0.32 | 2.0 | ND | |
| delta-BHC | 0.16 | 2.0 | ND | |
| Heptachlor | 0.11 | 2.0 | ND | |
| Aldrin | 0.20 | 2.0 | ND | |
| Heptachlor Epoxide | 0.078 | 2.0 | ND | |
| gamma-Chlordane | 0.16 | 2.0 | ND | |
| alpha-Chlordane | 0.17 | 2.0 | ND | |
| 4,4-DDE | 0.19 | 2.0 | ND | |
| Endosulfan I | 0.18 | 2.0 | 0.183 | |
| Dieldrin | 0.15 | 2.0 | ND | |
| Endrin | 0.19 | 2.0 | ND | |
| 4,4-DDD | 0.57 | 2.0 | ND | |
| Endosulfan II | 0.58 | 2.0 | ND | |
| 4,4-DDT | 0.13 | 2.0 | ND | |
| Endrin Aldehyde | 0.15 | 2.0 | ND | |
| Methoxychlor | 0.20 | 2.0 | ND | |
| Endosulfan Sulfate | 0.12 | 2.0 | ND | |
| Endrin Ketone | 0.094 | 2.0 | ND | |
| Chlordane | 2.1 | 20 | ND | |
| Toxaphene | 8.5 | 50 | ND | |
| TCMX (S) | | | 80.0 | |
| DCBP (S) | | | 95.1 | |

Torrent LABORATORY, INC.

# MB Summary Report

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1612153 | **Prep Method:** | 7471BP | **Prep Date:** | 12/19/16 | **Prep Batch:** | 4109 |
| **Matrix:** | Soil | **Analytical Method:** | SW7471B | **Analyzed Date:** | 12/20/2016 | **Analytical Batch:** | 421679 |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Lab Qualifier |
|---|---|---|---|---|
| Mercury | 0.083 | 0.50 | ND | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1612153 | **Prep Method:** | 7471BP | **Prep Date:** | 12/19/16 | **Prep Batch:** | 4110 |
| **Matrix:** | Soil | **Analytical Method:** | SW7471B | **Analyzed Date:** | 12/20/2016 | **Analytical Batch:** | 421680 |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Lab Qualifier |
|---|---|---|---|---|
| Mercury | 0.083 | 0.50 | ND | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1612153 | **Prep Method:** | 3050B | **Prep Date:** | 12/19/16 | **Prep Batch:** | 4123 |
| **Matrix:** | Soil | **Analytical Method:** | SW6010B | **Analyzed Date:** | 12/20/2016 | **Analytical Batch:** | 421690 |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Lab Qualifier |
|---|---|---|---|---|
| Antimony | 0.050 | 5.00 | 0.63 | |
| Arsenic | 0.15 | 1.30 | 0.66 | |
| Barium | 0.055 | 5.00 | ND | |
| Beryllium | 0.055 | 5.00 | ND | |
| Cadmium | 0.10 | 5.00 | ND | |
| Chromium | 0.075 | 5.00 | 0.14 | |
| Cobalt | 0.070 | 5.00 | ND | |
| Copper | 0.20 | 5.00 | ND | |
| Lead | 0.10 | 1.30 | 0.23 | |
| Molybdenum | 0.050 | 5.00 | 0.20 | |
| Nickel | 0.50 | 5.00 | ND | |
| Selenium | 0.22 | 5.00 | ND | |
| Silver | 0.15 | 5.00 | ND | |
| Thallium | 0.20 | 5.00 | ND | |
| Vanadium | 0.10 | 5.00 | ND | |
| Zinc | 0.30 | 5.00 | 0.67 | |

Torrent LABORATORY, INC.

# MB Summary Report

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1612153 | **Prep Method:** | 3546_OCP | **Prep Date:** | 12/20/16 | **Prep Batch:** | 4129 |
| **Matrix:** | Soil | **Analytical Method:** | SW8081A | **Analyzed Date:** | 12/21/2016 | **Analytical Batch:** | 421708 |
| **Units:** | ug/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Lab Qualifier |
|---|---|---|---|---|
| alpha-BHC | 0.13 | 2.0 | ND | |
| gamma-BHC (Lindane) | 0.16 | 2.0 | ND | |
| beta-BHC | 0.32 | 2.0 | ND | |
| delta-BHC | 0.16 | 2.0 | ND | |
| Heptachlor | 0.11 | 2.0 | ND | |
| Aldrin | 0.20 | 2.0 | ND | |
| Heptachlor Epoxide | 0.078 | 2.0 | ND | |
| gamma-Chlordane | 0.16 | 2.0 | ND | |
| alpha-Chlordane | 0.17 | 2.0 | ND | |
| 4,4-DDE | 0.19 | 2.0 | ND | |
| Endosulfan I | 0.18 | 2.0 | ND | |
| Dieldrin | 0.15 | 2.0 | ND | |
| Endrin | 0.19 | 2.0 | ND | |
| 4,4-DDD | 0.57 | 2.0 | ND | |
| Endosulfan II | 0.58 | 2.0 | ND | |
| 4,4-DDT | 0.13 | 2.0 | ND | |
| Endrin Aldehyde | 0.15 | 2.0 | ND | |
| Methoxychlor | 0.20 | 2.0 | ND | |
| Endosulfan Sulfate | 0.12 | 2.0 | ND | |
| Endrin Ketone | 0.094 | 2.0 | ND | |
| Chlordane | 2.1 | 20 | ND | |
| Toxaphene | 8.5 | 50 | ND | |
| TCMX (S) | | | 85.5 | |
| DCBP (S) | | | 110 | |

Torrent LABORATORY, INC.

# LCS/LCSD Summary Report

*Raw values are used in quality control assessment.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1612153 | **Prep Method:** | 3050B | **Prep Date:** | 12/19/16 | **Prep Batch:** | 4102 |
| **Matrix:** | Soil | **Analytical Method:** | SW6010B | **Analyzed Date:** | 12/19/2016 | **Analytical Batch:** | 421675 |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Spike Conc. | LCS % Recovery | LCSD % Recovery | LCS/LCSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 0.15 | 1.30 | ND | 50 | 93.3 | 91.4 | 2.16 | 80 - 120 | 30 | |
| Lead | 0.10 | 3.00 | 0.26 | 50 | 96.2 | 99.2 | 3.07 | 80 - 120 | 30 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1612153 | **Prep Method:** | 3546_OCP | **Prep Date:** | 12/19/16 | **Prep Batch:** | 4103 |
| **Matrix:** | Soil | **Analytical Method:** | SW8081A | **Analyzed Date:** | 12/19/2016 | **Analytical Batch:** | 421704 |
| **Units:** | ug/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Spike Conc. | LCS % Recovery | LCSD % Recovery | LCS/LCSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| gamma-BHC (Lindane) | 0.16 | 2.0 | ND | 40 | 88.5 | 86.5 | 2.29 | 25 - 135 | 30 | |
| Heptachlor | 0.11 | 2.0 | ND | 40 | 86.2 | 84.0 | 2.64 | 40 - 130 | 30 | |
| Aldrin | 0.20 | 2.0 | ND | 40 | 85.3 | 83.9 | 1.48 | 25 - 140 | 30 | |
| Dieldrin | 0.15 | 2.0 | ND | 40 | 82.5 | 81.9 | 0.608 | 60 - 130 | 30 | |
| Endrin | 0.19 | 2.0 | ND | 40 | 92.2 | 92.4 | 0.271 | 55 - 135 | 30 | |
| 4,4-DDT | 0.13 | 2.0 | ND | 40 | 90.5 | 89.3 | 1.39 | 45 - 140 | 30 | |
| TCMX (S) | | | | 100 | 80.2 | 77.3 | | 70 - 125 | | |
| DCBP (S) | | | | 100 | 97.3 | 86.7 | | 30 - 135 | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1612153 | **Prep Method:** | 7471BP | **Prep Date:** | 12/19/16 | **Prep Batch:** | 4109 |
| **Matrix:** | Soil | **Analytical Method:** | SW7471B | **Analyzed Date:** | 12/20/2016 | **Analytical Batch:** | 421679 |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Spike Conc. | LCS % Recovery | LCSD % Recovery | LCS/LCSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.047 | 0.50 | ND | 1.25 | 94.3 | 93.1 | 1.71 | 80 - 120 | 30 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1612153 | **Prep Method:** | 7471BP | **Prep Date:** | 12/19/16 | **Prep Batch:** | 4110 |
| **Matrix:** | Soil | **Analytical Method:** | SW7471B | **Analyzed Date:** | 12/20/2016 | **Analytical Batch:** | 421680 |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Spike Conc. | LCS % Recovery | LCSD % Recovery | LCS/LCSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.047 | 0.50 | ND | 1.25 | 93.3 | 93.1 | 0.858 | 80 - 120 | 30 | |

Torrent LABORATORY, INC.

# LCS/LCSD Summary Report

*Raw values are used in quality control assessment.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1612153 | **Prep Method:** | 3050B | **Prep Date:** | 12/19/16 | **Prep Batch:** | 4123 |
| **Matrix:** | Soil | **Analytical Method:** | SW6010B | **Analyzed Date:** | 12/20/2016 | **Analytical Batch:** | 421690 |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Spike Conc. | LCS % Recovery | LCSD % Recovery | LCS/LCSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | 0.050 | 5.00 | 0.63 | 50 | 103 | 101 | 1.97 | 80 - 120 | 30 | |
| Arsenic | 0.15 | 1.30 | 0.66 | 50 | 105 | 105 | 0.000 | 80 - 120 | 30 | |
| Barium | 0.055 | 5.00 | ND | 50 | 101 | 99.1 | 2.00 | 80 - 120 | 30 | |
| Beryllium | 0.055 | 5.00 | ND | 50 | 97.3 | 101 | 3.23 | 80 - 120 | 30 | |
| Cadmium | 0.10 | 5.00 | ND | 50 | 98.6 | 96.4 | 2.26 | 80 - 120 | 30 | |
| Chromium | 0.075 | 5.00 | 0.14 | 50 | 102 | 99.9 | 1.78 | 80 - 120 | 30 | |
| Cobalt | 0.070 | 5.00 | ND | 50 | 99.9 | 97.9 | 1.82 | 80 - 120 | 30 | |
| Copper | 0.20 | 5.00 | ND | 50 | 102 | 99.6 | 2.38 | 80 - 120 | 30 | |
| Lead | 0.10 | 3.00 | 0.23 | 50 | 101 | 98.0 | 3.41 | 80 - 120 | 30 | |
| Molybdenum | 0.050 | 5.00 | 0.20 | 50 | 103 | 101 | 1.37 | 80 - 120 | 30 | |
| Nickel | 0.50 | 5.00 | ND | 50 | 99.8 | 97.9 | 1.82 | 80 - 120 | 30 | |
| Selenium | 0.22 | 5.00 | ND | 50 | 91.5 | 95.7 | 4.48 | 80 - 120 | 30 | |
| Silver | 0.15 | 5.00 | ND | 50 | 100 | 96.8 | 3.65 | 80 - 120 | 30 | |
| Thallium | 0.20 | 5.00 | ND | 50 | 99.3 | 109 | 9.23 | 80 - 120 | 30 | |
| Vanadium | 0.10 | 5.00 | ND | 50 | 103 | 100 | 2.37 | 80 - 120 | 30 | |
| Zinc | 0.30 | 5.00 | 0.67 | 50 | 96.5 | 94.7 | 2.09 | 80 - 120 | 30 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1612153 | **Prep Method:** | 3546_OCP | **Prep Date:** | 12/20/16 | **Prep Batch:** | 4129 |
| **Matrix:** | Soil | **Analytical Method:** | SW8081A | **Analyzed Date:** | 12/21/2016 | **Analytical Batch:** | 421708 |
| **Units:** | ug/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Spike Conc. | LCS % Recovery | LCSD % Recovery | LCS/LCSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| gamma-BHC (Lindane) | 0.16 | 2.0 | ND | 40 | 90.4 | 96.0 | 5.90 | 25 - 135 | 30 | |
| Heptachlor | 0.11 | 2.0 | ND | 40 | 84.8 | 90.4 | 6.56 | 40 - 130 | 30 | |
| Aldrin | 0.20 | 2.0 | ND | 40 | 85.7 | 91.3 | 6.21 | 25 - 140 | 30 | |
| Dieldrin | 0.15 | 2.0 | ND | 40 | 81.2 | 86.2 | 5.97 | 60 - 130 | 30 | |
| Endrin | 0.19 | 2.0 | ND | 40 | 95.9 | 103 | 7.28 | 55 - 135 | 30 | |
| 4,4-DDT | 0.13 | 2.0 | ND | 40 | 87.6 | 93.4 | 6.63 | 45 - 140 | 30 | |
| TCMX (S) | | | | 100 | 79.9 | 85.5 | | 70 - 125 | | |
| DCBP (S) | | | | 100 | 98.6 | 109 | | 30 - 135 | | |

Torrent LABORATORY, INC.

# MS/MSD Summary Report

*Raw values are used in quality control assessment.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1612153 | **Prep Method:** | 3546_OCP | **Prep Date:** | 12/20/16 | **Prep Batch:** | 4129 |
| **Matrix:** | **Soil** | **Analytical Method:** | | **Analyzed Date:** | | **Analytical Batch:** | 421708 |
| **Spiked Sample:** | 1612153-012A | | | | | | |
| **Units:** | ug/Kg | | | | | | |

| Parameters | MDL | PQL | Sample Conc. | Spike Conc. | MS % Recovery | MSD % Recovery | MS/MSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| gamma-BHC (Lindane) | 0.636 | 8.00 | ND | 40 | 108 | 107 | 0.697 | 25 - 135 | 30 | |
| Heptachlor | 0.420 | 8.00 | ND | 40 | 102 | 104 | 2.42 | 40 - 130 | 30 | |
| Aldrin | 0.780 | 8.00 | ND | 40 | 105 | 106 | 0.948 | 25 - 140 | 30 | |
| Dieldrin | 0.592 | 8.00 | ND | 40 | 102 | 99.7 | 0.244 | 60 - 130 | 30 | |
| Endrin | 0.752 | 8.00 | ND | 40 | 122 | 123 | 1.42 | 55 - 135 | 30 | |
| 4,4-DDT | 0.516 | 8.00 | 15.6 | 40 | 97.0 | 98.4 | 6.75 | 45 - 140 | 30 | |
| TCMX (S) | | | | 100 | 95.0 | 96.9 | | 70 - 125 | | |
| DCBP (S) | | | | 100 | 112 | 108 | | 30 - 135 | | |

Torrent LABORATORY, INC.

# Laboratory Qualifiers and Definitions

## DEFINITIONS:

| |
|---|
| **Accuracy/Bias (% Recovery)** - The closeness of agreement between an observed value and an accepted reference value. |
| **Blank (Method/Preparation Blank)** -MB/PB - An analyte-free matrix to which all reagents are added in the same volumes/proportions as used in sample processing. The method blank is used to document contamination resulting from the analytical process. |
| **Duplicate** - a field sample and/or laboratory QC sample prepared in duplicate following all of the same processes and procedures used on the original sample (sample duplicate, LCSD, MSD) |
| **Laboratory Control Sample (LCS ad LCSD)** - A known matrix spiked with compounds representative of the target analyte(s). This is used to document laboratory performance. |
| **Matrix** - the component or substrate that contains the analyte of interest (e.g., - groundwater, sediment, soil, waste water, etc) |
| **Matrix Spike (MS/MSD)** - Client sample spiked with identical concentrations of target analyte (s). The spiking occurs prior to the sample preparation and analysis. They are used to document the precision and bias of a method in a given sample matrix. |
| **Method Detection Limit (MDL)** - the minimum concentration of a substance that can be measured and reported with a 99% confidence that the analyte concentration is greater than zero |
| **Practical Quantitation Limit/Reporting Limit/Limit of Quantitation (PQL/RL/LOQ)** - a laboratory determined value at 2 to 5 times above the MDL that can be reproduced in a manner that results in a 99% confidence level that the result is both accurate and precise. PQLs/RLs/LODs reflect all preparation factors and/or dilution factors that have been applied to the sample during the preparation and/or analytical processes. |
| **Precision (%RPD)** - The agreement among a set of replicate/duplicate measurements without regard to known value of the replicates |
| **Surrogate (S) or (Surr)** - An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples. Surrogates are used in most organic analysis to demonstrate matrix compatibility with the chosen method of analysis |
| **Tentatively Identified Compound (TIC)** - A compound not contained within the analytical calibration standards but present in the GCMS library of defined compounds. When the library is searched for an unknown compound, it can frequently give a tentative identification to the compound based on retention time and primary and secondary ion match. TICs are reported as estimates and are candidates for further investigation. |
| **Units:** the unit of measure used to express the reported result - **mg/L** and ***mg/Kg*** (equivalent to PPM - parts per million in **liquid** and ***solid***), **ug/L** and ***ug/Kg*** (equivalent to PPB - parts per billion in **liquid** and ***solid***), **ug/m3**, ***mg/m3***, **ppbv** and ***ppmv*** (all units of measure for reporting concentrations in air), **%** ( equivalent to 10000 ppm or 1,000,000 ppb), **ug/Wipe** ( concentration found on the surface of a single Wipe usually taken over a 100cm2 surface) |

## LABORATORY QUALIFIERS:

| |
|---|
| **B** - Indicates when the analyte is found in the associated method or preparation blank |
| **D** - Surrogate is not recoverable due to the necessary dilution of the sample |
| **E** - Indicates the reportable value is outside of the calibration range of the instrument but within the linear range of the instrument (unless otherwise noted) Values reported with an E qualifier should be considered as estimated. |
| **H**- Indicates that the recommended holding time for the analyte or compound has been exceeded |
| **J**- Indicates a value between the method MDL and PQL and that the reported concentration should be considered as estimated rather the quantitative |
| **NA** - Not Analyzed |
| **N/A** - Not Applicable |
| **ND** - Not Detected at a concentration greater than the PQL/RL or, if reported to the MDL, at greater than the MDL. |
| **NR** - Not recoverable - a matrix spike concentration is not recoverable due to a concentration within the original sample that is greater than four times the spike concentration added |
| **R**- The % RPD between a duplicate set of samples is outside of the absolute values established by laboratory control charts |
| **S**- Spike recovery is outside of established method and/or laboratory control limits. Further explanation of the use of this qualifier should be included within a case narrative |
| **X** -Used to indicate that a value based on pattern identification is within the pattern range but not typical of the pattern found in standards. Further explanation may or may not be provided within the sample footnote and/or the case narrative. |

483 Sinclair Frontage Rd., Milpitas, CA 95035 | tel: 408.263.5258 | fax: 408.263.8293 | www.torrentlab.com

Torrent LABORATORY, INC.

# Sample Receipt Checklist

Client Name: Cornerstone(Walnut Creek)

Project Name: 3141 Taylor Road SQ

Work Order No.: 1612153

Date and Time Received: 12/16/2016 2:02:00PM

Received By: Lorna Imbat

Physically Logged By: Lorna Imbat

Checklist Completed By:

Carrier Name: Client Drop Off

## Chain of Custody (COC) Information

| | |
|---|---|
| Chain of custody present? | Yes |
| Chain of custody signed when relinquished and received? | Yes |
| Chain of custody agrees with sample labels? | Yes |
| Custody seals intact on sample bottles? | Not Present |

## Sample Receipt Information

| | |
|---|---|
| Custody seals intact on shipping container/cooler? | Not Present |
| Shipping Container/Cooler In Good Condition? | Yes |
| Samples in proper container/bottle? | Yes |
| Samples containers intact? | Yes |
| Sufficient sample volume for indicated test? | Yes |

## Sample Preservation and Hold Time (HT) Information

| | | |
|---|---|---|
| All samples received within holding time? | Yes | |
| Container/Temp Blank temperature in compliance? | Yes | Temperature: 2.0 °C |
| Water-VOA vials have zero headspace? | No VOA vials submitted | |
| Water-pH acceptable upon receipt? | N/A | |

pH Checked by: n/a

pH Adjusted by: n/a

**Comments:**

Torrent LABORATORY, INC.

# Login Summary Report

| | | | |
|---|---|---|---|
| **Client ID:** | TL5508 Cornerstone(Walnut Creek) | **QC Level:** | II |
| **Project Name:** | 3141 Taylor Road SQ | **TAT Requested:** | 3 Day Std:3 |
| **Project # :** | 411-16-1 | **Date Received:** | 12/16/2016 |
| **Report Due Date:** | 12/21/2016 | **Time Received:** | 2:02 pm |

**Comments:**

**Work Order # :** ***1612153***

| WO Sample ID | Client Sample ID | Collection Date/Time | Matrix | Scheduled Disposal | Sample On Hold | Test On Hold | Requested Tests | Subbed |
|---|---|---|---|---|---|---|---|---|
| 1612153-001A | SS-13 (0-1/2') | 12/16/16 11:12 | Soil | 06/14/17 | | | Hg_S_7471B<br>Met_S_AsPb | |
| 1612153-002A | SS-14 (0-1/2') | 12/16/16 11:26 | Soil | 06/14/17 | | | Hg_S_7471B<br>Met_S_AsPb | |
| 1612153-003A | SS-15 (0-1/2') | 12/16/16 11:23 | Soil | 06/14/17 | | | Hg_S_7471B<br>Met_S_AsPb | |
| 1612153-004A | SS-16 (0-1/2') | 12/16/16 11:19 | Soil | 06/14/17 | | | Hg_S_7471B<br>Met_S_AsPb | |
| 1612153-005A | SS-17 (0-1/2') | 12/16/16 10:00 | Soil | 06/14/17 | | | Hg_S_7471B<br>Met_S_AsPb | |
| 1612153-006A | SS-18 (0-1/2') | 12/16/16 9:55 | Soil | 06/14/17 | | | Hg_S_7471B<br>Met_S_AsPb | |
| 1612153-007A | SS-19 (0-1/2') | 12/16/16 9:43 | Soil | 06/14/17 | | | Hg_S_7471B<br>Pest_S_8081OCP<br>Met_S_AsPb | |
| 1612153-008A | SS-20 (0-1/2') | 12/16/16 9:38 | Soil | 06/14/17 | | | Hg_S_7471B<br>Met_S_AsPb | |
| 1612153-009A | SS-21 (0-1/2') | 12/16/16 9:34 | Soil | 06/14/17 | | | Hg_S_7471B<br>Met_S_AsPb | |
| 1612153-010A | SS-22 (0-1/2') | 12/16/16 9:26 | Soil | 06/14/17 | | | Pest_S_8081OCP<br>Met_S_AsPb<br>Hg_S_7471B | |
| 1612153-011A | SS-23 (0-1/2') | 12/16/16 9:23 | Soil | 06/14/17 | | | Pest_S_8081OCP<br>Met_S_AsPb<br>Hg_S_7471B | |
| 1612153-012A | SS-24 (0-1/2') | 12/16/16 9:20 | Soil | 06/14/17 | | | | |

Torrent LABORATORY, INC.

# Login Summary Report

| | | | | |
|---|---|---|---|---|
| **Client ID:** | TL5508 | Cornerstone(Walnut Creek) | **QC Level:** | II |
| **Project Name:** | 3141 Taylor Road SQ | | **TAT Requested:** | 3 Day Std:3 |
| **Project # :** | 411-16-1 | | **Date Received:** | 12/16/2016 |
| **Report Due Date:** | 12/21/2016 | | **Time Received:** | 2:02 pm |

**Comments:**

**Work Order # :** ***1612153***

| WO Sample ID | Client Sample ID | Collection Date/Time | Matrix | Scheduled Disposal | Sample On Hold | Test On Hold | Requested Tests | Subbed |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | Hg_S_7471B<br>Met_S_AsPb<br>Pest_S_8081OCP | |

Torrent LABORATORY, INC.

CORNERSTONE EARTH GROUP

# Chain of Custody Record

1612153

| | | | |
|---|---|---|---|
| | Project Manager: Peter Langtry | Site Sampler: | Date: 12/16/2016 | COC No: |
| Cornerstone Earth Group, Inc. | Tel/Fax: 925-988-9500 ext. 11 | Lab Contact: | Lab: Torrent Laboratory Inc | 2 of 2 COCs |
| 1259 Oakmead Pkwy | Analysis Turnaround Time | | | Laboratory's Job No. |
| Sunnyvale, California 94085 | | | | |
| (408) 245-4600 Phone | TAT if different from Below _____ | | | |
| (408) 245-4620 FAX | ☐ 1 week | | | |
| Project Name: 3141 Taylor Road SQ | ■ 3 days | | | |
| Site: Loomis, CA | ☐ 2 days | | | |
| Project Number: 411-16-1 | ☐ 1 day | | | |

| Sample Identification | Sample Date | Sample Time | Sample Type | Matrix | # of Cont. | Filtered Sample | OCPs (EPA 8081) | Arsenic, Lead & Mercury (EPA 6010/7000) | Laboratory's Sample Specific Notes: |
|---|---|---|---|---|---|---|---|---|---|
| SS-13 (0-½') | 12/16/2016 | 11:12 | Liner | Soil | 1 | | X | X | -001A |
| SS-14 (0-½') | 12/16/2016 | 11:26 | Liner | Soil | 1 | | X | X | -002A |
| SS-15 (0-½') | 12/16/2016 | 11:23 | Liner | Soil | 1 | | X | X | -003A |
| SS-16 (0-½') | 12/16/2016 | 11:19 | Liner | Soil | 1 | | X | X | -004A |
| SS-17 (0-½') | 12/16/2016 | 10:00 | Liner | Soil | 1 | | X | X | -005A |
| SS-18 (0-½') | 12/16/2016 | 9:55 | Liner | Soil | 1 | | X | X | -006A |
| SS-19 (0-½') | 12/16/2016 | 9:43 | Liner | Soil | 1 | | X | X | -007A |
| SS-20 (0-½') | 12/16/2016 | 9:38 | Liner | Soil | 1 | | X | X | -008A |
| SS-21 (0-½') | 12/16/2016 | 9:34 | Liner | Soil | 1 | | X | X | -009A |
| SS-22 (0-½') | 12/16/2016 | 9:26 | Liner | Soil | 1 | | X | X | -010A |
| SS-23 (0-½') | 12/16/2016 | 9:23 | Liner | Soil | 1 | | X | X | -011A |
| SS-24 (0-½') | 12/16/2016 | 9:20 | Liner | Soil | 1 | | X | X | -012A |

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

*Possible Hazard Identification*
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ■ *Unknown*

*Sample Disposal*
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Special Instructions/QC Requirements & Comments: If additional sample is needed, please use the liner. If marked:

| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
|---|---|---|---|---|---|
| [signature] | Cornerstone Earth Group | 12/16/2016 1402 | [signature] L.D. Imbral | Torrent Laboratory, Inc. | 12/16/16 1402 |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |

D/U Temp 2+1

CORNERSTONE EARTH GROUP

# ATTACHMENT B – ARSENIC UCL CALCULATION SPREADSHEET

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | UCL Statistics for Uncensored Full Data Sets | | | | | | | | | | | |
| 2 | | | | | | | | | | | | |
| 3 | User Selected Options | | | | | | | | | | | |
| 4 | Date/Time of Computation | | | ProUCL 5.112/22/2016 8:50:50 AM | | | | | | | | |
| 5 | From File | | | WorkSheet.xls | | | | | | | | |
| 6 | Full Precision | | | OFF | | | | | | | | |
| 7 | Confidence Coefficient | | | 95% | | | | | | | | |
| 8 | Number of Bootstrap Operations | | | 2000 | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 11 | C0 | | | | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 13 | General Statistics | | | | | | | | | | | |
| 14 | Total Number of Observations | | | | | 24 | Number of Distinct Observations | | | | | 24 |
| 15 | | | | | | | Number of Missing Observations | | | | | 1 |
| 16 | Minimum | | | | | 4.07 | Mean | | | | | 10.02 |
| 17 | Maximum | | | | | 29.2 | Median | | | | | 9.065 |
| 18 | SD | | | | | 5.166 | Std. Error of Mean | | | | | 1.055 |
| 19 | Coefficient of Variation | | | | | 0.516 | Skewness | | | | | 2.31 |
| 20 | | | | | | | | | | | | |
| 21 | Normal GOF Test | | | | | | | | | | | |
| 22 | Shapiro Wilk Test Statistic | | | | | 0.8 | Shapiro Wilk GOF Test | | | | | |
| 23 | 5% Shapiro Wilk Critical Value | | | | | 0.916 | Data Not Normal at 5% Significance Level | | | | | |
| 24 | Lilliefors Test Statistic | | | | | 0.16 | Lilliefors GOF Test | | | | | |
| 25 | 5% Lilliefors Critical Value | | | | | 0.177 | Data appear Normal at 5% Significance Level | | | | | |
| 26 | Data appear Approximate Normal at 5% Significance Level | | | | | | | | | | | |
| 27 | | | | | | | | | | | | |
| 28 | Assuming Normal Distribution | | | | | | | | | | | |
| 29 | 95% Normal UCL | | | | | | 95% UCLs (Adjusted for Skewness) | | | | | |
| 30 | 95% Student's-t UCL | | | | | 11.82 | 95% Adjusted-CLT UCL (Chen-1995) | | | | | 12.28 |
| 31 | | | | | | | 95% Modified-t UCL (Johnson-1978) | | | | | 11.91 |
| 32 | | | | | | | | | | | | |
| 33 | Gamma GOF Test | | | | | | | | | | | |
| 34 | A-D Test Statistic | | | | | 0.34 | Anderson-Darling Gamma GOF Test | | | | | |
| 35 | 5% A-D Critical Value | | | | | 0.746 | Detected data appear Gamma Distributed at 5% Significance Level | | | | | |
| 36 | K-S Test Statistic | | | | | 0.101 | Kolmogorov-Smirnov Gamma GOF Test | | | | | |
| 37 | 5% K-S Critical Value | | | | | 0.178 | Detected data appear Gamma Distributed at 5% Significance Level | | | | | |
| 38 | Detected data appear Gamma Distributed at 5% Significance Level | | | | | | | | | | | |
| 39 | | | | | | | | | | | | |
| 40 | Gamma Statistics | | | | | | | | | | | |
| 41 | k hat (MLE) | | | | | 5.195 | k star (bias corrected MLE) | | | | | 4.574 |
| 42 | Theta hat (MLE) | | | | | 1.928 | Theta star (bias corrected MLE) | | | | | 2.19 |
| 43 | nu hat (MLE) | | | | | 249.4 | nu star (bias corrected) | | | | | 219.5 |
| 44 | MLE Mean (bias corrected) | | | | | 10.02 | MLE Sd (bias corrected) | | | | | 4.684 |
| 45 | | | | | | | Approximate Chi Square Value (0.05) | | | | | 186.2 |
| 46 | Adjusted Level of Significance | | | | | 0.0392 | Adjusted Chi Square Value | | | | | 184.1 |
| 47 | | | | | | | | | | | | |
| 48 | Assuming Gamma Distribution | | | | | | | | | | | |
| 49 | 95% Approximate Gamma UCL (use when n>=50)) | | | | | 11.81 | 95% Adjusted Gamma UCL (use when n<50) | | | | | 11.95 |
| 50 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | **Lognormal GOF Test** | | | | | | | | | | | |
| 52 | Shapiro Wilk Test Statistic | | | | | 0.973 | **Shapiro Wilk Lognormal GOF Test** | | | | | |
| 53 | 5% Shapiro Wilk Critical Value | | | | | 0.916 | Data appear Lognormal at 5% Significance Level | | | | | |
| 54 | Lilliefors Test Statistic | | | | | 0.0823 | **Lilliefors Lognormal GOF Test** | | | | | |
| 55 | 5% Lilliefors Critical Value | | | | | 0.177 | Data appear Lognormal at 5% Significance Level | | | | | |
| 56 | **Data appear Lognormal at 5% Significance Level** | | | | | | | | | | | |
| 57 | | | | | | | | | | | | |
| 58 | **Lognormal Statistics** | | | | | | | | | | | |
| 59 | Minimum of Logged Data | | | | | 1.404 | Mean of logged Data | | | | | 2.205 |
| 60 | Maximum of Logged Data | | | | | 3.374 | SD of logged Data | | | | | 0.442 |
| 61 | | | | | | | | | | | | |
| 62 | **Assuming Lognormal Distribution** | | | | | | | | | | | |
| 63 | 95% H-UCL | | | | | 11.94 | 90% Chebyshev (MVUE) UCL | | | | | 12.73 |
| 64 | 95% Chebyshev (MVUE) UCL | | | | | 13.99 | 97.5% Chebyshev (MVUE) UCL | | | | | 15.74 |
| 65 | 99% Chebyshev (MVUE) UCL | | | | | 19.17 | | | | | | |
| 66 | | | | | | | | | | | | |
| 67 | **Nonparametric Distribution Free UCL Statistics** | | | | | | | | | | | |
| 68 | **Data appear to follow a Discernible Distribution at 5% Significance Level** | | | | | | | | | | | |
| 69 | | | | | | | | | | | | |
| 70 | **Nonparametric Distribution Free UCLs** | | | | | | | | | | | |
| 71 | 95% CLT UCL | | | | | 11.75 | 95% Jackknife UCL | | | | | 11.82 |
| 72 | 95% Standard Bootstrap UCL | | | | | 11.76 | 95% Bootstrap-t UCL | | | | | 12.81 |
| 73 | 95% Hall's Bootstrap UCL | | | | | 20.11 | 95% Percentile Bootstrap UCL | | | | | 11.77 |
| 74 | 95% BCA Bootstrap UCL | | | | | 12.37 | | | | | | |
| 75 | 90% Chebyshev(Mean, Sd) UCL | | | | | 13.18 | 95% Chebyshev(Mean, Sd) UCL | | | | | 14.61 |
| 76 | 97.5% Chebyshev(Mean, Sd) UCL | | | | | 16.6 | 99% Chebyshev(Mean, Sd) UCL | | | | | 20.51 |
| 77 | | | | | | | | | | | | |
| 78 | **Suggested UCL to Use** | | | | | | | | | | | |
| 79 | 95% Student's-t UCL | | | | | 11.82 | | | | | | |
| 80 | | | | | | | | | | | | |
| 81 | When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test | | | | | | | | | | | |
| 82 | When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL | | | | | | | | | | | |
| 83 | | | | | | | | | | | | |
| 84 | Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. | | | | | | | | | | | |
| 85 | Recommendations are based upon data size, data distribution, and skewness. | | | | | | | | | | | |
| 86 | These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). | | | | | | | | | | | |
| 87 | However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician. | | | | | | | | | | | |

# APPENDIX J

CORNERSTONE EARTH GROUP

| | |
|---|---|
| **Type of Services** | **Final Preliminary Endangerment Assessment Report** |
| **Location** | **Planned Tribal School**<br>**3141 Taylor Road**<br>**Placer County, California** |
| **Prepared For** | **UNITED AUBURN INDIAN COMMUNITY**<br>**10720 Indian Hills Road**<br>**Auburn, California 95650** |
| **Project Number** | **411-16-3** |
| **Date** | **November 16, 2017** |

CORNERSTONE EARTH GROUP

| | |
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| **Project Number** | **411-16-3** |
| **Date** | **November 16, 2017** |


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| | |
|---|---|
| **Type of Services** | **Final Preliminary Endangerment Assessment Report** |
| **Location** | **3141 Taylor Road**<br>**Placer County, California** |

# SECTION 1: INTRODUCTION

This Final Preliminary Endangerment Assessment (PEA) report was prepared to evaluate current Site conditions at the planned Tribal School at 3141 Taylor Road in Placer County, California (Site) as shown on Figures 1 and 2. This PEA report was prepared in accordance with the PEA Work Plan dated June 28, 2017 prepared by Cornerstone Earth Group (Cornerstone). A copy of the Department of Toxic Substances Control (DTSC) PEA Work Plan approval letter dated June 29, 2017 is included in Appendix A.

This PEA was prepared to evaluate potential areas of environmental concern identified during the PEA scoping meeting on May 3, 2017 with the Department of Toxic Substance Control (DTSC) and UAIC. UAIC entered a Voluntary Cleanup Agreement (VCA) with the Department of Toxic Substances Control (DTSC) on May 25, 2017.

## 1.1 SITE DESCRIPTION

The project Site is located at 3141 Taylor Road in Loomis, California. The approximately 42.3-acre Site (Assessor's Parcel Number [APN] 043-013-010-000) is currently undeveloped except for six structures: two 2-story buildings formerly used as an inn and annex, a single-story event space, a caretaker's residence, a detached garage, and a maintenance barn (Figure 2). The Site is bounded by Taylor Road from the north, Tumble Lane to the east, and residential developments to the west and south.

## 1.2 PLANNED DEVELOPMENT

We understand that a private school is currently planned that will include an elementary school, a middle school, a tribal education center, library with pre-kindergarten classrooms, and a science/cultural arts building. A recreation field, garden and cultural center are also planned. The current development plan is shown on Figure 3.

Appurtenant parking, landscaping, and other improvements necessary for Site development are anticipated.

## 1.3 PEA OBJECTIVES

As defined by DTSC, a PEA is performed to determine whether current or past hazardous material management practices or waste management practices have resulted in the release or threatened release of hazardous materials, or whether naturally occurring hazardous materials are present, which pose a threat to public health or the environment. The PEA is also applicable to releases of hazardous materials. Specific objectives of the PEA include:

- Determining if a release of hazardous wastes/substances/materials has occurred at a Site and delineating the general extent of the contamination.
- Evaluating available information for indications of naturally-occurring hazardous materials at the Site.
- Estimating the potential threat to public health and/or the environment posed by the Site and providing an indicator of the relative risk.
- Determining if an interim action is required to reduce an existing or potential threat to public health or the environment.
- Completing preliminary project scoping activities to determine data gaps and identify possible remedial action strategies to form the basis for development of a Site strategy.
- Providing the data and information to the DTSC.
- Assessing and providing for the informational needs of the community.

## SECTION 2: PRIOR ENVIRONMENTAL STUDIES

In November 2015, Professional Services Industries, Inc (PSI) prepared a Phase I Environmental Site Assessment (ESA) for the Site (PSI, 2015). In December 2016, Cornerstone performed a preliminary soil quality evaluation (Cornerstone, 2016); these results also were presented in the PEA Work Plan. Selected information from these reports is presented below; please refer directly to these documents for a more complete overview of the Site.

### 2.1 SITE HISTORY

Based on the information presented in the Phase I ESA, the Site appears to have been occupied by an orchard in 1938, with a residence. The residence appears to be in the same location as the current Inn and caretaker's home. By 1966, the orchard appeared to be diminishing in extent and density of trees, although remnants of apparent orchard trees are visible on aerial photographs through 2005. The current structures and pond are visible on the 1984 aerial photograph.

During the 2015 Phase I ESA, small quantities of lubricants, oils, gasoline and herbicides were reported stored within the barn. No staining or other evidence of a release from these materials was reportedly observed.

A septic tank was reportedly located on-Site. In addition, a water supply well was reportedly located in the garden on the northwest portion of the Site.

No hazardous materials release incidents were reported in the Site vicinity that appeared likely to significantly affect ground water or soil vapor quality beneath the Site.

## 2.2 PHASE I ESA FINDINGS

The Phase I ESA concluded that no hazardous waste or materials were identified at the Site that would constitute a Recognized Environmental Condition[1] (REC). No significant data gaps were identified during the Phase I ESA, no Historical Recognized Environmental Conditions[2], or Controlled Recognized Environmental Conditions[3] were identified during PSI's Phase I ESA.

## 2.3 DECEMBER 2016 LIMITED PHASE II SOIL QUALITY EVAULATION

On December 16, 2016, Cornerstone's staff geologist collected 24 near-surface soil samples from across the former agricultural area of the Site, with approximately one sample per acre (Figures 4a and 4b). Sample frequency of the former agricultural area was selected in general accordance with the Department of Toxic Substances Control (DTSC) "Interim Guidance for Sampling Agricultural Fields for School Sites (Second Revision)" (August 26, 2002). Samples were collected from the natural ground surface to a depth of approximately ½ foot using hand-sampling equipment.

Following standard protocols, Cornerstone's staff engineer collected soil samples in new and pre-cleaned 2½ inch by 6-inch stainless steel liners and were taped, capped, and labeled with a unique identification number. All samples were labeled with a unique name and were placed in an ice chilled cooler and transported under chain of custody documentation to a State certified analytical testing lab. Analytical results were reported by the laboratory based on a wet-weight basis.

### 2.3.1 SOIL QUALITY RESULTS

The laboratory analytical results are as follows:

- Dichlorodiphenyltrichloroethane (DDT) was detected in 22 of 24 soil samples at concentrations up to 0.138 mg/kg. The residential RSL for DDT is 1.9 mg/kg. The DDT detected in the Site's topsoil does not appear to pose a significant risk to human health for the planned school Site use.

- Dichlorodiphenyldichloroethane(DDD) was detected in 2 of 24 soil samples at concentrations up to 0.0186 mg/kg. The residential RSL for DDD is 2.2 mg/kg. The DDD detected in the Site's topsoil does not appear to pose a significant risk to human health for the planned school Site use.

- Dichlorodiphenyldichloroethylene (DDE) was detected in 24 of 24 soil samples at concentrations up to 0.522 mg/kg. The residential RSL for DDE is 1.6 mg/kg. The DDE detected in the Site's topsoil does not appear to pose a significant risk to human health for the planned school Site use.

---

[1] The presence or likely presence of hazardous substances or petroleum products on the Site: 1) due to significant release to the environment; 2) under conditions indicative of a significant release to the environment; or 3) under conditions that pose a material threat of a future significant release to the environment.

[2] A past Recognized Environmental Condition has been addressed to the satisfaction of the applicable regulatory agency or meeting of unrestricted use criteria established by the applicable regulatory agency without subjecting the Site to required controls or restrictions.

[3] A Recognized Environmental Condition that has been addressed to the satisfaction of the applicable regulatory agency with hazardous substances

- Total DDT (the sum of DDT, DDD and DDE) was detected at concentrations less than the TTLC value of 1.0 mg/kg in all 24 soil samples analyzed.
- No other organochlorine pesticide (OCP) compounds were detected.
- Lead was detected at concentrations ranging between 3.75 mg/kg and 79.8 mg/kg; all detected lead concentrations were below the residential DTSC-SL of 80 mg/kg.
- Arsenic was detected at concentrations ranging between 4.07 mg/kg and 29.2 mg/kg. Arsenic was detected exceeding the established threshold of 12 mg/kg, set in the DTSC document Interim Guidance for Sampling Agriculture Properties (DTSC, 2008) in six of 24 samples analyzed.
- Mercury was not detected above the laboratory reporting limits.

## SECTION 3: AREAS OF POTENTIAL CONCERN REQUIRING FURTHER EVALUATION

The PEA Work Plan described the following areas of potential concern that required additional investigation. Results of the PEA Work Plan implementation are summarized in Section 5.

### 3.1 POLYCHLORINATED BIPHENYLS (PCBS) – TRANSFORMERS

Two pole-mounted transformers are located on-Site; one near Taylor Road, and one near the event building (Figure 2). There is a potential that PCBs may have been historically used within the transformers. PCBs are man-made chemicals commonly used in the past as coolants and lubricants. PCBs are found as a clear to yellow, heavy oily liquid or waxy solid. PCBs were frequently used as insulation in electrical equipment because of their stability, low water solubility, high boiling point, low flammability, and low electrical conductivity. Prior to 1978, PCBs were often used in the manufacture of transformers and capacitors, and leaks or releases from transformers producing contaminated areas have been documented. The age of the transformer does not necessarily indicate the presence or absence of impacts to soil from PCBs, as releases of PCBs from a previous transformer may have occurred before its replacement. Once released to the environment, PCBs bind to soil particles and are very persistent.

### 3.2 LEAD PAINT, PEST CONTROL, AND PCB BUILDING MATERIALS

Soil adjacent to former and existing structures that are painted with lead-containing paint and/or caulking around windows containing polychlorinated biphenyls (PCBs) can become impacted with lead and/or PCBs as a result of the weathering and/or peeling of painted and/or caulked surfaces. Soil near wood framed structures also can be impacted by OCPs used to control termites. Due to the age of the existing and former structures, there is a potential that residual concentrations of lead, PCBs, and/or OCPs may be present in the shallow soil near these structures.

### 3.3 POND SEDIMENT SAMPLING

The Site topography generally slopes to the northeast towards the pond. During heavy rainfall events, overland flow could transport surface soil to the pond. During our May 3, 2017 scoping meeting, DTSC staff requested sampling of the sediment in the pond to determine if OCPs or pesticide related metals have been transported and deposited in the pond.

### 3.4 ARSENIC IN SOIL

As noted above, arsenic was detected in soil samples collected in December 2016 potentially exceeding published regional background levels. The greatest concentration of arsenic was detected in sample SS-12 at 29.2 mg/kg. Step-out samples were collected around the sample to determine the lateral extent of the elevated arsenic detected; an evaluation of Site-specific arsenic concentration is presented in Section 6.1.

### 3.5 NATURALLY OCCURRING ASBESTOS

Asbestos occurs naturally in ultramafic rock. The six regulated asbestos-form minerals include: Chrysotile, Amosite, Crocidolite, Tremolite, Anthophyllite, and Actinolite. When this material or other Asbestos-form minerals are disturbed in connection with construction or grading, asbestos-containing dust can be generated. Exposure to asbestos can result in health ailments. The Department of Toxic Substances Control (DTSC) 2004 interim guidance document titled *Naturally Occurring Asbestos (NOA) at School Sites* recommends soil sampling when a proposed school site is located within a 10-mile radius of an NOA geologic formation.

The Site is located within the Sierra Nevada geomorphic province, a tilted fault block almost 400 miles long that is characterized by intrusions of granitic rocks and block faulting along its eastern boundary. The Site is located on the western slope of the Sierra Nevada mountain range.

Based on our review of readily available geologic maps, the nearest ultramafic geologic formation that may contain NOA is located approximately 4.5 miles east of the Site (Figure 6). Another ultramafic outcrop is mapped approximately 8 miles north-northeast of the Site.

Soil in areas downslope of ultramafic NOA-containing rock may contain NOA because of ultramafic particles transported by gravitational and hydrologic processes. The ultramafic geologic formation outcrops are separated from the Site by the American River, other topographic lows and ridges. Because the intervening elevation lows and ridges between the ultramafic outcrops and the Site, transport of soil/sediment from these outcrops to the Site is not considered likely. Therefore, NOA is not suspected to be present in soil beneath the Site.

### 3.6 CAM 17 METALS

Surface soil samples collected in December 2016 were analyzed for arsenic, lead and mercury as an initial soil quality screening. In accordance with our May 3, 2017 meeting with DTSC, analyses for 17 California Assessment Manual (CAM) metals was required.

# SECTION 4: ENVIRONMENTAL SETTING

## 4.1 PHYSICAL SETTING

A 1978 USGS 7.5 minute topographic map was reviewed to evaluate the physical setting of the Site. The Site's elevation is approximately 450 feet above mean sea level; topography in the vicinity of the Site slopes downward gently to the southwest towards the Central Valley.

## 4.2 GEOLOGY AND HYDROGEOLOGY

### 4.2.1 LOCAL GEOLOGY

The Site is located on the eastern transition of Sacramento Valley to the base of the Sierra Nevada foothills, where sandy loam overlays Mesozoic dioritic to granitic rocks. The Sierra Nevada batholith consisting of metavolcanics, gabbroic, and ultramafic rocks. The 1987 California Division of Mines and Geology *Geologic Map of the Sacramento Quadrangle* shows the subject property to be underlain by Mesozoic dioritic (granite-like) rock.

### 4.2.2 HYDROGEOLOGY

Based on information reviewed from PSI's 2015 Phase I ESA, quarterly groundwater monitoring report for former Penryn Beacon located at 3129 Penryn Road, Penryn, California, approximately ¼ mile east of the Site, shallow groundwater is approximately 15 to 20 feet below ground surface, and reportedly moves to the southwest. Groundwater flow beneath the Site is likely influenced by surface topography and the on-Site pond.

## 4.3 EXPOSURE PATHWAYS

Exposure pathways are the mechanisms by which a receptor (e.g. construction worker or future Site user) may contact contaminants of potential concern (COPCs) at the Site. Exposure pathways consist of three parts: (1) a source of contaminants, (2) an exposure point where the receptor may come into contact with contaminants (e.g. contaminated soil, drinking water, and/or indoor air), and (3) an exposure route (e.g. dermal, ingestion, and/or inhalation).

Arsenic was detected exceeding background concentrations in several soil samples. Concentrations of lead and OCPs detected in shallow surface samples were below residential screening criteria. As noted above, additional sampling was performed to evaluate the presence of OCPs and lead at locations of current structures and sediment in the pond. Therefore, the contaminants of potential concern (COPC) in shallow soil consist of arsenic, lead and OCPs.

No PCBs were detected in the soil samples analyzed. Therefore, PCBs are not considered COPC for the Site.

The physical characteristics of OCPs, arsenic and lead mainly make them relatively persistent and immobile. These COPC typically do not readily dissolve in water and migrate to ground water, as they readily adsorb to soil particles. Additionally, these COPC will not readily volatilize or migrate as vapors. These chemicals may migrate if adsorbed to soil particles that become entrained into ambient air as a result of wind erosion of surface soil.

There are no identified COPC for soil vapor or ground water on-Site.

### 4.4 CONCEPTUAL SITE MODEL

A conceptual site model (CSM) was developed to assist in understanding Site conditions and potential pathways by which humans may be exposed to contaminants of concern at the Site. An exposure pathway is considered complete if it presents a means of exposure to a receptor. A complete exposure pathway includes all of the following: a source of contamination, release mechanism, transport mechanism, exposure point, and a receptor. Figure 5 presents the CSM for the Site.

## SECTION 5: IMPLEMENTATION OF PEA WORK PLAN

### 5.1 SOIL SAMPLING

On July 18, 2017, Cornerstone's field geologists implemented the sampling and analyses plan presented in the DTSC-approved PEA Work Plan. Tables 1 and 2 presented below summarize the implemented sampling and analyses activities. Approximate sampling locations are shown on Figures 4A and 4B.

Soil sample locations were marked with semi-permanent stakes and/or markers on exposed soil or with white locating paint on hardscape surfaces to help identify the original sample location in order to be relocated. No Site demolition or grading activities are anticipated during this PEA investigation that could disturb Site features, landmarks, and/or boring stakes/markings. A hand held Global Positioning System (GPS) device was used to locate sample locations.

**Table 1. Sample Handling and Testing Requirements**

| Chemical(s) | Test Method | Sample Container | Minimum Reporting Limits* | Storage Temperature | Hold Times |
|---|---|---|---|---|---|
| OCPs | 8081A | Stainless Steel liner | 2 µg/kg; 40 µg/kg for Chlordane | 4º C | 14 Days |
| PCBs | 8082 | Stainless Steel liner | 50 µg/kg | 4º C | 14 Days |
| Metals | 6010B | Stainless Steel liner | 0.5 mg/kg | 4º C | 180 Days |

* For samples with no dilution. Reporting limits may be higher for samples that require dilution due to elevated concentrations.

## Table 2. Sampling and Analyses Plan

| Boring/Sample ID | Sample Location | Media | Depth (feet) | CAM 17 Metals | OCPs | Arsenic | PCBs | Area of Potential Concern (AOPC) |
|---|---|---|---|---|---|---|---|---|
| SS-1 through SS-24 | Samples Collected December 16, 2016 | Soil | 0-0.5 | X | | | | Re-Sample and Analyze for CAM 17 Metals |
| SS-25 | Exterior Perimeter of Inn and Annex Buildings | Soil | 0-0.5 | X | X | | X | Lead Based Paint/OCPs/PCBs |
| SS-26 | | Soil | 0-0.5 | X | X | | X | Lead Based Paint/OCPs/PCBs |
| SS-27 | | Soil | 0-0.5 | X | X | | X | Lead Based Paint/OCPs/PCBs |
| SS-28 | | Soil | 0-0.5 | X | X | | X | Lead Based Paint/OCPs/PCBs |
| SS-29 | | Soil | 0-0.5 | X | X | | X | Lead Based Paint/OCPs/PCBs |
| SS-30 | | Soil | 0-0.5 | X | X | | X | Lead Based Paint/OCPs/PCBs |
| SS-31 | | Soil | 0-0.5 | X | X | | X | Lead Based Paint/OCPs/PCBs |
| SS-32 | Exterior Perimeter of Event Space | Soil | 0-0.5 | X | X | | X | Lead Based Paint/OCPs/PCBs |
| SS-33 | | Soil | 0-0.5 | X | X | | X | Lead Based Paint/OCPs |
| SS-34 | | Soil | 0-0.5 | X | X | | X | Lead Based Paint/OCPs/PCBs |
| SS-35 | | Soil | 0-0.5 | X | X | | X | Lead Based Paint/OCPs/PCBs |
| SS-36 | | Soil | 0-0.5 | X | X | | X | Lead Based Paint/OCPs/PCBs |
| SS-37 | Exterior Perimeter of Caretakers Residence | Soil | 0-0.5 | X | X | | X | Lead Based Paint/OCPs/PCBs |
| SS-38 | | Soil | 0-0.5 | X | X | | X | Lead Based Paint/OCPs/PCBs |
| SS-39 | | Soil | 0-0.5 | X | X | | X | Lead Based Paint/OCPs/PCBs |
| SS-40 | | Soil | 0-0.5 | X | X | | X | Lead Based Paint/OCPs/PCBs |
| SS-41 | | Soil | 0-0.5 | X | X | | X | Lead Based Paint/OCPs/PCBs |
| SS-42 | | Soil | 0-0.5 | X | X | | X | Lead Based Paint/OCPs/PCBs |
| SS-43 | Exterior Perimeter of Barn | Soil | 0-0.5 | X | X | | | Lead Based Paint/OCPs |
| SS-44 | | Soil | 0-0.5 | X | X | | | Lead Based Paint/OCPs |
| SS-45 | | Soil | 0-0.5 | X | X | | | Lead Based Paint/OCPs |
| SS-46 | | Soil | 0-0.5 | X | X | | | Lead Based Paint/OCPs |
| SS-47 | Pond Sediment | Sediment | 0-0.5 | X | X | | | metals/OCPs |
| SS-48 | | Sediment | 0-0.5 | X | X | | | metals/OCPs |
| SS-49 | | Sediment | 0-0.5 | X | X | | | metals/OCPs |
| SS-50 | On-Site Transformers | Soil | 0-0.5 | | | | X | PCBs |
| | | Soil | 1-1.5 | | | | X | PCBs |
| | | Soil | 2-3 | | | | X | PCBs |
| SS-51 | | Soil | 0-0.5 | | | | X | PCBs |

Continued.

**Table 2, continued.**

| Boring/Sample ID | Sample Location | Media | Depth (feet) | CAM 17 Metals | OCPs | Arsenic | PCBs | Area of Potential Concern (AOPC) |
|---|---|---|---|---|---|---|---|---|
| SS-12A | Step-out Samples from SS-12 | Soil | 0-0.5 | | | X | | Arsenic |
| SS-12B | | Soil | 0-0.5 | | | X | | Arsenic |
| SS-12C | | Soil | 0-0.5 | | | X | | Arsenic |
| SS-12D | | Soil | 0-0.5 | | | X | | Arsenic |
| SS-4 | Deeper Samples at Previously Collected Locations | Soil | 2.5-3 | | | X | | Arsenic |
| SS-6 | | Soil | 2.5-3 | | | X | | Arsenic |
| SS-8 | | Soil | 2.5-3 | | | X | | Arsenic |
| SS-12 | | Soil | 2.5-3 | | | X | | Arsenic |
| SS-16 | | Soil | 2.5-3 | | | X | | Arsenic |
| SS-22 | | Soil | 2.5-3 | | | X | | Arsenic |
| BG-1 | Undeveloped Areas for Background Arsenic Concentrations | Soil | 0.5-1 | | | X | | Arsenic |
| BG-2 | | Soil | 0.5-1 | | | X | | Arsenic |
| BG-3 | | Soil | 0.5-1 | | | X | | Arsenic |
| BG-4 | | Soil | 0.5-1 | | | X | | Arsenic |
| | | | Total | 25 | 25 | 14 | 3 | |

### 5.1.1 Deviations from PEA Work Plan

The following deviations from the PEA Work Plan were performed:

- Additional soil samples, SS-51 0-1/2 foot and 1 to 1 ½ foot, were collected September 7, 2017 beneath a pole-mounted transformer and analyzed for PCBs.
- Five surface soil samples were collected from selected locations on September 7, 2017 for performance of an arsenic bioavailability study. The arsenic bioavailability study is discussed in Section 6.

### 5.1.2 Hand Sampling Method

Surface soil samples were collected using hand tools by manually pressing a 2½- by 6-inch stainless steel sampling tube into native soil to a depth up to approximately ½ foot. If the soil is too dense to manually press the sampling tube into the soil, the tube were driven into the soil using a slide sampler. To obtain deeper soil samples, hand sampling equipment was used including a hand auger, shovel, and digging bar. A stainless-steel liner were driven approximately 6 inches into freshly exposed soil at the base of the boring using a slide hammer.

## 5.2 DISCUSSION OF RESULTS

### 5.2.1 Environmental Screening Levels

The soil and soil vapor sampling results collected during this PEA investigation were compared to residential DTSC-SLs. If a DTSC-SL has not been established, the soil results were

compared to RSLs. Arsenic was compared to the Site background of 17.5 mg/kg, as discussed in Section 6.

### 5.2.2 Summary of Soil Analytical Data

The soil analytical results of the PEA investigation are presented in Tables 3 and 4 in the tables Section of this report. Analytical data sheets and chain of custody documentation are presented in Appendix B. The analytical results are summarized below. Note that Tables 3 and 4 also includes analytical results for soil samples collected December 16, 2016.

### 5.2.3 Arsenic Background Sample Concentrations

- To determine Site-specific background concentrations for arsenic, four soil samples (BG-1 through BG-4) were collected from areas of the Site that do not appear to have been occupied by orchards or otherwise developed, based on review of historic aerial photographs. Arsenic was detected in 4 of 4 background samples at concentrations ranging from 4.29 to 5.20 mg/kg.

### 5.2.4 Former Orchard Areas

- Arsenic was detected in 34 of 34 samples analyzed ranging from 4.43 to 41.1 mg/kg, with two samples exceeding the Site background concentration of 17.5 mg/kg.
- Lead was detected in 34 of 34 samples analyzed ranging in concentration from 11.8 to 121 mg/kg. with one sample (SS-16, 0 – ½ foot) exceeding the residential DTSC-SL of 80 mg/kg.
- The remaining metal concentrations detected were below their respective screening levels or published background levels.
- Concentrations of DDD, DDE, DDT, Total DDT were detected at concentration below their respective residential screening levels.

### 5.2.5 Soil Adjacent to Structures

- Arsenic was detected in 22 of 22 soil samples analyzed ranging from 2.6 mg/kg to 13.2 mg/kg, with none of the samples exceeding Site background level.
- Lead was detected in 22 of 22 soil samples at concentrations ranging from 3.96 mg/kg to 260 mg/kg, with 4 samples exceeding the residential DTSC-SL of 80 mg/kg. All four of the samples exceeding 80 mg/kg were collected from the exterior perimeters of the Inn and Annex buildings.
- The remaining metal concentrations detected were below their respective screening levels or published background levels.
- Chlordane was detected in 9 of 22 samples collected ranging in concentrations from 0.304 mg/kg to 1.49 mg/kg. One sample, SS-26, collected in the upper ½ foot of soil, near the Inn and Annex, detected chlordane at a concentration exceeding the residential DTSC-SL of 0.44 mg/kg.

- Concentrations of DDD, DDE, DDT, Total DDT, alpha-chlordane, dieldrin, heptachlor, heptachlor epoxide were detected at concentration below their respective residential screening levels.

- No PCBs were detected in 18 of 18 soil samples collected from the perimeters of the Inn and Annex, Event Space or Caretaker's Residence.

#### 5.2.6 Pond Sediment

- Arsenic was detected in 3 of 3 soil samples analyzed ranging from 1.08 mg/kg to 5.37 mg/kg.

- Lead was detected in 3 of 3 soil samples at concentrations ranging from 1.36 mg/kg to 11.2 mg/kg.

- The remaining metal concentrations detected also were below their respective screening levels or published background levels.

- Concentrations of DDE, DDT and Total DDT were detected at concentration below their respective residential screening levels. No other OCPs were detected.

- No PCBs were detected in the pond sediment samples.

#### 5.2.7 Soil Beneath Transformers

- No PCBs were detected in soil samples collected beneath the two pole-mounted transformers.

### 5.3 QUALITY ASSURANCE AND QUALITY CONTROL

#### 5.3.1 Field Duplicates

The field QA/QC procedures consisted of field duplicate collection and analysis. Field duplicate samples are two co-located samples of the same matrix, collected in the same approximate location and time, and similar overall homogeneity. Analysis of field duplicates provides a quantitative measure of the variability of the overall sampling and laboratory analysis process due to sample heterogeneity, sampling techniques, and/or analytical methods. The soil field duplicates were assigned a different sample ID but were packaged and transported in the same manner as the primary samples.

For this investigation, a total of two soil field duplicates were collected. The lake sediment field duplicate sample SS-101 was collected from sampling location SS-47 from approximately 0 to ½ feet. The near structure soil field duplicate sample SS-102 was collected from sampling location SS-28 from approximately 0 to ½ feet.

Detected concentration of metals and pesticides in the field duplicates were similar in magnitude. The duplicate SS-102 and SS-28 did not detect PBCs above laboratory reporting limits. The calculated relative percent difference (RPD) of the arsenic duplicates was 28.86% for SS-101 and 13.05% for SS-102. Low OCP concentrations were detected in the duplicate samples, but were below their respective residential screening levels.

### 5.3.2 Equipment Blanks

Equipment blank samples are collected prior to sampling activities by pouring analyte free water (deionized water) over or through decontaminated field sampling equipment. Analysis of equipment blanks evaluate the adequacy of the decontamination process and assess contamination from the total sampling, sample preparation process, when decontaminated sampling equipment is used to collect samples. For this investigation, one equipment blank (EqB-1) was collected from the hand sampling equipment used for soil sampling. The equipment blank was collected from sampling equipment prior to soil sampling activities at SS-11. Analytical results of the equipment blank did not OCPs or PCBs above their respective laboratory reporting limits. Low levels of the metals barium, chromium, molybdenum, nickel, and zinc were detected at concentration below their respective screening levels.

### 5.3.3 Sample Receipt and Handling

Sample handling and documentation was reviewed during the data quality assessment and included evaluating chain-of-custody documentation, technical sample integrity, preservation, and technical holding times. Samples were delivered to the analytical laboratory with proper chain-of-custody documentation. Sample cooler temperatures for samples submitted to Torrent were recorded at the time of sample receipt. After transfer of sample custody to the laboratories, the samples were placed in storage refrigerators, maintaining a temperature of 4° Celsius or below. The analytical testing was performed within the technical holding times for sample preparation and analyses.

### 5.3.4 Laboratory Quality Control

Upon completion of field work, samples were delivered with proper chain-of-custody documentation to Torrent Laboratory Inc. (Torrent), a state-certified analytical laboratory. The analytical laboratory QA/QC program included sample receipt verification, sample hold times, and the preparation and analysis of laboratory QC samples. To laboratory QC samples included method blanks, laboratory control samples, matrix spike and matrix spike duplicates, and surrogate recoveries.

### 5.3.5 Data Validation

To help confirm the validity of the analytical data, Level II data validation was performed for the analytical data received from Torrent Laboratory, Inc. Data validation is a sample-specific process implemented to determine the quality of a given data set beyond the method specification, determines any causes for non-conformance to the standard method, and verifies that the reported results are within acceptable ranges. The data evaluation was performed by third-party consultant Laboratory Data Consultants, Inc. (LDC) in Carlsbad, California. The data validation process did not reject the analytical results. The Level II Data Validation package is included in Appendix C.

# SECTION 6: ARSENIC SITE-SPECIFIC BACKGROUND LEVEL AND BIOAVAILABILITY ASSESSMENT

## 6.1 ARSENIC BACKGROUND LEVEL

Natural background concentrations of arsenic are often well above the health-based DTSC screening level of 0.11 mg/kg; however, DTSC generally does not require cleanup of metals in soil to below background levels. An evaluation of background arsenic concentrations was performed by Integral Consulting, Inc. using Site arsenic data in accordance with DTSC guidance titled *Selecting Inorganic Constituents as Chemicals of Potential Concern at Risk Assessments at Hazardous Waste Sites and Permitted Facilities* (DTSC, 1997) and *Arsenic Strategies – Determination of Arsenic Remediation – Development of Arsenic Cleanup Goals* (DTSC 2009).

Integral Consulting, Inc. statistically evaluated the arsenic dataset; their results are presented in Appendix D. Summary statistics for the arsenic dataset are summarized in Table 5 and in Appendix D. The 95$^{th}$ and 99$^{th}$ percentiles of the background population were calculated as 16.5 mg/kg and 17.5 mg/kg, respectively. Because the background dataset is large (n=65), the data are considered robust, and the distribution is well defined, the 99$^{th}$ percentile of 17.5 mg/kg is considered representative of the Site-specific background.

## 6.2 ARSENIC BIOAVAILABILITY ASSESSMENT

Most human health risk assessments assume that arsenic is highly bioavailable (absorbable by the body), likely leading to an overestimate of risk. When arsenic is present in soil, it associates with other minerals. These associations reduce the solubility of arsenic, thereby reducing the bioavailability of arsenic and resulting toxicity. To address this issue, DTSC's Human and Ecological Risk Office (HERO) developed a recommended methodology (HERO Note 6; August 22, 2016) to evaluate a site-specific relative bioavailability (RBA) (California Arsenic Bioaccessibility [CAB] method). The RBA is a ratio that compares the bioavailability of arsenic in soil to that of arsenic in water. A site-specific RBA can replace the default assumption used in risk assessment equations resulting in a more refined estimate of risk. The site-specific RBA also can be used to develop a health-risk based cleanup goal for arsenic.

Cornerstone submitted an Arsenic Bioavailability Work Plan to DTSC on August 28, 2017. DTSC provided comments to the Work Plan on September 5, 2017; comments are provided in Appendix A and were incorporated into the work performed.

On September 7, soil samples were collected from five locations that were previously sampled (BG-1, SS-3, SS-12D, SS-23 and SS-43), from the surface to a depth of approximately ½ foot. The soil samples were submitted to Prima Environmental (El Dorado Hills) to be analyzed using the Standard Operating Procedure (SOP) for the CAB method.

The results showed a low RBA in the majority of the samples (4.9% to 7.9%) based on non-detects in the extraction fluid. Only one sample, SS-12D, showed a higher RBA (71 percent); this sample location had the highest total arsenic concentration detected (41.1 mg/kg).

As shown on Table 3, only samples from the vicinity of location SS-12 (B, C, and D), which are in the former orchard area, have arsenic concentrations detected above the Site-specific background level. Based on the CAB assessment results, samples with arsenic above

background levels at the Site appear to be more bioavailable, which likely reflects anthropogenic sources. Based on the low bioavailability of lower concentration soils and the apparent limited extent of soils with concentrations above background, removal of soil from the vicinity of sample SS-12 should be health-protective for the proposed land use.

## SECTION 7: HUMAN HEALTH RISK SCREENING EVALUATION

As part of the PEA process, DTSC typically requires that a human health screening level evaluation be performed in general accordance with the methods outlined in DTSC's PEA Guidance Manual (DTSC, 2015). The screening human health risk evaluation outlined in the PEA Guidance Manual is intended to be a health-conservative evaluation of potential risks posed by chemicals at a site. For example, this evaluation assumes a site will be used for residential purposes regardless of actual or intended land use. Non-cancer hazard quotients (HQs) and incremental lifetime cancer risks (ILCRs) are estimated using an established human health risk-based residential screening concentration and the maximum detected concentration for each chemical as follows:

$$HQ = \text{Maximum concentration}/\text{Screening concentration}$$

$$ILCR = (\text{Maximum concentration}/\text{Screening concentration}) \times 10^{-6}$$

Where:

The screening concentrations are based on a target HQ of one and a target ILCR of one-in-a-million ($1\times10^{-6}$).

The chemical-specific HQs and ILCRs are each summed, regardless of the location of the maximum detected concentrations, to estimate the total non-cancer hazard index (HI) and total ILCR, respectively. If the total HI exceeds a value of one, then HIs are re-calculated by summing HQs for chemicals affecting the same target organ (e.g., respiratory effects).

The screening levels used in this evaluation are residential RSLs unless a DTSC-SL is available. The soil screening levels assume exposure via incidental soil ingestion, dermal contact with soil, and inhalation of vapors or resuspended particulates in ambient air. Screening levels are available for the majority of the compounds detected in soil samples collected at the Site. Cancer risks and non-cancer indices for arsenic, lead and detected OCPs are summarized in Table 6 below. Other CAM 17 metals were detected below residential screening levels and published background levels and, therefore, were not included in Table 6.

**Table 6. Cancer Risks and Non-Cancer Indices**

| Parameter | Cancer Screening Criteria [1] | Non-Cancer Screening Criteria [1] | Maximum Detected Concentration | Cancer Risk | Non-Cancer Hazard Index |
|---|---|---|---|---|---|
| Arsenic | 0.11 mg/kg | 0.4 mg/kg | 41.1 mg/kg (max detect) | $3.7 \times 10^{-4}$ | 102.5 |
| Arsenic | 0.11 mg/kg | 0.4 mg/kg | 17.5 mg/kg (background) | $1.6 \times 10^{-4}$ | 43.8 |
| Lead | 80 mg/kg | 80 mg/kg | 263 mg/kg | (a) | (a) |
| Chlordane | 0.43 mg/kg | 35 mg/kg | 1.49 mg/kg | $3.5 \times 10^{-6}$ | 0.043 |
| Dieldrin | 0.033 mg/kg | 3.9 mg/kg | 0.00149 mg/kg | $4.5 \times 10^{-8}$ | $3.8 \times 10^{-4}$ |
| Heptachlor | 0.13 mg/kg | 39 mg/kg | 0.00786 mg/kg | $6 \times 10^{-8}$ | $2 \times 10^{-4}$ |
| Heptachlor Epoxide | 0.07mg/kg | 1 mg/kg | 0.00621 mg/kg | $8.9 \times 10^{-8}$ | 0.00621 |
| 4,4-DDE | 2.0 mg/kg | NE | 0.522 mg/kg | $2.6 \times 10^{-7}$ | NC |
| 4,4-DDD | 2.3 mg/kg | NE | 0.0186 mg/kg | $8.1 \times 10^{-9}$ | NC |
| 4,4-DDT | 1.9 mg/kg | 37 mg/kg | 0.267 mg/kg | $1.4 \times 10^{-7}$ | 0.0072 |
| **Total Cancer Risk (including maximum arsenic detected)** | | | | $3.7 \times 10^{-4}$ | -- |
| **Total Cancer Risk (including estimated background arsenic [b])** | | | | $1.6 \times 10^{-4}$ | -- |
| **Total Cancer Risk (excluding arsenic)** | | | | $3.9 \times 10^{-6}$ | -- |
| **Total Hazard Index (including maximum arsenic detected)** | | | | -- | 102.6 |
| **Total Hazard Index (including estimated background arsenic [b])** | | | | -- | 43.9 |
| **Total Hazard Index (excluding arsenic)** | | | | -- | 0.05 |

1 – Screening criteria based on RSL or DTSC-SL.
(a) A cancer risk and hazard index are not estimated for lead. Instead, the maximum concentration detected is compared to the residential CHHSL of 80 mg/kg.
(b) Background arsenic estimated at 17.5 mg/kg (99 percentile)
NC – Not Calculated
NE – Not Established

# SECTION 8: COMMUNITY PROFILE AND OUTREACH

## 8.1 COMMUNITY PROFILE

The site is located at 3141 Taylor Road. According to the Placer County Community Development Resource Agency, the area surrounding the Site is mostly zoned for single-family residential purposes and rural residential, and open space. The 2010 United States Census documents a population of 12,447 031 within the Site's zip code (95650), with a median age of 44.9 years. Within this zip code, 16,100 households are present, with approximately 83 percent owner-occupied and 17 percent rental-occupied.

## 8.2 COMMUNITY OUTREACH

Once a PEA report has been approved by the DTSC and in accordance with Education Code, Section 17213.1, the United Auburn Indian Community will prepare a public notice and make the PEA report available for public review and comment.

# SECTION 9: CONCLUSIONS

During this PEA investigation, soil sampling was performed to address the areas requiring further evaluation identified in the DTSC-approved PEA Work Plan. Soil samples were collected near existing and former buildings to evaluate potential impacts from possible pest

control spraying near building foundations, and potential impacts from building materials such as lead-based paint and/or PCB caulking compounds. Soil samples were also collected from the former orchard areas to evaluate potential impacts from pesticide application, and from beneath transformers to evaluate the presence of PCBs.

Laboratory analyses of the soil samples collected from the perimeter of the Inn and Annex buildings detected lead and the OCP compound chlordane at concentrations that exceed residential environmental screening levels. The occurrence of these contaminants is likely related to lead-based paint on former building materials and pest control spraying. Soil removal from around the perimeter of the Inn and Annex buildings is recommended.

Laboratory analyses of soil samples collected from the orchard areas detected lead exceeding the residential RSL in sample SS-16 (121 mg/kg). The Site-wide 95 percent UCL for lead is 58 mg/kg, and the lead UCL will be lowered once soils around the Inn and Annex are removed. The lead detected at SS-16 does not appear significantly elevated and leaving this soil in-place appears appropriate.

As shown in Table 2 and on Figure 3, only samples from the vicinity of location SS-12 (B, C and D), within the former orchard area, had arsenic detected exceeding the Site-specific background level. It is recommended that these locations be considered for a removal action. Based on the CAB assessment results, samples with arsenic above background are more bioavailable, which likely reflects anthropogenic sources. Based on the low bioavailability of lower concentrations of arsenic in soil and limited extent of soils with concentrations above background removal of soil from the vicinity of SS-12 should be health-protective for the proposed land use. In addition, the Site-wide 95 UCL for arsenic is currently 10.5 mg/kg and will be considerably lower and well within background when soils in the vicinity of SS-12 are removed.

## SECTION 10: LIMITATIONS

This PEA Work Plan, an instrument of professional service, was prepared for the sole use of United Auburn Indian Community, RSC Engineering and the Department of Toxic Substances Control and may not be reproduced or distributed without written authorization from Cornerstone. Cornerstone makes no warranty, expressed or implied, except that our services have been performed in accordance with the environmental principles generally accepted at this time and location.

## SECTION 11: REFERENCES

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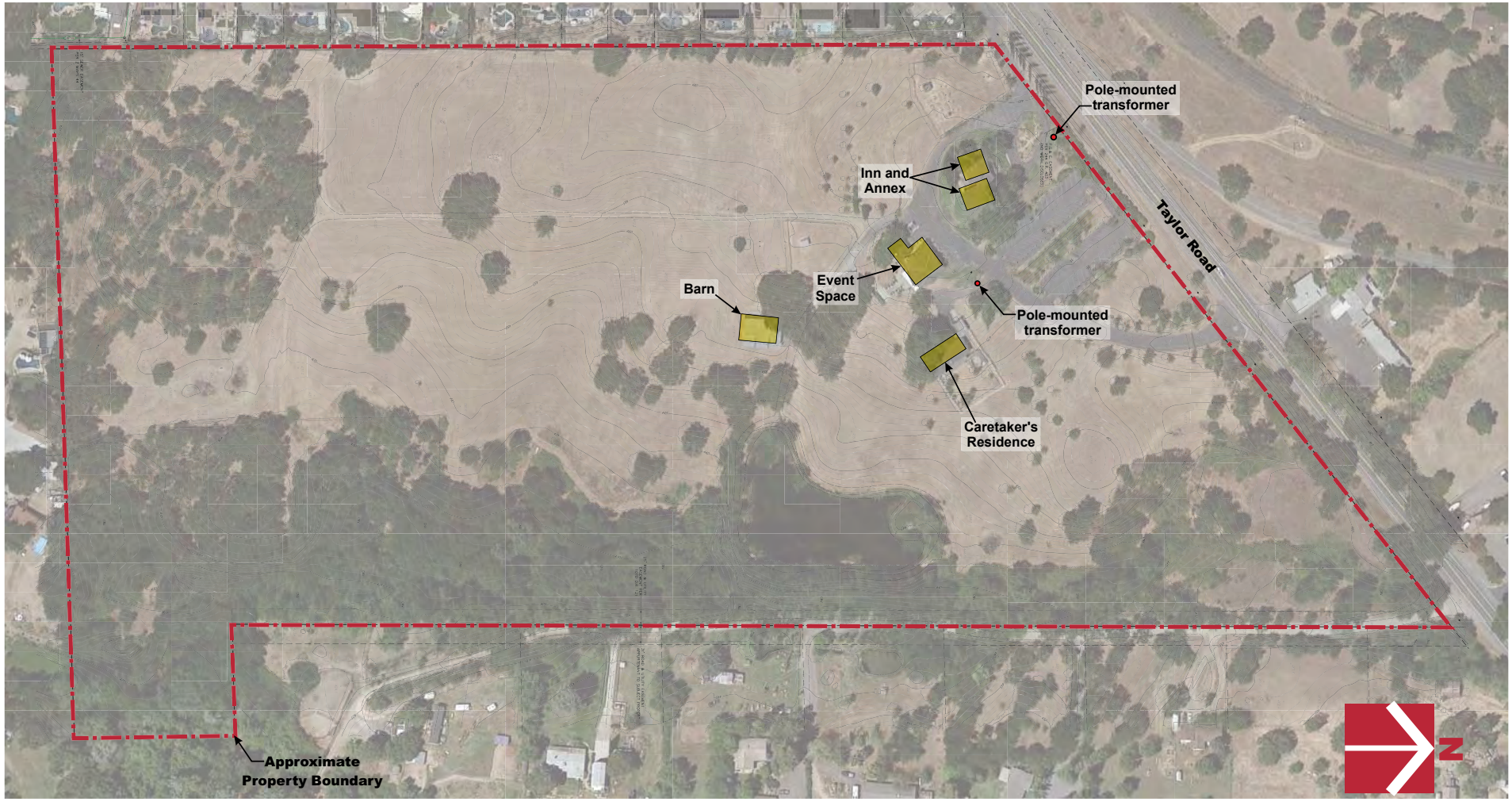
# FIGURES

CORNERSTONE EARTH GROUP

**Vicinity Map**

**United Auburn Indian Community School**
**3141 Taylor Road**
**Placer County, CA**

| | |
|---|---|
| Project Number | 411-16-3 |
| Figure Number | Figure 1 |
| Date | June 2017 |
| Drawn By | RRN |




0 160 320

APPROXIMATE SCALE (FEET)

CORNERSTONE EARTH GROUP

**Site Plan**

**United Auburn Indian Community School**
**3141 Taylor Road**
**Placer County, CA**

| | |
|---|---|
| Project Number | 411-16-3 |
| Figure Number | Figure 2 |
| Date | June 2017 |
| Drawn By | RRN |

Base by Google Earth, dated 7/10/2016
Overlay by RSC Engineering, Topographic Survey, dated October 2016

0 160 320

APPROXIMATE SCALE (FEET)

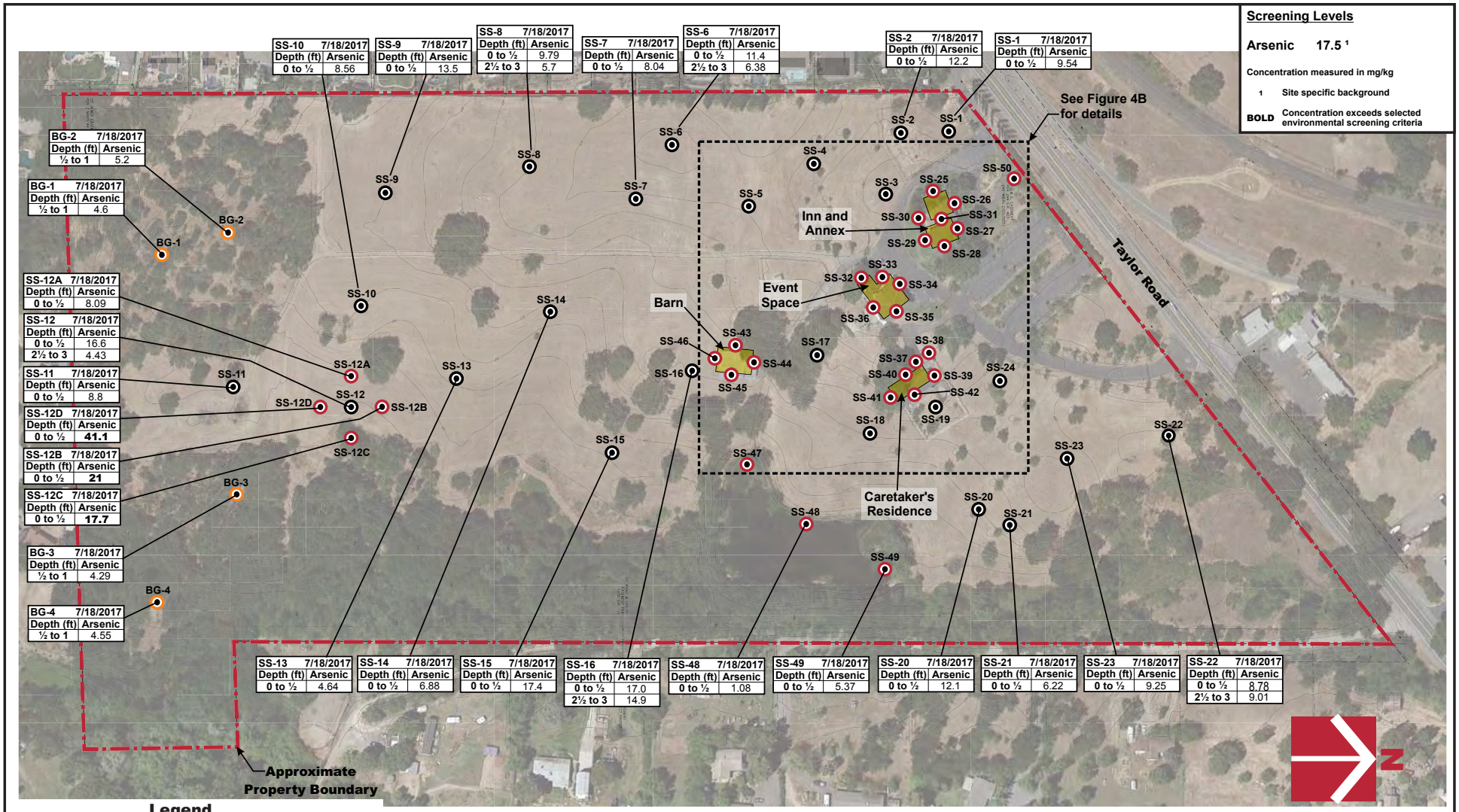
Base by Google Earth, dated 7/10/2016
Overlay by Lake Flato, Site Plan - SP1 & SP2, dated 3/31/2017

CORNERSTONE EARTH GROUP

**Development Plan**

**United Auburn Indian Community School**
**3141 Taylor Road**
**Placer County, CA**

| | |
|---|---|
| Project Number | 411-16-3 |
| Figure Number | Figure 3 |
| Date | June 2017 |
| Drawn By | RRN |




**Screening Levels**

Arsenic 17.5 [1]

Concentration measured in mg/kg

1 Site specific background

**BOLD** Concentration exceeds selected environmental screening criteria

**Legend**

- Approximate location of background sample (BG)
- Approximate location of soil sample (SS)
- Approximate location of soil sample (SS) (Cornerstone, 2016)

Base by Google Earth, dated 7/10/2016
Overlay by RSC Engineering, Topographic Survey, dated October 2016

CORNERSTONE EARTH GROUP

**Soil Sample Locations and Arsenic Results**

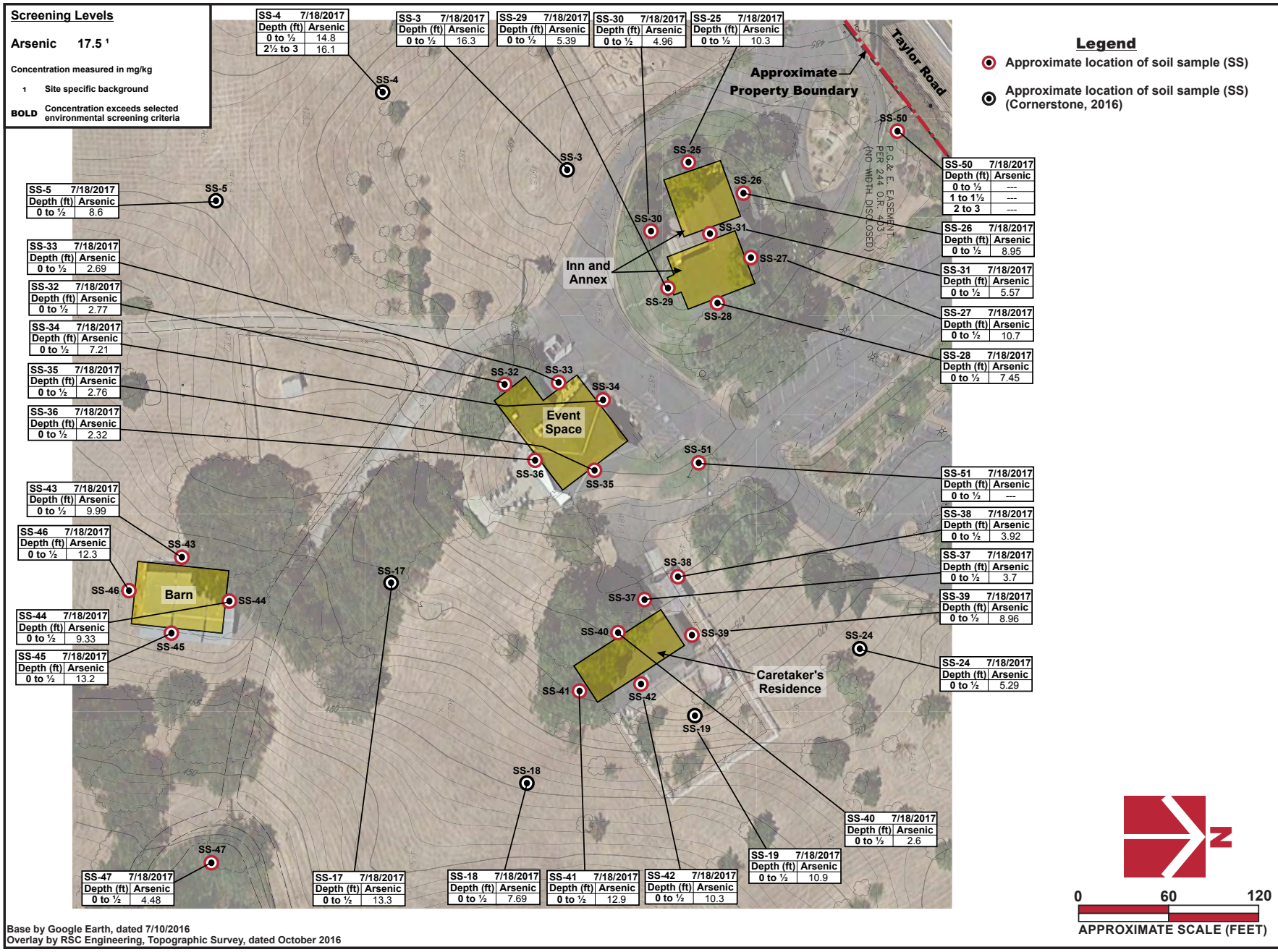
**United Auburn Indian Community School**
**3141 Taylor Road**
**Placer County, CA**

Project Number: 411-16-3

Figure Number: Figure 4A

Date: August 2017

Drawn By: RRN




Project Number 411-16-3

Figure Number Figure 4B

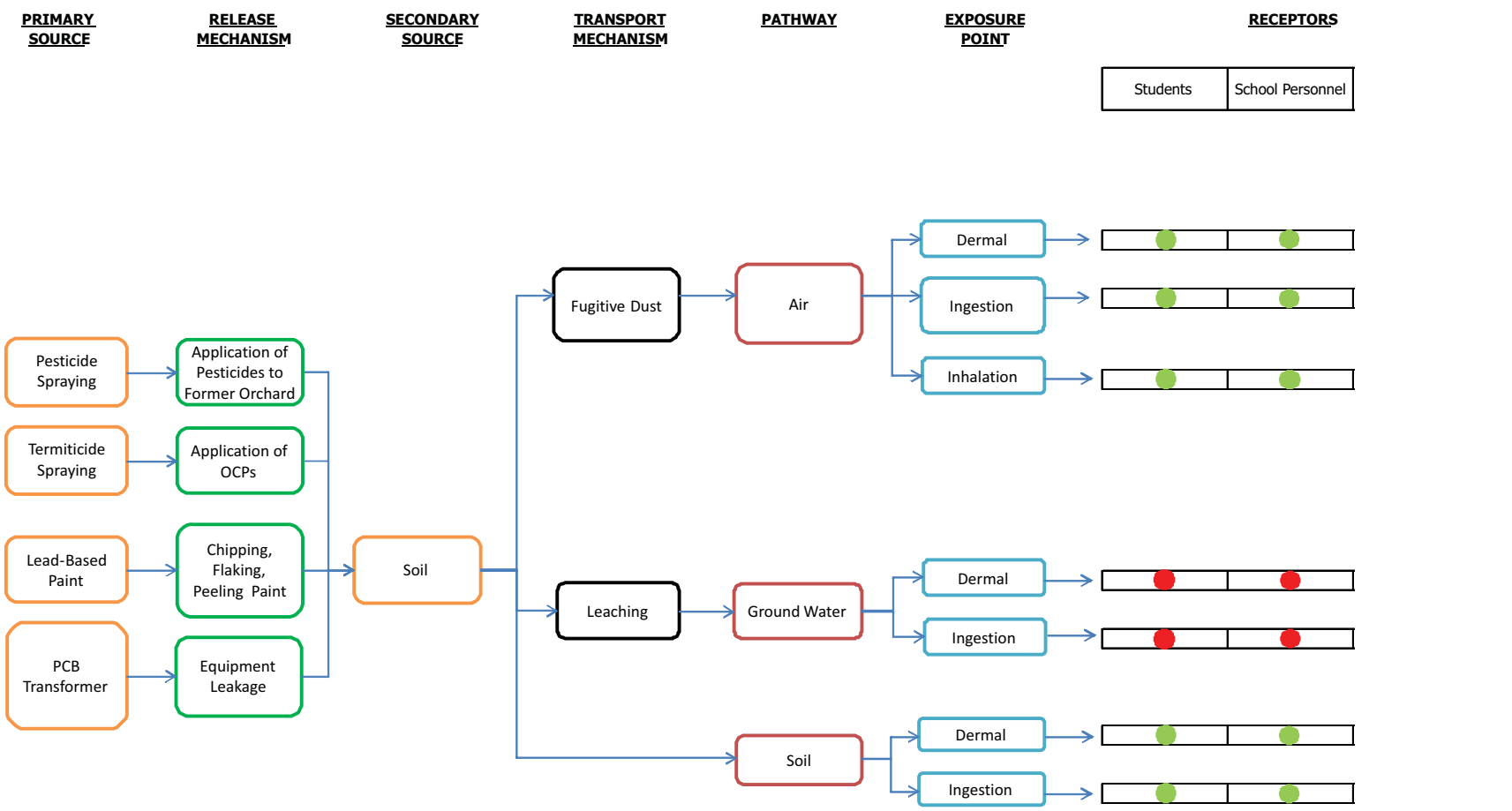
Date August 2017

Drawn By RRN

Soil Sample Locations and Arsenic Results

United Auburn Indian Community School
3141 Taylor Road
Placer County, CA

CORNERSTONE EARTH GROUP




Conceptual Site Model

United Auburn Indian Community School
3141 Taylor Road
Placer County, CA

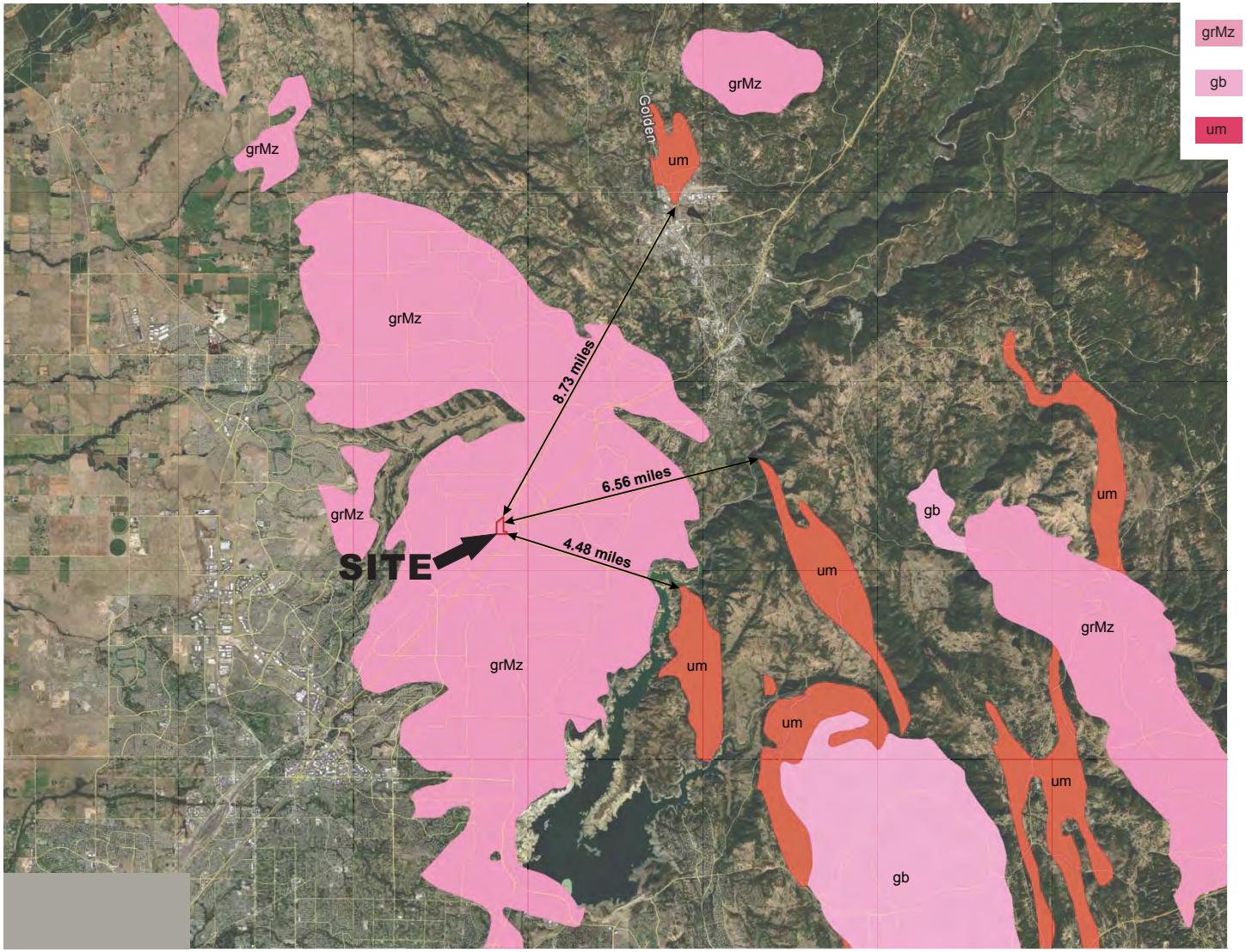
Project Number 411-16-3

Figure Number Figure 5

Date June 2017

Drawn By RRN

CORNERSTONE EARTH GROUP




**Geologic Units**

| | |
|---|---|
| grMz | Mesozoic granite rocks (Permian to Tertiary; most Mesozoic) |
| gb | Ultramafic rocks, chiefly Mesozoic (Late Proterozoic to Early Jurassic) |
| um | Mesozoic gabbroic rocks (Triassic to Cretaceous) |

N

0 14,000 28,000

APPROXIMATE SCALE (FEET)

Base by Google Earth, dated 10/25/2016

Project Number 411-16-3

Figure Number Figure 6

Date June 2017

Drawn By RRN

Ultramafic Map

United Auburn Indian Community School
3141 Taylor Road
Placer County, CA

CORNERSTONE EARTH GROUP

# DATA SUMMARY TABLES

Table 3. Analytical Results of Selected Soil Samples - Metals
(Concentrations in mg/kg)

| Sample ID | Date | Depth (feet) | Sample Location | Antimony | Arsenic | Barium | Beryllium | Cadmium | Chromium | Cobalt | Copper | Lead | Molybdenum | Nickel | Selenium | Silver | Vanadium | Zinc |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BG-1 (0.5-1) | 7/18/2017 | ½-1 | Undeveloped Areas Background Arsenic Concentrations | --- | 4.6 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| BG-2 (0.5-1) | 7/18/2017 | ½-1 | | --- | 5.2 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| BG-3 (0.5-1) | 7/18/2017 | ½-1 | | --- | 4.29 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| BG-4 (0.5-1) | 7/18/2017 | ½-1 | | --- | 4.55 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-1 (0-0.5) | 7/18/2017 | 0-½ | Former Orchard Areas | 0.165[1] | 9.54 | 59.7 | <0.16 | 0.102[1] | 28.3 | 6.78 | 23.1 | 17.6 | 0.252[1] | 13.6 | <0.035 | <0.14 | 30.5 | 39.9 |
| SS-2 (0-0.5) | 7/18/2017 | 0-½ | | 0.322[1] | 12.2 | 81.9 | 0.173[1] | 0.156[1] | 45.9 | 9.2 | 32.1 | 32.8 | 0.706[1] | 19 | <0.035 | <0.13 | 46.4 | 68.4 |
| SS-3 (0-0.5) | 7/18/2017 | 0-½ | | 0.238[1] | 16.3 | 76.9 | <0.25 | <0.13 | 42.3 | 11 | 35.4 | 26.6 | 0.462[1] | 19.9 | <0.054 | <0.15 | 50.4 | 53.4 |
| SS-4 (0-0.5) | 7/18/2017 | 0-½ | | 0.22[1] | 14.8 | 72.3 | 0.164[1] | 0.105[1] | 32.6 | 8.47 | 31.9 | 31 | 0.373[1] | 14.4 | <0.035 | 0.406[1] | 36.4 | 34.7 |
| SS-4 (2.5-3) | 7/18/2017 | 2½-3 | | --- | 16.1 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-5 (0-0.5) | 7/18/2017 | 0-½ | | 0.154[1] | 8.6 | 71.3 | <0.18 | <0.084 | 22.3 | 5.69 | 21.6 | 32.1 | 0.146[1] | 10.4 | <0.035 | <0.099 | 24.3[1] | 25.2 |
| SS-6 (0-0.5) | 7/18/2017 | 0-½ | | 0.233[1] | 11.4 | 79.9 | <0.20 | 0.147[1] | 34.3 | 8.9 | 29.7 | 31.2 | 0.298[1] | 18.4 | <0.043 | <0.12 | 40.8 | 42.2 |
| SS-6 (2.5-3) | 7/18/2017 | 2½-3 | | --- | 6.38 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-7 (0-0.5) | 7/18/2017 | 0-½ | | 0.197[1] | 8.04 | 91.3 | <0.19 | 0.109[1] | 30.7 | 7.79 | 31.1 | 28 | 0.25[1] | 14.5 | <0.041 | <0.12 | 34.3 | 34 |
| SS-8 (0-0.5) | 7/18/2017 | 0-½ | | 0.186[1] | 9.79 | 90.7 | <0.17 | 0.0879[1] | 26.5 | 7.16 | 31.1 | 42.4 | 0.182[1] | 12.7 | <0.036 | <0.10 | 27.9 | 29 |
| SS-8 (2.5-3) | 7/18/2017 | 2½-3 | | --- | 5.7 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-9 (0-0.5) | 7/18/2017 | 0-½ | | 0.167[1] | 13.5 | 115 | <0.22 | 0.124[1] | 34.1 | 8.98 | 44.2 | 56 | 0.265[1] | 17 | <0.047 | <0.13 | 37.9 | 42 |
| SS-10 (0-0.5) | 7/18/2017 | 0-½ | | 0.163[1] | 8.56 | 114 | 0.189[1] | 0.0985[1] | 40.5 | 10.8 | 38.8 | 24.2 | 0.267[1] | 19.4 | <0.035 | <0.099 | 48.5 | 44.1 |
| SS-11 (0-0.5) | 7/18/2017 | 0-½ | | 0.285[1] | 8.8 | 108 | 0.164[1] | 0.166[1] | 24.6 | 7.14 | 18.5 | 21.1 | 0.491[1] | 14.6 | <0.035 | <0.099 | 37 | 55.7 |
| SS-12 (0-0.5) | 7/18/2017 | 0-½ | | 0.16[1] | 16.6 | 53.5 | <0.19 | <0.10 | 20.5 | 5.64 | 12.7 | 53.1 | <0.16 | 9.05 | <0.042 | <0.12 | 21.5[1] | 21.5 |
| SS-12 (2.5-3) | 7/18/2017 | 2½-3 | | --- | 4.43 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-12A (0-0.5) | 7/18/2017 | 0-½ | | --- | 8.09 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-12B (0-0.5) | 7/18/2017 | 0-½ | | --- | 21 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-12C (0-0.5) | 7/18/2017 | 0-½ | | --- | 17.7 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-12D (0-0.5) | 7/18/2017 | 0-½ | | --- | 41.1 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-13 (0-0.5) | 7/18/2017 | 0-½ | | <0.12 | 4.64 | 70 | <0.16 | <0.084 | 20.9 | 5.78 | 18.8 | 13.1 | <0.13 | 10 | <0.035 | <0.098 | 25 | 23.1 |
| SS-14 (0-0.5) | 7/18/2017 | 0-½ | | 0.188[1] | 6.88 | 86.1 | <0.16 | 0.115[1] | 28.6 | 6.99 | 28.3 | 30.2 | 0.212[1] | 12.9 | <0.035 | <0.098 | 29.1 | 33.3 |
| SS-15 (0-0.5) | 7/18/2017 | 0-½ | | 0.462[1] | 17.4 | 128 | 0.326[1] | 0.183[1] | 50.8 | 12.7 | 28.4 | 42.9 | 0.668[1] | 24.1 | <0.050 | <0.14 | 61.7 | 69.7 |
| SS-16 (0-0.5) | 7/18/2017 | 0-½ | | 0.468[1] | 17 | 43.3 | 0.193[1] | 0.15[1] | 92.1 | 19.5 | 60.2 | 121 | 0.416[1] | 55.8 | <0.037 | <0.11 | 144 | 99.2 |
| SS-16 (2.5-3) | 7/18/2017 | 2½-3 | | --- | 14.9 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-17 (0-0.5) | 7/18/2017 | 0-½ | | 0.35[1] | 13.3 | 103 | 0.188[1] | 0.17[1] | 50.1 | 10 | 34.9 | 35.1 | 0.77[1] | 20.7 | <0.038 | <0.11 | 50.5 | 76.8 |
| SS-18 (0-0.5) | 7/18/2017 | 0-½ | | 0.182[1] | 7.69 | 54.9 | 0.161 | <0.084 | 35.3 | 8.46 | 19.5 | 12.2 | 0.314[1] | 13 | <0.035 | <0.099 | 39.9 | 43.3 |
| SS-19 (0-0.5) | 7/18/2017 | 0-½ | | 0.295[1] | 10.9 | 78.2 | 0.24[1] | 0.0975[1] | 34.7 | 8 | 20.5 | 15.4 | 0.418[1] | 18.2 | <0.035 | <0.099 | 43.2 | 89.7 |
| SS-20 (0-0.5) | 7/18/2017 | 0-½ | | 0.257[1] | 12.1 | 78.4 | <0.18 | 0.124J | 34.5 | 7.94 | 38.4 | 58 | 0.223[1] | 13.5 | <0.039 | <0.11 | 32.1 | 45.5 |
| SS-21 (0-0.5) | 7/18/2017 | 0-½ | | 0.131[1] | 6.22 | 40.1 | <0.16 | <0.084 | 26.9 | 6.41 | 26.2 | 19.9 | <0.13 | 10.5 | <0.035 | <0.099 | 26.1 | 25.2 |
| SS-22 (0-0.5) | 7/18/2017 | 0-½ | | 0.166[1] | 8.78 | 51.7 | <0.16 | 0.086 | 26.1 | 8.08 | 15.7 | 28.6 | 0.168[1] | 9.99 | <0.036 | <0.10 | 25.3[1] | 30.6 |
| SS-22 (2.5-3) | 7/18/2017 | 2½-3 | | --- | 9.01 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-23 (0-0.5) | 7/18/2017 | 0-½ | | 0.163[1] | 9.25 | 61.1 | <0.19 | <0.099 | 41.8 | 10.6 | 33.5 | 13.8 | 0.264[1] | 16.2 | <0.041 | <0.12 | 41.5 | 41.6 |
| SS-24 (0-0.5) | 7/18/2017 | 0-½ | | 0.143[1] | 5.29 | 50.1 | <0.16 | <0.084 | 32.6 | 6.36 | 26.7 | 11.8 | 0.132[1] | 12 | <0.035 | <0.098 | 29.2 | 31.7 |
| SS-25 (0-0.5) | 7/18/2017 | 0-½ | Exterior Perimeter of Inn and Annex Buildings | 0.876[1] | 10.3 | 76.9 | <0.19 | 0.26[1] | 34.2 | 7.24 | 55.5 | 263 | 0.228[1] | 13.5 | <0.041 | <0.12 | 30.7 | 143 |
| SS-26 (0-0.5) | 7/18/2017 | 0-½ | | 0.363[1] | 8.95 | 93.5 | <0.18 | 0.331[1] | 40 | 7.23 | 61.7 | 260 | 0.292[1] | 17.1 | <0.040 | <0.11 | 33.2 | 208 |
| SS-27 (0-0.5) | 7/18/2017 | 0-½ | | 0.489[1] | 10.7 | 95.9 | <0.27 | 0.557[1] | 43.7 | 9.2 | 31.4 | 87.7 | 0.341[1] | 20.5 | <0.058 | <0.17 | 38.1[1] | 132 |
| SS-28 (0-0.5) | 7/18/2017 | 0-½ | | <0.20 | 7.45 | 64.1 | <0.27 | <0.14 | 24.5 | 6.19 | 22.1 | 46.2 | 1.99 | 14 | <0.058 | <0.16 | 30.4[1] | 229 |
| SS-29 (0-0.5) | 7/18/2017 | 0-½ | | 0.3[1] | 5.39 | 77 | <0.28 | <0.15 | 34.5 | 8.02 | 18.5 | 29.1 | <0.23 | 31.7 | <0.061 | <0.17 | 28.8[1] | 83 |
| SS-30 (0-0.5) | 7/18/2017 | 0-½ | | 0.31[1] | 4.96 | 45.1 | <0.16 | 0.11[1] | 16.6 | 4.14 | 18.1 | 22.8 | <0.13 | 8.24 | <0.036 | <0.10 | 17.4[1] | 218 |
| SS-31 (0-0.5) | 7/18/2017 | 0-½ | | 0.198[1] | 5.57 | 65.8 | <0.24 | 0.235[1] | 25 | 6.5 | 25.1 | 263 | <0.20 | 15.3 | <0.052 | <0.15 | 22.3[1] | 234 |
| SS-32 (0-0.5) | 7/18/2017 | 0-½ | Exterior Perimeter of Event Space | <0.15 | 2.77 | 42.9 | <0.19 | <0.10 | 22.8 | 7.51 | 19.3 | 3.16 | <0.16 | 13.4 | <0.042 | <0.12 | 25.8[1] | 29.7 |
| SS-33 (0-0.5) | 7/18/2017 | 0-½ | | <0.14 | 2.69 | 31.9 | <0.18 | <0.096 | 20.8 | 4.98 | 17.1 | 3.96 | <0.15 | 11.2 | <0.040 | <0.11 | 21.9[1] | 37.4 |
| SS-34 (0-0.5) | 7/18/2017 | 0-½ | | <0.13 | 7.21 | 38.5 | <0.17 | <0.089 | 15.2 | 3.56 | 10.7 | 32.8 | <0.14 | 7.56 | <0.037 | <0.10 | 14.5[1] | 21.7 |
| SS-35 (0-0.5) | 7/18/2017 | 0-½ | | <0.14 | 2.76 | 25.1 | <0.19 | <0.10 | 15.4 | 3.89 | 11.7 | 8.39 | <0.16 | 7.72 | <0.041 | <0.12 | 15.5[1] | 33.8 |
| SS-36 (0-0.5) | 7/18/2017 | 0-½ | | 0.27[1] | 2.32 | 40 | <0.22 | <0.12 | 13.6 | 3.23 | 9.68 | 6.91 | <0.18 | 6.65[1] | <0.048 | <0.14 | 12.6[1] | 32.9 |
| SS-37 (0-0.5) | 7/18/2017 | 0-½ | Exterior Perimeter of Caretakers Residence | 0.237[1] | 3.7 | 35.4 | <0.23 | 0.472[1] | 16.5 | 4.31 | 101 | 12.9 | <0.19 | 8.58 | <0.050 | <0.14 | 22.4[1] | 160 |
| SS-38 (0-0.5) | 7/18/2017 | 0-½ | | <0.13 | 3.92 | 35.4 | <0.17 | 0.622[1] | 20.5 | 4.94 | 21.3 | 22.7 | <0.14 | 9.29 | <0.037 | <0.11 | 22.0[1] | 189 |
| SS-39 (0-0.5) | 7/18/2017 | 0-½ | | 0.405[1] | 8.96 | 42.6 | 0.217[1] | 0.0941[1] | 14.4 | 3.64 | 13.3 | 10.4 | 0.254[1] | 10.3 | 0.131[1] | <0.11 | 20.7[1] | 37 |
| SS-40 (0-0.5) | 7/18/2017 | 0-½ | | <0.13 | 2.6 | 28.1 | <0.17 | <0.091 | 15.3 | 3.56 | 12.8 | 9.29 | <0.14 | 7.9 | <0.038 | <0.11 | 15.3[1] | 49 |
| SS-41 (0-0.5) | 7/18/2017 | 0-½ | | 0.652[1] | 12.9 | 99.5 | 0.231[1] | 0.239[1] | 51.4 | 10.5 | 39.7 | 49.2 | 0.434[1] | 21.8 | <0.041 | 0.12[1] | 51.3 | 122 |
| SS-42 (0-0.5) | 7/18/2017 | 0-½ | | 1.02[1] | 10.3 | 68.7 | <0.22 | <0.12 | 43.4 | 8.06 | 38 | 33.2 | 0.374[1] | 18.9 | <0.048 | <0.14 | 42.1 | 63.6 |
| SS-43 (0-0.5) | 7/18/2017 | 0-½ | Exterior Perimeter of Barn | 0.192[1] | 9.99 | 65.4 | 0.196[1] | 0.14[1] | 46.9 | 8.41 | 23.3 | 8.56 | 0.339[1] | 21.4 | <0.042 | <0.12 | 51.5 | 276 |
| SS-44 (0-0.5) | 7/18/2017 | 0-½ | | 0.445[1] | 9.33 | 63.9 | <0.27 | 0.347[1] | 72.3 | 7.48 | 31.6 | 38.1 | 2.55 | 35.4 | <0.059 | <0.17 | 35.5[1] | 136 |
| SS-45 (0-0.5) | 7/18/2017 | 0-½ | | 0.224[1] | 13.2 | 58.8 | 0.195[1] | 0.154[1] | 39.9 | 12.4 | 20.3 | 19.1 | 0.34[1] | 16.7 | <0.037 | <0.11 | 49.8 | 206 |
| SS-46 (0-0.5) | 7/18/2017 | 0-½ | | 0.379[1] | 12.3 | 71.1 | 0.198[1] | 0.125[1] | 46.4 | 8.76 | 24.5 | 14.9 | 0.456[1] | 18.8 | <0.035 | <0.099 | 53.8 | 75.4 |
| SS-47 (0-0.5) | 7/18/2017 | 0-½ | Pond Sediment | <0.31 | 4.48 | 24.8 | <0.41 | <0.21 | 19.7 | 6.16 | 17.8 | 11.2 | 0.429[1] | 10.1[1] | <0.088 | <0.25 | 14.5J | 23.1 |
| SS-48 (0-0.5) | 7/18/2017 | 0-½ | | <0.16 | 1.08[1] | 7.64 | <0.22 | <0.11 | 6.99 | 0.793[1] | 3.5 | 1.36 | <0.18 | 2.72[1] | <0.047 | <0.13 | 3.69[1] | 4.9 |
| SS-49 (0-0.5) | 7/18/2017 | 0-½ | | <0.18 | 5.37 | 37.6 | <0.24 | <0.13 | 37.4 | 7.49 | 27.2 | 3.45 | <0.20 | 16.5 | <0.052 | <0.15 | 37.8 | 35.2 |
| SS-50 (0-0.5) | 7/18/2017 | 0-½ | On-Site Transformers | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-50 (1-1.5) | 7/18/2017 | 1-1½ | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-50 (2-3) | 7/18/2017 | 2-3 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-51 (0-0.5) | 9/7/2017 | 0-½ | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-51 (1 - 1.5) | 9/7/2017 | 1-1½ | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-101 (0-0.5) | 7/18/2017 | 0-½ | SS-47 Duplicate | <0.12 | 3.35 | 24.8 | <0.16 | <0.084 | 19.1 | 4.19 | 13.3 | 5.33 | <0.13 | 9.8 | <0.035 | <0.14 | 21.3[1] | 20.3 |
| SS-102 (0-0.5) | 7/18/2017 | 0-½ | SS-28 Duplicate | 0.356[1] | 8.49 | 87.5 | 0.172[1] | 0.165[1] | 23.7 | 6.07 | 22.9 | 38.9 | 0.846[1] | 13.8 | <0.035 | 0.25[1] | 40.7 | 112 |
| Screening Level | | | | 31 | 17.5 | 15,000 | 15 | 5.2 | NE | 23 | 3,100 | 80 | 390 | 490 | 390 | 390 | 390 | 23,000 |
| Basis | | | | RSL[1] | BG[2] | RSL[1] | DTSC-SL[3] | DTSC-SL[3] | NE | RSL[1] | RSL[1] | DTSC-SL[3] | RSL[1] | DTSC-SL[3] | RSL[1] | RSL[1] | RSL[1] | RSL[1] |
| Bradford, 1996 [a] | Background Range | | | 0.15 to 1.95 | 0.6 to 11 | 133 to 1,400 | 0.25 to 2.7 | 0.05 to 1.7 | 23 to 1,579 | 2.7 to 46.9 | 9.1 to 96.4 | 12.4 to 97.1 | 0.1 to 9.6 | 9 to 509 | 0.015 to 0.43 | 0.1 to 8.3 | 39 to 288 | 88 to 236 |
| | Upper Quartile | | | 0.73 | 4.7 | 625 | 1.53 | 0.44 | 115 | 18.3 | 36.6 | 26.7 | 1.4 | 56 | 0.05 | 0.53 | 134 | 170 |
| LBNL, 2009 [b] | 99th Percentile | | | <6 | 28 | 410 | 1 | 5.6 | 120 | 25 | 63 | 43 | 4.8 | 272 | 4.9 | 2.9 | 90 | 140 |
| | 95% Upper Tolerance Limit (UTL) | | | 5.5 | 19.1 | 323.6 | 1 | 2.7 | 99.6 | 22.2 | 69.4 | 16.1 | 7.4 | 119.8 | 5.6 | 1.8 | 74.3 | 106.1 |

1 Regional Screening Level (RSL), USEPA Region 9 - June 2017.
2 Site-Specific background (see Section 6.1)
3 Recommended Screening Level (SL), HERO Note 3 - June 2017
a Bradford, et. al. March 1996. Background Concentrations of Trace and Major Elements in California Soils.
b LBNL, 2009. Analysis of Background Distributions of Metals in the Soil at Lawrence Berkeley National Laboratory.
< Not detected at or above laboratory reporting limit
NE Not Established
--- Not Analyzed
BOLD Concentration exceeds selected environmental screening criteria

Table 4. Analytical Results of Selected Soil Samples - OCPs and PCBs
(Concentrations in mg/kg)

| Sample ID | Date | Depth (feet) | Sample Location | 4,4'-DDD | 4,4'-DDE | 4,4'-DDT | DDT Total | alpha-Chlordane | gamma-Chlordane | Chlordane | Dieldrin | Heptachlor | Heptachlor epoxide | PCBs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BG-1 (0.5-1) | 7/18/2017 | ½-1 | Undeveloped Areas for Background Arsenic Concentrations | --- | --- | --- | --- | --- | | --- | --- | --- | --- | --- |
| BG-2 (0.5-1) | 7/18/2017 | ½-1 | | --- | --- | --- | --- | --- | | --- | --- | --- | --- | --- |
| BG-3 (0.5-1) | 7/18/2017 | ½-1 | | --- | --- | --- | --- | --- | | --- | --- | --- | --- | --- |
| BG-4 (0.5-1) | 7/18/2017 | ½-1 | | --- | --- | --- | --- | --- | | --- | --- | --- | --- | --- |
| SS-1 (0-0.5) | 12/16/2016 | 0-½ | Former Orchard Areas | <0.0023 | 0.14 | 0.0201 | 0.1601 | <0.00069 | <0.00065 | <0.0084 | <0.00059 | <0.00042 | <0.00031 | --- |
| SS-2 (0-0.5) | 12/16/2016 | 0-½ | | <0.0057 | 0.0291 | 0.0117[3] | 0.0291 | <0.0017 | <0.0016 | <0.021 | <0.0015 | <0.0011 | <0.00078 | --- |
| SS-3 (0-0.5) | 12/16/2016 | 0-½ | | <0.0023 | 0.0112 | 0.00458[3] | 0.0112 | <0.00069 | <0.00065 | <0.0084 | <0.00059 | <0.00042 | <0.00031 | --- |
| SS-4 (0-0.5) | 12/16/2016 | 0-½ | | <0.002 | 0.0456 | 0.0106 | 0.0562 | <0.002 | <0.0016 | <0.02 | <0.002 | <0.002 | <0.002 | --- |
| SS-4 (2.5-3) | 7/18/2017 | 2½-3 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-5 (0-0.5) | 12/16/2016 | 0-½ | | <0.0023 | 0.14 | 0.0167 | 0.1567 | <0.00069 | <0.00065 | <0.0084 | <0.00059 | <0.00042 | <0.00031 | --- |
| SS-6 (0-0.5) | 12/16/2016 | 0-½ | | <0.002 | 0.043 | 0.0194 | 0.0624 | <0.002 | <0.0016 | <0.02 | <0.002 | <0.002 | <0.002 | --- |
| SS-6 (2.5-3) | 7/18/2017 | 2½-3 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-7 (0-0.5) | 12/16/2016 | 0-½ | | <0.0023 | 0.426 | 0.0971 | 0.5231 | <0.00069 | <0.00065 | <0.0084 | <0.00059 | <0.00042 | <0.00031 | --- |
| SS-8 (0-0.5) | 12/16/2016 | 0-½ | | <0.0023 | 0.124 | 0.0265 | 0.1505 | <0.00069 | <0.00065 | <0.0084 | <0.00059 | <0.00042 | <0.00031 | --- |
| SS-8 (2.5-3) | 7/18/2017 | 2½-3 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-9 (0-0.5) | 12/16/2016 | 0-½ | | <0.0023 | 0.444 | 0.0623 | 0.5063 | <0.00069 | <0.00065 | <0.0084 | <0.00059 | <0.00042 | <0.00031 | --- |
| SS-10 (0-0.5) | 12/16/2016 | 0-½ | | <0.0023 | 0.0937 | 0.0238 | 0.1175 | <0.00069 | <0.00065 | <0.0084 | <0.00059 | <0.00042 | <0.00031 | --- |
| SS-11 (0-0.5) | 12/16/2016 | 0-½ | | <0.002 | 0.00335 | <0.002 | 0.00335 | <0.002 | <0.0016 | <0.02 | <0.002 | <0.002 | <0.002 | --- |
| SS-12A (0-0.5) | 12/16/2016 | 0-½ | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-12B (0-0.5) | 12/16/2016 | 0-½ | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-12C (0-0.5) | 12/16/2016 | 0-½ | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-12D (0-0.5) | 12/16/2016 | 0-½ | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-12 (0-0.5) | 12/16/2016 | 0-½ | | <0.02 | 0.398 | 0.138 | 0.536 | <0.02 | <0.0016 | <0.2 | <0.02 | <0.02 | <0.02 | --- |
| SS-12 (2.5-3) | 7/18/2017 | 2½-3 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-13 (0-0.5) | 12/16/2016 | 0-½ | | <0.0017 | 0.0643 | 0.0146 | 0.0789 | <0.00052 | <0.00049 | <0.0063 | <0.00044 | <0.00032 | <0.00023 | --- |
| SS-14 (0-0.5) | 12/16/2016 | 0-½ | | 0.0186[3] | 0.522 | 0.106 | 0.628 | <0.0017 | <0.0016 | <0.021 | <0.0015 | <0.0011 | <0.00078 | --- |
| SS-15 (0-0.5) | 12/16/2016 | 0-½ | | 0.00694 | 0.0624[3] | 0.00694[3] | 0.00694 | <0.0017 | <0.0016 | <0.021 | <0.0015 | <0.0011 | <0.00078 | --- |
| SS-16 (0-0.5) | 12/16/2016 | 0-½ | | <0.0023 | 0.315 | 0.0434 | 0.3584 | <0.00069 | <0.00065 | <0.0084 | <0.00059 | <0.00042 | <0.00031 | --- |
| SS-16 (2.5-3) | 7/18/2017 | 2½-3 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-17 (0-0.5) | 12/16/2016 | 0-½ | | <0.0057 | 0.15 | 0.0339 | 0.1839 | <0.0017 | <0.0016 | <0.021 | <0.0015 | <0.0011 | <0.00078 | --- |
| SS-18 (0-0.5) | 12/16/2016 | 0-½ | | <0.0023 | 0.013 | <0.0023 | 0.013 | <0.00069 | <0.00065 | <0.0084 | <0.00059 | <0.00042 | <0.00031 | --- |
| SS-19 (0-0.5) | 12/16/2016 | 0-½ | | <0.002 | 0.0112 | 0.00772 | 0.01892 | <0.00017 | <0.0016 | <0.0021 | <0.00015 | <0.00011 | <0.000078 | --- |
| SS-20 (0-0.5) | 12/16/2016 | 0-½ | | <0.0023 | 0.0997 | 0.0152 | 0.1149 | <0.00069 | <0.00065 | <0.0084 | <0.00059 | <0.00042 | <0.00031 | --- |
| SS-21 (0-0.5) | 12/16/2016 | 0-½ | | <0.0023 | 0.0678 | 0.0114 | 0.0792 | <0.00069 | <0.00065 | <0.0084 | <0.00059 | <0.00042 | <0.00031 | --- |
| SS-22 (0-0.5) | 12/16/2016 | 0-½ | | <0.0023 | 0.259 | 0.0579 | 0.3169 | <0.00069 | <0.00065 | <0.0084 | <0.00059 | <0.00042 | <0.00031 | --- |
| SS-22 (2.5-3) | 7/18/2017 | 2½-3 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-23 (0-0.5) | 12/16/2016 | 0-½ | | <0.0023 | 0.0228 | 0.0105 | 0.0333 | <0.00069 | <0.00065 | <0.0084 | <0.00059 | <0.00042 | <0.00031 | --- |
| SS-24 (0-0.5) | 12/16/2016 | 0-½ | | <0.0023 | 0.0368 | 0.0156 | 0.0524 | <0.00069 | <0.00065 | <0.0084 | <0.00059 | <0.00042 | <0.00031 | --- |
| SS-25 (0-0.5) | 7/18/2017 | 0-½ | Exterior Perimeter of Inn and Annex Buildings | <0.002 | 0.122 | 0.0772 | 0.1992 | 0.0194 | 0.0159 | 0.304 | <0.00052 | <0.00037 | 0.00376[3] | ND |
| SS-26 (0-0.5) | 7/18/2017 | 0-½ | | <0.0019 | 0.161 | 0.161 | 0.322 | 0.147 | 0.121 | 1.49 | <0.00051 | 0.003[3] | 0.00621[3] | ND |
| SS-27 (0-0.5) | 7/18/2017 | 0-½ | | <0.0029 | 0.167 | 0.136 | 0.303 | 0.0291 | 0.0218 | 0.373 | <0.00075 | 0.0053[3] | <0.0004 | ND |
| SS-28 (0-0.5) | 7/18/2017 | 0-½ | | 0.00429[3] | 0.0996 | 0.0242 | 0.12809 | <0.00087 | <0.00082 | <0.011 | <0.00075 | <0.00053 | <0.00039 | ND |
| SS-29 (0-0.5) | 7/18/2017 | 0-½ | | <0.003 | 0.0407 | 0.0121 | 0.0528 | <0.00092 | <0.00087 | <0.011 | <0.00079 | <0.00056 | <0.00041 | ND |
| SS-30 (0-0.5) | 7/18/2017 | 0-½ | | 0.009 | 0.0828 | 0.0304 | 0.1222 | <0.00053 | <0.00050 | <0.0065 | <0.00046 | <0.00032 | <0.00024 | ND |
| SS-31 (0-0.5) | 7/18/2017 | 0-½ | | <0.0026 | 0.219 | 0.267 | 0.486 | 0.0612 | 0.0588 | <0.0096 | <0.00067 | 0.00786[3] | <0.00035 | ND |
| SS-32 (0-0.5) | 7/18/2017 | 0-½ | Exterior Perimeter of Event Space | <0.0021 | 0.0116 | 0.0091 | 0.0091 | <0.00063 | <0.0006 | <0.0077 | <0.00054 | <0.00038 | <0.00029 | ND |
| SS-33 (0-0.5) | 7/18/2017 | 0-½ | | <0.0019 | 0.0118 | 0.0134 | 0.0252 | <0.0006 | <0.00056 | <0.0073 | <0.00051 | <0.00036 | <0.00027 | ND |
| SS-34 (0-0.5) | 7/18/2017 | 0-½ | | <0.0018 | 0.121 | 0.0507 | 0.1717 | <0.00055 | <0.00052 | <0.0067 | <0.00047 | <0.00033 | <0.00025 | ND |
| SS-35 (0-0.5) | 7/18/2017 | 0-½ | | <0.002 | 0.041 | 0.0162 | 0.0572 | <0.00062 | <0.00059 | <0.0076 | <0.00053 | <0.00038 | <0.00028 | ND |
| SS-36 (0-0.5) | 7/18/2017 | 0-½ | | <0.0023 | 0.0372 | 0.00968 | 0.04688 | <0.00072 | <0.00067 | <0.0087 | <0.00061 | <0.00043 | <0.00032 | ND |
| SS-37 (0-0.5) | 7/18/2017 | 0-½ | Exterior Perimeter of Caretakers Residence | <0.0025 | 0.0178 | 0.00989 | 0.02769 | 0.0217 | 0.0166 | 0.232 | <0.00065 | <0.00046 | <0.00034 | ND |
| SS-38 (0-0.5) | 7/18/2017 | 0-½ | | <0.0018 | 0.0463 | 0.0398 | 0.0861 | 0.00299[3] | 0.00271[3] | 0.093 | <0.00048 | <0.00034 | <0.00025 | ND |
| SS-39 (0-0.5) | 7/18/2017 | 0-½ | | <0.0019 | 0.0124 | 0.0138 | 0.0262 | 0.00154[3] | 0.00140[3] | 0.115 | 0.00149[3] | <0.00035 | <0.00026 | ND |
| SS-40 (0-0.5) | 7/18/2017 | 0-½ | | <0.0018 | 0.00545[3] | 0.007 | 0.01245 | 0.0182 | 0.0146 | 0.12 | <0.00048 | <0.00034 | <0.00026 | ND |
| SS-41 (0-0.5) | 7/18/2017 | 0-½ | | <0.002 | 0.034 | 0.0252 | 0.0592 | 0.00724 | 0.00773 | 0.157 | <0.00053 | <0.00038 | <0.00028 | ND |
| SS-42 (0-0.5) | 7/18/2017 | 0-½ | | <0.0024 | 0.0453 | 0.0558 | 0.1011 | 0.00151[3] | 0.00207[3] | 0.0507[3] | <0.00062 | <0.00044 | <0.00033 | ND |
| SS-43 (0-0.5) | 7/18/2017 | 0-½ | Exterior Perimeter of Barn | <0.0021 | 0.0218 | 0.0158 | 0.0376 | <0.00063 | <0.0006 | <0.0077 | <0.00054 | <0.00038 | <0.00029 | --- |
| SS-44 (0-0.5) | 7/18/2017 | 0-½ | | <0.0029 | 0.25 | 0.0556 | 0.3056 | <0.00089 | <0.00084 | <0.011 | <0.00076 | <0.00054 | <0.0004 | --- |
| SS-45 (0-0.5) | 7/18/2017 | 0-½ | | <0.0018 | 0.114 | 0.0444 | 0.1584 | <0.00056 | <0.00053 | <0.0068 | <0.00048 | <0.00034 | <0.00025 | --- |
| SS-46 (0-0.5) | 7/18/2017 | 0-½ | | <0.0017 | 0.085 | 0.0162 | 0.1012 | <0.00052 | <0.00049 | <0.0064 | <0.00045 | <0.00032 | <0.00024 | --- |
| SS-47 (0-0.5) | 7/18/2017 | 0-½ | Pond Sediment | <0.0043 | 0.0655 | 0.0148[3] | 0.0803 | <0.0013 | <0.0012 | <0.016 | <0.0011 | <0.0008 | <0.00059 | --- |
| SS-48 (0-0.5) | 7/18/2017 | 0-½ | | <0.00076 | <0.00026 | <0.00017 | <0.00017 | <0.00023 | <0.00022 | <0.0028 | <0.0002 | <0.00014 | <0.00011 | --- |
| SS-49 (0-0.5) | 7/18/2017 | 0-½ | | <0.0025 | 0.0122 | <0.00058 | 0.0122 | <0.00078 | <0.00073 | <0.0095 | <0.00067 | <0.00047 | <0.00035 | --- |
| SS-50 (0-0.5) | 7/18/2017 | 0-½ | On-Site Transformer | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ND |
| SS-50 (1-1.5) | 7/18/2017 | 1-1½ | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ND |
| SS-50 (2-3) | 7/18/2017 | 2-3 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ND |
| SS-51 (0-0.5) | 9/7/2017 | 0-½ | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ND |
| SS-51 (1 - 1.5)) | 9/7/2017 | 1-1½ | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ND |
| SS-101 (0-0.5) | 7/18/2017 | 0-½ | SS-47 Duplicate | <0.0024 | 0.0378 | 0.00301[3] | 0.04081 | <0.00074 | <0.00069 | <0.009 | <0.00063 | <0.00045 | <0.00033 | --- |
| SS-102 (0-0.5) | 7/18/2017 | 0-½ | SS-28 Duplicate | <0.0018 | 0.0452 | 0.0125 | 0.0577 | <0.00057 | <0.00053 | <0.0069 | <0.00048 | <0.00034 | <0.00026 | ND |
| EqB-1 (µg/L) | 7/18/2017 | --- | Equipment Blank | <0.0028 | <0.0088 | <0.0051 | <0.0088 | <0.0035 | | <0.13 | <0.0031 | <0.010 | <0.0031 | ND |
| Screening Level | | | | 2.3 | 2 | 1.9 | 1 | NE | NE | 0.44 | 0.034 | 0.13 | 0.07 | Variable |
| Basis | | | | RSL | RSL | RSL | TTLC | NE | NE | DTSC-SL | RSL | RSL | RSL | Variable |

1 Regional Screening Level (RSL), USEPA Region 9 - June 2017.
2 Recommended Screening Level (SL), HERO Note 3 - June 2017
< Not detected at or above laboratory reporting limit
ND Not detected at or above reporting limit
NE Not Established
--- Not Analyzed
BOLD Concentration exceeds selected environmental screening criteria

**Table 5. Summary Statistics - Arsenic, Lead and Detected Organochlorine Pesticides**
(Concentrations in mg/kg)

| Chemical Detected | Number of Samples | Number of Detects | Screening Level (mg/kg) | Frequency of Detection (Percent) | Minimum Detected (mg/kg) | Maximum Detected (mg/kg) | No. of Samples Exceeding Screening Level | Location of Maximum | Mean Concentration (mg/kg) | Site Wide 95% UCL (mg/kg) |
|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 65 | 65 | 17.5 [a] | 100% | 1.08 | 41.11 | 3 | SS-12D | 9.256 | 10.51 |
| Lead | 49 | 49 | 80 | 100% | 1.36 | 263 | 5 | SS-25, SS-31 | 41.25 | 58.04 |
| Chlordane | 49 | 9 | 0.44 | 18% | 0.0507 | 1.49 | 1 | SS-26 | 0.326 | 0.166 |
| Dieldrin | 49 | 1 | 0.034 | 2% | 0.00149 | 0.00149 | 0 | SS-39 | NC | NC |
| Heptachlor | 49 | 3 | 0.13 | 6% | 0.003 | 0.00786 | 0 | SS-26 | NC | NC |
| Heptachlor Epoxide | 49 | 2 | 0.07 | 4% | 0.00376 | 0.00621 | 0 | SS-26 | NC | NC |
| 4,4-DDE | 49 | 48 | 2 | 98% | 0.00335 | 0.522 | 0 | SS-14 | NC | NC |
| 4,4-DDD | 49 | 4 | 2.3 | 8% | 0.00429 | 0.0186 | 0 | SS-14 | NC | NC |
| 4,4-DDT | 49 | 45 | 1.9 | 92% | 0.00458 | 0.267 | 0 | SS-31 | NC | NC |

NC - Not calculated due to small number of detections or maximum concentration below screening level

a - Site-specific backgroud (see Section 6.1)

# APPENDIX A – DTSC CORRESPONDENCE

Department of Toxic Substances Control

*Matthew Rodriquez*
Secretary for
Environmental Protection

Barbara A. Lee, Director
8800 Cal Center Drive
Sacramento, California 95826-3200

*Edmund G. Brown Jr.*
Governor

June 29, 2017

Mr. Peter M. Langtry, P.G., C.E.G.
Senior Principal Geologist
Cornerstone Earth Group
1270 Springbrook Road, Suite 101
Walnut Creek, California 94597

APPROVAL OF THE FINAL PRELIMINARY ENDANGERMENT ASSESSMENT WORK PLAN FOR THE PLANNED TRIBAL SCHOOL SITE LOCATED AT 3141 TAYLOR ROAD, PLACER COUNTY, CALIFORNIA

Dear Mr. Langtry:

The Department of Toxic Substances Control (DTSC) has reviewed the Final Preliminary Endangerment Assessment Work Plan (Final Work Plan) dated June 28, 2017 for the planned Tribal School located at 3141 Taylor Road in Placer County, California (Site). The Final Work Plan addresses DTSC comments on the draft Work Plan issued on June 26, 2017 and is hereby approved. Please notify me at (916) 255-6528 or via e-mail at Dean.Wright@dtsc.ca.gov as soon as dates for the sampling effort are selected.

Thank you for your efforts to ensure this site is safe for its intended future use.

Sincerely,

Mr. Dean Wright, P.G.,
Site Evaluation and Remediation Unit

cc: Mr. Richard S. Chavez, P.E.
RSC Engineering
2250 Douglas Boulevard, Suite 150
Roseville, California 95661

RECEIVED
JUL 03 2017
BY:

cc: Mr. Randy Boehm
Urban Resources, Inc.
2500 NE Sandy Boulevard, Suite B
Portland, Oregon 97232

Mr. West Bourgault, P.G.
Hazardous Materials and Solid Waste Supervisor
Placer County Health and Human Services Department
Environmental Health Division
3091 County Center Drive
Auburn, California 95603

Mr. Steven Becker, P.G., Chief (electronic copy)
Site Evaluation and Remediation Unit
Department of Toxic Substances Control
8800 Cal Center Drive
Sacramento, California 95826

CORNERSTONE EARTH GROUP

| | |
|---|---|
| Date: | October 31, 2017 |
| Project No.: | 411-16-3 |
| Prepared For: | Mr. Dean Wright<br>**DEPARTMENT OF TOXIC SUBSTANCES CONTROL**<br>8800 Cal Center Drive<br>Sacramento, California 95826 |
| Re: | Response to DTSC Comments to Draft PEA Report<br>Planned Tribal School<br>3141 Taylor Road<br>Placer County, California |

Dear Mr. Wright:

Thank you for reviewing and commenting on the Draft PEA Report for the Planned Tribal School at 3141 Taylor Road in Placer County, California.

We have reviewed and addressed each of the comments in your letter dated October 26, 2017. Attached with this letter is a table that summarizes and responds to each of the Department of Toxic Substances Control (DTSC) comments. A Revised PEA Report is also attached.

Please let us know if you have any additional questions or comments.

Sincerely,

**Cornerstone Earth Group, Inc.**

Peter Langtry, P.G., C.E.G.
Senior Principal Geologist

Copies: Addressee (1 by email)
RSC Engineering (1 by email)
Attn: Mr. Richard Chavez
Urban Resources, Inc. (1 by email)
Attn: Mr. Randy Boehm

Attachments: Response to Comments Table
Revised PEA Report

| Response to DTSC Comments for Draft PEA Report<br>Planned Tribal School Site<br>Placer County, California | |
|---|---|
| ***DTSC Comments*** | ***Response*** |
| 1.<br>The Report indicates that guidance titled *Selecting Inorganic Constituents as Chemicals of Potential Concern for Risk Assessments at Hazardous Waste Sites and Permitted Facilities* (DTSC 1997) was used to determine the arsenic background in soil at the Site. DTSC recommends using the more recent guidance titled *Arsenic Strategies – Determination of Arsenic Remediation – Development of Arsenic Cleanup Goals* (DTSC 2009). This guidance allows for the use of the 4th spread analysis to remove outliers in an iterative process until no outliers are identified. Conducing the arsenic background evaluation in this manner may result in a lower background concentration and reveal additional areas of the Site which may require remediation. Please include the spreadsheets used to calculate the background using the site-wide data in the revised Report. | Additional discussion of the statistical methodology was performed and included in the Report |
| 2.<br>Table 6 in the Report incorrectly identifies the non-cancer screening level for arsenic as 11 mg/kg. As per DTSC HHRA Note 3, the correct non-cancer screening level is 0.4 mg/kg. | Table 6 of the report has been corrected. |
| 3.<br>Once the arsenic background concentration is derived as per bullet number one above, DTSC requests that the revised report include the risk and hazard associated with the background to demonstrate how much past activities on site have contributed to the overall hazard and risk due to arsenic. | The risk and hazard associated with the estimated arsenic background has been added to Table 6. |

Department of Toxic Substances Control

*Matthew Rodriquez*
Secretary for
Environmental Protection

Barbara A. Lee, Director
8800 Cal Center Drive
Sacramento, California 95826-3200

*Edmund G. Brown Jr.*
Governor

November 9, 2017

Mr. Peter M. Langtry, P.G., C.E.G.
Senior Principal Geologist
Cornerstone Earth Group
1270 Springbrook Road, Suite 101
Walnut Creek, California 94597

ACCEPTANCE OF THE REVISED DRAFT PRELIMINARY ENDANGERMENT ASSESSMENT REPORT FOR THE PLANNED TRIBAL SCHOOL SITE LOCATED AT 3141 TAYLOR ROAD, PLACER COUNTY, CALIFORNIA

Dear Mr. Langtry:

The Department of Toxic Substances Control (DTSC) has reviewed the Revised Draft Preliminary Endangerment Assessment Report (Revised Report) dated October 31, 2017 for the planned Tribal School located at 3141 Taylor Road in Placer County, California (Site). The Report was submitted to DTSC on behalf of the United Auburn Indian Community by the Cornerstone Earth Group and followed the approved Preliminary Endangerment Assessment Work Plan dated June 28, 2017. The investigation included soil and sediment samples collected from targeted and random locations throughout the property to determine if a release of hazardous materials occurred at the Site and the threats those releases may pose to human health or the environment. The Revised Report also addresses DTSC comments that were provided on the Draft Preliminary Endangerment Assessment Report dated October 6, 2017.

The Revised Report identified two areas where shallow soil is recommended for removal. The first is around the existing Inn and Annex building where lead concentrations were found above residential screening levels. The second is a section of the former orchard area where concentrations of arsenic were above the background concentration of 17.5 milligrams per kilogram (mg/kg) calculated in the Revised Report. DTSC appreciates the additional arsenic background evaluation that was provided in the Revised Report and agrees with the recommendations for soil removal at the two identified areas of the Site.

Please provide one hard copy and one electronic copy of a signed, Final Preliminary Endangerment Assessment Report (Final Report) to DTSC within 10 days of receiving

this letter. Upon receiving the Final Report, DTSC will issue a final approval letter and the investigative phase of this project will be complete. DTSC will also begin the process of amending the Voluntary Cleanup Agreement for the project Site to include all tasks associated with the completion of a Removal Action. If you have any questions regarding this letter, please contact me at (916) 255-6528.

Sincerely,

Mr. Dean Wright, P.G.,
Site Evaluation and Remediation Unit

cc: Mr. Richard S. Chavez, P.E.
RSC Engineering
2250 Douglas Blvd., Suite 150
Roseville, California 95661

Mr. Randy Boehm
Urban Resources, Inc.
2500 NE Sandy Blvd., Suite B
Portland, Oregon 97232

Mr. West Bourgault, P.G.
Hazardous Materials and Solid Waste Supervisor
Placer County Health and Human Services Department
Environmental Health Division
3091 County Center Drive
Auburn, California 95603

Valerie Mitchell Hanley, Ph.D. (electronic copy)
Staff Toxicologist
Human and Ecological Risk Office
Department of Toxic Substances Control
8800 Cal Center Drive
Sacramento, California 95826

Mr. Steven Becker, P.G., Chief (electronic copy)
Site Evaluation and Remediation Unit
Department of Toxic Substances Control
8800 Cal Center Drive
Sacramento, California 95826

# APPENDIX B – ANALYTICAL DATA SHEETS AND CHAIN OF CUSTODY DOCUMENTATION

Cornerstone(Walnut Creek)
1270 Springbrook Rd., Ste. 101
Walnut Creek, California 94597
Tel: 925 988 9500
Fax: 925 988 9501

RE: 3141 Taylor Road

Work Order No.: 1707122

Dear Peter Langtry:

Torrent Laboratory, Inc. received 24 sample(s) on July 19, 2017 for the analyses presented in the following Report.

All data for associated QC met EPA or laboratory specification(s) except where noted in the case narrative.

Torrent Laboratory, Inc. is certified by the State of California, ELAP #1991. If you have any questions regarding these test results, please feel free to contact the Project Management Team at (408)263-5258; ext 204.

Patti L Sandrock
QA Officer

July 27, 2017
Date

**Date:** 7/27/2017

**Client:** Cornerstone(Walnut Creek)

**Project:** 3141 Taylor Road

**Work Order:** 1707122

## CASE NARRATIVE

No issues encountered with the receiving, preparation, analysis or reporting of the results associated with this work order.

Unless otherwise indicated in the following narrative, no results have been method and/or field blank corrected.

Reported results relate only to the items/samples tested by the laboratory.

This report shall not be reproduced, except in full, without the written approval of Torrent Analytical, Inc.

Data is reported as dry weight. Where necessary, results are reported to the MDL to meet client reporting limits of 0.5 mg/kg for metals, 50 ug/kg for PCBs and 2 ug/kg for Pesticides (40 ug/kg for Toxaphene and Chlordane).

Analytical Comments for method _Met_S_6020CAM17, 1707122-001A MS/MSD, QC Analytical Preparation ID 8321, Note:The % recoveries for Silver are outside of laboratory control limits but % RPD is within limits. The associated LCS/LCSD is within both % Recovery and %RPD limits. No corrective action required.

Analytical Comments for method _Met_S_6020CAM17, 1707122-019A MS/MSD, QC Analytical Preparation ID 8336, Note:The % recoveries for Silver, Barium, Chromium, Vanadium and Zinc are outside of laboratory control limits but % RPD is within limits. The associated LCS/LCSD is within both % Recovery and %RPD limits. No corrective action required.

Torrent LABORATORY, INC.

# Sample Result Summary

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date Received:** 07/19/17
**Date Reported:** 07/27/17

**SS-101 (0-0.5)** 1707122-001

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Arsenic | 6020A | 1 | 0.21 | 1.0 | 3.35 | mg/Kg |
| Barium | 6020A | 1 | 0.84 | 1.0 | 24.8 | mg/Kg |
| Chromium | 6020A | 1 | 0.097 | 1.0 | 19.1 | mg/Kg |
| Cobalt | 6020A | 1 | 0.21 | 1.0 | 4.19 | mg/Kg |
| Copper | 6020A | 1 | 0.17 | 2.5 | 13.3 | mg/Kg |
| Lead | 6020A | 1 | 0.054 | 1.0 | 5.33 | mg/Kg |
| Nickel | 6020A | 1 | 1.2 | 5.0 | 9.80 | mg/Kg |
| Vanadium | 6020A | 1 | 0.28 | 25 | 21.3 | mg/Kg |
| Zinc | 6020A | 1 | 0.70 | 2.5 | 20.3 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 29.5 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.42 | % |
| 4,4-DDE | SW8081B | 3 | 0.83 | 8.5 | 37.8 | ug/Kg |
| 4,4-DDT | SW8081B | 3 | 0.55 | 8.5 | 3.01 | ug/Kg |

**SS-102 (0-0.5)** 1707122-002

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Antimony | 6020A | 1 | 0.12 | 1.0 | 0.356 | mg/Kg |
| Arsenic | 6020A | 1 | 0.21 | 1.0 | 8.49 | mg/Kg |
| Beryllium | 6020A | 1 | 0.16 | 1.0 | 0.172 | mg/Kg |
| Cadmium | 6020A | 1 | 0.084 | 1.0 | 0.165 | mg/Kg |
| Chromium | 6020A | 1 | 0.097 | 1.0 | 23.7 | mg/Kg |
| Cobalt | 6020A | 1 | 0.21 | 1.0 | 6.07 | mg/Kg |
| Copper | 6020A | 1 | 0.17 | 2.5 | 22.9 | mg/Kg |
| Lead | 6020A | 1 | 0.054 | 1.0 | 38.9 | mg/Kg |
| Molybdenum | 6020A | 1 | 0.13 | 1.0 | 0.846 | mg/Kg |
| Nickel | 6020A | 1 | 1.2 | 5.0 | 13.8 | mg/Kg |
| Vanadium | 6020A | 1 | 0.28 | 25 | 40.7 | mg/Kg |
| Barium | 6020A | 10 | 1.7 | 2.0 | 87.5 | mg/Kg |
| Zinc | 6020A | 10 | 1.4 | 5.0 | 112 | mg/Kg |
| Silver | 6020A | 1 | 0.11 | 1.1 | 0.250 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 7.89 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.09 | % |
| 4,4-DDE | SW8081B | 3 | 0.63 | 6.5 | 45.2 | ug/Kg |
| 4,4-DDT | SW8081B | 3 | 0.42 | 6.5 | 12.5 | ug/Kg |

Torrent LABORATORY, INC.

# Sample Result Summary

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date Received:** 07/19/17
**Date Reported:** 07/27/17

**SS-1 (0-0.5)** 1707122-003

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Antimony | 6020A | 1 | 0.12 | 1.0 | 0.165 | mg/Kg |
| Arsenic | 6020A | 1 | 0.21 | 1.0 | 9.54 | mg/Kg |
| Barium | 6020A | 1 | 0.84 | 1.0 | 59.7 | mg/Kg |
| Cadmium | 6020A | 1 | 0.084 | 1.0 | 0.102 | mg/Kg |
| Chromium | 6020A | 1 | 0.097 | 1.0 | 28.3 | mg/Kg |
| Cobalt | 6020A | 1 | 0.21 | 1.0 | 6.78 | mg/Kg |
| Copper | 6020A | 1 | 0.17 | 2.5 | 23.1 | mg/Kg |
| Lead | 6020A | 1 | 0.054 | 1.0 | 17.6 | mg/Kg |
| Molybdenum | 6020A | 1 | 0.13 | 1.0 | 0.252 | mg/Kg |
| Nickel | 6020A | 1 | 1.2 | 5.0 | 13.6 | mg/Kg |
| Vanadium | 6020A | 1 | 0.28 | 25 | 30.5 | mg/Kg |
| Zinc | 6020A | 1 | 0.70 | 2.5 | 39.9 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 28.4 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.40 | % |

**SS-2 (0-0.5)** 1707122-004

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Antimony | 6020A | 1 | 0.12 | 1.0 | 0.322 | mg/Kg |
| Arsenic | 6020A | 1 | 0.21 | 1.0 | 12.2 | mg/Kg |
| Beryllium | 6020A | 1 | 0.16 | 1.0 | 0.173 | mg/Kg |
| Cadmium | 6020A | 1 | 0.084 | 1.0 | 0.156 | mg/Kg |
| Chromium | 6020A | 1 | 0.097 | 1.0 | 45.9 | mg/Kg |
| Cobalt | 6020A | 1 | 0.21 | 1.0 | 9.20 | mg/Kg |
| Copper | 6020A | 1 | 0.17 | 2.5 | 32.1 | mg/Kg |
| Lead | 6020A | 1 | 0.054 | 1.0 | 32.8 | mg/Kg |
| Molybdenum | 6020A | 1 | 0.13 | 1.0 | 0.706 | mg/Kg |
| Nickel | 6020A | 1 | 1.2 | 5.0 | 19.0 | mg/Kg |
| Vanadium | 6020A | 1 | 0.28 | 25 | 46.4 | mg/Kg |
| Zinc | 6020A | 1 | 0.70 | 2.5 | 68.4 | mg/Kg |
| Barium | 6020A | 1 | 1.1 | 1.3 | 81.9 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 25.5 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.34 | % |

Torrent LABORATORY, INC.

# Sample Result Summary

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date Received:** 07/19/17
**Date Reported:** 07/27/17

**SS-3 (0-0.5)** 1707122-005

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Antimony | 6020A | 1 | 0.19 | 1.6 | 0.238 | mg/Kg |
| Arsenic | 6020A | 1 | 0.33 | 1.6 | 16.3 | mg/Kg |
| Barium | 6020A | 1 | 1.3 | 1.6 | 76.9 | mg/Kg |
| Chromium | 6020A | 1 | 0.15 | 1.6 | 42.3 | mg/Kg |
| Cobalt | 6020A | 1 | 0.33 | 1.6 | 11.0 | mg/Kg |
| Copper | 6020A | 1 | 0.27 | 3.9 | 35.4 | mg/Kg |
| Lead | 6020A | 1 | 0.084 | 1.6 | 26.6 | mg/Kg |
| Molybdenum | 6020A | 1 | 0.20 | 1.6 | 0.462 | mg/Kg |
| Nickel | 6020A | 1 | 2.0 | 7.9 | 19.9 | mg/Kg |
| Vanadium | 6020A | 1 | 0.44 | 39 | 50.4 | mg/Kg |
| Zinc | 6020A | 1 | 1.1 | 3.9 | 53.4 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 36.5 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.57 | % |

**SS-4 (0-0.5)** 1707122-006

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Antimony | 6020A | 1 | 0.12 | 1.0 | 0.220 | mg/Kg |
| Arsenic | 6020A | 1 | 0.21 | 1.0 | 14.8 | mg/Kg |
| Beryllium | 6020A | 1 | 0.16 | 1.0 | 0.164 | mg/Kg |
| Cadmium | 6020A | 1 | 0.084 | 1.0 | 0.105 | mg/Kg |
| Chromium | 6020A | 1 | 0.098 | 1.0 | 32.6 | mg/Kg |
| Cobalt | 6020A | 1 | 0.21 | 1.0 | 8.47 | mg/Kg |
| Copper | 6020A | 1 | 0.17 | 2.5 | 31.9 | mg/Kg |
| Lead | 6020A | 1 | 0.054 | 1.0 | 31.0 | mg/Kg |
| Molybdenum | 6020A | 1 | 0.13 | 1.0 | 0.373 | mg/Kg |
| Nickel | 6020A | 1 | 1.3 | 5.1 | 14.4 | mg/Kg |
| Vanadium | 6020A | 1 | 0.28 | 25 | 36.4 | mg/Kg |
| Zinc | 6020A | 1 | 0.71 | 2.5 | 34.7 | mg/Kg |
| Barium | 6020A | 10 | 1.7 | 2.0 | 72.3 | mg/Kg |
| Silver | 6020A | 1 | 0.099 | 1.0 | 0.406 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 1.21 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.01 | % |

**SS-4 (2.5-3)** 1707122-007

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Arsenic | 6020A | 1 | 0.28 | 1.3 | 16.1 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 25.6 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.34 | % |

Torrent LABORATORY, INC.

# Sample Result Summary

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date Received:** 07/19/17
**Date Reported:** 07/27/17

**SS-5 (0-0.5)** 1707122-008

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Antimony | 6020A | 1 | 0.12 | 1.0 | 0.154 | mg/Kg |
| Arsenic | 6020A | 1 | 0.21 | 1.0 | 8.60 | mg/Kg |
| Chromium | 6020A | 1 | 0.098 | 1.0 | 22.3 | mg/Kg |
| Cobalt | 6020A | 1 | 0.21 | 1.0 | 5.69 | mg/Kg |
| Copper | 6020A | 1 | 0.17 | 2.5 | 21.6 | mg/Kg |
| Lead | 6020A | 1 | 0.054 | 1.0 | 32.1 | mg/Kg |
| Molybdenum | 6020A | 1 | 0.13 | 1.0 | 0.146 | mg/Kg |
| Nickel | 6020A | 1 | 1.3 | 5.1 | 10.4 | mg/Kg |
| Vanadium | 6020A | 1 | 0.28 | 25 | 24.3 | mg/Kg |
| Zinc | 6020A | 1 | 0.71 | 2.5 | 25.2 | mg/Kg |
| Barium | 6020A | 10 | 1.7 | 2.0 | 71.3 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 0.680 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.01 | % |

**SS-6 (0-0.5)** 1707122-009

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Antimony | 6020A | 1 | 0.15 | 1.3 | 0.233 | mg/Kg |
| Arsenic | 6020A | 1 | 0.26 | 1.3 | 11.4 | mg/Kg |
| Cadmium | 6020A | 1 | 0.10 | 1.3 | 0.147 | mg/Kg |
| Chromium | 6020A | 1 | 0.12 | 1.3 | 34.3 | mg/Kg |
| Cobalt | 6020A | 1 | 0.26 | 1.3 | 8.90 | mg/Kg |
| Copper | 6020A | 1 | 0.21 | 3.1 | 29.7 | mg/Kg |
| Lead | 6020A | 1 | 0.067 | 1.3 | 31.2 | mg/Kg |
| Molybdenum | 6020A | 1 | 0.16 | 1.3 | 0.298 | mg/Kg |
| Nickel | 6020A | 1 | 1.6 | 6.3 | 18.4 | mg/Kg |
| Vanadium | 6020A | 1 | 0.35 | 31 | 40.8 | mg/Kg |
| Zinc | 6020A | 1 | 0.88 | 3.1 | 42.2 | mg/Kg |
| Barium | 6020A | 10 | 2.1 | 2.5 | 79.9 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 19.9 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.25 | % |

**SS-6 (2.5-3)** 1707122-010

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Arsenic | 6020A | 1 | 0.24 | 1.1 | 6.38 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 12.1 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.14 | % |

Torrent LABORATORY, INC.

# Sample Result Summary

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date Received:** 07/19/17
**Date Reported:** 07/27/17

**SS-7 (0-0.5)** 1707122-011

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Antimony | 6020A | 1 | 0.14 | 1.2 | 0.197 | mg/Kg |
| Arsenic | 6020A | 1 | 0.25 | 1.2 | 8.04 | mg/Kg |
| Cadmium | 6020A | 1 | 0.10 | 1.2 | 0.109 | mg/Kg |
| Chromium | 6020A | 1 | 0.12 | 1.2 | 30.7 | mg/Kg |
| Cobalt | 6020A | 1 | 0.25 | 1.2 | 7.79 | mg/Kg |
| Copper | 6020A | 1 | 0.20 | 3.0 | 31.1 | mg/Kg |
| Lead | 6020A | 1 | 0.064 | 1.2 | 28.0 | mg/Kg |
| Molybdenum | 6020A | 1 | 0.16 | 1.2 | 0.250 | mg/Kg |
| Nickel | 6020A | 1 | 1.5 | 6.0 | 14.5 | mg/Kg |
| Vanadium | 6020A | 1 | 0.34 | 30 | 34.3 | mg/Kg |
| Zinc | 6020A | 1 | 0.84 | 3.0 | 34.0 | mg/Kg |
| Barium | 6020A | 10 | 2.0 | 2.4 | 91.3 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 16.8 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.20 | % |

**SS-9 (0-0.5)** 1707122-012

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Antimony | 6020A | 1 | 0.16 | 1.4 | 0.167 | mg/Kg |
| Arsenic | 6020A | 1 | 0.28 | 1.4 | 13.5 | mg/Kg |
| Cadmium | 6020A | 1 | 0.11 | 1.4 | 0.124 | mg/Kg |
| Chromium | 6020A | 1 | 0.13 | 1.4 | 34.1 | mg/Kg |
| Cobalt | 6020A | 1 | 0.28 | 1.4 | 8.98 | mg/Kg |
| Copper | 6020A | 1 | 0.23 | 3.4 | 44.2 | mg/Kg |
| Lead | 6020A | 1 | 0.072 | 1.4 | 56.0 | mg/Kg |
| Molybdenum | 6020A | 1 | 0.18 | 1.4 | 0.265 | mg/Kg |
| Nickel | 6020A | 1 | 1.7 | 6.8 | 17.0 | mg/Kg |
| Vanadium | 6020A | 1 | 0.38 | 34 | 37.9 | mg/Kg |
| Zinc | 6020A | 1 | 0.95 | 3.4 | 42.0 | mg/Kg |
| Barium | 6020A | 10 | 2.3 | 2.7 | 115 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 26.1 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.35 | % |

Torrent LABORATORY, INC.

# Sample Result Summary

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date Received:** 07/19/17
**Date Reported:** 07/27/17

**SS-8 (0-0.5)** 1707122-013

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Antimony | 6020A | 1 | 0.13 | 1.0 | 0.186 | mg/Kg |
| Arsenic | 6020A | 1 | 0.22 | 1.0 | 9.79 | mg/Kg |
| Cadmium | 6020A | 1 | 0.087 | 1.0 | 0.0879 | mg/Kg |
| Chromium | 6020A | 1 | 0.10 | 1.0 | 26.5 | mg/Kg |
| Cobalt | 6020A | 1 | 0.22 | 1.0 | 7.16 | mg/Kg |
| Copper | 6020A | 1 | 0.18 | 2.6 | 31.1 | mg/Kg |
| Lead | 6020A | 1 | 0.056 | 1.0 | 42.4 | mg/Kg |
| Molybdenum | 6020A | 1 | 0.14 | 1.0 | 0.182 | mg/Kg |
| Nickel | 6020A | 1 | 1.3 | 5.2 | 12.7 | mg/Kg |
| Vanadium | 6020A | 1 | 0.29 | 26 | 27.9 | mg/Kg |
| Zinc | 6020A | 1 | 0.73 | 2.6 | 29.0 | mg/Kg |
| Barium | 6020A | 10 | 1.7 | 2.1 | 90.7 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 3.84 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.04 | % |

**SS-8 (2.5-3)** 1707122-014

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Arsenic | 6020A | 1 | 0.26 | 1.2 | 5.70 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 19.2 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.24 | % |

**SS-10 (0-0.5)** 1707122-015

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Antimony | 6020A | 1 | 0.12 | 1.0 | 0.163 | mg/Kg |
| Arsenic | 6020A | 1 | 0.21 | 1.0 | 8.56 | mg/Kg |
| Beryllium | 6020A | 1 | 0.16 | 1.0 | 0.189 | mg/Kg |
| Cadmium | 6020A | 1 | 0.084 | 1.0 | 0.0985 | mg/Kg |
| Cobalt | 6020A | 1 | 0.21 | 1.0 | 10.8 | mg/Kg |
| Copper | 6020A | 1 | 0.17 | 2.5 | 38.8 | mg/Kg |
| Lead | 6020A | 1 | 0.054 | 1.0 | 24.2 | mg/Kg |
| Molybdenum | 6020A | 1 | 0.13 | 1.0 | 0.267 | mg/Kg |
| Nickel | 6020A | 1 | 1.3 | 5.1 | 19.4 | mg/Kg |
| Vanadium | 6020A | 1 | 0.28 | 25 | 48.5 | mg/Kg |
| Zinc | 6020A | 1 | 0.71 | 2.5 | 44.1 | mg/Kg |
| Barium | 6020A | 10 | 1.7 | 2.0 | 114 | mg/Kg |
| Chromium | 6020A | 1 | 0.098 | 1.0 | 40.5 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 1.12 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.01 | % |

Torrent LABORATORY, INC.

# Sample Result Summary

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date Received:** 07/19/17
**Date Reported:** 07/27/17

**SS-11 (0-0.5)** 1707122-016

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Antimony | 6020A | 1 | 0.12 | 1.0 | 0.285 | mg/Kg |
| Arsenic | 6020A | 1 | 0.21 | 1.0 | 8.80 | mg/Kg |
| Beryllium | 6020A | 1 | 0.16 | 1.0 | 0.164 | mg/Kg |
| Cadmium | 6020A | 1 | 0.084 | 1.0 | 0.166 | mg/Kg |
| Cobalt | 6020A | 1 | 0.21 | 1.0 | 7.14 | mg/Kg |
| Copper | 6020A | 1 | 0.17 | 2.5 | 18.5 | mg/Kg |
| Lead | 6020A | 1 | 0.054 | 1.0 | 21.1 | mg/Kg |
| Molybdenum | 6020A | 1 | 0.13 | 1.0 | 0.491 | mg/Kg |
| Nickel | 6020A | 1 | 1.3 | 5.1 | 14.6 | mg/Kg |
| Vanadium | 6020A | 1 | 0.28 | 25 | 37.0 | mg/Kg |
| Zinc | 6020A | 1 | 0.71 | 2.5 | 55.7 | mg/Kg |
| Barium | 6020A | 10 | 1.7 | 2.0 | 108 | mg/Kg |
| Chromium | 6020A | 1 | 0.098 | 1.0 | 24.6 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 1.37 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.01 | % |

**SS-12 (0-0.5)** 1707122-017

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Antimony | 6020A | 1 | 0.15 | 1.2 | 0.160 | mg/Kg |
| Arsenic | 6020A | 1 | 0.25 | 1.2 | 16.6 | mg/Kg |
| Barium | 6020A | 1 | 1.0 | 1.2 | 53.5 | mg/Kg |
| Cobalt | 6020A | 1 | 0.25 | 1.2 | 5.64 | mg/Kg |
| Copper | 6020A | 1 | 0.21 | 3.0 | 12.7 | mg/Kg |
| Lead | 6020A | 1 | 0.065 | 1.2 | 53.1 | mg/Kg |
| Nickel | 6020A | 1 | 1.5 | 6.1 | 9.05 | mg/Kg |
| Vanadium | 6020A | 1 | 0.34 | 30 | 21.5 | mg/Kg |
| Zinc | 6020A | 1 | 0.85 | 3.0 | 21.5 | mg/Kg |
| Chromium | 6020A | 1 | 0.12 | 1.2 | 20.5 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 17.5 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.21 | % |

**SS-12 (2.5-3)** 1707122-018

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Arsenic | 6020A | 1 | 0.22 | 1.1 | 4.43 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 6.33 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.07 | % |

Torrent LABORATORY, INC.

# Sample Result Summary

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date Received:** 07/19/17
**Date Reported:** 07/27/17

**SS-13 (0-0.5)** 1707122-019

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Arsenic | 6020A | 1 | 0.21 | 1.0 | 4.64 | mg/Kg |
| Chromium | 6020A | 1 | 0.097 | 1.0 | 20.9 | mg/Kg |
| Cobalt | 6020A | 1 | 0.21 | 1.0 | 5.78 | mg/Kg |
| Copper | 6020A | 1 | 0.17 | 2.5 | 18.8 | mg/Kg |
| Lead | 6020A | 1 | 0.054 | 1.0 | 13.1 | mg/Kg |
| Nickel | 6020A | 1 | 1.2 | 5.0 | 10.0 | mg/Kg |
| Vanadium | 6020A | 1 | 0.28 | 25 | 25.0 | mg/Kg |
| Zinc | 6020A | 1 | 0.70 | 2.5 | 23.1 | mg/Kg |
| Barium | 6020A | 10 | 1.7 | 2.0 | 70.0 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 0.440 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.00 | % |

**SS-14 (0-0.5)** 1707122-020

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Antimony | 6020A | 1 | 0.12 | 1.0 | 0.188 | mg/Kg |
| Arsenic | 6020A | 1 | 0.21 | 1.0 | 6.88 | mg/Kg |
| Cadmium | 6020A | 1 | 0.084 | 1.0 | 0.115 | mg/Kg |
| Chromium | 6020A | 1 | 0.097 | 1.0 | 28.6 | mg/Kg |
| Cobalt | 6020A | 1 | 0.21 | 1.0 | 6.99 | mg/Kg |
| Copper | 6020A | 1 | 0.17 | 2.5 | 28.3 | mg/Kg |
| Lead | 6020A | 1 | 0.054 | 1.0 | 30.2 | mg/Kg |
| Molybdenum | 6020A | 1 | 0.13 | 1.0 | 0.212 | mg/Kg |
| Nickel | 6020A | 1 | 1.2 | 5.0 | 12.9 | mg/Kg |
| Vanadium | 6020A | 1 | 0.28 | 25 | 29.1 | mg/Kg |
| Zinc | 6020A | 1 | 0.70 | 2.5 | 33.3 | mg/Kg |
| Barium | 6020A | 10 | 1.7 | 2.0 | 86.1 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 0.440 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.00 | % |

Torrent LABORATORY, INC.

# Sample Result Summary

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date Received:** 07/19/17
**Date Reported:** 07/27/17

**SS-15 (0-0.5)** 1707122-021

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Antimony | 6020A | 1 | 0.18 | 1.5 | 0.462 | mg/Kg |
| Arsenic | 6020A | 1 | 0.30 | 1.5 | 17.4 | mg/Kg |
| Beryllium | 6020A | 1 | 0.23 | 1.5 | 0.326 | mg/Kg |
| Cadmium | 6020A | 1 | 0.12 | 1.5 | 0.183 | mg/Kg |
| Chromium | 6020A | 1 | 0.14 | 1.5 | 50.8 | mg/Kg |
| Cobalt | 6020A | 1 | 0.31 | 1.5 | 12.7 | mg/Kg |
| Copper | 6020A | 1 | 0.25 | 3.7 | 28.4 | mg/Kg |
| Lead | 6020A | 1 | 0.078 | 1.5 | 42.9 | mg/Kg |
| Molybdenum | 6020A | 1 | 0.19 | 1.5 | 0.668 | mg/Kg |
| Nickel | 6020A | 1 | 1.8 | 7.3 | 24.1 | mg/Kg |
| Vanadium | 6020A | 1 | 0.41 | 37 | 61.7 | mg/Kg |
| Zinc | 6020A | 1 | 1.0 | 3.7 | 69.7 | mg/Kg |
| Barium | 6020A | 10 | 2.4 | 2.9 | 128 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 27.2 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.37 | % |

**SS-16 (0-0.5)** 1707122-022

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Antimony | 6020A | 1 | 0.13 | 1.1 | 0.468 | mg/Kg |
| Arsenic | 6020A | 1 | 0.23 | 1.1 | 17.0 | mg/Kg |
| Barium | 6020A | 1 | 0.90 | 1.1 | 43.3 | mg/Kg |
| Beryllium | 6020A | 1 | 0.17 | 1.1 | 0.193 | mg/Kg |
| Cadmium | 6020A | 1 | 0.090 | 1.1 | 0.150 | mg/Kg |
| Cobalt | 6020A | 1 | 0.23 | 1.1 | 19.5 | mg/Kg |
| Copper | 6020A | 1 | 0.18 | 2.7 | 60.2 | mg/Kg |
| Molybdenum | 6020A | 1 | 0.14 | 1.1 | 0.416 | mg/Kg |
| Nickel | 6020A | 1 | 1.3 | 5.4 | 55.8 | mg/Kg |
| Chromium | 6020A | 25 | 0.52 | 5.4 | 92.1 | mg/Kg |
| Lead | 6020A | 25 | 0.29 | 5.4 | 121 | mg/Kg |
| Vanadium | 6020A | 25 | 1.5 | 140 | 144 | mg/Kg |
| Zinc | 6020A | 25 | 3.8 | 14 | 99.2 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 5.57 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.06 | % |

**SS-16 (2.5-3)** 1707122-023

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Arsenic | 6020A | 1 | 0.23 | 1.1 | 14.9 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 10.8 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.12 | % |

Torrent LABORATORY, INC.

## Sample Result Summary

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date Received:** 07/19/17
**Date Reported:** 07/27/17

**SS-17 (0-0.5)** 1707122-024

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Antimony | 6020A | 1 | 0.13 | 1.1 | 0.350 | mg/Kg |
| Arsenic | 6020A | 1 | 0.23 | 1.1 | 13.3 | mg/Kg |
| Beryllium | 6020A | 1 | 0.17 | 1.1 | 0.188 | mg/Kg |
| Cadmium | 6020A | 1 | 0.091 | 1.1 | 0.170 | mg/Kg |
| Chromium | 6020A | 1 | 0.11 | 1.1 | 50.1 | mg/Kg |
| Cobalt | 6020A | 1 | 0.23 | 1.1 | 10.0 | mg/Kg |
| Copper | 6020A | 1 | 0.19 | 2.7 | 34.9 | mg/Kg |
| Lead | 6020A | 1 | 0.058 | 1.1 | 35.1 | mg/Kg |
| Molybdenum | 6020A | 1 | 0.14 | 1.1 | 0.770 | mg/Kg |
| Nickel | 6020A | 1 | 1.4 | 5.5 | 20.7 | mg/Kg |
| Vanadium | 6020A | 1 | 0.31 | 27 | 50.5 | mg/Kg |
| Barium | 6020A | 10 | 1.8 | 2.2 | 103 | mg/Kg |
| Zinc | 6020A | 10 | 1.5 | 5.5 | 76.8 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 1.27 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.01 | % |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-101 (0-0.5) | **Lab Sample ID:** | 1707122-001A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 13:01 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 7471BP | **Prep Batch Date/Time:** | 7/21/17 | 5:30:00PM |
| **Prep Batch ID:** | 8348 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.12 | 0.71 | ND | | mg/Kg | 07/25/17 | 11:10 | BJAY | 425634 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-101 (0-0.5) | **Lab Sample ID:** | 1707122-001A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 13:01 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Antimony | 6020A | 1 | 0.12 | 1.0 | ND | | mg/Kg | 07/21/17 | 15:37 | ERR | 425540 |
| Arsenic | 6020A | 1 | 0.21 | 1.0 | **3.35** | | mg/Kg | 07/21/17 | 15:37 | ERR | 425540 |
| Barium | 6020A | 1 | 0.84 | 1.0 | **24.8** | | mg/Kg | 07/21/17 | 15:37 | ERR | 425540 |
| Beryllium | 6020A | 1 | 0.16 | 1.0 | ND | | mg/Kg | 07/21/17 | 15:37 | ERR | 425540 |
| Cadmium | 6020A | 1 | 0.084 | 1.0 | ND | | mg/Kg | 07/21/17 | 15:37 | ERR | 425540 |
| Chromium | 6020A | 1 | 0.097 | 1.0 | **19.1** | | mg/Kg | 07/21/17 | 15:37 | ERR | 425540 |
| Cobalt | 6020A | 1 | 0.21 | 1.0 | **4.19** | | mg/Kg | 07/21/17 | 15:37 | ERR | 425540 |
| Copper | 6020A | 1 | 0.17 | 2.5 | **13.3** | | mg/Kg | 07/21/17 | 15:37 | ERR | 425540 |
| Lead | 6020A | 1 | 0.054 | 1.0 | **5.33** | | mg/Kg | 07/21/17 | 15:37 | ERR | 425540 |
| Molybdenum | 6020A | 1 | 0.13 | 1.0 | ND | | mg/Kg | 07/21/17 | 15:37 | ERR | 425540 |
| Nickel | 6020A | 1 | 1.2 | 5.0 | **9.80** | | mg/Kg | 07/21/17 | 15:37 | ERR | 425540 |
| Selenium | 6020A | 1 | 0.035 | 2.5 | ND | | mg/Kg | 07/21/17 | 15:37 | ERR | 425540 |
| Thallium | 6020A | 1 | 1.00 | 5.0 | ND | | mg/Kg | 07/21/17 | 15:37 | ERR | 425540 |
| Vanadium | 6020A | 1 | 0.28 | 25 | **21.3** | J | mg/Kg | 07/21/17 | 15:37 | ERR | 425540 |
| Zinc | 6020A | 1 | 0.70 | 2.5 | **20.3** | | mg/Kg | 07/21/17 | 15:37 | ERR | 425540 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-101 (0-0.5) | **Lab Sample ID:** | 1707122-001A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 13:01 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Silver | 6020A | 1 | 0.14 | 1.4 | ND | | mg/Kg | 07/25/17 | 12:02 | ERR | 425658 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-101 (0-0.5) | **Lab Sample ID:** | 1707122-001A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 13:01 | | |
| **SDG:** | | | |

| | | | |
|---|---|---|---|
| **Prep Method:** | 3546_OCP | **Prep Batch Date/Time:** | 7/22/17 2:15:00PM |
| **Prep Batch ID:** | 8352 | **Prep Analyst:** | SNARASIMHAN |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| alpha-BHC | SW8081B | 3 | 0.54 | 8.5 | ND | | ug/Kg | 07/26/17 | 22:14 | LA | 425689 |
| gamma-BHC (Lindane) | SW8081B | 3 | 0.68 | 8.5 | ND | | ug/Kg | 07/26/17 | 22:14 | LA | 425689 |
| beta-BHC | SW8081B | 3 | 1.3 | 8.5 | ND | | ug/Kg | 07/26/17 | 22:14 | LA | 425689 |
| delta-BHC | SW8081B | 3 | 0.66 | 8.5 | ND | | ug/Kg | 07/26/17 | 22:14 | LA | 425689 |
| Heptachlor | SW8081B | 3 | 0.45 | 8.5 | ND | | ug/Kg | 07/26/17 | 22:14 | LA | 425689 |
| Aldrin | SW8081B | 3 | 0.83 | 8.5 | ND | | ug/Kg | 07/26/17 | 22:14 | LA | 425689 |
| Heptachlor Epoxide | SW8081B | 3 | 0.33 | 8.5 | ND | | ug/Kg | 07/26/17 | 22:14 | LA | 425689 |
| gamma-Chlordane | SW8081B | 3 | 0.69 | 8.5 | ND | | ug/Kg | 07/26/17 | 22:14 | LA | 425689 |
| alpha-Chlordane | SW8081B | 3 | 0.74 | 8.5 | ND | | ug/Kg | 07/26/17 | 22:14 | LA | 425689 |
| 4,4-DDE | SW8081B | 3 | 0.83 | 8.5 | **37.8** | | ug/Kg | 07/26/17 | 22:14 | LA | 425689 |
| Endosulfan I | SW8081B | 3 | 0.78 | 8.5 | ND | | ug/Kg | 07/26/17 | 22:14 | LA | 425689 |
| Dieldrin | SW8081B | 3 | 0.63 | 8.5 | ND | | ug/Kg | 07/26/17 | 22:14 | LA | 425689 |
| Endrin | SW8081B | 3 | 0.80 | 8.5 | ND | | ug/Kg | 07/26/17 | 22:14 | LA | 425689 |
| 4,4-DDD | SW8081B | 3 | 2.4 | 8.5 | ND | | ug/Kg | 07/26/17 | 22:14 | LA | 425689 |
| Endosulfan II | SW8081B | 3 | 2.5 | 8.5 | ND | | ug/Kg | 07/26/17 | 22:14 | LA | 425689 |
| 4,4-DDT | SW8081B | 3 | 0.55 | 8.5 | **3.01** | J | ug/Kg | 07/26/17 | 22:14 | LA | 425689 |
| Endrin Aldehyde | SW8081B | 3 | 0.64 | 8.5 | ND | | ug/Kg | 07/26/17 | 22:14 | LA | 425689 |
| Methoxychlor | SW8081B | 3 | 0.85 | 8.5 | ND | | ug/Kg | 07/26/17 | 22:14 | LA | 425689 |
| Endosulfan Sulfate | SW8081B | 3 | 0.50 | 8.5 | ND | | ug/Kg | 07/26/17 | 22:14 | LA | 425689 |
| Endrin Ketone | SW8081B | 3 | 0.40 | 8.5 | ND | | ug/Kg | 07/26/17 | 22:14 | LA | 425689 |
| Chlordane | SW8081B | 3 | 9.0 | 85 | ND | | ug/Kg | 07/26/17 | 22:14 | LA | 425689 |
| Toxaphene | SW8081B | 3 | 36 | 210 | ND | | ug/Kg | 07/26/17 | 22:14 | LA | 425689 |
| | | | Acceptance Limits | | | | | | | | |
| TCMX (S) | SW8081B | | 48 - 125 | | **76.4** | | % | 07/26/17 | 22:14 | LA | 425689 |
| DCBP (S) | SW8081B | | 38 - 135 | | **87.0** | | % | 07/26/17 | 22:14 | LA | 425689 |

**NOTE:** Sample diluted due to nature of the matrix (dark, viscous extract)

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-101 (0-0.5) | **Lab Sample ID:** | 1707122-001A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 13:01 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/21/17 | 6:15:00PM |
| **Prep Batch ID:** | 8446 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **29.5** | | % | 07/21/17 | 18:15 | PH | 425657 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.42** | | - | 07/21/17 | 18:15 | PH | 425657 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-102 (0-0.5) | **Lab Sample ID:** | 1707122-002A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 13:02 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 7471BP | **Prep Batch Date/Time:** | 7/21/17 | 5:30:00PM |
| **Prep Batch ID:** | 8348 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.091 | 0.55 | ND | | mg/Kg | 07/25/17 | 11:16 | BJAY | 425634 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-102 (0-0.5) | **Lab Sample ID:** | 1707122-002A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 13:02 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Antimony | 6020A | 1 | 0.12 | 1.0 | **0.356** | J | mg/Kg | 07/21/17 | 16:02 | ERR | 425540 |
| Arsenic | 6020A | 1 | 0.21 | 1.0 | **8.49** | | mg/Kg | 07/21/17 | 16:02 | ERR | 425540 |
| Beryllium | 6020A | 1 | 0.16 | 1.0 | **0.172** | J | mg/Kg | 07/21/17 | 16:02 | ERR | 425540 |
| Cadmium | 6020A | 1 | 0.084 | 1.0 | **0.165** | J | mg/Kg | 07/21/17 | 16:02 | ERR | 425540 |
| Chromium | 6020A | 1 | 0.097 | 1.0 | **23.7** | | mg/Kg | 07/21/17 | 16:02 | ERR | 425540 |
| Cobalt | 6020A | 1 | 0.21 | 1.0 | **6.07** | | mg/Kg | 07/21/17 | 16:02 | ERR | 425540 |
| Copper | 6020A | 1 | 0.17 | 2.5 | **22.9** | | mg/Kg | 07/21/17 | 16:02 | ERR | 425540 |
| Lead | 6020A | 1 | 0.054 | 1.0 | **38.9** | | mg/Kg | 07/21/17 | 16:02 | ERR | 425540 |
| Molybdenum | 6020A | 1 | 0.13 | 1.0 | **0.846** | J | mg/Kg | 07/21/17 | 16:02 | ERR | 425540 |
| Nickel | 6020A | 1 | 1.2 | 5.0 | **13.8** | | mg/Kg | 07/21/17 | 16:02 | ERR | 425540 |
| Selenium | 6020A | 1 | 0.035 | 2.5 | ND | | mg/Kg | 07/21/17 | 16:02 | ERR | 425540 |
| Thallium | 6020A | 1 | 1.00 | 5.0 | ND | | mg/Kg | 07/21/17 | 16:02 | ERR | 425540 |
| Vanadium | 6020A | 1 | 0.28 | 25 | **40.7** | | mg/Kg | 07/21/17 | 16:02 | ERR | 425540 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-102 (0-0.5) | **Lab Sample ID:** | 1707122-002A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 13:02 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Silver | 6020A | 1 | 0.11 | 1.1 | **0.250** | J | mg/Kg | 07/25/17 | 12:16 | ERR | 425658 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-102 (0-0.5) | **Lab Sample ID:** | 1707122-002A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 13:02 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 6020A | 10 | 1.7 | 2.0 | **87.5** | | mg/Kg | 07/21/17 | 19:57 | ERR | 425540 |
| Zinc | 6020A | 10 | 1.4 | 5.0 | **112** | | mg/Kg | 07/21/17 | 19:57 | ERR | 425540 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-102 (0-0.5) | **Lab Sample ID:** | 1707122-002A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 13:02 | | |
| **SDG:** | | | |

| | | | |
|---|---|---|---|
| **Prep Method:** | 3546_PCB | **Prep Batch Date/Time:** | 7/21/17 12:17:00PM |
| **Prep Batch ID:** | 8323 | **Prep Analyst:** | SNARASIMHAN |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Aroclor1016 | SW8082A | 1 | 57 | 110 | ND | | ug/Kg | 07/24/17 | 21:47 | mk | 425625 |
| Aroclor1221 | SW8082A | 1 | 5.4 | 110 | ND | | ug/Kg | 07/24/17 | 21:47 | mk | 425625 |
| Aroclor1232 | SW8082A | 1 | 18 | 110 | ND | | ug/Kg | 07/24/17 | 21:47 | mk | 425625 |
| Aroclor1242 | SW8082A | 1 | 3.2 | 110 | ND | | ug/Kg | 07/24/17 | 21:47 | mk | 425625 |
| Aroclor1248 | SW8082A | 1 | 2.2 | 110 | ND | | ug/Kg | 07/24/17 | 21:47 | mk | 425625 |
| Aroclor1254 | SW8082A | 1 | 2.2 | 110 | ND | | ug/Kg | 07/24/17 | 21:47 | mk | 425625 |
| Aroclor1260 | SW8082A | 1 | 39 | 110 | ND | | ug/Kg | 07/24/17 | 21:47 | mk | 425625 |
| | | | Acceptance Limits | | | | | | | | |
| TCMX (S) | SW8082A | | 48 - 125 | | **87.0** | | % | 07/24/17 | 21:47 | mk | 425625 |
| DCBP (S) | SW8082A | | 48 - 135 | | **78.0** | | % | 07/24/17 | 21:47 | mk | 425625 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-102 (0-0.5) | **Lab Sample ID:** | 1707122-002A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 13:02 | | |
| **SDG:** | | | |

| | | | |
|---|---|---|---|
| **Prep Method:** | 3546_OCP | **Prep Batch Date/Time:** | 7/22/17 2:15:00PM |
| **Prep Batch ID:** | 8352 | **Prep Analyst:** | SNARASIMHAN |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| alpha-BHC | SW8081B | 3 | 0.42 | 6.5 | ND | | ug/Kg | 07/26/17 | 22:30 | LA | 425689 |
| gamma-BHC (Lindane) | SW8081B | 3 | 0.52 | 6.5 | ND | | ug/Kg | 07/26/17 | 22:30 | LA | 425689 |
| beta-BHC | SW8081B | 3 | 1.0 | 6.5 | ND | | ug/Kg | 07/26/17 | 22:30 | LA | 425689 |
| delta-BHC | SW8081B | 3 | 0.51 | 6.5 | ND | | ug/Kg | 07/26/17 | 22:30 | LA | 425689 |
| Heptachlor | SW8081B | 3 | 0.34 | 6.5 | ND | | ug/Kg | 07/26/17 | 22:30 | LA | 425689 |
| Aldrin | SW8081B | 3 | 0.64 | 6.5 | ND | | ug/Kg | 07/26/17 | 22:30 | LA | 425689 |
| Heptachlor Epoxide | SW8081B | 3 | 0.26 | 6.5 | ND | | ug/Kg | 07/26/17 | 22:30 | LA | 425689 |
| gamma-Chlordane | SW8081B | 3 | 0.53 | 6.5 | ND | | ug/Kg | 07/26/17 | 22:30 | LA | 425689 |
| alpha-Chlordane | SW8081B | 3 | 0.57 | 6.5 | ND | | ug/Kg | 07/26/17 | 22:30 | LA | 425689 |
| 4,4-DDE | SW8081B | 3 | 0.63 | 6.5 | **45.2** | | ug/Kg | 07/26/17 | 22:30 | LA | 425689 |
| Endosulfan I | SW8081B | 3 | 0.60 | 6.5 | ND | | ug/Kg | 07/26/17 | 22:30 | LA | 425689 |
| Dieldrin | SW8081B | 3 | 0.48 | 6.5 | ND | | ug/Kg | 07/26/17 | 22:30 | LA | 425689 |
| Endrin | SW8081B | 3 | 0.61 | 6.5 | ND | | ug/Kg | 07/26/17 | 22:30 | LA | 425689 |
| 4,4-DDD | SW8081B | 3 | 1.8 | 6.5 | ND | | ug/Kg | 07/26/17 | 22:30 | LA | 425689 |
| Endosulfan II | SW8081B | 3 | 1.9 | 6.5 | ND | | ug/Kg | 07/26/17 | 22:30 | LA | 425689 |
| 4,4-DDT | SW8081B | 3 | 0.42 | 6.5 | **12.5** | | ug/Kg | 07/26/17 | 22:30 | LA | 425689 |
| Endrin Aldehyde | SW8081B | 3 | 0.49 | 6.5 | ND | | ug/Kg | 07/26/17 | 22:30 | LA | 425689 |
| Methoxychlor | SW8081B | 3 | 0.65 | 6.5 | ND | | ug/Kg | 07/26/17 | 22:30 | LA | 425689 |
| Endosulfan Sulfate | SW8081B | 3 | 0.38 | 6.5 | ND | | ug/Kg | 07/26/17 | 22:30 | LA | 425689 |
| Endrin Ketone | SW8081B | 3 | 0.31 | 6.5 | ND | | ug/Kg | 07/26/17 | 22:30 | LA | 425689 |
| Chlordane | SW8081B | 3 | 6.9 | 65 | ND | | ug/Kg | 07/26/17 | 22:30 | LA | 425689 |
| Toxaphene | SW8081B | 3 | 28 | 160 | ND | | ug/Kg | 07/26/17 | 22:30 | LA | 425689 |
| | | | Acceptance Limits | | | | | | | | |
| TCMX (S) | SW8081B | | 48 - 125 | | **53.9** | | % | 07/26/17 | 22:30 | LA | 425689 |
| DCBP (S) | SW8081B | | 38 - 135 | | **60.7** | | % | 07/26/17 | 22:30 | LA | 425689 |

**NOTE:** Sample diluted due to nature of the matrix (dark, viscous extract)

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-102 (0-0.5) | **Lab Sample ID:** | 1707122-002A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 13:02 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/21/17 | 6:15:00PM |
| **Prep Batch ID:** | 8446 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **7.89** | | % | 07/21/17 | 18:15 | PH | 425657 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.09** | | - | 07/21/17 | 18:15 | PH | 425657 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-1 (0-0.5) | **Lab Sample ID:** | 1707122-003A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 14:26 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 7471BP | **Prep Batch Date/Time:** | 7/21/17 | 5:30:00PM |
| **Prep Batch ID:** | 8348 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.12 | 0.70 | ND | | mg/Kg | 07/25/17 | 11:21 | BJAY | 425634 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-1 (0-0.5) | **Lab Sample ID:** | 1707122-003A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 14:26 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Antimony | 6020A | 1 | 0.12 | 1.0 | **0.165** | J | mg/Kg | 07/21/17 | 16:18 | ERR | 425540 |
| Arsenic | 6020A | 1 | 0.21 | 1.0 | **9.54** | | mg/Kg | 07/21/17 | 16:18 | ERR | 425540 |
| Barium | 6020A | 1 | 0.84 | 1.0 | **59.7** | | mg/Kg | 07/21/17 | 16:18 | ERR | 425540 |
| Beryllium | 6020A | 1 | 0.16 | 1.0 | ND | | mg/Kg | 07/21/17 | 16:18 | ERR | 425540 |
| Cadmium | 6020A | 1 | 0.084 | 1.0 | **0.102** | J | mg/Kg | 07/21/17 | 16:18 | ERR | 425540 |
| Chromium | 6020A | 1 | 0.097 | 1.0 | **28.3** | | mg/Kg | 07/21/17 | 16:18 | ERR | 425540 |
| Cobalt | 6020A | 1 | 0.21 | 1.0 | **6.78** | | mg/Kg | 07/21/17 | 16:18 | ERR | 425540 |
| Copper | 6020A | 1 | 0.17 | 2.5 | **23.1** | | mg/Kg | 07/21/17 | 16:18 | ERR | 425540 |
| Lead | 6020A | 1 | 0.054 | 1.0 | **17.6** | | mg/Kg | 07/21/17 | 16:18 | ERR | 425540 |
| Molybdenum | 6020A | 1 | 0.13 | 1.0 | **0.252** | J | mg/Kg | 07/21/17 | 16:18 | ERR | 425540 |
| Nickel | 6020A | 1 | 1.2 | 5.0 | **13.6** | | mg/Kg | 07/21/17 | 16:18 | ERR | 425540 |
| Selenium | 6020A | 1 | 0.035 | 2.5 | ND | | mg/Kg | 07/21/17 | 16:18 | ERR | 425540 |
| Thallium | 6020A | 1 | 1.00 | 5.0 | ND | | mg/Kg | 07/21/17 | 16:18 | ERR | 425540 |
| Vanadium | 6020A | 1 | 0.28 | 25 | **30.5** | | mg/Kg | 07/21/17 | 16:18 | ERR | 425540 |
| Zinc | 6020A | 1 | 0.70 | 2.5 | **39.9** | | mg/Kg | 07/21/17 | 16:18 | ERR | 425540 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-1 (0-0.5) | **Lab Sample ID:** | 1707122-003A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 14:26 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Silver | 6020A | 1 | 0.14 | 1.4 | ND | | mg/Kg | 07/25/17 | 12:25 | ERR | 425658 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-1 (0-0.5) | **Lab Sample ID:** | 1707122-003A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 14:26 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/21/17 | 6:15:00PM |
| **Prep Batch ID:** | 8446 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **28.4** | | % | 07/21/17 | 18:15 | PH | 425657 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.40** | | - | 07/21/17 | 18:15 | PH | 425657 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-2 (0-0.5) | **Lab Sample ID:** | 1707122-004A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 14:23 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 7471BP | **Prep Batch Date/Time:** | 7/21/17 | 5:30:00PM |
| **Prep Batch ID:** | 8348 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.11 | 0.67 | ND | | mg/Kg | 07/25/17 | 11:29 | BJAY | 425634 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-2 (0-0.5) | **Lab Sample ID:** | 1707122-004A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 14:23 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Antimony | 6020A | 1 | 0.12 | 1.0 | **0.322** | J | mg/Kg | 07/25/17 | 18:00 | ERR | 425540 |
| Arsenic | 6020A | 1 | 0.21 | 1.0 | **12.2** | | mg/Kg | 07/25/17 | 18:00 | ERR | 425540 |
| Beryllium | 6020A | 1 | 0.16 | 1.0 | **0.173** | J | mg/Kg | 07/25/17 | 18:00 | ERR | 425540 |
| Cadmium | 6020A | 1 | 0.084 | 1.0 | **0.156** | J | mg/Kg | 07/25/17 | 18:00 | ERR | 425540 |
| Chromium | 6020A | 1 | 0.097 | 1.0 | **45.9** | | mg/Kg | 07/25/17 | 18:00 | ERR | 425540 |
| Cobalt | 6020A | 1 | 0.21 | 1.0 | **9.20** | | mg/Kg | 07/25/17 | 18:00 | ERR | 425540 |
| Copper | 6020A | 1 | 0.17 | 2.5 | **32.1** | | mg/Kg | 07/25/17 | 18:00 | ERR | 425540 |
| Lead | 6020A | 1 | 0.054 | 1.0 | **32.8** | | mg/Kg | 07/25/17 | 18:00 | ERR | 425540 |
| Molybdenum | 6020A | 1 | 0.13 | 1.0 | **0.706** | J | mg/Kg | 07/25/17 | 18:00 | ERR | 425540 |
| Nickel | 6020A | 1 | 1.2 | 5.0 | **19.0** | | mg/Kg | 07/25/17 | 18:00 | ERR | 425540 |
| Selenium | 6020A | 1 | 0.035 | 2.5 | ND | | mg/Kg | 07/25/17 | 18:00 | ERR | 425540 |
| Thallium | 6020A | 1 | 1.00 | 5.0 | ND | | mg/Kg | 07/25/17 | 18:00 | ERR | 425540 |
| Vanadium | 6020A | 1 | 0.28 | 25 | **46.4** | | mg/Kg | 07/25/17 | 18:00 | ERR | 425540 |
| Zinc | 6020A | 1 | 0.70 | 2.5 | **68.4** | | mg/Kg | 07/25/17 | 18:00 | ERR | 425540 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-2 (0-0.5) | **Lab Sample ID:** | 1707122-004A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 14:23 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Barium | 6020A | 1 | 1.1 | 1.3 | **81.9** | | mg/Kg | 07/25/17 | 12:44 | ERR | 425658 |
| Silver | 6020A | 1 | 0.13 | 1.3 | ND | | mg/Kg | 07/25/17 | 12:44 | ERR | 425658 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-2 (0-0.5) | **Lab Sample ID:** | 1707122-004A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 14:23 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/21/17 | 6:15:00PM |
| **Prep Batch ID:** | 8446 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **25.5** | | % | 07/21/17 | 18:15 | PH | 425657 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.34** | | - | 07/21/17 | 18:15 | PH | 425657 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-3 (0-0.5) | **Lab Sample ID:** | 1707122-005A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 16:18 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 7471BP | **Prep Batch Date/Time:** | 7/21/17 | 5:30:00PM |
| **Prep Batch ID:** | 8348 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.13 | 0.79 | ND | | mg/Kg | 07/25/17 | 11:31 | BJAY | 425634 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-3 (0-0.5) | **Lab Sample ID:** | 1707122-005A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 16:18 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Antimony | 6020A | 1 | 0.19 | 1.6 | **0.238** | J | mg/Kg | 07/21/17 | 17:00 | ERR | 425540 |
| Arsenic | 6020A | 1 | 0.33 | 1.6 | **16.3** | | mg/Kg | 07/21/17 | 17:00 | ERR | 425540 |
| Barium | 6020A | 1 | 1.3 | 1.6 | **76.9** | | mg/Kg | 07/21/17 | 17:00 | ERR | 425540 |
| Beryllium | 6020A | 1 | 0.25 | 1.6 | ND | | mg/Kg | 07/21/17 | 17:00 | ERR | 425540 |
| Cadmium | 6020A | 1 | 0.13 | 1.6 | ND | | mg/Kg | 07/21/17 | 17:00 | ERR | 425540 |
| Chromium | 6020A | 1 | 0.15 | 1.6 | **42.3** | | mg/Kg | 07/21/17 | 17:00 | ERR | 425540 |
| Cobalt | 6020A | 1 | 0.33 | 1.6 | **11.0** | | mg/Kg | 07/21/17 | 17:00 | ERR | 425540 |
| Copper | 6020A | 1 | 0.27 | 3.9 | **35.4** | | mg/Kg | 07/21/17 | 17:00 | ERR | 425540 |
| Lead | 6020A | 1 | 0.084 | 1.6 | **26.6** | | mg/Kg | 07/21/17 | 17:00 | ERR | 425540 |
| Molybdenum | 6020A | 1 | 0.20 | 1.6 | **0.462** | J | mg/Kg | 07/21/17 | 17:00 | ERR | 425540 |
| Nickel | 6020A | 1 | 2.0 | 7.9 | **19.9** | | mg/Kg | 07/21/17 | 17:00 | ERR | 425540 |
| Selenium | 6020A | 1 | 0.054 | 3.9 | ND | | mg/Kg | 07/21/17 | 17:00 | ERR | 425540 |
| Thallium | 6020A | 1 | 1.6 | 7.9 | ND | | mg/Kg | 07/21/17 | 17:00 | ERR | 425540 |
| Vanadium | 6020A | 1 | 0.44 | 39 | **50.4** | | mg/Kg | 07/21/17 | 17:00 | ERR | 425540 |
| Zinc | 6020A | 1 | 1.1 | 3.9 | **53.4** | | mg/Kg | 07/21/17 | 17:00 | ERR | 425540 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-3 (0-0.5) | **Lab Sample ID:** | 1707122-005A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 16:18 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Silver | 6020A | 1 | 0.15 | 1.6 | ND | | mg/Kg | 07/25/17 | 12:48 | ERR | 425658 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-3 (0-0.5) | **Lab Sample ID:** | 1707122-005A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 16:18 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/21/17 | 6:15:00PM |
| **Prep Batch ID:** | 8446 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **36.5** | | % | 07/21/17 | 18:15 | PH | 425657 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.57** | | - | 07/21/17 | 18:15 | PH | 425657 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-4 (0-0.5) | **Lab Sample ID:** | 1707122-006A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 13:12 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 7471BP | **Prep Batch Date/Time:** | 7/21/17 | 5:30:00PM |
| **Prep Batch ID:** | 8348 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.084 | 0.51 | ND | | mg/Kg | 07/25/17 | 11:33 | BJAY | 425634 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-4 (0-0.5) | **Lab Sample ID:** | 1707122-006A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 13:12 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Antimony | 6020A | 1 | 0.12 | 1.0 | **0.220** | J | mg/Kg | 07/21/17 | 17:09 | ERR | 425540 |
| Arsenic | 6020A | 1 | 0.21 | 1.0 | **14.8** | | mg/Kg | 07/21/17 | 17:09 | ERR | 425540 |
| Beryllium | 6020A | 1 | 0.16 | 1.0 | **0.164** | J | mg/Kg | 07/21/17 | 17:09 | ERR | 425540 |
| Cadmium | 6020A | 1 | 0.084 | 1.0 | **0.105** | J | mg/Kg | 07/21/17 | 17:09 | ERR | 425540 |
| Chromium | 6020A | 1 | 0.098 | 1.0 | **32.6** | | mg/Kg | 07/21/17 | 17:09 | ERR | 425540 |
| Cobalt | 6020A | 1 | 0.21 | 1.0 | **8.47** | | mg/Kg | 07/21/17 | 17:09 | ERR | 425540 |
| Copper | 6020A | 1 | 0.17 | 2.5 | **31.9** | | mg/Kg | 07/21/17 | 17:09 | ERR | 425540 |
| Lead | 6020A | 1 | 0.054 | 1.0 | **31.0** | | mg/Kg | 07/21/17 | 17:09 | ERR | 425540 |
| Molybdenum | 6020A | 1 | 0.13 | 1.0 | **0.373** | J | mg/Kg | 07/21/17 | 17:09 | ERR | 425540 |
| Nickel | 6020A | 1 | 1.3 | 5.1 | **14.4** | | mg/Kg | 07/21/17 | 17:09 | ERR | 425540 |
| Selenium | 6020A | 1 | 0.035 | 2.5 | ND | | mg/Kg | 07/21/17 | 17:09 | ERR | 425540 |
| Thallium | 6020A | 1 | 1.0 | 5.1 | ND | | mg/Kg | 07/21/17 | 17:09 | ERR | 425540 |
| Vanadium | 6020A | 1 | 0.28 | 25 | **36.4** | | mg/Kg | 07/21/17 | 17:09 | ERR | 425540 |
| Zinc | 6020A | 1 | 0.71 | 2.5 | **34.7** | | mg/Kg | 07/21/17 | 17:09 | ERR | 425540 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-4 (0-0.5) | **Lab Sample ID:** | 1707122-006A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 13:12 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Silver | 6020A | 1 | 0.099 | 1.0 | **0.406** | J | mg/Kg | 07/25/17 | 12:53 | ERR | 425658 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-4 (0-0.5) | **Lab Sample ID:** | 1707122-006A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 13:12 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 6020A | 10 | 1.7 | 2.0 | **72.3** | | mg/Kg | 07/21/17 | 20:13 | ERR | 425540 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-4 (0-0.5) | **Lab Sample ID:** | 1707122-006A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 13:12 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/21/17 | 6:15:00PM |
| **Prep Batch ID:** | 8446 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **1.21** | | % | 07/21/17 | 18:15 | PH | 425657 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.01** | | - | 07/21/17 | 18:15 | PH | 425657 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-4 (2.5-3) | **Lab Sample ID:** | 1707122-007A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 13:17 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/20/17 | 11:40:00AM |
| **Prep Batch ID:** | 8276 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 6020A | 1 | 0.28 | 1.3 | **16.1** | | mg/Kg | 07/20/17 | 17:37 | ERR | 425519 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-4 (2.5-3) | **Lab Sample ID:** | 1707122-007A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 13:17 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/21/17 | 6:15:00PM |
| **Prep Batch ID:** | 8446 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **25.6** | | % | 07/21/17 | 18:15 | PH | 425657 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.34** | | - | 07/21/17 | 18:15 | PH | 425657 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-5 (0-0.5) | **Lab Sample ID:** | 1707122-008A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:50 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 7471BP | **Prep Batch Date/Time:** | 7/21/17 | 5:30:00PM |
| **Prep Batch ID:** | 8348 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.084 | 0.51 | ND | | mg/Kg | 07/25/17 | 11:35 | BJAY | 425634 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-5 (0-0.5) | **Lab Sample ID:** | 1707122-008A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:50 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Antimony | 6020A | 1 | 0.12 | 1.0 | **0.154** | J | mg/Kg | 07/21/17 | 17:17 | ERR | 425540 |
| Arsenic | 6020A | 1 | 0.21 | 1.0 | **8.60** | | mg/Kg | 07/21/17 | 17:17 | ERR | 425540 |
| Beryllium | 6020A | 1 | 0.16 | 1.0 | ND | | mg/Kg | 07/21/17 | 17:17 | ERR | 425540 |
| Cadmium | 6020A | 1 | 0.084 | 1.0 | ND | | mg/Kg | 07/21/17 | 17:17 | ERR | 425540 |
| Chromium | 6020A | 1 | 0.098 | 1.0 | **22.3** | | mg/Kg | 07/21/17 | 17:17 | ERR | 425540 |
| Cobalt | 6020A | 1 | 0.21 | 1.0 | **5.69** | | mg/Kg | 07/21/17 | 17:17 | ERR | 425540 |
| Copper | 6020A | 1 | 0.17 | 2.5 | **21.6** | | mg/Kg | 07/21/17 | 17:17 | ERR | 425540 |
| Lead | 6020A | 1 | 0.054 | 1.0 | **32.1** | | mg/Kg | 07/21/17 | 17:17 | ERR | 425540 |
| Molybdenum | 6020A | 1 | 0.13 | 1.0 | **0.146** | J | mg/Kg | 07/21/17 | 17:17 | ERR | 425540 |
| Nickel | 6020A | 1 | 1.3 | 5.1 | **10.4** | | mg/Kg | 07/21/17 | 17:17 | ERR | 425540 |
| Selenium | 6020A | 1 | 0.035 | 2.5 | ND | | mg/Kg | 07/21/17 | 17:17 | ERR | 425540 |
| Thallium | 6020A | 1 | 1.0 | 5.1 | ND | | mg/Kg | 07/21/17 | 17:17 | ERR | 425540 |
| Vanadium | 6020A | 1 | 0.28 | 25 | **24.3** | J | mg/Kg | 07/21/17 | 17:17 | ERR | 425540 |
| Zinc | 6020A | 1 | 0.71 | 2.5 | **25.2** | | mg/Kg | 07/21/17 | 17:17 | ERR | 425540 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-5 (0-0.5) | **Lab Sample ID:** | 1707122-008A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:50 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Silver | 6020A | 1 | 0.099 | 1.0 | ND | | mg/Kg | 07/25/17 | 12:58 | ERR | 425658 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-5 (0-0.5) | **Lab Sample ID:** | 1707122-008A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:50 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 6020A | 10 | 1.7 | 2.0 | **71.3** | | mg/Kg | 07/21/17 | 20:22 | ERR | 425540 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-5 (0-0.5) | **Lab Sample ID:** | 1707122-008A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:50 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/21/17 | 6:15:00PM |
| **Prep Batch ID:** | 8446 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **0.680** | | % | 07/21/17 | 18:15 | PH | 425657 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.01** | | - | 07/21/17 | 18:15 | PH | 425657 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-6 (0-0.5) | **Lab Sample ID:** | 1707122-009A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:14 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 7471BP | **Prep Batch Date/Time:** | 7/21/17 | 5:30:00PM |
| **Prep Batch ID:** | 8348 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.10 | 0.63 | ND | | mg/Kg | 07/25/17 | 11:37 | BJAY | 425634 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-6 (0-0.5) | **Lab Sample ID:** | 1707122-009A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:14 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Antimony | 6020A | 1 | 0.15 | 1.3 | **0.233** | J | mg/Kg | 07/21/17 | 17:26 | ERR | 425540 |
| Arsenic | 6020A | 1 | 0.26 | 1.3 | **11.4** | | mg/Kg | 07/21/17 | 17:26 | ERR | 425540 |
| Beryllium | 6020A | 1 | 0.20 | 1.3 | ND | | mg/Kg | 07/21/17 | 17:26 | ERR | 425540 |
| Cadmium | 6020A | 1 | 0.10 | 1.3 | **0.147** | J | mg/Kg | 07/21/17 | 17:26 | ERR | 425540 |
| Chromium | 6020A | 1 | 0.12 | 1.3 | **34.3** | | mg/Kg | 07/21/17 | 17:26 | ERR | 425540 |
| Cobalt | 6020A | 1 | 0.26 | 1.3 | **8.90** | | mg/Kg | 07/21/17 | 17:26 | ERR | 425540 |
| Copper | 6020A | 1 | 0.21 | 3.1 | **29.7** | | mg/Kg | 07/21/17 | 17:26 | ERR | 425540 |
| Lead | 6020A | 1 | 0.067 | 1.3 | **31.2** | | mg/Kg | 07/21/17 | 17:26 | ERR | 425540 |
| Molybdenum | 6020A | 1 | 0.16 | 1.3 | **0.298** | J | mg/Kg | 07/21/17 | 17:26 | ERR | 425540 |
| Nickel | 6020A | 1 | 1.6 | 6.3 | **18.4** | | mg/Kg | 07/21/17 | 17:26 | ERR | 425540 |
| Selenium | 6020A | 1 | 0.043 | 3.1 | ND | | mg/Kg | 07/21/17 | 17:26 | ERR | 425540 |
| Vanadium | 6020A | 1 | 0.35 | 31 | **40.8** | | mg/Kg | 07/21/17 | 17:26 | ERR | 425540 |
| Zinc | 6020A | 1 | 0.88 | 3.1 | **42.2** | | mg/Kg | 07/21/17 | 17:26 | ERR | 425540 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-6 (0-0.5) | **Lab Sample ID:** | 1707122-009A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:14 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Silver | 6020A | 1 | 0.12 | 1.3 | ND | | mg/Kg | 07/25/17 | 13:02 | ERR | 425658 |
| Thallium | 6020A | 1 | 1.2 | 6.3 | ND | | mg/Kg | 07/25/17 | 13:02 | ERR | 425658 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-6 (0-0.5) | **Lab Sample ID:** | 1707122-009A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:14 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 6020A | 10 | 2.1 | 2.5 | **79.9** | | mg/Kg | 07/21/17 | 20:30 | ERR | 425540 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-6 (0-0.5) | **Lab Sample ID:** | 1707122-009A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:14 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/21/17 | 6:15:00PM |
| **Prep Batch ID:** | 8446 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **19.9** | | % | 07/21/17 | 18:15 | PH | 425657 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.25** | | - | 07/21/17 | 18:15 | PH | 425657 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-6 (2.5-3) | **Lab Sample ID:** | 1707122-010A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:20 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/20/17 | 11:40:00AM |
| **Prep Batch ID:** | 8276 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 6020A | 1 | 0.24 | 1.1 | **6.38** | | mg/Kg | 07/20/17 | 17:50 | ERR | 425519 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-6 (2.5-3) | **Lab Sample ID:** | 1707122-010A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:20 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/21/17 | 6:15:00PM |
| **Prep Batch ID:** | 8446 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **12.1** | | % | 07/21/17 | 18:15 | PH | 425657 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.14** | | - | 07/21/17 | 18:15 | PH | 425657 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-7 (0-0.5) | **Lab Sample ID:** | 1707122-011A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:45 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 7471BP | **Prep Batch Date/Time:** | 7/21/17 | 5:30:00PM |
| **Prep Batch ID:** | 8348 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.10 | 0.60 | ND | | mg/Kg | 07/25/17 | 11:39 | BJAY | 425634 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-7 (0-0.5) | **Lab Sample ID:** | 1707122-011A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:45 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Antimony | 6020A | 1 | 0.14 | 1.2 | **0.197** | J | mg/Kg | 07/21/17 | 17:34 | ERR | 425540 |
| Arsenic | 6020A | 1 | 0.25 | 1.2 | **8.04** | | mg/Kg | 07/21/17 | 17:34 | ERR | 425540 |
| Beryllium | 6020A | 1 | 0.19 | 1.2 | ND | | mg/Kg | 07/21/17 | 17:34 | ERR | 425540 |
| Cadmium | 6020A | 1 | 0.10 | 1.2 | **0.109** | J | mg/Kg | 07/21/17 | 17:34 | ERR | 425540 |
| Chromium | 6020A | 1 | 0.12 | 1.2 | **30.7** | | mg/Kg | 07/21/17 | 17:34 | ERR | 425540 |
| Cobalt | 6020A | 1 | 0.25 | 1.2 | **7.79** | | mg/Kg | 07/21/17 | 17:34 | ERR | 425540 |
| Copper | 6020A | 1 | 0.20 | 3.0 | **31.1** | | mg/Kg | 07/21/17 | 17:34 | ERR | 425540 |
| Lead | 6020A | 1 | 0.064 | 1.2 | **28.0** | | mg/Kg | 07/21/17 | 17:34 | ERR | 425540 |
| Molybdenum | 6020A | 1 | 0.16 | 1.2 | **0.250** | J | mg/Kg | 07/21/17 | 17:34 | ERR | 425540 |
| Nickel | 6020A | 1 | 1.5 | 6.0 | **14.5** | | mg/Kg | 07/21/17 | 17:34 | ERR | 425540 |
| Selenium | 6020A | 1 | 0.041 | 3.0 | ND | | mg/Kg | 07/21/17 | 17:34 | ERR | 425540 |
| Vanadium | 6020A | 1 | 0.34 | 30 | **34.3** | | mg/Kg | 07/21/17 | 17:34 | ERR | 425540 |
| Zinc | 6020A | 1 | 0.84 | 3.0 | **34.0** | | mg/Kg | 07/21/17 | 17:34 | ERR | 425540 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-7 (0-0.5) | **Lab Sample ID:** | 1707122-011A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:45 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Silver | 6020A | 1 | 0.12 | 1.2 | ND | | mg/Kg | 07/25/17 | 13:07 | ERR | 425658 |
| Thallium | 6020A | 1 | 1.2 | 6.0 | ND | | mg/Kg | 07/25/17 | 13:07 | ERR | 425658 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-7 (0-0.5) | **Lab Sample ID:** | 1707122-011A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:45 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 6020A | 10 | 2.0 | 2.4 | **91.3** | | mg/Kg | 07/21/17 | 20:39 | ERR | 425540 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-7 (0-0.5) | **Lab Sample ID:** | 1707122-011A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:45 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/21/17 | 6:15:00PM |
| **Prep Batch ID:** | 8446 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **16.8** | | % | 07/21/17 | 18:15 | PH | 425657 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.20** | | - | 07/21/17 | 18:15 | PH | 425657 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-9 (0-0.5) | **Lab Sample ID:** | 1707122-012A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:07 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 7471BP | **Prep Batch Date/Time:** | 7/21/17 | 5:30:00PM |
| **Prep Batch ID:** | 8348 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.11 | 0.68 | ND | | mg/Kg | 07/25/17 | 11:43 | BJAY | 425634 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-9 (0-0.5) | **Lab Sample ID:** | 1707122-012A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:07 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Antimony | 6020A | 1 | 0.16 | 1.4 | **0.167** | J | mg/Kg | 07/21/17 | 17:51 | ERR | 425540 |
| Arsenic | 6020A | 1 | 0.28 | 1.4 | **13.5** | | mg/Kg | 07/21/17 | 17:51 | ERR | 425540 |
| Beryllium | 6020A | 1 | 0.22 | 1.4 | ND | | mg/Kg | 07/21/17 | 17:51 | ERR | 425540 |
| Cadmium | 6020A | 1 | 0.11 | 1.4 | **0.124** | J | mg/Kg | 07/21/17 | 17:51 | ERR | 425540 |
| Chromium | 6020A | 1 | 0.13 | 1.4 | **34.1** | | mg/Kg | 07/21/17 | 17:51 | ERR | 425540 |
| Cobalt | 6020A | 1 | 0.28 | 1.4 | **8.98** | | mg/Kg | 07/21/17 | 17:51 | ERR | 425540 |
| Copper | 6020A | 1 | 0.23 | 3.4 | **44.2** | | mg/Kg | 07/21/17 | 17:51 | ERR | 425540 |
| Lead | 6020A | 1 | 0.072 | 1.4 | **56.0** | | mg/Kg | 07/21/17 | 17:51 | ERR | 425540 |
| Molybdenum | 6020A | 1 | 0.18 | 1.4 | **0.265** | J | mg/Kg | 07/21/17 | 17:51 | ERR | 425540 |
| Nickel | 6020A | 1 | 1.7 | 6.8 | **17.0** | | mg/Kg | 07/21/17 | 17:51 | ERR | 425540 |
| Selenium | 6020A | 1 | 0.047 | 3.4 | ND | | mg/Kg | 07/21/17 | 17:51 | ERR | 425540 |
| Vanadium | 6020A | 1 | 0.38 | 34 | **37.9** | | mg/Kg | 07/21/17 | 17:51 | ERR | 425540 |
| Zinc | 6020A | 1 | 0.95 | 3.4 | **42.0** | | mg/Kg | 07/21/17 | 17:51 | ERR | 425540 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-9 (0-0.5) | **Lab Sample ID:** | 1707122-012A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:07 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Silver | 6020A | 1 | 0.13 | 1.4 | ND | | mg/Kg | 07/25/17 | 13:16 | ERR | 425658 |
| Thallium | 6020A | 1 | 1.3 | 6.8 | ND | | mg/Kg | 07/25/17 | 13:16 | ERR | 425658 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-9 (0-0.5) | **Lab Sample ID:** | 1707122-012A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:07 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 6020A | 10 | 2.3 | 2.7 | **115** | | mg/Kg | 07/21/17 | 20:47 | ERR | 425540 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-9 (0-0.5) | **Lab Sample ID:** | 1707122-012A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:07 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/21/17 | 6:15:00PM |
| **Prep Batch ID:** | 8446 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **26.1** | | % | 07/21/17 | 18:15 | PH | 425657 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.35** | | - | 07/21/17 | 18:15 | PH | 425657 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-8 (0-0.5) | **Lab Sample ID:** | 1707122-013A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:54 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 7471BP | **Prep Batch Date/Time:** | 7/21/17 | 5:30:00PM |
| **Prep Batch ID:** | 8348 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.087 | 0.52 | ND | | mg/Kg | 07/25/17 | 11:47 | BJAY | 425634 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-8 (0-0.5) | **Lab Sample ID:** | 1707122-013A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:54 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Antimony | 6020A | 1 | 0.13 | 1.0 | **0.186** | J | mg/Kg | 07/21/17 | 18:08 | ERR | 425540 |
| Arsenic | 6020A | 1 | 0.22 | 1.0 | **9.79** | | mg/Kg | 07/21/17 | 18:08 | ERR | 425540 |
| Beryllium | 6020A | 1 | 0.17 | 1.0 | ND | | mg/Kg | 07/21/17 | 18:08 | ERR | 425540 |
| Cadmium | 6020A | 1 | 0.087 | 1.0 | **0.0879** | J | mg/Kg | 07/21/17 | 18:08 | ERR | 425540 |
| Chromium | 6020A | 1 | 0.10 | 1.0 | **26.5** | | mg/Kg | 07/21/17 | 18:08 | ERR | 425540 |
| Cobalt | 6020A | 1 | 0.22 | 1.0 | **7.16** | | mg/Kg | 07/21/17 | 18:08 | ERR | 425540 |
| Copper | 6020A | 1 | 0.18 | 2.6 | **31.1** | | mg/Kg | 07/21/17 | 18:08 | ERR | 425540 |
| Lead | 6020A | 1 | 0.056 | 1.0 | **42.4** | | mg/Kg | 07/21/17 | 18:08 | ERR | 425540 |
| Molybdenum | 6020A | 1 | 0.14 | 1.0 | **0.182** | J | mg/Kg | 07/21/17 | 18:08 | ERR | 425540 |
| Nickel | 6020A | 1 | 1.3 | 5.2 | **12.7** | | mg/Kg | 07/21/17 | 18:08 | ERR | 425540 |
| Selenium | 6020A | 1 | 0.036 | 2.6 | ND | | mg/Kg | 07/21/17 | 18:08 | ERR | 425540 |
| Vanadium | 6020A | 1 | 0.29 | 26 | **27.9** | | mg/Kg | 07/21/17 | 18:08 | ERR | 425540 |
| Zinc | 6020A | 1 | 0.73 | 2.6 | **29.0** | | mg/Kg | 07/21/17 | 18:08 | ERR | 425540 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-8 (0-0.5) | **Lab Sample ID:** | 1707122-013A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:54 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Silver | 6020A | 1 | 0.10 | 1.0 | ND | | mg/Kg | 07/25/17 | 13:26 | ERR | 425658 |
| Thallium | 6020A | 1 | 1.0 | 5.2 | ND | | mg/Kg | 07/25/17 | 13:26 | ERR | 425658 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-8 (0-0.5) | **Lab Sample ID:** | 1707122-013A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:54 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 6020A | 10 | 1.7 | 2.1 | **90.7** | | mg/Kg | 07/21/17 | 20:55 | ERR | 425540 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-8 (0-0.5) | **Lab Sample ID:** | 1707122-013A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:54 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/21/17 | 6:15:00PM |
| **Prep Batch ID:** | 8446 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **3.84** | | % | 07/21/17 | 18:15 | PH | 425657 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.04** | | - | 07/21/17 | 18:15 | PH | 425657 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-8 (2.5-3) | **Lab Sample ID:** | 1707122-014A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:58 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/20/17 | 11:40:00AM |
| **Prep Batch ID:** | 8276 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 6020A | 1 | 0.26 | 1.2 | **5.70** | | mg/Kg | 07/20/17 | 17:55 | ERR | 425519 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-8 (2.5-3) | **Lab Sample ID:** | 1707122-014A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:58 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/21/17 | 6:15:00PM |
| **Prep Batch ID:** | 8446 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **19.2** | | % | 07/21/17 | 18:15 | PH | 425657 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.24** | | - | 07/21/17 | 18:15 | PH | 425657 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-10 (0-0.5) | **Lab Sample ID:** | 1707122-015A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 9:55 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 7471BP | **Prep Batch Date/Time:** | 7/21/17 | 5:30:00PM |
| **Prep Batch ID:** | 8348 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.084 | 0.51 | ND | | mg/Kg | 07/25/17 | 11:53 | BJAY | 425634 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-10 (0-0.5) | **Lab Sample ID:** | 1707122-015A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 9:55 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Antimony | 6020A | 1 | 0.12 | 1.0 | **0.163** | J | mg/Kg | 07/21/17 | 18:33 | ERR | 425540 |
| Arsenic | 6020A | 1 | 0.21 | 1.0 | **8.56** | | mg/Kg | 07/21/17 | 18:33 | ERR | 425540 |
| Beryllium | 6020A | 1 | 0.16 | 1.0 | **0.189** | J | mg/Kg | 07/21/17 | 18:33 | ERR | 425540 |
| Cadmium | 6020A | 1 | 0.084 | 1.0 | **0.0985** | J | mg/Kg | 07/21/17 | 18:33 | ERR | 425540 |
| Cobalt | 6020A | 1 | 0.21 | 1.0 | **10.8** | | mg/Kg | 07/21/17 | 18:33 | ERR | 425540 |
| Copper | 6020A | 1 | 0.17 | 2.5 | **38.8** | | mg/Kg | 07/21/17 | 18:33 | ERR | 425540 |
| Lead | 6020A | 1 | 0.054 | 1.0 | **24.2** | | mg/Kg | 07/21/17 | 18:33 | ERR | 425540 |
| Molybdenum | 6020A | 1 | 0.13 | 1.0 | **0.267** | J | mg/Kg | 07/21/17 | 18:33 | ERR | 425540 |
| Nickel | 6020A | 1 | 1.3 | 5.1 | **19.4** | | mg/Kg | 07/21/17 | 18:33 | ERR | 425540 |
| Selenium | 6020A | 1 | 0.035 | 2.5 | ND | | mg/Kg | 07/21/17 | 18:33 | ERR | 425540 |
| Vanadium | 6020A | 1 | 0.28 | 25 | **48.5** | | mg/Kg | 07/21/17 | 18:33 | ERR | 425540 |
| Zinc | 6020A | 1 | 0.71 | 2.5 | **44.1** | | mg/Kg | 07/21/17 | 18:33 | ERR | 425540 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-10 (0-0.5) | **Lab Sample ID:** | 1707122-015A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 9:55 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Chromium | 6020A | 1 | 0.098 | 1.0 | **40.5** | | mg/Kg | 07/25/17 | 13:40 | ERR | 425658 |
| Silver | 6020A | 1 | 0.099 | 1.0 | ND | | mg/Kg | 07/25/17 | 13:40 | ERR | 425658 |
| Thallium | 6020A | 1 | 1.0 | 5.1 | ND | | mg/Kg | 07/25/17 | 13:40 | ERR | 425658 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-10 (0-0.5) | **Lab Sample ID:** | 1707122-015A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 9:55 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 6020A | 10 | 1.7 | 2.0 | **114** | | mg/Kg | 07/21/17 | 21:04 | ERR | 425540 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-10 (0-0.5) | **Lab Sample ID:** | 1707122-015A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 9:55 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/21/17 | 6:15:00PM |
| **Prep Batch ID:** | 8446 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **1.12** | | % | 07/21/17 | 18:15 | PH | 425657 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.01** | | - | 07/21/17 | 18:15 | PH | 425657 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-11 (0-0.5) | **Lab Sample ID:** | 1707122-016A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 8:55 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 7471BP | **Prep Batch Date/Time:** | 7/21/17 | 5:30:00PM |
| **Prep Batch ID:** | 8348 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.084 | 0.51 | ND | | mg/Kg | 07/25/17 | 11:55 | BJAY | 425634 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-11 (0-0.5) | **Lab Sample ID:** | 1707122-016A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 8:55 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Antimony | 6020A | 1 | 0.12 | 1.0 | **0.285** | J | mg/Kg | 07/21/17 | 18:41 | ERR | 425540 |
| Arsenic | 6020A | 1 | 0.21 | 1.0 | **8.80** | | mg/Kg | 07/21/17 | 18:41 | ERR | 425540 |
| Beryllium | 6020A | 1 | 0.16 | 1.0 | **0.164** | J | mg/Kg | 07/21/17 | 18:41 | ERR | 425540 |
| Cadmium | 6020A | 1 | 0.084 | 1.0 | **0.166** | J | mg/Kg | 07/21/17 | 18:41 | ERR | 425540 |
| Cobalt | 6020A | 1 | 0.21 | 1.0 | **7.14** | | mg/Kg | 07/21/17 | 18:41 | ERR | 425540 |
| Copper | 6020A | 1 | 0.17 | 2.5 | **18.5** | | mg/Kg | 07/21/17 | 18:41 | ERR | 425540 |
| Lead | 6020A | 1 | 0.054 | 1.0 | **21.1** | | mg/Kg | 07/21/17 | 18:41 | ERR | 425540 |
| Molybdenum | 6020A | 1 | 0.13 | 1.0 | **0.491** | J | mg/Kg | 07/21/17 | 18:41 | ERR | 425540 |
| Nickel | 6020A | 1 | 1.3 | 5.1 | **14.6** | | mg/Kg | 07/21/17 | 18:41 | ERR | 425540 |
| Selenium | 6020A | 1 | 0.035 | 2.5 | ND | | mg/Kg | 07/21/17 | 18:41 | ERR | 425540 |
| Vanadium | 6020A | 1 | 0.28 | 25 | **37.0** | | mg/Kg | 07/21/17 | 18:41 | ERR | 425540 |
| Zinc | 6020A | 1 | 0.71 | 2.5 | **55.7** | | mg/Kg | 07/21/17 | 18:41 | ERR | 425540 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-11 (0-0.5) | **Lab Sample ID:** | 1707122-016A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 8:55 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Chromium | 6020A | 1 | 0.098 | 1.0 | **24.6** | | mg/Kg | 07/25/17 | 13:44 | ERR | 425658 |
| Silver | 6020A | 1 | 0.099 | 1.0 | ND | | mg/Kg | 07/25/17 | 13:44 | ERR | 425658 |
| Thallium | 6020A | 1 | 1.0 | 5.1 | ND | | mg/Kg | 07/25/17 | 13:44 | ERR | 425658 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-11 (0-0.5) | **Lab Sample ID:** | 1707122-016A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 8:55 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 6020A | 10 | 1.7 | 2.0 | **108** | | mg/Kg | 07/21/17 | 21:12 | ERR | 425540 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-11 (0-0.5) | **Lab Sample ID:** | 1707122-016A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 8:55 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/21/17 | 6:15:00PM |
| **Prep Batch ID:** | 8446 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **1.37** | | % | 07/21/17 | 18:15 | PH | 425657 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.01** | | - | 07/21/17 | 18:15 | PH | 425657 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-12 (0-0.5) | **Lab Sample ID:** | 1707122-017A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 9:25 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 7471BP | **Prep Batch Date/Time:** | 7/21/17 | 5:30:00PM |
| **Prep Batch ID:** | 8348 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.10 | 0.61 | ND | | mg/Kg | 07/25/17 | 11:57 | BJAY | 425634 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-12 (0-0.5) | **Lab Sample ID:** | 1707122-017A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 9:25 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Antimony | 6020A | 1 | 0.15 | 1.2 | **0.160** | J | mg/Kg | 07/21/17 | 18:49 | ERR | 425540 |
| Arsenic | 6020A | 1 | 0.25 | 1.2 | **16.6** | | mg/Kg | 07/21/17 | 18:49 | ERR | 425540 |
| Barium | 6020A | 1 | 1.0 | 1.2 | **53.5** | | mg/Kg | 07/21/17 | 18:49 | ERR | 425540 |
| Beryllium | 6020A | 1 | 0.19 | 1.2 | ND | | mg/Kg | 07/21/17 | 18:49 | ERR | 425540 |
| Cadmium | 6020A | 1 | 0.10 | 1.2 | ND | | mg/Kg | 07/21/17 | 18:49 | ERR | 425540 |
| Cobalt | 6020A | 1 | 0.25 | 1.2 | **5.64** | | mg/Kg | 07/21/17 | 18:49 | ERR | 425540 |
| Copper | 6020A | 1 | 0.21 | 3.0 | **12.7** | | mg/Kg | 07/21/17 | 18:49 | ERR | 425540 |
| Lead | 6020A | 1 | 0.065 | 1.2 | **53.1** | | mg/Kg | 07/21/17 | 18:49 | ERR | 425540 |
| Molybdenum | 6020A | 1 | 0.16 | 1.2 | ND | | mg/Kg | 07/21/17 | 18:49 | ERR | 425540 |
| Nickel | 6020A | 1 | 1.5 | 6.1 | **9.05** | | mg/Kg | 07/21/17 | 18:49 | ERR | 425540 |
| Selenium | 6020A | 1 | 0.042 | 3.0 | ND | | mg/Kg | 07/21/17 | 18:49 | ERR | 425540 |
| Vanadium | 6020A | 1 | 0.34 | 30 | **21.5** | J | mg/Kg | 07/21/17 | 18:49 | ERR | 425540 |
| Zinc | 6020A | 1 | 0.85 | 3.0 | **21.5** | | mg/Kg | 07/21/17 | 18:49 | ERR | 425540 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-12 (0-0.5) | **Lab Sample ID:** | 1707122-017A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 9:25 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Chromium | 6020A | 1 | 0.12 | 1.2 | **20.5** | | mg/Kg | 07/25/17 | 13:49 | ERR | 425658 |
| Silver | 6020A | 1 | 0.12 | 1.2 | ND | | mg/Kg | 07/25/17 | 13:49 | ERR | 425658 |
| Thallium | 6020A | 1 | 1.2 | 6.1 | ND | | mg/Kg | 07/25/17 | 13:49 | ERR | 425658 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-12 (0-0.5) | **Lab Sample ID:** | 1707122-017A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 9:25 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/21/17 | 6:15:00PM |
| **Prep Batch ID:** | 8446 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **17.5** | | % | 07/21/17 | 18:15 | PH | 425657 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.21** | | - | 07/21/17 | 18:15 | PH | 425657 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-12 (2.5-3) | **Lab Sample ID:** | 1707122-018A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 9:30 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/20/17 | 11:40:00AM |
| **Prep Batch ID:** | 8276 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 6020A | 1 | 0.22 | 1.1 | **4.43** | | mg/Kg | 07/20/17 | 17:59 | ERR | 425519 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-12 (2.5-3) | **Lab Sample ID:** | 1707122-018A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 9:30 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/21/17 | 6:15:00PM |
| **Prep Batch ID:** | 8446 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **6.33** | | % | 07/21/17 | 18:15 | PH | 425657 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.07** | | - | 07/21/17 | 18:15 | PH | 425657 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-13 (0-0.5) | **Lab Sample ID:** | 1707122-019A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:33 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 7471BP | **Prep Batch Date/Time:** | 7/21/17 | 5:10:00PM |
| **Prep Batch ID:** | 8337 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.083 | 0.50 | ND | | mg/Kg | 07/25/17 | 12:05 | BJAY | 425633 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-13 (0-0.5) | **Lab Sample ID:** | 1707122-019A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:33 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 4:10:00PM |
| **Prep Batch ID:** | 8336 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Antimony | 6020A | 1 | 0.12 | 1.0 | ND | | mg/Kg | 07/25/17 | 16:44 | ERR | 425557 |
| Arsenic | 6020A | 1 | 0.21 | 1.0 | **4.64** | | mg/Kg | 07/25/17 | 16:44 | ERR | 425557 |
| Beryllium | 6020A | 1 | 0.16 | 1.0 | ND | | mg/Kg | 07/25/17 | 16:44 | ERR | 425557 |
| Cadmium | 6020A | 1 | 0.084 | 1.0 | ND | | mg/Kg | 07/25/17 | 16:44 | ERR | 425557 |
| Chromium | 6020A | 1 | 0.097 | 1.0 | **20.9** | | mg/Kg | 07/25/17 | 16:44 | ERR | 425557 |
| Cobalt | 6020A | 1 | 0.21 | 1.0 | **5.78** | | mg/Kg | 07/25/17 | 16:44 | ERR | 425557 |
| Copper | 6020A | 1 | 0.17 | 2.5 | **18.8** | | mg/Kg | 07/25/17 | 16:44 | ERR | 425557 |
| Lead | 6020A | 1 | 0.054 | 1.0 | **13.1** | | mg/Kg | 07/25/17 | 16:44 | ERR | 425557 |
| Molybdenum | 6020A | 1 | 0.13 | 1.0 | ND | | mg/Kg | 07/25/17 | 16:44 | ERR | 425557 |
| Nickel | 6020A | 1 | 1.2 | 5.0 | **10.0** | | mg/Kg | 07/25/17 | 16:44 | ERR | 425557 |
| Selenium | 6020A | 1 | 0.035 | 2.5 | ND | | mg/Kg | 07/25/17 | 16:44 | ERR | 425557 |
| Silver | 6020A | 1 | 0.098 | 1.0 | ND | | mg/Kg | 07/25/17 | 16:44 | ERR | 425557 |
| Thallium | 6020A | 1 | 1.00 | 5.0 | ND | | mg/Kg | 07/25/17 | 16:44 | ERR | 425557 |
| Vanadium | 6020A | 1 | 0.28 | 25 | **25.0** | | mg/Kg | 07/25/17 | 16:44 | ERR | 425557 |
| Zinc | 6020A | 1 | 0.70 | 2.5 | **23.1** | | mg/Kg | 07/25/17 | 16:44 | ERR | 425557 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-13 (0-0.5) | **Lab Sample ID:** | 1707122-019A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:33 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 4:10:00PM |
| **Prep Batch ID:** | 8336 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 6020A | 10 | 1.7 | 2.0 | **70.0** | | mg/Kg | 07/26/17 | 17:19 | ERR | 425682 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-13 (0-0.5) | **Lab Sample ID:** | 1707122-019A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:33 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/21/17 | 6:15:00PM |
| **Prep Batch ID:** | 8446 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **0.440** | | % | 07/21/17 | 18:15 | PH | 425657 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.00** | | - | 07/21/17 | 18:15 | PH | 425657 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-14 (0-0.5) | **Lab Sample ID:** | 1707122-020A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:46 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 7471BP | **Prep Batch Date/Time:** | 7/21/17 | 5:10:00PM |
| **Prep Batch ID:** | 8337 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.083 | 0.50 | ND | | mg/Kg | 07/25/17 | 12:11 | BJAY | 425633 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-14 (0-0.5) | **Lab Sample ID:** | 1707122-020A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:46 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 4:10:00PM |
| **Prep Batch ID:** | 8336 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Antimony | 6020A | 1 | 0.12 | 1.0 | **0.188** | J | mg/Kg | 07/25/17 | 17:10 | ERR | 425557 |
| Arsenic | 6020A | 1 | 0.21 | 1.0 | **6.88** | | mg/Kg | 07/25/17 | 17:10 | ERR | 425557 |
| Beryllium | 6020A | 1 | 0.16 | 1.0 | ND | | mg/Kg | 07/25/17 | 17:10 | ERR | 425557 |
| Cadmium | 6020A | 1 | 0.084 | 1.0 | **0.115** | J | mg/Kg | 07/25/17 | 17:10 | ERR | 425557 |
| Chromium | 6020A | 1 | 0.097 | 1.0 | **28.6** | | mg/Kg | 07/25/17 | 17:10 | ERR | 425557 |
| Cobalt | 6020A | 1 | 0.21 | 1.0 | **6.99** | | mg/Kg | 07/25/17 | 17:10 | ERR | 425557 |
| Copper | 6020A | 1 | 0.17 | 2.5 | **28.3** | | mg/Kg | 07/25/17 | 17:10 | ERR | 425557 |
| Lead | 6020A | 1 | 0.054 | 1.0 | **30.2** | | mg/Kg | 07/25/17 | 17:10 | ERR | 425557 |
| Molybdenum | 6020A | 1 | 0.13 | 1.0 | **0.212** | J | mg/Kg | 07/25/17 | 17:10 | ERR | 425557 |
| Nickel | 6020A | 1 | 1.2 | 5.0 | **12.9** | | mg/Kg | 07/25/17 | 17:10 | ERR | 425557 |
| Selenium | 6020A | 1 | 0.035 | 2.5 | ND | | mg/Kg | 07/25/17 | 17:10 | ERR | 425557 |
| Silver | 6020A | 1 | 0.098 | 1.0 | ND | | mg/Kg | 07/25/17 | 17:10 | ERR | 425557 |
| Thallium | 6020A | 1 | 1.00 | 5.0 | ND | | mg/Kg | 07/25/17 | 17:10 | ERR | 425557 |
| Vanadium | 6020A | 1 | 0.28 | 25 | **29.1** | | mg/Kg | 07/25/17 | 17:10 | ERR | 425557 |
| Zinc | 6020A | 1 | 0.70 | 2.5 | **33.3** | | mg/Kg | 07/25/17 | 17:10 | ERR | 425557 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-14 (0-0.5) | **Lab Sample ID:** | 1707122-020A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:46 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 4:10:00PM |
| **Prep Batch ID:** | 8336 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 6020A | 10 | 1.7 | 2.0 | **86.1** | | mg/Kg | 07/26/17 | 17:24 | ERR | 425682 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-14 (0-0.5) | **Lab Sample ID:** | 1707122-020A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:46 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/21/17 | 6:15:00PM |
| **Prep Batch ID:** | 8446 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **0.440** | | % | 07/21/17 | 18:15 | PH | 425657 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.00** | | - | 07/21/17 | 18:15 | PH | 425657 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-15 (0-0.5) | **Lab Sample ID:** | 1707122-021A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:56 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 7471BP | **Prep Batch Date/Time:** | 7/21/17 | 5:10:00PM |
| **Prep Batch ID:** | 8337 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.11 | 0.69 | ND | | mg/Kg | 07/25/17 | 12:20 | BJAY | 425633 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-15 (0-0.5) | **Lab Sample ID:** | 1707122-021A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:56 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 4:10:00PM |
| **Prep Batch ID:** | 8336 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Antimony | 6020A | 1 | 0.18 | 1.5 | **0.462** | J | mg/Kg | 07/25/17 | 17:26 | ERR | 425557 |
| Arsenic | 6020A | 1 | 0.30 | 1.5 | **17.4** | | mg/Kg | 07/25/17 | 17:26 | ERR | 425557 |
| Beryllium | 6020A | 1 | 0.23 | 1.5 | **0.326** | J | mg/Kg | 07/25/17 | 17:26 | ERR | 425557 |
| Cadmium | 6020A | 1 | 0.12 | 1.5 | **0.183** | J | mg/Kg | 07/25/17 | 17:26 | ERR | 425557 |
| Chromium | 6020A | 1 | 0.14 | 1.5 | **50.8** | | mg/Kg | 07/25/17 | 17:26 | ERR | 425557 |
| Cobalt | 6020A | 1 | 0.31 | 1.5 | **12.7** | | mg/Kg | 07/25/17 | 17:26 | ERR | 425557 |
| Copper | 6020A | 1 | 0.25 | 3.7 | **28.4** | | mg/Kg | 07/25/17 | 17:26 | ERR | 425557 |
| Lead | 6020A | 1 | 0.078 | 1.5 | **42.9** | | mg/Kg | 07/25/17 | 17:26 | ERR | 425557 |
| Molybdenum | 6020A | 1 | 0.19 | 1.5 | **0.668** | J | mg/Kg | 07/25/17 | 17:26 | ERR | 425557 |
| Nickel | 6020A | 1 | 1.8 | 7.3 | **24.1** | | mg/Kg | 07/25/17 | 17:26 | ERR | 425557 |
| Selenium | 6020A | 1 | 0.050 | 3.7 | ND | | mg/Kg | 07/25/17 | 17:26 | ERR | 425557 |
| Silver | 6020A | 1 | 0.14 | 1.5 | ND | | mg/Kg | 07/25/17 | 17:26 | ERR | 425557 |
| Thallium | 6020A | 1 | 1.5 | 7.3 | ND | | mg/Kg | 07/25/17 | 17:26 | ERR | 425557 |
| Vanadium | 6020A | 1 | 0.41 | 37 | **61.7** | | mg/Kg | 07/25/17 | 17:26 | ERR | 425557 |
| Zinc | 6020A | 1 | 1.0 | 3.7 | **69.7** | | mg/Kg | 07/25/17 | 17:26 | ERR | 425557 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-15 (0-0.5) | **Lab Sample ID:** | 1707122-021A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:56 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 4:10:00PM |
| **Prep Batch ID:** | 8336 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 6020A | 10 | 2.4 | 2.9 | **128** | | mg/Kg | 07/26/17 | 17:30 | ERR | 425682 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-15 (0-0.5) | **Lab Sample ID:** | 1707122-021A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:56 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/21/17 | 6:45:00PM |
| **Prep Batch ID:** | 8347 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **27.2** | | % | 07/21/17 | 18:45 | PH | 425559 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.37** | | - | 07/21/17 | 18:45 | PH | 425559 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-16 (0-0.5) | **Lab Sample ID:** | 1707122-022A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 11:27 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 7471BP | **Prep Batch Date/Time:** | 7/21/17 | 5:10:00PM |
| **Prep Batch ID:** | 8337 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.088 | 0.53 | ND | | mg/Kg | 07/25/17 | 12:22 | BJAY | 425633 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-16 (0-0.5) | **Lab Sample ID:** | 1707122-022A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 11:27 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 4:10:00PM |
| **Prep Batch ID:** | 8336 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Antimony | 6020A | 1 | 0.13 | 1.1 | **0.468** | J | mg/Kg | 07/25/17 | 17:35 | ERR | 425557 |
| Arsenic | 6020A | 1 | 0.23 | 1.1 | **17.0** | | mg/Kg | 07/25/17 | 17:35 | ERR | 425557 |
| Barium | 6020A | 1 | 0.90 | 1.1 | **43.3** | | mg/Kg | 07/25/17 | 17:35 | ERR | 425557 |
| Beryllium | 6020A | 1 | 0.17 | 1.1 | **0.193** | J | mg/Kg | 07/25/17 | 17:35 | ERR | 425557 |
| Cadmium | 6020A | 1 | 0.090 | 1.1 | **0.150** | J | mg/Kg | 07/25/17 | 17:35 | ERR | 425557 |
| Cobalt | 6020A | 1 | 0.23 | 1.1 | **19.5** | | mg/Kg | 07/25/17 | 17:35 | ERR | 425557 |
| Copper | 6020A | 1 | 0.18 | 2.7 | **60.2** | | mg/Kg | 07/25/17 | 17:35 | ERR | 425557 |
| Molybdenum | 6020A | 1 | 0.14 | 1.1 | **0.416** | J | mg/Kg | 07/25/17 | 17:35 | ERR | 425557 |
| Nickel | 6020A | 1 | 1.3 | 5.4 | **55.8** | | mg/Kg | 07/25/17 | 17:35 | ERR | 425557 |
| Selenium | 6020A | 1 | 0.037 | 2.7 | ND | | mg/Kg | 07/25/17 | 17:35 | ERR | 425557 |
| Silver | 6020A | 1 | 0.11 | 1.1 | ND | | mg/Kg | 07/25/17 | 17:35 | ERR | 425557 |
| Thallium | 6020A | 1 | 1.1 | 5.4 | ND | | mg/Kg | 07/25/17 | 17:35 | ERR | 425557 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-16 (0-0.5) | **Lab Sample ID:** | 1707122-022A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 11:27 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 4:10:00PM |
| **Prep Batch ID:** | 8336 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chromium | 6020A | 25 | 0.52 | 5.4 | **92.1** | | mg/Kg | 07/26/17 | 17:35 | ERR | 425682 |
| Lead | 6020A | 25 | 0.29 | 5.4 | **121** | | mg/Kg | 07/26/17 | 17:35 | ERR | 425682 |
| Vanadium | 6020A | 25 | 1.5 | 140 | **144** | | mg/Kg | 07/26/17 | 17:35 | ERR | 425682 |
| Zinc | 6020A | 25 | 3.8 | 14 | **99.2** | | mg/Kg | 07/26/17 | 17:35 | ERR | 425682 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-16 (0-0.5) | **Lab Sample ID:** | 1707122-022A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 11:27 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/21/17 | 6:45:00PM |
| **Prep Batch ID:** | 8347 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **5.57** | | % | 07/21/17 | 18:45 | PH | 425559 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.06** | | - | 07/21/17 | 18:45 | PH | 425559 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-16 (2.5-3) | **Lab Sample ID:** | 1707122-023A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 11:39 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/20/17 | 11:40:00AM |
| **Prep Batch ID:** | 8276 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 6020A | 1 | 0.23 | 1.1 | **14.9** | | mg/Kg | 07/20/17 | 18:03 | ERR | 425519 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-16 (2.5-3) | **Lab Sample ID:** | 1707122-023A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 11:39 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/21/17 | 6:45:00PM |
| **Prep Batch ID:** | 8347 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **10.8** | | % | 07/21/17 | 18:45 | PH | 425559 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.12** | | - | 07/21/17 | 18:45 | PH | 425559 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-17 (0-0.5) | **Lab Sample ID:** | 1707122-024A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:53 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 7471BP | **Prep Batch Date/Time:** | 7/21/17 | 5:10:00PM |
| **Prep Batch ID:** | 8337 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.084 | 0.51 | ND | | mg/Kg | 07/25/17 | 12:24 | BJAY | 425633 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-17 (0-0.5) | **Lab Sample ID:** | 1707122-024A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:53 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 4:10:00PM |
| **Prep Batch ID:** | 8336 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Antimony | 6020A | 1 | 0.13 | 1.1 | **0.350** | J | mg/Kg | 07/25/17 | 18:00 | ERR | 425557 |
| Arsenic | 6020A | 1 | 0.23 | 1.1 | **13.3** | | mg/Kg | 07/25/17 | 18:00 | ERR | 425557 |
| Beryllium | 6020A | 1 | 0.17 | 1.1 | **0.188** | J | mg/Kg | 07/25/17 | 18:00 | ERR | 425557 |
| Cadmium | 6020A | 1 | 0.091 | 1.1 | **0.170** | J | mg/Kg | 07/25/17 | 18:00 | ERR | 425557 |
| Chromium | 6020A | 1 | 0.11 | 1.1 | **50.1** | | mg/Kg | 07/25/17 | 18:00 | ERR | 425557 |
| Cobalt | 6020A | 1 | 0.23 | 1.1 | **10.0** | | mg/Kg | 07/25/17 | 18:00 | ERR | 425557 |
| Copper | 6020A | 1 | 0.19 | 2.7 | **34.9** | | mg/Kg | 07/25/17 | 18:00 | ERR | 425557 |
| Lead | 6020A | 1 | 0.058 | 1.1 | **35.1** | | mg/Kg | 07/25/17 | 18:00 | ERR | 425557 |
| Molybdenum | 6020A | 1 | 0.14 | 1.1 | **0.770** | J | mg/Kg | 07/25/17 | 18:00 | ERR | 425557 |
| Nickel | 6020A | 1 | 1.4 | 5.5 | **20.7** | | mg/Kg | 07/25/17 | 18:00 | ERR | 425557 |
| Selenium | 6020A | 1 | 0.038 | 2.7 | ND | | mg/Kg | 07/25/17 | 18:00 | ERR | 425557 |
| Silver | 6020A | 1 | 0.11 | 1.1 | ND | | mg/Kg | 07/25/17 | 18:00 | ERR | 425557 |
| Thallium | 6020A | 1 | 1.1 | 5.5 | ND | | mg/Kg | 07/25/17 | 18:00 | ERR | 425557 |
| Vanadium | 6020A | 1 | 0.31 | 27 | **50.5** | | mg/Kg | 07/25/17 | 18:00 | ERR | 425557 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-17 (0-0.5) | **Lab Sample ID:** | 1707122-024A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:53 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 4:10:00PM |
| **Prep Batch ID:** | 8336 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 6020A | 10 | 1.8 | 2.2 | **103** | | mg/Kg | 07/26/17 | 17:40 | ERR | 425682 |
| Zinc | 6020A | 10 | 1.5 | 5.5 | **76.8** | | mg/Kg | 07/26/17 | 17:40 | ERR | 425682 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-17 (0-0.5) | **Lab Sample ID:** | 1707122-024A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:53 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/21/17 | 6:45:00PM |
| **Prep Batch ID:** | 8347 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **1.27** | | % | 07/21/17 | 18:45 | PH | 425559 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.01** | | - | 07/21/17 | 18:45 | PH | 425559 |

Torrent LABORATORY, INC.

# MB Summary Report

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707122 | **Prep Method:** | 6020S-P | **Prep Date:** | 07/20/17 | **Prep Batch:** | 8276 |
| **Matrix:** | Soil | **Analytical Method:** | 6020A | **Analyzed Date:** | 7/20/2017 | **Analytical Batch:** | 425519 |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Lab Qualifier |
|---|---|---|---|---|
| Arsenic | 0.21 | 1.0 | ND | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707122 | **Prep Method:** | 6020S-P | **Prep Date:** | 07/21/17 | **Prep Batch:** | 8321 |
| **Matrix:** | Soil | **Analytical Method:** | 6020A | **Analyzed Date:** | 7/21/2017 | **Analytical Batch:** | 425540 |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Lab Qualifier |
|---|---|---|---|---|
| Antimony | 0.12 | 1.0 | ND | |
| Arsenic | 0.21 | 1.0 | ND | |
| Barium | 0.84 | 1.0 | ND | |
| Beryllium | 0.16 | 1.0 | ND | |
| Cadmium | 0.084 | 1.0 | ND | |
| Chromium | 0.097 | 1.0 | 0.26 | J |
| Cobalt | 0.21 | 1.0 | ND | |
| Copper | 0.17 | 2.5 | ND | |
| Lead | 0.054 | 1.0 | ND | |
| Molybdenum | 0.13 | 1.0 | 0.19 | J |
| Nickel | 1.2 | 5.0 | ND | |
| Selenium | 0.035 | 2.5 | ND | |
| Thallium | 1.00 | 5.0 | ND | |
| Vanadium | 0.28 | 25 | ND | |
| Zinc | 0.70 | 2.5 | ND | |

Torrent LABORATORY, INC.

# MB Summary Report

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707122 | **Prep Method:** | 3546_PCB | **Prep Date:** | 07/21/17 | **Prep Batch:** | 8323 |
| **Matrix:** | Soil | **Analytical Method:** | SW8082A | **Analyzed Date:** | 7/21/2017 | **Analytical Batch:** | 425546 |
| **Units:** | ug/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Lab Qualifier |
|---|---|---|---|---|
| Aroclor1016 | 53 | 100 | ND | |
| Aroclor1221 | 5.0 | 100 | ND | |
| Aroclor1232 | 17 | 100 | ND | |
| Aroclor1242 | 3.0 | 100 | ND | |
| Aroclor1248 | 2.0 | 100 | ND | |
| Aroclor1254 | 2.0 | 100 | ND | |
| Aroclor1260 | 36 | 100 | ND | |
| TCMX (S) | | | 94.0 | |
| DCBP (S) | | | 99.0 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707122 | **Prep Method:** | 6020S-P | **Prep Date:** | 07/21/17 | **Prep Batch:** | 8336 |
| **Matrix:** | Soil | **Analytical Method:** | 6020A | **Analyzed Date:** | 7/25/2017 | **Analytical Batch:** | 425557 |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Lab Qualifier |
|---|---|---|---|---|
| Antimony | 0.12 | 1.0 | 0.19 | J |
| Arsenic | 0.21 | 1.0 | ND | |
| Barium | 0.84 | 1.0 | ND | |
| Beryllium | 0.16 | 1.0 | ND | |
| Cadmium | 0.084 | 1.0 | ND | |
| Chromium | 0.097 | 1.0 | 0.17 | J |
| Cobalt | 0.21 | 1.0 | ND | |
| Copper | 0.17 | 2.5 | ND | |
| Lead | 0.054 | 1.0 | ND | |
| Molybdenum | 0.13 | 1.0 | 0.20 | J |
| Nickel | 1.2 | 5.0 | ND | |
| Selenium | 0.035 | 2.5 | ND | |
| Silver | 0.098 | 1.0 | ND | |
| Thallium | 1.00 | 5.0 | ND | |
| Vanadium | 0.28 | 25 | ND | |
| Zinc | 0.70 | 2.5 | ND | |

Torrent LABORATORY, INC.

# MB Summary Report

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707122 | **Prep Method:** | 7471BP | **Prep Date:** | 07/21/17 | **Prep Batch:** | 8337 |
| **Matrix:** | Soil | **Analytical Method:** | SW7471B | **Analyzed Date:** | 7/25/2017 | **Analytical Batch:** | 425633 |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Lab Qualifier |
|---|---|---|---|---|
| Mercury | 0.083 | 0.50 | ND | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707122 | **Prep Method:** | % Water-P | **Prep Date:** | 07/21/17 | **Prep Batch:** | 8347 |
| **Matrix:** | Soil | **Analytical Method:** | ASTM D2216-90 | **Analyzed Date:** | 7/21/2017 | **Analytical Batch:** | 425559 |
| **Units:** | mg/L | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Lab Qualifier |
|---|---|---|---|---|
| % Moisture | 0.050 | 0.050 | ND | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707122 | **Prep Method:** | 7471BP | **Prep Date:** | 07/21/17 | **Prep Batch:** | 8348 |
| **Matrix:** | Soil | **Analytical Method:** | SW7471B | **Analyzed Date:** | 7/25/2017 | **Analytical Batch:** | 425634 |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Lab Qualifier |
|---|---|---|---|---|
| Mercury | 0.083 | 0.50 | ND | |

Torrent LABORATORY, INC.

# MB Summary Report

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707122 | **Prep Method:** | 3546_OCP | **Prep Date:** | 07/22/17 | **Prep Batch:** | 8352 |
| **Matrix:** | Soil | **Analytical Method:** | SW8081B | **Analyzed Date:** | 7/23/2017 | **Analytical Batch:** | 425641 |
| **Units:** | ug/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Lab Qualifier |
|---|---|---|---|---|
| alpha-BHC | 0.13 | 2.0 | ND | |
| gamma-BHC (Lindane) | 0.16 | 2.0 | ND | |
| beta-BHC | 0.32 | 2.0 | ND | |
| delta-BHC | 0.16 | 2.0 | ND | |
| Heptachlor | 0.11 | 2.0 | ND | |
| Aldrin | 0.20 | 2.0 | ND | |
| Heptachlor Epoxide | 0.078 | 2.0 | ND | |
| gamma-Chlordane | 0.16 | 2.0 | ND | |
| alpha-Chlordane | 0.17 | 2.0 | ND | |
| 4,4-DDE | 0.19 | 2.0 | ND | |
| Endosulfan I | 0.18 | 2.0 | ND | |
| Dieldrin | 0.15 | 2.0 | ND | |
| Endrin | 0.19 | 2.0 | ND | |
| 4,4-DDD | 0.57 | 2.0 | ND | |
| Endosulfan II | 0.58 | 2.0 | ND | |
| 4,4-DDT | 0.13 | 2.0 | ND | |
| Endrin Aldehyde | 0.15 | 2.0 | ND | |
| Methoxychlor | 0.20 | 2.0 | ND | |
| Endosulfan Sulfate | 0.12 | 2.0 | ND | |
| Endrin Ketone | 0.094 | 2.0 | ND | |
| Chlordane | 2.1 | 20 | ND | |
| Toxaphene | 8.5 | 50 | ND | |
| TCMX (S) | | | 92.9 | |
| DCBP (S) | | | 124 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707122 | **Prep Method:** | % Water-P | **Prep Date:** | 07/21/17 | **Prep Batch:** | 8446 |
| **Matrix:** | Soil | **Analytical Method:** | ASTM D2216-90 | **Analyzed Date:** | 7/21/2017 | **Analytical Batch:** | 425657 |
| **Units:** | % | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Lab Qualifier |
|---|---|---|---|---|
| % Moisture | 0.050 | 0.050 | ND | |

Torrent LABORATORY, INC.

# LCS/LCSD Summary Report

*Raw values are used in quality control assessment.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707122 | **Prep Method:** | 6020S-P | **Prep Date:** | 07/20/17 | **Prep Batch:** | 8276 |
| **Matrix:** | Soil | **Analytical Method:** | 6020A | **Analyzed Date:** | 7/20/2017 | **Analytical Batch:** | 425519 |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Spike Conc. | LCS % Recovery | LCSD % Recovery | LCS/LCSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 0.21 | 1.0 | ND | 25 | 90.4 | 98.9 | 8.88 | 80 - 120 | 30 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707122 | **Prep Method:** | 6020S-P | **Prep Date:** | 07/21/17 | **Prep Batch:** | 8321 |
| **Matrix:** | Soil | **Analytical Method:** | 6020A | **Analyzed Date:** | 7/21/2017 | **Analytical Batch:** | 425540 |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Spike Conc. | LCS % Recovery | LCSD % Recovery | LCS/LCSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | 0.12 | 1.0 | ND | 25 | 98.9 | 99.8 | 1.21 | 80 - 120 | 30 | |
| Arsenic | 0.21 | 1.0 | ND | 25 | 93.6 | 94.1 | 0.426 | 80 - 120 | 30 | |
| Barium | 0.84 | 1.0 | ND | 25 | 107 | 107 | 0.375 | 80 - 120 | 30 | |
| Beryllium | 0.16 | 1.0 | ND | 25 | 95.8 | 97.0 | 1.24 | 80 - 120 | 30 | |
| Cadmium | 0.084 | 1.0 | ND | 25 | 99.2 | 99.5 | 0.402 | 80 - 120 | 30 | |
| Chromium | 0.097 | 1.0 | 0.26 | 25 | 104 | 104 | 0.000 | 80 - 120 | 30 | |
| Cobalt | 0.21 | 1.0 | ND | 25 | 102 | 102 | 0.393 | 80 - 120 | 30 | |
| Copper | 0.17 | 2.5 | ND | 25 | 101 | 101 | 0.794 | 80 - 120 | 30 | |
| Lead | 0.054 | 1.0 | ND | 25 | 94.6 | 94.9 | 0.000 | 80 - 120 | 30 | |
| Molybdenum | 0.13 | 1.0 | 0.19 | 25 | 102 | 103 | 1.17 | 80 - 120 | 30 | |
| Nickel | 1.2 | 5.0 | ND | 25 | 103 | 103 | 0.000 | 80 - 120 | 30 | |
| Selenium | 0.035 | 2.5 | ND | 25 | 87.7 | 87.9 | 0.456 | 80 - 120 | 30 | |
| Thallium | 1.00 | 5.0 | ND | 25 | 90.2 | 91.1 | 0.881 | 80 - 120 | 30 | |
| Vanadium | 0.28 | 25 | ND | 25 | 95.2 | 96.4 | 1.25 | 80 - 120 | 30 | |
| Zinc | 0.70 | 2.5 | ND | 25 | 95.9 | 96.9 | 0.830 | 80 - 120 | 30 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707122 | **Prep Method:** | 3546_PCB | **Prep Date:** | 07/21/17 | **Prep Batch:** | 8323 |
| **Matrix:** | Soil | **Analytical Method:** | SW8082A | **Analyzed Date:** | 7/21/2017 | **Analytical Batch:** | 425546 |
| **Units:** | ug/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Spike Conc. | LCS % Recovery | LCSD % Recovery | LCS/LCSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| Aroclor1016 | 53 | 100 | ND | 600 | 108 | 97.5 | 9.76 | 25 - 145 | 30 | |
| Aroclor1260 | 36 | 100 | ND | 600 | 105 | 95.2 | 9.67 | 30 - 145 | 30 | |
| TCMX (S) | | | | 0.10 | 99.0 | 92.0 | | 48 - 125 | | |
| DCBP (S) | | | | 0.10 | 114 | 104 | | 48 - 135 | | |

Torrent LABORATORY, INC.

# LCS/LCSD Summary Report

*Raw values are used in quality control assessment.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707122 | **Prep Method:** | 6020S-P | **Prep Date:** | 07/21/17 | **Prep Batch:** | 8336 |
| **Matrix:** | Soil | **Analytical Method:** | 6020A | **Analyzed Date:** | 7/25/2017 | **Analytical Batch:** | 425557 |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Spike Conc. | LCS % Recovery | LCSD % Recovery | LCS/LCSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | 0.12 | 1.0 | 0.19 | 25 | 98.5 | 97.7 | 0.816 | 80 - 120 | 30 | |
| Arsenic | 0.21 | 1.0 | ND | 25 | 100 | 100 | 0.000 | 80 - 120 | 30 | |
| Barium | 0.84 | 1.0 | ND | 25 | 97.7 | 97.9 | 0.409 | 80 - 120 | 30 | |
| Beryllium | 0.16 | 1.0 | ND | 25 | 99.0 | 99.1 | 0.000 | 80 - 120 | 30 | |
| Cadmium | 0.084 | 1.0 | ND | 25 | 99.7 | 99.9 | 0.401 | 80 - 120 | 30 | |
| Chromium | 0.097 | 1.0 | 0.17 | 25 | 103 | 102 | 0.781 | 80 - 120 | 30 | |
| Cobalt | 0.21 | 1.0 | ND | 25 | 100 | 101 | 0.000 | 80 - 120 | 30 | |
| Copper | 0.17 | 2.5 | ND | 25 | 103 | 103 | 0.778 | 80 - 120 | 30 | |
| Lead | 0.054 | 1.0 | ND | 25 | 105 | 106 | 0.760 | 80 - 120 | 30 | |
| Molybdenum | 0.13 | 1.0 | 0.20 | 25 | 101 | 101 | 0.000 | 80 - 120 | 30 | |
| Nickel | 1.2 | 5.0 | ND | 25 | 101 | 101 | 0.398 | 80 - 120 | 30 | |
| Selenium | 0.035 | 2.5 | ND | 25 | 102 | 103 | 0.781 | 80 - 120 | 30 | |
| Silver | 0.098 | 1.0 | ND | 25 | 98.7 | 98.9 | 0.000 | 80 - 120 | 30 | |
| Thallium | 1.00 | 5.0 | ND | 25 | 104 | 105 | 0.000 | 80 - 120 | 30 | |
| Vanadium | 0.28 | 25 | ND | 25 | 98.8 | 98.8 | 0.000 | 80 - 120 | 30 | |
| Zinc | 0.70 | 2.5 | ND | 25 | 101 | 102 | 0.000 | 80 - 120 | 30 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707122 | **Prep Method:** | 7471BP | **Prep Date:** | 07/21/17 | **Prep Batch:** | 8337 |
| **Matrix:** | Soil | **Analytical Method:** | SW7471B | **Analyzed Date:** | 7/25/2017 | **Analytical Batch:** | 425633 |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Spike Conc. | LCS % Recovery | LCSD % Recovery | LCS/LCSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.047 | 0.50 | ND | 1.25 | 111 | 111 | 0.000 | 80 - 120 | 30 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707122 | **Prep Method:** | 7471BP | **Prep Date:** | 07/21/17 | **Prep Batch:** | 8348 |
| **Matrix:** | Soil | **Analytical Method:** | SW7471B | **Analyzed Date:** | 7/25/2017 | **Analytical Batch:** | 425634 |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Spike Conc. | LCS % Recovery | LCSD % Recovery | LCS/LCSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.047 | 0.50 | ND | 1.25 | 105 | 104 | 1.53 | 80 - 120 | 30 | |

Torrent LABORATORY, INC.

# LCS/LCSD Summary Report

*Raw values are used in quality control assessment.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707122 | **Prep Method:** | 3546_OCP | **Prep Date:** | 07/22/17 | **Prep Batch:** | 8352 |
| **Matrix:** | Soil | **Analytical Method:** | SW8081B | **Analyzed Date:** | 7/23/2017 | **Analytical Batch:** | 425641 |
| **Units:** | ug/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Spike Conc. | LCS % Recovery | LCSD % Recovery | LCS/LCSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| gamma-BHC (Lindane) | 0.16 | 2.0 | ND | 40 | 104 | 106 | 0.952 | 25 - 135 | 30 | |
| Heptachlor | 0.11 | 2.0 | ND | 40 | 99.4 | 101 | 1.00 | 40 - 130 | 30 | |
| Aldrin | 0.20 | 2.0 | ND | 40 | 104 | 105 | 0.955 | 25 - 140 | 30 | |
| Dieldrin | 0.15 | 2.0 | ND | 40 | 98.9 | 101 | 2.01 | 60 - 130 | 30 | |
| Endrin | 0.19 | 2.0 | ND | 40 | 91.9 | 94.0 | 2.15 | 55 - 135 | 30 | |
| 4,4-DDT | 0.13 | 2.0 | ND | 40 | 89.4 | 93.3 | 4.38 | 45 - 140 | 30 | |
| TCMX (S) | | | | 130 | 88.6 | 89.5 | | 48 - 125 | | |
| DCBP (S) | | | | 130 | 107 | 113 | | 38 - 135 | | |

Torrent LABORATORY, INC.

# MS/MSD Summary Report

*Raw values are used in quality control assessment.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707122 | **Prep Method:** | 6020S-P | **Prep Date:** | 07/21/17 | **Prep Batch:** | 8321 |
| **Matrix:** | **Soil** | **Analytical Method:** | 6020A | **Analyzed Date:** | July 21 | **Analytical Batch:** | 425540 |
| **Spiked Sample:** | 1707122-001A | | | | | | |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Sample Conc. | Spike Conc. | MS % Recovery | MSD % Recovery | MS/MSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | 0.12 | 1.0 | ND | 25 | 98.2 | 99.0 | 1.22 | 30.7 - 130 | 33 | |
| Arsenic | 0.21 | 1.0 | 3.35 | 25 | 88.1 | 89.4 | 1.17 | 71.0 - 121 | 33 | |
| Barium | 0.84 | 1.0 | 24.8 | 25 | 89.4 | 92.2 | 1.47 | 70.2 - 130 | 33 | |
| Beryllium | 0.16 | 1.0 | ND | 25 | 86.3 | 86.2 | 0.464 | 73.3 - 125 | 33 | |
| Cadmium | 0.084 | 1.0 | ND | 25 | 99.9 | 101 | 0.797 | 88.7 - 110 | 33 | |
| Chromium | 0.097 | 1.0 | 19.1 | 25 | 81.2 | 89.8 | 5.43 | 76.0 - 116 | 33 | |
| Cobalt | 0.21 | 1.0 | 4.19 | 25 | 91.7 | 93.0 | 1.10 | 57.4 - 122 | 33 | |
| Copper | 0.17 | 2.5 | 13.3 | 25 | 80.7 | 86.2 | 4.09 | 74.8 - 119 | 33 | |
| Lead | 0.054 | 1.0 | 5.33 | 25 | 82.7 | 84.0 | 1.15 | 57.9 - 118 | 33 | |
| Molybdenum | 0.13 | 1.0 | ND | 25 | 103 | 103 | 0.388 | 62.9 - 123 | 33 | |
| Nickel | 1.2 | 5.0 | 9.80 | 25 | 83.0 | 89.2 | 5.11 | 61.5 - 122 | 33 | |
| Selenium | 0.035 | 2.5 | ND | 25 | 86.3 | 88.1 | 1.83 | 62.0 - 111 | 33 | |
| Silver | 0.098 | 1.0 | ND | 25 | 36.8 | 37.1 | 0.758 | 81.1 - 109 | 33 | S |
| Thallium | 1.00 | 5.0 | ND | 25 | 83.8 | 84.4 | 0.943 | 39.2 - 125 | 33 | |
| Vanadium | 0.28 | 25 | ND | 25 | 86.8 | 94.1 | 4.10 | 65.8 - 122 | 33 | |
| Zinc | 0.70 | 2.5 | 20.3 | 25 | 81.0 | 83.2 | 1.22 | 59.9 - 122 | 33 | |

Torrent LABORATORY, INC.

# MS/MSD Summary Report

*Raw values are used in quality control assessment.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707122 | **Prep Method:** | 6020S-P | **Prep Date:** | 07/21/17 | **Prep Batch:** | 8336 |
| **Matrix:** | **Soil** | **Analytical Method:** | 6020A | **Analyzed Date:** | July 25 | **Analytical Batch:** | 425557 |
| **Spiked Sample:** | 1707122-019A | | | | | | |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Sample Conc. | Spike Conc. | MS % Recovery | MSD % Recovery | MS/MSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | 0.12 | 1.0 | ND | 25 | 92.2 | 90.4 | 2.19 | 30.7 - 130 | 33 | |
| Arsenic | 0.21 | 1.0 | 4.64 | 25 | 103 | 94.5 | 7.16 | 71.0 - 121 | 33 | |
| Barium | 0.84 | 1.0 | 68.7 | 25 | 134 | 57.7 | 20.4 | 70.2 - 130 | 33 | S |
| Beryllium | 0.16 | 1.0 | ND | 25 | 81.1 | 79.2 | 2.49 | 73.3 - 125 | 33 | |
| Cadmium | 0.084 | 1.0 | ND | 25 | 100 | 95.6 | 4.90 | 88.7 - 110 | 33 | |
| Chromium | 0.097 | 1.0 | 20.9 | 25 | 136 | 116 | 9.56 | 76.0 - 116 | 33 | S |
| Cobalt | 0.21 | 1.0 | 5.78 | 25 | 99.0 | 90.4 | 7.13 | 57.4 - 122 | 33 | |
| Copper | 0.17 | 2.5 | 18.8 | 25 | 108 | 87.9 | 11.8 | 74.8 - 119 | 33 | |
| Lead | 0.054 | 1.0 | 13.1 | 25 | 112 | 100 | 7.56 | 57.9 - 118 | 33 | |
| Molybdenum | 0.13 | 1.0 | ND | 25 | 97.0 | 95.0 | 1.67 | 62.9 - 123 | 33 | |
| Nickel | 1.2 | 5.0 | 10.0 | 25 | 104 | 93.4 | 7.79 | 61.5 - 122 | 33 | |
| Selenium | 0.035 | 2.5 | ND | 25 | 94.0 | 90.5 | 3.90 | 62.0 - 111 | 33 | |
| Silver | 0.098 | 1.0 | ND | 25 | 93.0 | 90.1 | 3.49 | 81.1 - 109 | 33 | |
| Thallium | 1.00 | 5.0 | ND | 25 | 90.0 | 87.8 | 2.70 | 39.2 - 125 | 33 | |
| Vanadium | 0.28 | 25 | 25.0 | 25 | 137 | 107 | 13.3 | 65.8 - 122 | 33 | S |
| Zinc | 0.70 | 2.5 | 23.1 | 25 | 128 | 109 | 8.93 | 59.9 - 122 | 33 | S |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707122 | **Prep Method:** | 7471BP | **Prep Date:** | 07/21/17 | **Prep Batch:** | 8337 |
| **Matrix:** | **Soil** | **Analytical Method:** | SW7471B | **Analyzed Date:** | 7/25/2017 | **Analytical Batch:** | 425633 |
| **Spiked Sample:** | 1707122-019A | | | | | | |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Sample Conc. | Spike Conc. | MS % Recovery | MSD % Recovery | MS/MSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.047 | 0.50 | ND | 1.25 | 108 | 112 | 2.88 | 75 - 125 | 30 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707122 | **Prep Method:** | 7471BP | **Prep Date:** | 07/21/17 | **Prep Batch:** | 8348 |
| **Matrix:** | **Soil** | **Analytical Method:** | SW7471B | **Analyzed Date:** | 7/25/2017 | **Analytical Batch:** | 425634 |
| **Spiked Sample:** | 1707122-001A | | | | | | |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Sample Conc. | Spike Conc. | MS % Recovery | MSD % Recovery | MS/MSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.047 | 0.50 | ND | 1.25 | 114 | 106 | 7.94 | 75 - 125 | 30 | |

Torrent LABORATORY, INC.

# Duplicate QC Summary Report

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707122 | **Prep Method:** | % Water-P | **Prep Date:** | 7/21/2017 | **Prep Batch:** | 8446 |
| **Matrix:** | | **Analytical Method:** | ASTM D2216-90 | **Analyzed Date:** | 07/21/17 | **Analytical Batch:** | 425657 |
| **Units:** | | | | | | **Lab Sample ID:** | 1707122-001A-DUP-8446 |

| Parameters | MDL | PQL | Sample Result | Duplicate Result | % RPD |
|---|---|---|---|---|---|
| % Moisture | 0.050 | 0.0500 | 29.5 | 33.1 | 11.50 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707122 | **Prep Method:** | % Water-P | **Prep Date:** | 7/21/2017 | **Prep Batch:** | 8446 |
| **Matrix:** | | **Analytical Method:** | ASTM D2216-90 | **Analyzed Date:** | 07/21/17 | **Analytical Batch:** | 425657 |
| **Units:** | | | | | | **Lab Sample ID:** | 1707122-011A-DUP-8446 |

| Parameters | MDL | PQL | Sample Result | Duplicate Result | % RPD |
|---|---|---|---|---|---|
| % Moisture | 0.050 | 0.0500 | 16.8 | 19.6 | 15.40 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707122 | **Prep Method:** | % Water-P | **Prep Date:** | 7/21/2017 | **Prep Batch:** | 8347 |
| **Matrix:** | | **Analytical Method:** | ASTM D2216-90 | **Analyzed Date:** | 07/21/17 | **Analytical Batch:** | 425559 |
| **Units:** | | | | | | **Lab Sample ID:** | 1707122-021A-DUP-8347 |

| Parameters | MDL | PQL | Sample Result | Duplicate Result | % RPD |
|---|---|---|---|---|---|
| % Moisture | 0.050 | 0.0500 | 27.2 | 24.2 | 11.70 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707122 | **Prep Method:** | 6020S-P | **Prep Date:** | 7/20/2017 | **Prep Batch:** | 8276 |
| **Matrix:** | | **Analytical Method:** | 6020A | **Analyzed Date:** | 07/20/17 | **Analytical Batch:** | 425519 |
| **Units:** | | | | | | **Lab Sample ID:** | 1707122-023A-DUP-8276 |

| Parameters | MDL | PQL | Sample Result | Duplicate Result | % RPD |
|---|---|---|---|---|---|
| Arsenic | 0.23 | 1.1 | 14.9 | 13.2 | 12.00 |

# Laboratory Qualifiers and Definitions

## DEFINITIONS:

| |
|---|
| **Accuracy/Bias (% Recovery)** - The closeness of agreement between an observed value and an accepted reference value. |
| **Blank (Method/Preparation Blank)** -MB/PB - An analyte-free matrix to which all reagents are added in the same volumes/proportions as used in sample processing. The method blank is used to document contamination resulting from the analytical process. |
| **Duplicate** - a field sample and/or laboratory QC sample prepared in duplicate following all of the same processes and procedures used on the original sample (sample duplicate, LCSD, MSD) |
| **Laboratory Control Sample (LCS ad LCSD)** - A known matrix spiked with compounds representative of the target analyte(s). This is used to document laboratory performance. |
| **Matrix** - the component or substrate that contains the analyte of interest (e.g., - groundwater, sediment, soil, waste water, etc) |
| **Matrix Spike (MS/MSD)** - Client sample spiked with identical concentrations of target analyte (s). The spiking occurs prior to the sample preparation and analysis. They are used to document the precision and bias of a method in a given sample matrix. |
| **Method Detection Limit (MDL)** - the minimum concentration of a substance that can be measured and reported with a 99% confidence that the analyte concentration is greater than zero |
| **Practical Quantitation Limit/Reporting Limit/Limit of Quantitation (PQL/RL/LOQ)** - a laboratory determined value at 2 to 5 times above the MDL that can be reproduced in a manner that results in a 99% confidence level that the result is both accurate and precise. PQLs/RLs/LODs reflect all preparation factors and/or dilution factors that have been applied to the sample during the preparation and/or analytical processes. |
| **Precision (%RPD)** - The agreement among a set of replicate/duplicate measurements without regard to known value of the replicates |
| **Surrogate (S) or (Surr)** - An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples. Surrogates are used in most organic analysis to demonstrate matrix compatibility with the chosen method of analysis |
| **Tentatively Identified Compound (TIC) -** A compound not contained within the analytical calibration standards but present in the GCMS library of defined compounds. When the library is searched for an unknown compound, it can frequently give a tentative identification to the compound based on retention time and primary and secondary ion match. TICs are reported as estimates and are candidates for further investigation. |
| **Units:** the unit of measure used to express the reported result - **mg/L** and ***mg/Kg*** (equivalent to PPM - parts per million in **liquid** and ***solid***), **ug/L** and ***ug/Kg*** (equivalent to PPB - parts per billion in **liquid** and ***solid***), **ug/m3**, ***mg/m3***, **ppbv** and ***ppmv*** (all units of measure for reporting concentrations in air), **%** ( equivalent to 10000 ppm or 1,000,000 ppb), **ug/Wipe** ( concentration found on the surface of a single Wipe usually taken over a 100cm2 surface) |

## LABORATORY QUALIFIERS:

**B** - Indicates when the analyte is found in the associated method or preparation blank
**D** - Surrogate is not recoverable due to the necessary dilution of the sample
**E** - Indicates the reportable value is outside of the calibration range of the instrument but within the linear range of the instrument (unless otherwise noted) Values reported with an E qualifier should be considered as estimated.
**H**- Indicates that the recommended holding time for the analyte or compound has been exceeded
**J**- Indicates a value between the method MDL and PQL and that the reported concentration should be considered as estimated rather the quantitative
**NA** - Not Analyzed
**N/A** - Not Applicable
**ND** - Not Detected at a concentration greater than the PQL/RL or, if reported to the MDL, at greater than the MDL.
**NR** - Not recoverable - a matrix spike concentration is not recoverable due to a concentration within the original sample that is greater than four times the spike concentration added
**R**- The % RPD between a duplicate set of samples is outside of the absolute values established by laboratory control charts
**S**- Spike recovery is outside of established method and/or laboratory control limits. Further explanation of the use of this qualifier should be included within a case narrative
**X** -Used to indicate that a value based on pattern identification is within the pattern range but not typical of the pattern found in standards. Further explanation may or may not be provided within the sample footnote and/or the case narrative.

# Sample Receipt Checklist

Client Name: Cornerstone(Walnut Creek)

Project Name: 3141 Taylor Road

Work Order No.: 1707122

Date and Time Received: 7/19/2017 1:35:00PM

Received By: Helena Ueng

Physically Logged By: Helena Ueng

Checklist Completed By:

Carrier Name: First Courier

**Chain of Custody (COC) Information**

| | |
|---|---|
| Chain of custody present? | Yes |
| Chain of custody signed when relinquished and received? | Yes |
| Chain of custody agrees with sample labels? | Yes |
| Custody seals intact on sample bottles? | Not Present |

**Sample Receipt Information**

| | |
|---|---|
| Custody seals intact on shipping container/cooler? | Not Present |
| Shipping Container/Cooler In Good Condition? | Yes |
| Samples in proper container/bottle? | Yes |
| Samples containers intact? | Yes |
| Sufficient sample volume for indicated test? | Yes |

**Sample Preservation and Hold Time (HT) Information**

| | | | | |
|---|---|---|---|---|
| All samples received within holding time? | Yes | | | |
| Container/Temp Blank temperature in compliance? | Yes | Temperature: | 1.0 | °C |
| Water-VOA vials have zero headspace? | | | | |
| Water-pH acceptable upon receipt? | N/A | | | |

pH Checked by: N/A

pH Adjusted by: N/A

**Comments:**

# Login Summary Report

| | | | | |
|---|---|---|---|---|
| **Client ID:** | TL5508 | Cornerstone(Walnut Creek) | **QC Level:** | II |
| **Project Name:** | 3141 Taylor Road | | **TAT Requested:** | 5+ day:5 |
| **Project # :** | 411-16-3 | | **Date Received:** | 7/19/2017 |
| **Report Due Date:** | 7/26/2017 | | **Time Received:** | 1:35 pm |

**Comments:**

**Work Order # :** ***1707122***

| WO Sample ID | Client Sample ID | Collection Date/Time | Matrix | Scheduled Disposal | Sample On Hold | Test On Hold | Requested Tests | Subbed |
|---|---|---|---|---|---|---|---|---|
| 1707122-001A | SS-101 (0-0.5) | 07/18/17 13:01 | Soil | 01/15/18 | | | PMOIST<br>Pest_S_8081OCP<br>Met_S_6020CAM17<br>Hg_S_7471B | |
| **Sample Note:** | Metals by 6020, need to be reported to the MDL to meet RL of 0.5 mg/kg<br><br>OCPs--need RLs of 2 ppb (40 ppb for Chlordane). Avoid diluting. | | | | | | | |
| 1707122-002A | SS-102 (0-0.5) | 07/18/17 13:02 | Soil | 01/15/18 | | | PCBs_S_8082A<br>Met_S_6020CAM17<br>Pest_S_8081OCP<br>Hg_S_7471B<br>PMOIST | |
| **Sample Note:** | PCBs--need RL of 50 ppb | | | | | | | |
| 1707122-003A | SS-1 (0-0.5) | 07/18/17 14:26 | Soil | 01/15/18 | | | PMOIST<br>Met_S_6020CAM17<br>Hg_S_7471B | |
| 1707122-004A | SS-2 (0-0.5) | 07/18/17 14:23 | Soil | 01/15/18 | | | PMOIST<br>Met_S_6020CAM17<br>Hg_S_7471B | |
| 1707122-005A | SS-3 (0-0.5) | 07/18/17 16:18 | Soil | 01/15/18 | | | PMOIST<br>Met_S_6020CAM17<br>Hg_S_7471B | |
| 1707122-006A | SS-4 (0-0.5) | 07/18/17 13:12 | Soil | 01/15/18 | | | PMOIST<br>Met_S_6020CAM17<br>Hg_S_7471B | |
| 1707122-007A | SS-4 (2.5-3) | 07/18/17 13:17 | Soil | 01/15/18 | | | PMOIST<br>Met_S_6020AsPb | |
| **Sample Note:** | 6020-Arsenic only | | | | | | | |
| 1707122-008A | SS-5 (0-0.5) | 07/18/17 12:50 | Soil | 01/15/18 | | | | |

# Login Summary Report

**Client ID:** TL5508 Cornerstone(Walnut Creek)

**Project Name:** 3141 Taylor Road

**Project # :** 411-16-3

**Report Due Date:** 7/26/2017

**QC Level:** II

**TAT Requested:** 5+ day:5

**Date Received:** 7/19/2017

**Time Received:** 1:35 pm

**Comments:**

**Work Order # :** ***1707122***

| WO Sample ID | Client Sample ID | Collection Date/Time | Matrix | Scheduled Disposal | Sample On Hold | Test On Hold | Requested Tests | Subbed |
|---|---|---|---|---|---|---|---|---|
| 1707122-009A | SS-6 (0-0.5) | 07/18/17 12:14 | Soil | 01/15/18 | | | PMOIST<br>Met_S_6020CAM17<br>Hg_S_7471B | |
| 1707122-010A | SS-6 (2.5-3) | 07/18/17 12:20 | Soil | 01/15/18 | | | PMOIST<br>Met_S_6020CAM17<br>Hg_S_7471B | |
| 1707122-011A | SS-7 (0-0.5) | 07/18/17 12:45 | Soil | 01/15/18 | | | PMOIST<br>Met_S_6020AsPb | |
| 1707122-012A | SS-9 (0-0.5) | 07/18/17 10:07 | Soil | 01/15/18 | | | PMOIST<br>Met_S_6020CAM17<br>Hg_S_7471B | |
| 1707122-013A | SS-8 (0-0.5) | 07/18/17 10:54 | Soil | 01/15/18 | | | PMOIST<br>Met_S_6020CAM17<br>Hg_S_7471B | |
| 1707122-014A | SS-8 (2.5-3) | 07/18/17 10:58 | Soil | 01/15/18 | | | PMOIST<br>Met_S_6020CAM17<br>Hg_S_7471B | |
| 1707122-015A | SS-10 (0-0.5) | 07/18/17 9:55 | Soil | 01/15/18 | | | PMOIST<br>Met_S_6020AsPb | |
| 1707122-016A | SS-11 (0-0.5) | 07/18/17 8:55 | Soil | 01/15/18 | | | PMOIST<br>Met_S_6020CAM17<br>Hg_S_7471B | |
| 1707122-017A | SS-12 (0-0.5) | 07/18/17 9:25 | Soil | 01/15/18 | | | PMOIST<br>Met_S_6020CAM17<br>Hg_S_7471B | |

# Login Summary Report

| | | | | |
|---|---|---|---|---|
| **Client ID:** | TL5508 | Cornerstone(Walnut Creek) | **QC Level:** | II |
| **Project Name:** | 3141 Taylor Road | | **TAT Requested:** | 5+ day:5 |
| **Project # :** | 411-16-3 | | **Date Received:** | 7/19/2017 |
| **Report Due Date:** | 7/26/2017 | | **Time Received:** | 1:35 pm |

**Comments:**

**Work Order # :** ***1707122***

| WO Sample ID | Client Sample ID | Collection Date/Time | Matrix | Scheduled Disposal | Sample On Hold | Test On Hold | Requested Tests | Subbed |
|---|---|---|---|---|---|---|---|---|
| 1707122-018A | SS-12 (2.5-3) | 07/18/17 9:30 | Soil | 01/15/18 | | | PMOIST<br>Met_S_6020AsPb | |
| 1707122-019A | SS-13 (0-0.5) | 07/18/17 10:33 | Soil | 01/15/18 | | | Hg_S_7471B<br>Met_S_6020CAM17<br>PMOIST | |
| 1707122-020A | SS-14 (0-0.5) | 07/18/17 10:46 | Soil | 01/15/18 | | | Hg_S_7471B<br>Met_S_6020CAM17<br>PMOIST | |
| 1707122-021A | SS-15 (0-0.5) | 07/18/17 10:56 | Soil | 01/15/18 | | | PMOIST<br>Met_S_6020CAM17<br>Hg_S_7471B | |
| 1707122-022A | SS-16 (0-0.5) | 07/18/17 11:27 | Soil | 01/15/18 | | | PMOIST<br>Met_S_6020CAM17<br>Hg_S_7471B | |
| 1707122-023A | SS-16 (2.5-3) | 07/18/17 11:39 | Soil | 01/15/18 | | | PMOIST<br>Met_S_6020AsPb | |
| 1707122-024A | SS-17 (0-0.5) | 07/18/17 12:53 | Soil | 01/15/18 | | | PMOIST<br>Hg_S_7471B<br>Met_S_6020CAM17 | |

Torrent LABORATORY, INC.

CORNERSTONE EARTH GROUP

# Chain of Custody Record

1707122

| | | | |
|---|---|---|---|
| Cornerstone Earth Group, Inc. | Project Manager: Peter Langtry | Site Sampler: BMJ KAK | Date: 7/18/17 |
| | Tel/Fax: 925-988-9500 ext. 217 | Lab Contact: Kathie Evans | Lab: Torrent Laboratory, Inc. |
| 1270 Springbrook Rd | Analysis Turnaround Time | | |
| Walnut Creek, CA 94597 | | | |
| (925)-988-9500 Phone | TAT if different from Below _____ | | |
| (925)-988-9501 FAX | ☐ 1 week | | |
| Project Name: 3141 Taylor Rd | ■ 3 days | | |
| Site: Loomis, CA | ☐ 2 days | | |
| Project Number: 411-16-3 | ☐ 1 day | | |

COC No: 1 of 6 COCs

Laboratory's Job No.

| | Sample Identification | Sample Date | Sample Time | Sample Type | Matrix | # of Cont. | Filtered Sample | Arsenic (EPA 6020) | CAM17 (EPA 6020) | OCPs (EPA 8081) | PCBs (EPA 8082) | HOLD | Laboratory's Sample Specific Notes: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -001A | SS-101 (0-0.5) | 7/18/17 | 01:01 | Liner | Sol | 1 | | | X | X | | | |
| -002A | SS-102 (0-0.5) | | 01:02 | | | | | | X | X | X | | |
| -003A | SS-1 (0-0.5) | | 14:26 | | | | | | X | | | | |
| -004A | SS-2 (0-0.5) | | 14:23 | | | | | | X | | | | |
| -005A | SS-3 (0-0.5) | | 16:18 | | | | | | X | | | | |
| -006A | SS-4 (0-0.5) | | 13:12 | | | | | | X | | | | |
| -007A | SS-4 (2.5-3) | | 13:17 | | | | | X | | | | | |
| -008A | SS-5 (0-0.5) | | 12:50 | | | | | | X | | | | |
| -009A | SS-6 (0-0.5) | | 12:14 | | | | | | X | | | | |
| -010A | SS-6 (2.5-3) | | 12:20 | | | | | X | ~~X~~ PCBs | | | | Arsenic Only |
| -011A | SS-7 (0-0.5) | | 12:45 | | | | | | X | | | | |
| -012A | SS-9 (0-0.5) | | 10:07 | | | | | | X | | | | |

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

**Possible Hazard Identification**

☐ Non-Hazardous ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

**Sample Disposal**

☐ Return to Client ☐ Disposal by Lab ☐ Archive For _____ Months

**Special Instructions/QC Requirements & Comments: If additional sample is needed, please use the liner.**

Please CC: Brent Johnson, bjohnson@cornerstoneearth.com, with results

Please report all soil analyses on dry weight basis.

| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
|---|---|---|---|---|---|
| [signature] | Cornerstone Earth Group | 7/19/17 11:30 | [signature] | 1st CLASS | 7/19 11:30 |
| [signature] | 1st CLASS | 7/19/17 1:35 | [signature] | Torrent | 7/19/17 13:35 |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |

PCS Temp = 1°C #1

Torrent LABORATORY, INC.

CORNERSTONE EARTH GROUP

# Chain of Custody Record

1707122

| | | | |
|---|---|---|---|
| Cornerstone Earth Group, Inc. | Project Manager: Peter Langtry | Site Sampler: BMJ / KAK | Date: 7/18/17 |
| | Tel/Fax: 925-988-9500 ext. 217 | Lab Contact: Kathie Evans | Lab: Torrent Laboratory, Inc. |
| 1270 Springbrook Rd | Analysis Turnaround Time | | |
| Walnut Creek, CA 94597 | | | |
| (925)-988-9500 Phone | TAT if different from Below _____ | | |
| (925)-988-9501 FAX | ☐ 1 week | | |
| Project Name: 3141 Taylor Rd | ■ 3 days | | |
| Site: Loomis, CA | ☐ 2 days | | |
| Project Number: 411-16-3 | ☐ 1 day | | |

COC No: 2 of 6 COCs

Laboratory's Job No.

| | Sample Identification | Sample Date | Sample Time | Sample Type | Matrix | # of Cont. | Filtered Sample | Arsenic (EPA 6020) | CAM17 (EPA 6020) | OCPs (EPA 8081) | PCBs (EPA 8082) | HOLD | Laboratory's Sample Specific Notes: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -013A | SS-8 (0-0.5) | 7/18/17 | 10:54 | Liner | Soil | 1 | | | X | | | | |
| -014A | SS-8 (2.5-3) | | 10:58 | | | | | X | | | | | |
| -015A | SS-~~9~~ BJ 10 (0-0.5) | | 09:55 | | | | | | X | | | | |
| -016A | SS-11 (0-0.5) | | 08:55 | | | | | | X | | | | |
| -017A | SS-12 (0-0.5) | | 09:25 | | | | | | X | | | | |
| -018A | SS-12 (2.5-3) | | 09:30 | | | | | X | | | | | |
| -019A | SS-13 (0-0.5) | | 10:33 | | | | | | X | | | | |
| -020A | SS-14 (0-0.5) | | 10:46 | | | | | | X | | | | |
| -021A | SS-15 (0-0.5) | | 10:56 | | | | | | X | | | | |
| -022A | SS-16 (0-0.5) | | 11:27 | | | | | | X | | | | |
| -023A | SS-16 (BJ 2.5-3) | | 11:39 | | | | | X | | | | | |
| -024A | SS-17 (0-0.5) | | 12:53 | | | | | | X | | | | |

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other 1

*Possible Hazard Identification*

☐ Non-Hazardous ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

*Sample Disposal*

☐ *Return to Client* ☐ *Disposal by Lab* ☐ *Archive For* _____ *Months*

**Special Instructions/QC Requirements & Comments: If additional sample is needed, please use the liner.**

Please CC: Brent Johnson, bjohnson@cornerstoneearth.com, with results

Please report all soil analyses on dry weight basis

| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
|---|---|---|---|---|---|
| [signature] | Cornerstone Earth Group | 7/19/17 11:30 | Derek | 1st Class | 7/19 1130 |
| Relinquished by: Derek | Company: 1st Class | Date/Time: 7/19/17 | Received by: 1:35 [signature] | Company: Torrent | Date/Time: 7/19/17 13:35 |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |

FCS Temp=1°C #1

Cornerstone(Walnut Creek)
1270 Springbrook Rd., Ste. 101
Walnut Creek, California 94597
Tel: 925 988 9500
Fax: 925 988 9501

RE: 3141 Taylor Road

Work Order No.: 1707122

Dear Peter Langtry:

Torrent Laboratory, Inc. received 24 sample(s) on July 19, 2017 for the analyses presented in the following Report.

All data for associated QC met EPA or laboratory specification(s) except where noted in the case narrative.

Torrent Laboratory, Inc. is certified by the State of California, ELAP #1991. If you have any questions regarding these test results, please feel free to contact the Project Management Team at (408)263-5258; ext 204.

Patti L Sandrock
QA Officer

July 27, 2017
Date

**Date:** 7/27/2017

**Client:** Cornerstone(Walnut Creek)

**Project:** 3141 Taylor Road

**Work Order:** 1707122

## CASE NARRATIVE

No issues encountered with the receiving, preparation, analysis or reporting of the results associated with this work order.

Unless otherwise indicated in the following narrative, no results have been method and/or field blank corrected.

Reported results relate only to the items/samples tested by the laboratory.

This report shall not be reproduced, except in full, without the written approval of Torrent Analytical, Inc.

Data is reported as dry weight. Where necessary, results are reported to the MDL to meet client reporting limits of 0.5 mg/kg for metals, 50 ug/kg for PCBs and 2 ug/kg for Pesticides (40 ug/kg for Toxaphene and Chlordane).

Analytical Comments for method _Met_S_6020CAM17, 1707122-001A MS/MSD, QC Analytical Preparation ID 8321, Note:The % recoveries for Silver are outside of laboratory control limits but % RPD is within limits. The associated LCS/LCSD is within both % Recovery and %RPD limits. No corrective action required.

Analytical Comments for method _Met_S_6020CAM17, 1707122-019A MS/MSD, QC Analytical Preparation ID 8336, Note:The % recoveries for Silver, Barium, Chromium, Vanadium and Zinc are outside of laboratory control limits but % RPD is within limits. The associated LCS/LCSD is within both % Recovery and %RPD limits. No corrective action required.

Torrent LABORATORY, INC.

# Sample Result Summary

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date Received:** 07/19/17
**Date Reported:** 07/27/17

**SS-101 (0-0.5)** 1707122-001

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Arsenic | 6020A | 1 | 0.21 | 1.0 | 3.35 | mg/Kg |
| Barium | 6020A | 1 | 0.84 | 1.0 | 24.8 | mg/Kg |
| Chromium | 6020A | 1 | 0.097 | 1.0 | 19.1 | mg/Kg |
| Cobalt | 6020A | 1 | 0.21 | 1.0 | 4.19 | mg/Kg |
| Copper | 6020A | 1 | 0.17 | 2.5 | 13.3 | mg/Kg |
| Lead | 6020A | 1 | 0.054 | 1.0 | 5.33 | mg/Kg |
| Nickel | 6020A | 1 | 1.2 | 5.0 | 9.80 | mg/Kg |
| Vanadium | 6020A | 1 | 0.28 | 25 | 21.3 | mg/Kg |
| Zinc | 6020A | 1 | 0.70 | 2.5 | 20.3 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 29.5 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.42 | % |
| 4,4-DDE | SW8081B | 3 | 0.83 | 8.5 | 37.8 | ug/Kg |
| 4,4-DDT | SW8081B | 3 | 0.55 | 8.5 | 3.01 | ug/Kg |

**SS-102 (0-0.5)** 1707122-002

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Antimony | 6020A | 1 | 0.12 | 1.0 | 0.356 | mg/Kg |
| Arsenic | 6020A | 1 | 0.21 | 1.0 | 8.49 | mg/Kg |
| Beryllium | 6020A | 1 | 0.16 | 1.0 | 0.172 | mg/Kg |
| Cadmium | 6020A | 1 | 0.084 | 1.0 | 0.165 | mg/Kg |
| Chromium | 6020A | 1 | 0.097 | 1.0 | 23.7 | mg/Kg |
| Cobalt | 6020A | 1 | 0.21 | 1.0 | 6.07 | mg/Kg |
| Copper | 6020A | 1 | 0.17 | 2.5 | 22.9 | mg/Kg |
| Lead | 6020A | 1 | 0.054 | 1.0 | 38.9 | mg/Kg |
| Molybdenum | 6020A | 1 | 0.13 | 1.0 | 0.846 | mg/Kg |
| Nickel | 6020A | 1 | 1.2 | 5.0 | 13.8 | mg/Kg |
| Vanadium | 6020A | 1 | 0.28 | 25 | 40.7 | mg/Kg |
| Barium | 6020A | 10 | 1.7 | 2.0 | 87.5 | mg/Kg |
| Zinc | 6020A | 10 | 1.4 | 5.0 | 112 | mg/Kg |
| Silver | 6020A | 1 | 0.11 | 1.1 | 0.250 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 7.89 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.09 | % |
| 4,4-DDE | SW8081B | 3 | 0.63 | 6.5 | 45.2 | ug/Kg |
| 4,4-DDT | SW8081B | 3 | 0.42 | 6.5 | 12.5 | ug/Kg |

Torrent LABORATORY, INC.

# Sample Result Summary

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date Received:** 07/19/17
**Date Reported:** 07/27/17

**SS-1 (0-0.5)** 1707122-003

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Antimony | 6020A | 1 | 0.12 | 1.0 | 0.165 | mg/Kg |
| Arsenic | 6020A | 1 | 0.21 | 1.0 | 9.54 | mg/Kg |
| Barium | 6020A | 1 | 0.84 | 1.0 | 59.7 | mg/Kg |
| Cadmium | 6020A | 1 | 0.084 | 1.0 | 0.102 | mg/Kg |
| Chromium | 6020A | 1 | 0.097 | 1.0 | 28.3 | mg/Kg |
| Cobalt | 6020A | 1 | 0.21 | 1.0 | 6.78 | mg/Kg |
| Copper | 6020A | 1 | 0.17 | 2.5 | 23.1 | mg/Kg |
| Lead | 6020A | 1 | 0.054 | 1.0 | 17.6 | mg/Kg |
| Molybdenum | 6020A | 1 | 0.13 | 1.0 | 0.252 | mg/Kg |
| Nickel | 6020A | 1 | 1.2 | 5.0 | 13.6 | mg/Kg |
| Vanadium | 6020A | 1 | 0.28 | 25 | 30.5 | mg/Kg |
| Zinc | 6020A | 1 | 0.70 | 2.5 | 39.9 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 28.4 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.40 | % |

**SS-2 (0-0.5)** 1707122-004

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Antimony | 6020A | 1 | 0.12 | 1.0 | 0.322 | mg/Kg |
| Arsenic | 6020A | 1 | 0.21 | 1.0 | 12.2 | mg/Kg |
| Beryllium | 6020A | 1 | 0.16 | 1.0 | 0.173 | mg/Kg |
| Cadmium | 6020A | 1 | 0.084 | 1.0 | 0.156 | mg/Kg |
| Chromium | 6020A | 1 | 0.097 | 1.0 | 45.9 | mg/Kg |
| Cobalt | 6020A | 1 | 0.21 | 1.0 | 9.20 | mg/Kg |
| Copper | 6020A | 1 | 0.17 | 2.5 | 32.1 | mg/Kg |
| Lead | 6020A | 1 | 0.054 | 1.0 | 32.8 | mg/Kg |
| Molybdenum | 6020A | 1 | 0.13 | 1.0 | 0.706 | mg/Kg |
| Nickel | 6020A | 1 | 1.2 | 5.0 | 19.0 | mg/Kg |
| Vanadium | 6020A | 1 | 0.28 | 25 | 46.4 | mg/Kg |
| Zinc | 6020A | 1 | 0.70 | 2.5 | 68.4 | mg/Kg |
| Barium | 6020A | 1 | 1.1 | 1.3 | 81.9 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 25.5 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.34 | % |

Torrent LABORATORY, INC.

# Sample Result Summary

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date Received:** 07/19/17
**Date Reported:** 07/27/17

**SS-3 (0-0.5)** 1707122-005

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Antimony | 6020A | 1 | 0.19 | 1.6 | 0.238 | mg/Kg |
| Arsenic | 6020A | 1 | 0.33 | 1.6 | 16.3 | mg/Kg |
| Barium | 6020A | 1 | 1.3 | 1.6 | 76.9 | mg/Kg |
| Chromium | 6020A | 1 | 0.15 | 1.6 | 42.3 | mg/Kg |
| Cobalt | 6020A | 1 | 0.33 | 1.6 | 11.0 | mg/Kg |
| Copper | 6020A | 1 | 0.27 | 3.9 | 35.4 | mg/Kg |
| Lead | 6020A | 1 | 0.084 | 1.6 | 26.6 | mg/Kg |
| Molybdenum | 6020A | 1 | 0.20 | 1.6 | 0.462 | mg/Kg |
| Nickel | 6020A | 1 | 2.0 | 7.9 | 19.9 | mg/Kg |
| Vanadium | 6020A | 1 | 0.44 | 39 | 50.4 | mg/Kg |
| Zinc | 6020A | 1 | 1.1 | 3.9 | 53.4 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 36.5 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.57 | % |

**SS-4 (0-0.5)** 1707122-006

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Antimony | 6020A | 1 | 0.12 | 1.0 | 0.220 | mg/Kg |
| Arsenic | 6020A | 1 | 0.21 | 1.0 | 14.8 | mg/Kg |
| Beryllium | 6020A | 1 | 0.16 | 1.0 | 0.164 | mg/Kg |
| Cadmium | 6020A | 1 | 0.084 | 1.0 | 0.105 | mg/Kg |
| Chromium | 6020A | 1 | 0.098 | 1.0 | 32.6 | mg/Kg |
| Cobalt | 6020A | 1 | 0.21 | 1.0 | 8.47 | mg/Kg |
| Copper | 6020A | 1 | 0.17 | 2.5 | 31.9 | mg/Kg |
| Lead | 6020A | 1 | 0.054 | 1.0 | 31.0 | mg/Kg |
| Molybdenum | 6020A | 1 | 0.13 | 1.0 | 0.373 | mg/Kg |
| Nickel | 6020A | 1 | 1.3 | 5.1 | 14.4 | mg/Kg |
| Vanadium | 6020A | 1 | 0.28 | 25 | 36.4 | mg/Kg |
| Zinc | 6020A | 1 | 0.71 | 2.5 | 34.7 | mg/Kg |
| Barium | 6020A | 10 | 1.7 | 2.0 | 72.3 | mg/Kg |
| Silver | 6020A | 1 | 0.099 | 1.0 | 0.406 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 1.21 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.01 | % |

**SS-4 (2.5-3)** 1707122-007

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Arsenic | 6020A | 1 | 0.28 | 1.3 | 16.1 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 25.6 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.34 | % |

Torrent LABORATORY, INC.

# Sample Result Summary

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date Received:** 07/19/17
**Date Reported:** 07/27/17

**SS-5 (0-0.5)** 1707122-008

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Antimony | 6020A | 1 | 0.12 | 1.0 | 0.154 | mg/Kg |
| Arsenic | 6020A | 1 | 0.21 | 1.0 | 8.60 | mg/Kg |
| Chromium | 6020A | 1 | 0.098 | 1.0 | 22.3 | mg/Kg |
| Cobalt | 6020A | 1 | 0.21 | 1.0 | 5.69 | mg/Kg |
| Copper | 6020A | 1 | 0.17 | 2.5 | 21.6 | mg/Kg |
| Lead | 6020A | 1 | 0.054 | 1.0 | 32.1 | mg/Kg |
| Molybdenum | 6020A | 1 | 0.13 | 1.0 | 0.146 | mg/Kg |
| Nickel | 6020A | 1 | 1.3 | 5.1 | 10.4 | mg/Kg |
| Vanadium | 6020A | 1 | 0.28 | 25 | 24.3 | mg/Kg |
| Zinc | 6020A | 1 | 0.71 | 2.5 | 25.2 | mg/Kg |
| Barium | 6020A | 10 | 1.7 | 2.0 | 71.3 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 0.680 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.01 | % |

**SS-6 (0-0.5)** 1707122-009

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Antimony | 6020A | 1 | 0.15 | 1.3 | 0.233 | mg/Kg |
| Arsenic | 6020A | 1 | 0.26 | 1.3 | 11.4 | mg/Kg |
| Cadmium | 6020A | 1 | 0.10 | 1.3 | 0.147 | mg/Kg |
| Chromium | 6020A | 1 | 0.12 | 1.3 | 34.3 | mg/Kg |
| Cobalt | 6020A | 1 | 0.26 | 1.3 | 8.90 | mg/Kg |
| Copper | 6020A | 1 | 0.21 | 3.1 | 29.7 | mg/Kg |
| Lead | 6020A | 1 | 0.067 | 1.3 | 31.2 | mg/Kg |
| Molybdenum | 6020A | 1 | 0.16 | 1.3 | 0.298 | mg/Kg |
| Nickel | 6020A | 1 | 1.6 | 6.3 | 18.4 | mg/Kg |
| Vanadium | 6020A | 1 | 0.35 | 31 | 40.8 | mg/Kg |
| Zinc | 6020A | 1 | 0.88 | 3.1 | 42.2 | mg/Kg |
| Barium | 6020A | 10 | 2.1 | 2.5 | 79.9 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 19.9 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.25 | % |

**SS-6 (2.5-3)** 1707122-010

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Arsenic | 6020A | 1 | 0.24 | 1.1 | 6.38 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 12.1 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.14 | % |

Torrent LABORATORY, INC.

# Sample Result Summary

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date Received:** 07/19/17
**Date Reported:** 07/27/17

**SS-7 (0-0.5)** 1707122-011

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Antimony | 6020A | 1 | 0.14 | 1.2 | 0.197 | mg/Kg |
| Arsenic | 6020A | 1 | 0.25 | 1.2 | 8.04 | mg/Kg |
| Cadmium | 6020A | 1 | 0.10 | 1.2 | 0.109 | mg/Kg |
| Chromium | 6020A | 1 | 0.12 | 1.2 | 30.7 | mg/Kg |
| Cobalt | 6020A | 1 | 0.25 | 1.2 | 7.79 | mg/Kg |
| Copper | 6020A | 1 | 0.20 | 3.0 | 31.1 | mg/Kg |
| Lead | 6020A | 1 | 0.064 | 1.2 | 28.0 | mg/Kg |
| Molybdenum | 6020A | 1 | 0.16 | 1.2 | 0.250 | mg/Kg |
| Nickel | 6020A | 1 | 1.5 | 6.0 | 14.5 | mg/Kg |
| Vanadium | 6020A | 1 | 0.34 | 30 | 34.3 | mg/Kg |
| Zinc | 6020A | 1 | 0.84 | 3.0 | 34.0 | mg/Kg |
| Barium | 6020A | 10 | 2.0 | 2.4 | 91.3 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 16.8 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.20 | % |

**SS-9 (0-0.5)** 1707122-012

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Antimony | 6020A | 1 | 0.16 | 1.4 | 0.167 | mg/Kg |
| Arsenic | 6020A | 1 | 0.28 | 1.4 | 13.5 | mg/Kg |
| Cadmium | 6020A | 1 | 0.11 | 1.4 | 0.124 | mg/Kg |
| Chromium | 6020A | 1 | 0.13 | 1.4 | 34.1 | mg/Kg |
| Cobalt | 6020A | 1 | 0.28 | 1.4 | 8.98 | mg/Kg |
| Copper | 6020A | 1 | 0.23 | 3.4 | 44.2 | mg/Kg |
| Lead | 6020A | 1 | 0.072 | 1.4 | 56.0 | mg/Kg |
| Molybdenum | 6020A | 1 | 0.18 | 1.4 | 0.265 | mg/Kg |
| Nickel | 6020A | 1 | 1.7 | 6.8 | 17.0 | mg/Kg |
| Vanadium | 6020A | 1 | 0.38 | 34 | 37.9 | mg/Kg |
| Zinc | 6020A | 1 | 0.95 | 3.4 | 42.0 | mg/Kg |
| Barium | 6020A | 10 | 2.3 | 2.7 | 115 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 26.1 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.35 | % |

Torrent LABORATORY, INC.

# Sample Result Summary

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date Received:** 07/19/17
**Date Reported:** 07/27/17

**SS-8 (0-0.5)** 1707122-013

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Antimony | 6020A | 1 | 0.13 | 1.0 | 0.186 | mg/Kg |
| Arsenic | 6020A | 1 | 0.22 | 1.0 | 9.79 | mg/Kg |
| Cadmium | 6020A | 1 | 0.087 | 1.0 | 0.0879 | mg/Kg |
| Chromium | 6020A | 1 | 0.10 | 1.0 | 26.5 | mg/Kg |
| Cobalt | 6020A | 1 | 0.22 | 1.0 | 7.16 | mg/Kg |
| Copper | 6020A | 1 | 0.18 | 2.6 | 31.1 | mg/Kg |
| Lead | 6020A | 1 | 0.056 | 1.0 | 42.4 | mg/Kg |
| Molybdenum | 6020A | 1 | 0.14 | 1.0 | 0.182 | mg/Kg |
| Nickel | 6020A | 1 | 1.3 | 5.2 | 12.7 | mg/Kg |
| Vanadium | 6020A | 1 | 0.29 | 26 | 27.9 | mg/Kg |
| Zinc | 6020A | 1 | 0.73 | 2.6 | 29.0 | mg/Kg |
| Barium | 6020A | 10 | 1.7 | 2.1 | 90.7 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 3.84 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.04 | % |

**SS-8 (2.5-3)** 1707122-014

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Arsenic | 6020A | 1 | 0.26 | 1.2 | 5.70 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 19.2 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.24 | % |

**SS-10 (0-0.5)** 1707122-015

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Antimony | 6020A | 1 | 0.12 | 1.0 | 0.163 | mg/Kg |
| Arsenic | 6020A | 1 | 0.21 | 1.0 | 8.56 | mg/Kg |
| Beryllium | 6020A | 1 | 0.16 | 1.0 | 0.189 | mg/Kg |
| Cadmium | 6020A | 1 | 0.084 | 1.0 | 0.0985 | mg/Kg |
| Cobalt | 6020A | 1 | 0.21 | 1.0 | 10.8 | mg/Kg |
| Copper | 6020A | 1 | 0.17 | 2.5 | 38.8 | mg/Kg |
| Lead | 6020A | 1 | 0.054 | 1.0 | 24.2 | mg/Kg |
| Molybdenum | 6020A | 1 | 0.13 | 1.0 | 0.267 | mg/Kg |
| Nickel | 6020A | 1 | 1.3 | 5.1 | 19.4 | mg/Kg |
| Vanadium | 6020A | 1 | 0.28 | 25 | 48.5 | mg/Kg |
| Zinc | 6020A | 1 | 0.71 | 2.5 | 44.1 | mg/Kg |
| Barium | 6020A | 10 | 1.7 | 2.0 | 114 | mg/Kg |
| Chromium | 6020A | 1 | 0.098 | 1.0 | 40.5 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 1.12 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.01 | % |

Torrent LABORATORY, INC.

# Sample Result Summary

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date Received:** 07/19/17
**Date Reported:** 07/27/17

**SS-11 (0-0.5)** 1707122-016

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Antimony | 6020A | 1 | 0.12 | 1.0 | 0.285 | mg/Kg |
| Arsenic | 6020A | 1 | 0.21 | 1.0 | 8.80 | mg/Kg |
| Beryllium | 6020A | 1 | 0.16 | 1.0 | 0.164 | mg/Kg |
| Cadmium | 6020A | 1 | 0.084 | 1.0 | 0.166 | mg/Kg |
| Cobalt | 6020A | 1 | 0.21 | 1.0 | 7.14 | mg/Kg |
| Copper | 6020A | 1 | 0.17 | 2.5 | 18.5 | mg/Kg |
| Lead | 6020A | 1 | 0.054 | 1.0 | 21.1 | mg/Kg |
| Molybdenum | 6020A | 1 | 0.13 | 1.0 | 0.491 | mg/Kg |
| Nickel | 6020A | 1 | 1.3 | 5.1 | 14.6 | mg/Kg |
| Vanadium | 6020A | 1 | 0.28 | 25 | 37.0 | mg/Kg |
| Zinc | 6020A | 1 | 0.71 | 2.5 | 55.7 | mg/Kg |
| Barium | 6020A | 10 | 1.7 | 2.0 | 108 | mg/Kg |
| Chromium | 6020A | 1 | 0.098 | 1.0 | 24.6 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 1.37 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.01 | % |

**SS-12 (0-0.5)** 1707122-017

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Antimony | 6020A | 1 | 0.15 | 1.2 | 0.160 | mg/Kg |
| Arsenic | 6020A | 1 | 0.25 | 1.2 | 16.6 | mg/Kg |
| Barium | 6020A | 1 | 1.0 | 1.2 | 53.5 | mg/Kg |
| Cobalt | 6020A | 1 | 0.25 | 1.2 | 5.64 | mg/Kg |
| Copper | 6020A | 1 | 0.21 | 3.0 | 12.7 | mg/Kg |
| Lead | 6020A | 1 | 0.065 | 1.2 | 53.1 | mg/Kg |
| Nickel | 6020A | 1 | 1.5 | 6.1 | 9.05 | mg/Kg |
| Vanadium | 6020A | 1 | 0.34 | 30 | 21.5 | mg/Kg |
| Zinc | 6020A | 1 | 0.85 | 3.0 | 21.5 | mg/Kg |
| Chromium | 6020A | 1 | 0.12 | 1.2 | 20.5 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 17.5 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.21 | % |

**SS-12 (2.5-3)** 1707122-018

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Arsenic | 6020A | 1 | 0.22 | 1.1 | 4.43 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 6.33 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.07 | % |

Torrent LABORATORY, INC.

# Sample Result Summary

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date Received:** 07/19/17
**Date Reported:** 07/27/17

**SS-13 (0-0.5)** 1707122-019

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Arsenic | 6020A | 1 | 0.21 | 1.0 | 4.64 | mg/Kg |
| Chromium | 6020A | 1 | 0.097 | 1.0 | 20.9 | mg/Kg |
| Cobalt | 6020A | 1 | 0.21 | 1.0 | 5.78 | mg/Kg |
| Copper | 6020A | 1 | 0.17 | 2.5 | 18.8 | mg/Kg |
| Lead | 6020A | 1 | 0.054 | 1.0 | 13.1 | mg/Kg |
| Nickel | 6020A | 1 | 1.2 | 5.0 | 10.0 | mg/Kg |
| Vanadium | 6020A | 1 | 0.28 | 25 | 25.0 | mg/Kg |
| Zinc | 6020A | 1 | 0.70 | 2.5 | 23.1 | mg/Kg |
| Barium | 6020A | 10 | 1.7 | 2.0 | 70.0 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 0.440 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.00 | % |

**SS-14 (0-0.5)** 1707122-020

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Antimony | 6020A | 1 | 0.12 | 1.0 | 0.188 | mg/Kg |
| Arsenic | 6020A | 1 | 0.21 | 1.0 | 6.88 | mg/Kg |
| Cadmium | 6020A | 1 | 0.084 | 1.0 | 0.115 | mg/Kg |
| Chromium | 6020A | 1 | 0.097 | 1.0 | 28.6 | mg/Kg |
| Cobalt | 6020A | 1 | 0.21 | 1.0 | 6.99 | mg/Kg |
| Copper | 6020A | 1 | 0.17 | 2.5 | 28.3 | mg/Kg |
| Lead | 6020A | 1 | 0.054 | 1.0 | 30.2 | mg/Kg |
| Molybdenum | 6020A | 1 | 0.13 | 1.0 | 0.212 | mg/Kg |
| Nickel | 6020A | 1 | 1.2 | 5.0 | 12.9 | mg/Kg |
| Vanadium | 6020A | 1 | 0.28 | 25 | 29.1 | mg/Kg |
| Zinc | 6020A | 1 | 0.70 | 2.5 | 33.3 | mg/Kg |
| Barium | 6020A | 10 | 1.7 | 2.0 | 86.1 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 0.440 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.00 | % |

Torrent LABORATORY, INC.

# Sample Result Summary

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date Received:** 07/19/17
**Date Reported:** 07/27/17

**SS-15 (0-0.5)** 1707122-021

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Antimony | 6020A | 1 | 0.18 | 1.5 | 0.462 | mg/Kg |
| Arsenic | 6020A | 1 | 0.30 | 1.5 | 17.4 | mg/Kg |
| Beryllium | 6020A | 1 | 0.23 | 1.5 | 0.326 | mg/Kg |
| Cadmium | 6020A | 1 | 0.12 | 1.5 | 0.183 | mg/Kg |
| Chromium | 6020A | 1 | 0.14 | 1.5 | 50.8 | mg/Kg |
| Cobalt | 6020A | 1 | 0.31 | 1.5 | 12.7 | mg/Kg |
| Copper | 6020A | 1 | 0.25 | 3.7 | 28.4 | mg/Kg |
| Lead | 6020A | 1 | 0.078 | 1.5 | 42.9 | mg/Kg |
| Molybdenum | 6020A | 1 | 0.19 | 1.5 | 0.668 | mg/Kg |
| Nickel | 6020A | 1 | 1.8 | 7.3 | 24.1 | mg/Kg |
| Vanadium | 6020A | 1 | 0.41 | 37 | 61.7 | mg/Kg |
| Zinc | 6020A | 1 | 1.0 | 3.7 | 69.7 | mg/Kg |
| Barium | 6020A | 10 | 2.4 | 2.9 | 128 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 27.2 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.37 | % |

**SS-16 (0-0.5)** 1707122-022

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Antimony | 6020A | 1 | 0.13 | 1.1 | 0.468 | mg/Kg |
| Arsenic | 6020A | 1 | 0.23 | 1.1 | 17.0 | mg/Kg |
| Barium | 6020A | 1 | 0.90 | 1.1 | 43.3 | mg/Kg |
| Beryllium | 6020A | 1 | 0.17 | 1.1 | 0.193 | mg/Kg |
| Cadmium | 6020A | 1 | 0.090 | 1.1 | 0.150 | mg/Kg |
| Cobalt | 6020A | 1 | 0.23 | 1.1 | 19.5 | mg/Kg |
| Copper | 6020A | 1 | 0.18 | 2.7 | 60.2 | mg/Kg |
| Molybdenum | 6020A | 1 | 0.14 | 1.1 | 0.416 | mg/Kg |
| Nickel | 6020A | 1 | 1.3 | 5.4 | 55.8 | mg/Kg |
| Chromium | 6020A | 25 | 0.52 | 5.4 | 92.1 | mg/Kg |
| Lead | 6020A | 25 | 0.29 | 5.4 | 121 | mg/Kg |
| Vanadium | 6020A | 25 | 1.5 | 140 | 144 | mg/Kg |
| Zinc | 6020A | 25 | 3.8 | 14 | 99.2 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 5.57 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.06 | % |

**SS-16 (2.5-3)** 1707122-023

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Arsenic | 6020A | 1 | 0.23 | 1.1 | 14.9 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 10.8 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.12 | % |

Torrent LABORATORY, INC.

## Sample Result Summary

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date Received:** 07/19/17
**Date Reported:** 07/27/17

**SS-17 (0-0.5)** 1707122-024

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Antimony | 6020A | 1 | 0.13 | 1.1 | 0.350 | mg/Kg |
| Arsenic | 6020A | 1 | 0.23 | 1.1 | 13.3 | mg/Kg |
| Beryllium | 6020A | 1 | 0.17 | 1.1 | 0.188 | mg/Kg |
| Cadmium | 6020A | 1 | 0.091 | 1.1 | 0.170 | mg/Kg |
| Chromium | 6020A | 1 | 0.11 | 1.1 | 50.1 | mg/Kg |
| Cobalt | 6020A | 1 | 0.23 | 1.1 | 10.0 | mg/Kg |
| Copper | 6020A | 1 | 0.19 | 2.7 | 34.9 | mg/Kg |
| Lead | 6020A | 1 | 0.058 | 1.1 | 35.1 | mg/Kg |
| Molybdenum | 6020A | 1 | 0.14 | 1.1 | 0.770 | mg/Kg |
| Nickel | 6020A | 1 | 1.4 | 5.5 | 20.7 | mg/Kg |
| Vanadium | 6020A | 1 | 0.31 | 27 | 50.5 | mg/Kg |
| Barium | 6020A | 10 | 1.8 | 2.2 | 103 | mg/Kg |
| Zinc | 6020A | 10 | 1.5 | 5.5 | 76.8 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 1.27 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.01 | % |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-101 (0-0.5) | **Lab Sample ID:** | 1707122-001A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 13:01 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 7471BP | **Prep Batch Date/Time:** | 7/21/17 | 5:30:00PM |
| **Prep Batch ID:** | 8348 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.12 | 0.71 | ND | | mg/Kg | 07/25/17 | 11:10 | BJAY | 425634 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-101 (0-0.5) | **Lab Sample ID:** | 1707122-001A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 13:01 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Antimony | 6020A | 1 | 0.12 | 1.0 | ND | | mg/Kg | 07/21/17 | 15:37 | ERR | 425540 |
| Arsenic | 6020A | 1 | 0.21 | 1.0 | **3.35** | | mg/Kg | 07/21/17 | 15:37 | ERR | 425540 |
| Barium | 6020A | 1 | 0.84 | 1.0 | **24.8** | | mg/Kg | 07/21/17 | 15:37 | ERR | 425540 |
| Beryllium | 6020A | 1 | 0.16 | 1.0 | ND | | mg/Kg | 07/21/17 | 15:37 | ERR | 425540 |
| Cadmium | 6020A | 1 | 0.084 | 1.0 | ND | | mg/Kg | 07/21/17 | 15:37 | ERR | 425540 |
| Chromium | 6020A | 1 | 0.097 | 1.0 | **19.1** | | mg/Kg | 07/21/17 | 15:37 | ERR | 425540 |
| Cobalt | 6020A | 1 | 0.21 | 1.0 | **4.19** | | mg/Kg | 07/21/17 | 15:37 | ERR | 425540 |
| Copper | 6020A | 1 | 0.17 | 2.5 | **13.3** | | mg/Kg | 07/21/17 | 15:37 | ERR | 425540 |
| Lead | 6020A | 1 | 0.054 | 1.0 | **5.33** | | mg/Kg | 07/21/17 | 15:37 | ERR | 425540 |
| Molybdenum | 6020A | 1 | 0.13 | 1.0 | ND | | mg/Kg | 07/21/17 | 15:37 | ERR | 425540 |
| Nickel | 6020A | 1 | 1.2 | 5.0 | **9.80** | | mg/Kg | 07/21/17 | 15:37 | ERR | 425540 |
| Selenium | 6020A | 1 | 0.035 | 2.5 | ND | | mg/Kg | 07/21/17 | 15:37 | ERR | 425540 |
| Thallium | 6020A | 1 | 1.00 | 5.0 | ND | | mg/Kg | 07/21/17 | 15:37 | ERR | 425540 |
| Vanadium | 6020A | 1 | 0.28 | 25 | **21.3** | J | mg/Kg | 07/21/17 | 15:37 | ERR | 425540 |
| Zinc | 6020A | 1 | 0.70 | 2.5 | **20.3** | | mg/Kg | 07/21/17 | 15:37 | ERR | 425540 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-101 (0-0.5) | **Lab Sample ID:** | 1707122-001A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 13:01 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Silver | 6020A | 1 | 0.14 | 1.4 | ND | | mg/Kg | 07/25/17 | 12:02 | ERR | 425658 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-101 (0-0.5) | **Lab Sample ID:** | 1707122-001A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 13:01 | | |
| **SDG:** | | | |

| | | | |
|---|---|---|---|
| **Prep Method:** | 3546_OCP | **Prep Batch Date/Time:** | 7/22/17 2:15:00PM |
| **Prep Batch ID:** | 8352 | **Prep Analyst:** | SNARASIMHAN |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| alpha-BHC | SW8081B | 3 | 0.54 | 8.5 | ND | | ug/Kg | 07/26/17 | 22:14 | LA | 425689 |
| gamma-BHC (Lindane) | SW8081B | 3 | 0.68 | 8.5 | ND | | ug/Kg | 07/26/17 | 22:14 | LA | 425689 |
| beta-BHC | SW8081B | 3 | 1.3 | 8.5 | ND | | ug/Kg | 07/26/17 | 22:14 | LA | 425689 |
| delta-BHC | SW8081B | 3 | 0.66 | 8.5 | ND | | ug/Kg | 07/26/17 | 22:14 | LA | 425689 |
| Heptachlor | SW8081B | 3 | 0.45 | 8.5 | ND | | ug/Kg | 07/26/17 | 22:14 | LA | 425689 |
| Aldrin | SW8081B | 3 | 0.83 | 8.5 | ND | | ug/Kg | 07/26/17 | 22:14 | LA | 425689 |
| Heptachlor Epoxide | SW8081B | 3 | 0.33 | 8.5 | ND | | ug/Kg | 07/26/17 | 22:14 | LA | 425689 |
| gamma-Chlordane | SW8081B | 3 | 0.69 | 8.5 | ND | | ug/Kg | 07/26/17 | 22:14 | LA | 425689 |
| alpha-Chlordane | SW8081B | 3 | 0.74 | 8.5 | ND | | ug/Kg | 07/26/17 | 22:14 | LA | 425689 |
| 4,4-DDE | SW8081B | 3 | 0.83 | 8.5 | **37.8** | | ug/Kg | 07/26/17 | 22:14 | LA | 425689 |
| Endosulfan I | SW8081B | 3 | 0.78 | 8.5 | ND | | ug/Kg | 07/26/17 | 22:14 | LA | 425689 |
| Dieldrin | SW8081B | 3 | 0.63 | 8.5 | ND | | ug/Kg | 07/26/17 | 22:14 | LA | 425689 |
| Endrin | SW8081B | 3 | 0.80 | 8.5 | ND | | ug/Kg | 07/26/17 | 22:14 | LA | 425689 |
| 4,4-DDD | SW8081B | 3 | 2.4 | 8.5 | ND | | ug/Kg | 07/26/17 | 22:14 | LA | 425689 |
| Endosulfan II | SW8081B | 3 | 2.5 | 8.5 | ND | | ug/Kg | 07/26/17 | 22:14 | LA | 425689 |
| 4,4-DDT | SW8081B | 3 | 0.55 | 8.5 | **3.01** | J | ug/Kg | 07/26/17 | 22:14 | LA | 425689 |
| Endrin Aldehyde | SW8081B | 3 | 0.64 | 8.5 | ND | | ug/Kg | 07/26/17 | 22:14 | LA | 425689 |
| Methoxychlor | SW8081B | 3 | 0.85 | 8.5 | ND | | ug/Kg | 07/26/17 | 22:14 | LA | 425689 |
| Endosulfan Sulfate | SW8081B | 3 | 0.50 | 8.5 | ND | | ug/Kg | 07/26/17 | 22:14 | LA | 425689 |
| Endrin Ketone | SW8081B | 3 | 0.40 | 8.5 | ND | | ug/Kg | 07/26/17 | 22:14 | LA | 425689 |
| Chlordane | SW8081B | 3 | 9.0 | 85 | ND | | ug/Kg | 07/26/17 | 22:14 | LA | 425689 |
| Toxaphene | SW8081B | 3 | 36 | 210 | ND | | ug/Kg | 07/26/17 | 22:14 | LA | 425689 |
| | | | Acceptance Limits | | | | | | | | |
| TCMX (S) | SW8081B | | 48 - 125 | | **76.4** | | % | 07/26/17 | 22:14 | LA | 425689 |
| DCBP (S) | SW8081B | | 38 - 135 | | **87.0** | | % | 07/26/17 | 22:14 | LA | 425689 |

**NOTE:** Sample diluted due to nature of the matrix (dark, viscous extract)

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-101 (0-0.5) | **Lab Sample ID:** | 1707122-001A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 13:01 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/21/17 | 6:15:00PM |
| **Prep Batch ID:** | 8446 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **29.5** | | % | 07/21/17 | 18:15 | PH | 425657 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.42** | | - | 07/21/17 | 18:15 | PH | 425657 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-102 (0-0.5) | **Lab Sample ID:** | 1707122-002A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 13:02 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 7471BP | **Prep Batch Date/Time:** | 7/21/17 | 5:30:00PM |
| **Prep Batch ID:** | 8348 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.091 | 0.55 | ND | | mg/Kg | 07/25/17 | 11:16 | BJAY | 425634 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-102 (0-0.5) | **Lab Sample ID:** | 1707122-002A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 13:02 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Antimony | 6020A | 1 | 0.12 | 1.0 | **0.356** | J | mg/Kg | 07/21/17 | 16:02 | ERR | 425540 |
| Arsenic | 6020A | 1 | 0.21 | 1.0 | **8.49** | | mg/Kg | 07/21/17 | 16:02 | ERR | 425540 |
| Beryllium | 6020A | 1 | 0.16 | 1.0 | **0.172** | J | mg/Kg | 07/21/17 | 16:02 | ERR | 425540 |
| Cadmium | 6020A | 1 | 0.084 | 1.0 | **0.165** | J | mg/Kg | 07/21/17 | 16:02 | ERR | 425540 |
| Chromium | 6020A | 1 | 0.097 | 1.0 | **23.7** | | mg/Kg | 07/21/17 | 16:02 | ERR | 425540 |
| Cobalt | 6020A | 1 | 0.21 | 1.0 | **6.07** | | mg/Kg | 07/21/17 | 16:02 | ERR | 425540 |
| Copper | 6020A | 1 | 0.17 | 2.5 | **22.9** | | mg/Kg | 07/21/17 | 16:02 | ERR | 425540 |
| Lead | 6020A | 1 | 0.054 | 1.0 | **38.9** | | mg/Kg | 07/21/17 | 16:02 | ERR | 425540 |
| Molybdenum | 6020A | 1 | 0.13 | 1.0 | **0.846** | J | mg/Kg | 07/21/17 | 16:02 | ERR | 425540 |
| Nickel | 6020A | 1 | 1.2 | 5.0 | **13.8** | | mg/Kg | 07/21/17 | 16:02 | ERR | 425540 |
| Selenium | 6020A | 1 | 0.035 | 2.5 | ND | | mg/Kg | 07/21/17 | 16:02 | ERR | 425540 |
| Thallium | 6020A | 1 | 1.00 | 5.0 | ND | | mg/Kg | 07/21/17 | 16:02 | ERR | 425540 |
| Vanadium | 6020A | 1 | 0.28 | 25 | **40.7** | | mg/Kg | 07/21/17 | 16:02 | ERR | 425540 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-102 (0-0.5) | **Lab Sample ID:** | 1707122-002A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 13:02 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Silver | 6020A | 1 | 0.11 | 1.1 | **0.250** | J | mg/Kg | 07/25/17 | 12:16 | ERR | 425658 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-102 (0-0.5) | **Lab Sample ID:** | 1707122-002A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 13:02 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 6020A | 10 | 1.7 | 2.0 | **87.5** | | mg/Kg | 07/21/17 | 19:57 | ERR | 425540 |
| Zinc | 6020A | 10 | 1.4 | 5.0 | **112** | | mg/Kg | 07/21/17 | 19:57 | ERR | 425540 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-102 (0-0.5) | **Lab Sample ID:** | 1707122-002A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 13:02 | | |
| **SDG:** | | | |

| | | | |
|---|---|---|---|
| **Prep Method:** | 3546_PCB | **Prep Batch Date/Time:** | 7/21/17 12:17:00PM |
| **Prep Batch ID:** | 8323 | **Prep Analyst:** | SNARASIMHAN |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Aroclor1016 | SW8082A | 1 | 57 | 110 | ND | | ug/Kg | 07/24/17 | 21:47 | mk | 425625 |
| Aroclor1221 | SW8082A | 1 | 5.4 | 110 | ND | | ug/Kg | 07/24/17 | 21:47 | mk | 425625 |
| Aroclor1232 | SW8082A | 1 | 18 | 110 | ND | | ug/Kg | 07/24/17 | 21:47 | mk | 425625 |
| Aroclor1242 | SW8082A | 1 | 3.2 | 110 | ND | | ug/Kg | 07/24/17 | 21:47 | mk | 425625 |
| Aroclor1248 | SW8082A | 1 | 2.2 | 110 | ND | | ug/Kg | 07/24/17 | 21:47 | mk | 425625 |
| Aroclor1254 | SW8082A | 1 | 2.2 | 110 | ND | | ug/Kg | 07/24/17 | 21:47 | mk | 425625 |
| Aroclor1260 | SW8082A | 1 | 39 | 110 | ND | | ug/Kg | 07/24/17 | 21:47 | mk | 425625 |
| | | | Acceptance Limits | | | | | | | | |
| TCMX (S) | SW8082A | | 48 - 125 | | **87.0** | | % | 07/24/17 | 21:47 | mk | 425625 |
| DCBP (S) | SW8082A | | 48 - 135 | | **78.0** | | % | 07/24/17 | 21:47 | mk | 425625 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-102 (0-0.5) | **Lab Sample ID:** | 1707122-002A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 13:02 | | |
| **SDG:** | | | |

| | | | |
|---|---|---|---|
| **Prep Method:** | 3546_OCP | **Prep Batch Date/Time:** | 7/22/17 2:15:00PM |
| **Prep Batch ID:** | 8352 | **Prep Analyst:** | SNARASIMHAN |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| alpha-BHC | SW8081B | 3 | 0.42 | 6.5 | ND | | ug/Kg | 07/26/17 | 22:30 | LA | 425689 |
| gamma-BHC (Lindane) | SW8081B | 3 | 0.52 | 6.5 | ND | | ug/Kg | 07/26/17 | 22:30 | LA | 425689 |
| beta-BHC | SW8081B | 3 | 1.0 | 6.5 | ND | | ug/Kg | 07/26/17 | 22:30 | LA | 425689 |
| delta-BHC | SW8081B | 3 | 0.51 | 6.5 | ND | | ug/Kg | 07/26/17 | 22:30 | LA | 425689 |
| Heptachlor | SW8081B | 3 | 0.34 | 6.5 | ND | | ug/Kg | 07/26/17 | 22:30 | LA | 425689 |
| Aldrin | SW8081B | 3 | 0.64 | 6.5 | ND | | ug/Kg | 07/26/17 | 22:30 | LA | 425689 |
| Heptachlor Epoxide | SW8081B | 3 | 0.26 | 6.5 | ND | | ug/Kg | 07/26/17 | 22:30 | LA | 425689 |
| gamma-Chlordane | SW8081B | 3 | 0.53 | 6.5 | ND | | ug/Kg | 07/26/17 | 22:30 | LA | 425689 |
| alpha-Chlordane | SW8081B | 3 | 0.57 | 6.5 | ND | | ug/Kg | 07/26/17 | 22:30 | LA | 425689 |
| 4,4-DDE | SW8081B | 3 | 0.63 | 6.5 | **45.2** | | ug/Kg | 07/26/17 | 22:30 | LA | 425689 |
| Endosulfan I | SW8081B | 3 | 0.60 | 6.5 | ND | | ug/Kg | 07/26/17 | 22:30 | LA | 425689 |
| Dieldrin | SW8081B | 3 | 0.48 | 6.5 | ND | | ug/Kg | 07/26/17 | 22:30 | LA | 425689 |
| Endrin | SW8081B | 3 | 0.61 | 6.5 | ND | | ug/Kg | 07/26/17 | 22:30 | LA | 425689 |
| 4,4-DDD | SW8081B | 3 | 1.8 | 6.5 | ND | | ug/Kg | 07/26/17 | 22:30 | LA | 425689 |
| Endosulfan II | SW8081B | 3 | 1.9 | 6.5 | ND | | ug/Kg | 07/26/17 | 22:30 | LA | 425689 |
| 4,4-DDT | SW8081B | 3 | 0.42 | 6.5 | **12.5** | | ug/Kg | 07/26/17 | 22:30 | LA | 425689 |
| Endrin Aldehyde | SW8081B | 3 | 0.49 | 6.5 | ND | | ug/Kg | 07/26/17 | 22:30 | LA | 425689 |
| Methoxychlor | SW8081B | 3 | 0.65 | 6.5 | ND | | ug/Kg | 07/26/17 | 22:30 | LA | 425689 |
| Endosulfan Sulfate | SW8081B | 3 | 0.38 | 6.5 | ND | | ug/Kg | 07/26/17 | 22:30 | LA | 425689 |
| Endrin Ketone | SW8081B | 3 | 0.31 | 6.5 | ND | | ug/Kg | 07/26/17 | 22:30 | LA | 425689 |
| Chlordane | SW8081B | 3 | 6.9 | 65 | ND | | ug/Kg | 07/26/17 | 22:30 | LA | 425689 |
| Toxaphene | SW8081B | 3 | 28 | 160 | ND | | ug/Kg | 07/26/17 | 22:30 | LA | 425689 |
| | | | Acceptance Limits | | | | | | | | |
| TCMX (S) | SW8081B | | 48 - 125 | | **53.9** | | % | 07/26/17 | 22:30 | LA | 425689 |
| DCBP (S) | SW8081B | | 38 - 135 | | **60.7** | | % | 07/26/17 | 22:30 | LA | 425689 |

**NOTE:** Sample diluted due to nature of the matrix (dark, viscous extract)

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-102 (0-0.5) | **Lab Sample ID:** | 1707122-002A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 13:02 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/21/17 | 6:15:00PM |
| **Prep Batch ID:** | 8446 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **7.89** | | % | 07/21/17 | 18:15 | PH | 425657 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.09** | | - | 07/21/17 | 18:15 | PH | 425657 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-1 (0-0.5) | **Lab Sample ID:** | 1707122-003A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 14:26 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 7471BP | **Prep Batch Date/Time:** | 7/21/17 | 5:30:00PM |
| **Prep Batch ID:** | 8348 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.12 | 0.70 | ND | | mg/Kg | 07/25/17 | 11:21 | BJAY | 425634 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-1 (0-0.5) | **Lab Sample ID:** | 1707122-003A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 14:26 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Antimony | 6020A | 1 | 0.12 | 1.0 | **0.165** | J | mg/Kg | 07/21/17 | 16:18 | ERR | 425540 |
| Arsenic | 6020A | 1 | 0.21 | 1.0 | **9.54** | | mg/Kg | 07/21/17 | 16:18 | ERR | 425540 |
| Barium | 6020A | 1 | 0.84 | 1.0 | **59.7** | | mg/Kg | 07/21/17 | 16:18 | ERR | 425540 |
| Beryllium | 6020A | 1 | 0.16 | 1.0 | ND | | mg/Kg | 07/21/17 | 16:18 | ERR | 425540 |
| Cadmium | 6020A | 1 | 0.084 | 1.0 | **0.102** | J | mg/Kg | 07/21/17 | 16:18 | ERR | 425540 |
| Chromium | 6020A | 1 | 0.097 | 1.0 | **28.3** | | mg/Kg | 07/21/17 | 16:18 | ERR | 425540 |
| Cobalt | 6020A | 1 | 0.21 | 1.0 | **6.78** | | mg/Kg | 07/21/17 | 16:18 | ERR | 425540 |
| Copper | 6020A | 1 | 0.17 | 2.5 | **23.1** | | mg/Kg | 07/21/17 | 16:18 | ERR | 425540 |
| Lead | 6020A | 1 | 0.054 | 1.0 | **17.6** | | mg/Kg | 07/21/17 | 16:18 | ERR | 425540 |
| Molybdenum | 6020A | 1 | 0.13 | 1.0 | **0.252** | J | mg/Kg | 07/21/17 | 16:18 | ERR | 425540 |
| Nickel | 6020A | 1 | 1.2 | 5.0 | **13.6** | | mg/Kg | 07/21/17 | 16:18 | ERR | 425540 |
| Selenium | 6020A | 1 | 0.035 | 2.5 | ND | | mg/Kg | 07/21/17 | 16:18 | ERR | 425540 |
| Thallium | 6020A | 1 | 1.00 | 5.0 | ND | | mg/Kg | 07/21/17 | 16:18 | ERR | 425540 |
| Vanadium | 6020A | 1 | 0.28 | 25 | **30.5** | | mg/Kg | 07/21/17 | 16:18 | ERR | 425540 |
| Zinc | 6020A | 1 | 0.70 | 2.5 | **39.9** | | mg/Kg | 07/21/17 | 16:18 | ERR | 425540 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-1 (0-0.5) | **Lab Sample ID:** | 1707122-003A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 14:26 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Silver | 6020A | 1 | 0.14 | 1.4 | ND | | mg/Kg | 07/25/17 | 12:25 | ERR | 425658 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-1 (0-0.5) | **Lab Sample ID:** | 1707122-003A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 14:26 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/21/17 | 6:15:00PM |
| **Prep Batch ID:** | 8446 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **28.4** | | % | 07/21/17 | 18:15 | PH | 425657 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.40** | | - | 07/21/17 | 18:15 | PH | 425657 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-2 (0-0.5) | **Lab Sample ID:** | 1707122-004A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 14:23 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 7471BP | **Prep Batch Date/Time:** | 7/21/17 | 5:30:00PM |
| **Prep Batch ID:** | 8348 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.11 | 0.67 | ND | | mg/Kg | 07/25/17 | 11:29 | BJAY | 425634 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-2 (0-0.5) | **Lab Sample ID:** | 1707122-004A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 14:23 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Antimony | 6020A | 1 | 0.12 | 1.0 | **0.322** | J | mg/Kg | 07/25/17 | 18:00 | ERR | 425540 |
| Arsenic | 6020A | 1 | 0.21 | 1.0 | **12.2** | | mg/Kg | 07/25/17 | 18:00 | ERR | 425540 |
| Beryllium | 6020A | 1 | 0.16 | 1.0 | **0.173** | J | mg/Kg | 07/25/17 | 18:00 | ERR | 425540 |
| Cadmium | 6020A | 1 | 0.084 | 1.0 | **0.156** | J | mg/Kg | 07/25/17 | 18:00 | ERR | 425540 |
| Chromium | 6020A | 1 | 0.097 | 1.0 | **45.9** | | mg/Kg | 07/25/17 | 18:00 | ERR | 425540 |
| Cobalt | 6020A | 1 | 0.21 | 1.0 | **9.20** | | mg/Kg | 07/25/17 | 18:00 | ERR | 425540 |
| Copper | 6020A | 1 | 0.17 | 2.5 | **32.1** | | mg/Kg | 07/25/17 | 18:00 | ERR | 425540 |
| Lead | 6020A | 1 | 0.054 | 1.0 | **32.8** | | mg/Kg | 07/25/17 | 18:00 | ERR | 425540 |
| Molybdenum | 6020A | 1 | 0.13 | 1.0 | **0.706** | J | mg/Kg | 07/25/17 | 18:00 | ERR | 425540 |
| Nickel | 6020A | 1 | 1.2 | 5.0 | **19.0** | | mg/Kg | 07/25/17 | 18:00 | ERR | 425540 |
| Selenium | 6020A | 1 | 0.035 | 2.5 | ND | | mg/Kg | 07/25/17 | 18:00 | ERR | 425540 |
| Thallium | 6020A | 1 | 1.00 | 5.0 | ND | | mg/Kg | 07/25/17 | 18:00 | ERR | 425540 |
| Vanadium | 6020A | 1 | 0.28 | 25 | **46.4** | | mg/Kg | 07/25/17 | 18:00 | ERR | 425540 |
| Zinc | 6020A | 1 | 0.70 | 2.5 | **68.4** | | mg/Kg | 07/25/17 | 18:00 | ERR | 425540 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-2 (0-0.5) | **Lab Sample ID:** | 1707122-004A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 14:23 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Barium | 6020A | 1 | 1.1 | 1.3 | **81.9** | | mg/Kg | 07/25/17 | 12:44 | ERR | 425658 |
| Silver | 6020A | 1 | 0.13 | 1.3 | ND | | mg/Kg | 07/25/17 | 12:44 | ERR | 425658 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-2 (0-0.5) | **Lab Sample ID:** | 1707122-004A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 14:23 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/21/17 | 6:15:00PM |
| **Prep Batch ID:** | 8446 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **25.5** | | % | 07/21/17 | 18:15 | PH | 425657 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.34** | | - | 07/21/17 | 18:15 | PH | 425657 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-3 (0-0.5) | **Lab Sample ID:** | 1707122-005A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 16:18 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 7471BP | **Prep Batch Date/Time:** | 7/21/17 | 5:30:00PM |
| **Prep Batch ID:** | 8348 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.13 | 0.79 | ND | | mg/Kg | 07/25/17 | 11:31 | BJAY | 425634 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-3 (0-0.5) | **Lab Sample ID:** | 1707122-005A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 16:18 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Antimony | 6020A | 1 | 0.19 | 1.6 | **0.238** | J | mg/Kg | 07/21/17 | 17:00 | ERR | 425540 |
| Arsenic | 6020A | 1 | 0.33 | 1.6 | **16.3** | | mg/Kg | 07/21/17 | 17:00 | ERR | 425540 |
| Barium | 6020A | 1 | 1.3 | 1.6 | **76.9** | | mg/Kg | 07/21/17 | 17:00 | ERR | 425540 |
| Beryllium | 6020A | 1 | 0.25 | 1.6 | ND | | mg/Kg | 07/21/17 | 17:00 | ERR | 425540 |
| Cadmium | 6020A | 1 | 0.13 | 1.6 | ND | | mg/Kg | 07/21/17 | 17:00 | ERR | 425540 |
| Chromium | 6020A | 1 | 0.15 | 1.6 | **42.3** | | mg/Kg | 07/21/17 | 17:00 | ERR | 425540 |
| Cobalt | 6020A | 1 | 0.33 | 1.6 | **11.0** | | mg/Kg | 07/21/17 | 17:00 | ERR | 425540 |
| Copper | 6020A | 1 | 0.27 | 3.9 | **35.4** | | mg/Kg | 07/21/17 | 17:00 | ERR | 425540 |
| Lead | 6020A | 1 | 0.084 | 1.6 | **26.6** | | mg/Kg | 07/21/17 | 17:00 | ERR | 425540 |
| Molybdenum | 6020A | 1 | 0.20 | 1.6 | **0.462** | J | mg/Kg | 07/21/17 | 17:00 | ERR | 425540 |
| Nickel | 6020A | 1 | 2.0 | 7.9 | **19.9** | | mg/Kg | 07/21/17 | 17:00 | ERR | 425540 |
| Selenium | 6020A | 1 | 0.054 | 3.9 | ND | | mg/Kg | 07/21/17 | 17:00 | ERR | 425540 |
| Thallium | 6020A | 1 | 1.6 | 7.9 | ND | | mg/Kg | 07/21/17 | 17:00 | ERR | 425540 |
| Vanadium | 6020A | 1 | 0.44 | 39 | **50.4** | | mg/Kg | 07/21/17 | 17:00 | ERR | 425540 |
| Zinc | 6020A | 1 | 1.1 | 3.9 | **53.4** | | mg/Kg | 07/21/17 | 17:00 | ERR | 425540 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-3 (0-0.5) | **Lab Sample ID:** | 1707122-005A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 16:18 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Silver | 6020A | 1 | 0.15 | 1.6 | ND | | mg/Kg | 07/25/17 | 12:48 | ERR | 425658 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-3 (0-0.5) | **Lab Sample ID:** | 1707122-005A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 16:18 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/21/17 | 6:15:00PM |
| **Prep Batch ID:** | 8446 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **36.5** | | % | 07/21/17 | 18:15 | PH | 425657 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.57** | | - | 07/21/17 | 18:15 | PH | 425657 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-4 (0-0.5) | **Lab Sample ID:** | 1707122-006A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 13:12 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 7471BP | **Prep Batch Date/Time:** | 7/21/17 | 5:30:00PM |
| **Prep Batch ID:** | 8348 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.084 | 0.51 | ND | | mg/Kg | 07/25/17 | 11:33 | BJAY | 425634 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-4 (0-0.5) | **Lab Sample ID:** | 1707122-006A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 13:12 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Antimony | 6020A | 1 | 0.12 | 1.0 | **0.220** | J | mg/Kg | 07/21/17 | 17:09 | ERR | 425540 |
| Arsenic | 6020A | 1 | 0.21 | 1.0 | **14.8** | | mg/Kg | 07/21/17 | 17:09 | ERR | 425540 |
| Beryllium | 6020A | 1 | 0.16 | 1.0 | **0.164** | J | mg/Kg | 07/21/17 | 17:09 | ERR | 425540 |
| Cadmium | 6020A | 1 | 0.084 | 1.0 | **0.105** | J | mg/Kg | 07/21/17 | 17:09 | ERR | 425540 |
| Chromium | 6020A | 1 | 0.098 | 1.0 | **32.6** | | mg/Kg | 07/21/17 | 17:09 | ERR | 425540 |
| Cobalt | 6020A | 1 | 0.21 | 1.0 | **8.47** | | mg/Kg | 07/21/17 | 17:09 | ERR | 425540 |
| Copper | 6020A | 1 | 0.17 | 2.5 | **31.9** | | mg/Kg | 07/21/17 | 17:09 | ERR | 425540 |
| Lead | 6020A | 1 | 0.054 | 1.0 | **31.0** | | mg/Kg | 07/21/17 | 17:09 | ERR | 425540 |
| Molybdenum | 6020A | 1 | 0.13 | 1.0 | **0.373** | J | mg/Kg | 07/21/17 | 17:09 | ERR | 425540 |
| Nickel | 6020A | 1 | 1.3 | 5.1 | **14.4** | | mg/Kg | 07/21/17 | 17:09 | ERR | 425540 |
| Selenium | 6020A | 1 | 0.035 | 2.5 | ND | | mg/Kg | 07/21/17 | 17:09 | ERR | 425540 |
| Thallium | 6020A | 1 | 1.0 | 5.1 | ND | | mg/Kg | 07/21/17 | 17:09 | ERR | 425540 |
| Vanadium | 6020A | 1 | 0.28 | 25 | **36.4** | | mg/Kg | 07/21/17 | 17:09 | ERR | 425540 |
| Zinc | 6020A | 1 | 0.71 | 2.5 | **34.7** | | mg/Kg | 07/21/17 | 17:09 | ERR | 425540 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-4 (0-0.5) | **Lab Sample ID:** | 1707122-006A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 13:12 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Silver | 6020A | 1 | 0.099 | 1.0 | **0.406** | J | mg/Kg | 07/25/17 | 12:53 | ERR | 425658 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-4 (0-0.5) | **Lab Sample ID:** | 1707122-006A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 13:12 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 6020A | 10 | 1.7 | 2.0 | **72.3** | | mg/Kg | 07/21/17 | 20:13 | ERR | 425540 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-4 (0-0.5) | **Lab Sample ID:** | 1707122-006A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 13:12 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/21/17 | 6:15:00PM |
| **Prep Batch ID:** | 8446 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **1.21** | | % | 07/21/17 | 18:15 | PH | 425657 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.01** | | - | 07/21/17 | 18:15 | PH | 425657 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-4 (2.5-3) | **Lab Sample ID:** | 1707122-007A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 13:17 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/20/17 | 11:40:00AM |
| **Prep Batch ID:** | 8276 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 6020A | 1 | 0.28 | 1.3 | **16.1** | | mg/Kg | 07/20/17 | 17:37 | ERR | 425519 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-4 (2.5-3) | **Lab Sample ID:** | 1707122-007A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 13:17 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/21/17 | 6:15:00PM |
| **Prep Batch ID:** | 8446 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **25.6** | | % | 07/21/17 | 18:15 | PH | 425657 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.34** | | - | 07/21/17 | 18:15 | PH | 425657 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-5 (0-0.5) | **Lab Sample ID:** | 1707122-008A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:50 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 7471BP | **Prep Batch Date/Time:** | 7/21/17 | 5:30:00PM |
| **Prep Batch ID:** | 8348 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.084 | 0.51 | ND | | mg/Kg | 07/25/17 | 11:35 | BJAY | 425634 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-5 (0-0.5) | **Lab Sample ID:** | 1707122-008A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:50 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Antimony | 6020A | 1 | 0.12 | 1.0 | **0.154** | J | mg/Kg | 07/21/17 | 17:17 | ERR | 425540 |
| Arsenic | 6020A | 1 | 0.21 | 1.0 | **8.60** | | mg/Kg | 07/21/17 | 17:17 | ERR | 425540 |
| Beryllium | 6020A | 1 | 0.16 | 1.0 | ND | | mg/Kg | 07/21/17 | 17:17 | ERR | 425540 |
| Cadmium | 6020A | 1 | 0.084 | 1.0 | ND | | mg/Kg | 07/21/17 | 17:17 | ERR | 425540 |
| Chromium | 6020A | 1 | 0.098 | 1.0 | **22.3** | | mg/Kg | 07/21/17 | 17:17 | ERR | 425540 |
| Cobalt | 6020A | 1 | 0.21 | 1.0 | **5.69** | | mg/Kg | 07/21/17 | 17:17 | ERR | 425540 |
| Copper | 6020A | 1 | 0.17 | 2.5 | **21.6** | | mg/Kg | 07/21/17 | 17:17 | ERR | 425540 |
| Lead | 6020A | 1 | 0.054 | 1.0 | **32.1** | | mg/Kg | 07/21/17 | 17:17 | ERR | 425540 |
| Molybdenum | 6020A | 1 | 0.13 | 1.0 | **0.146** | J | mg/Kg | 07/21/17 | 17:17 | ERR | 425540 |
| Nickel | 6020A | 1 | 1.3 | 5.1 | **10.4** | | mg/Kg | 07/21/17 | 17:17 | ERR | 425540 |
| Selenium | 6020A | 1 | 0.035 | 2.5 | ND | | mg/Kg | 07/21/17 | 17:17 | ERR | 425540 |
| Thallium | 6020A | 1 | 1.0 | 5.1 | ND | | mg/Kg | 07/21/17 | 17:17 | ERR | 425540 |
| Vanadium | 6020A | 1 | 0.28 | 25 | **24.3** | J | mg/Kg | 07/21/17 | 17:17 | ERR | 425540 |
| Zinc | 6020A | 1 | 0.71 | 2.5 | **25.2** | | mg/Kg | 07/21/17 | 17:17 | ERR | 425540 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-5 (0-0.5) | **Lab Sample ID:** | 1707122-008A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:50 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Silver | 6020A | 1 | 0.099 | 1.0 | ND | | mg/Kg | 07/25/17 | 12:58 | ERR | 425658 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-5 (0-0.5) | **Lab Sample ID:** | 1707122-008A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:50 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 6020A | 10 | 1.7 | 2.0 | **71.3** | | mg/Kg | 07/21/17 | 20:22 | ERR | 425540 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-5 (0-0.5) | **Lab Sample ID:** | 1707122-008A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:50 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/21/17 | 6:15:00PM |
| **Prep Batch ID:** | 8446 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **0.680** | | % | 07/21/17 | 18:15 | PH | 425657 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.01** | | - | 07/21/17 | 18:15 | PH | 425657 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-6 (0-0.5) | **Lab Sample ID:** | 1707122-009A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:14 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 7471BP | **Prep Batch Date/Time:** | 7/21/17 | 5:30:00PM |
| **Prep Batch ID:** | 8348 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.10 | 0.63 | ND | | mg/Kg | 07/25/17 | 11:37 | BJAY | 425634 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-6 (0-0.5) | **Lab Sample ID:** | 1707122-009A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:14 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Antimony | 6020A | 1 | 0.15 | 1.3 | **0.233** | J | mg/Kg | 07/21/17 | 17:26 | ERR | 425540 |
| Arsenic | 6020A | 1 | 0.26 | 1.3 | **11.4** | | mg/Kg | 07/21/17 | 17:26 | ERR | 425540 |
| Beryllium | 6020A | 1 | 0.20 | 1.3 | ND | | mg/Kg | 07/21/17 | 17:26 | ERR | 425540 |
| Cadmium | 6020A | 1 | 0.10 | 1.3 | **0.147** | J | mg/Kg | 07/21/17 | 17:26 | ERR | 425540 |
| Chromium | 6020A | 1 | 0.12 | 1.3 | **34.3** | | mg/Kg | 07/21/17 | 17:26 | ERR | 425540 |
| Cobalt | 6020A | 1 | 0.26 | 1.3 | **8.90** | | mg/Kg | 07/21/17 | 17:26 | ERR | 425540 |
| Copper | 6020A | 1 | 0.21 | 3.1 | **29.7** | | mg/Kg | 07/21/17 | 17:26 | ERR | 425540 |
| Lead | 6020A | 1 | 0.067 | 1.3 | **31.2** | | mg/Kg | 07/21/17 | 17:26 | ERR | 425540 |
| Molybdenum | 6020A | 1 | 0.16 | 1.3 | **0.298** | J | mg/Kg | 07/21/17 | 17:26 | ERR | 425540 |
| Nickel | 6020A | 1 | 1.6 | 6.3 | **18.4** | | mg/Kg | 07/21/17 | 17:26 | ERR | 425540 |
| Selenium | 6020A | 1 | 0.043 | 3.1 | ND | | mg/Kg | 07/21/17 | 17:26 | ERR | 425540 |
| Vanadium | 6020A | 1 | 0.35 | 31 | **40.8** | | mg/Kg | 07/21/17 | 17:26 | ERR | 425540 |
| Zinc | 6020A | 1 | 0.88 | 3.1 | **42.2** | | mg/Kg | 07/21/17 | 17:26 | ERR | 425540 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-6 (0-0.5) | **Lab Sample ID:** | 1707122-009A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:14 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Silver | 6020A | 1 | 0.12 | 1.3 | ND | | mg/Kg | 07/25/17 | 13:02 | ERR | 425658 |
| Thallium | 6020A | 1 | 1.2 | 6.3 | ND | | mg/Kg | 07/25/17 | 13:02 | ERR | 425658 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-6 (0-0.5) | **Lab Sample ID:** | 1707122-009A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:14 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 6020A | 10 | 2.1 | 2.5 | **79.9** | | mg/Kg | 07/21/17 | 20:30 | ERR | 425540 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-6 (0-0.5) | **Lab Sample ID:** | 1707122-009A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:14 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/21/17 | 6:15:00PM |
| **Prep Batch ID:** | 8446 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **19.9** | | % | 07/21/17 | 18:15 | PH | 425657 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.25** | | - | 07/21/17 | 18:15 | PH | 425657 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-6 (2.5-3) | **Lab Sample ID:** | 1707122-010A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:20 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/20/17 | 11:40:00AM |
| **Prep Batch ID:** | 8276 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 6020A | 1 | 0.24 | 1.1 | **6.38** | | mg/Kg | 07/20/17 | 17:50 | ERR | 425519 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-6 (2.5-3) | **Lab Sample ID:** | 1707122-010A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:20 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/21/17 | 6:15:00PM |
| **Prep Batch ID:** | 8446 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **12.1** | | % | 07/21/17 | 18:15 | PH | 425657 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.14** | | - | 07/21/17 | 18:15 | PH | 425657 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-7 (0-0.5) | **Lab Sample ID:** | 1707122-011A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:45 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 7471BP | **Prep Batch Date/Time:** | 7/21/17 | 5:30:00PM |
| **Prep Batch ID:** | 8348 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.10 | 0.60 | ND | | mg/Kg | 07/25/17 | 11:39 | BJAY | 425634 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-7 (0-0.5) | **Lab Sample ID:** | 1707122-011A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:45 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Antimony | 6020A | 1 | 0.14 | 1.2 | **0.197** | J | mg/Kg | 07/21/17 | 17:34 | ERR | 425540 |
| Arsenic | 6020A | 1 | 0.25 | 1.2 | **8.04** | | mg/Kg | 07/21/17 | 17:34 | ERR | 425540 |
| Beryllium | 6020A | 1 | 0.19 | 1.2 | ND | | mg/Kg | 07/21/17 | 17:34 | ERR | 425540 |
| Cadmium | 6020A | 1 | 0.10 | 1.2 | **0.109** | J | mg/Kg | 07/21/17 | 17:34 | ERR | 425540 |
| Chromium | 6020A | 1 | 0.12 | 1.2 | **30.7** | | mg/Kg | 07/21/17 | 17:34 | ERR | 425540 |
| Cobalt | 6020A | 1 | 0.25 | 1.2 | **7.79** | | mg/Kg | 07/21/17 | 17:34 | ERR | 425540 |
| Copper | 6020A | 1 | 0.20 | 3.0 | **31.1** | | mg/Kg | 07/21/17 | 17:34 | ERR | 425540 |
| Lead | 6020A | 1 | 0.064 | 1.2 | **28.0** | | mg/Kg | 07/21/17 | 17:34 | ERR | 425540 |
| Molybdenum | 6020A | 1 | 0.16 | 1.2 | **0.250** | J | mg/Kg | 07/21/17 | 17:34 | ERR | 425540 |
| Nickel | 6020A | 1 | 1.5 | 6.0 | **14.5** | | mg/Kg | 07/21/17 | 17:34 | ERR | 425540 |
| Selenium | 6020A | 1 | 0.041 | 3.0 | ND | | mg/Kg | 07/21/17 | 17:34 | ERR | 425540 |
| Vanadium | 6020A | 1 | 0.34 | 30 | **34.3** | | mg/Kg | 07/21/17 | 17:34 | ERR | 425540 |
| Zinc | 6020A | 1 | 0.84 | 3.0 | **34.0** | | mg/Kg | 07/21/17 | 17:34 | ERR | 425540 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-7 (0-0.5) | **Lab Sample ID:** | 1707122-011A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:45 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Silver | 6020A | 1 | 0.12 | 1.2 | ND | | mg/Kg | 07/25/17 | 13:07 | ERR | 425658 |
| Thallium | 6020A | 1 | 1.2 | 6.0 | ND | | mg/Kg | 07/25/17 | 13:07 | ERR | 425658 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-7 (0-0.5) | **Lab Sample ID:** | 1707122-011A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:45 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 6020A | 10 | 2.0 | 2.4 | **91.3** | | mg/Kg | 07/21/17 | 20:39 | ERR | 425540 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-7 (0-0.5) | **Lab Sample ID:** | 1707122-011A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:45 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/21/17 | 6:15:00PM |
| **Prep Batch ID:** | 8446 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **16.8** | | % | 07/21/17 | 18:15 | PH | 425657 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.20** | | - | 07/21/17 | 18:15 | PH | 425657 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-9 (0-0.5) | **Lab Sample ID:** | 1707122-012A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:07 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 7471BP | **Prep Batch Date/Time:** | 7/21/17 | 5:30:00PM |
| **Prep Batch ID:** | 8348 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.11 | 0.68 | ND | | mg/Kg | 07/25/17 | 11:43 | BJAY | 425634 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-9 (0-0.5) | **Lab Sample ID:** | 1707122-012A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:07 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Antimony | 6020A | 1 | 0.16 | 1.4 | **0.167** | J | mg/Kg | 07/21/17 | 17:51 | ERR | 425540 |
| Arsenic | 6020A | 1 | 0.28 | 1.4 | **13.5** | | mg/Kg | 07/21/17 | 17:51 | ERR | 425540 |
| Beryllium | 6020A | 1 | 0.22 | 1.4 | ND | | mg/Kg | 07/21/17 | 17:51 | ERR | 425540 |
| Cadmium | 6020A | 1 | 0.11 | 1.4 | **0.124** | J | mg/Kg | 07/21/17 | 17:51 | ERR | 425540 |
| Chromium | 6020A | 1 | 0.13 | 1.4 | **34.1** | | mg/Kg | 07/21/17 | 17:51 | ERR | 425540 |
| Cobalt | 6020A | 1 | 0.28 | 1.4 | **8.98** | | mg/Kg | 07/21/17 | 17:51 | ERR | 425540 |
| Copper | 6020A | 1 | 0.23 | 3.4 | **44.2** | | mg/Kg | 07/21/17 | 17:51 | ERR | 425540 |
| Lead | 6020A | 1 | 0.072 | 1.4 | **56.0** | | mg/Kg | 07/21/17 | 17:51 | ERR | 425540 |
| Molybdenum | 6020A | 1 | 0.18 | 1.4 | **0.265** | J | mg/Kg | 07/21/17 | 17:51 | ERR | 425540 |
| Nickel | 6020A | 1 | 1.7 | 6.8 | **17.0** | | mg/Kg | 07/21/17 | 17:51 | ERR | 425540 |
| Selenium | 6020A | 1 | 0.047 | 3.4 | ND | | mg/Kg | 07/21/17 | 17:51 | ERR | 425540 |
| Vanadium | 6020A | 1 | 0.38 | 34 | **37.9** | | mg/Kg | 07/21/17 | 17:51 | ERR | 425540 |
| Zinc | 6020A | 1 | 0.95 | 3.4 | **42.0** | | mg/Kg | 07/21/17 | 17:51 | ERR | 425540 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-9 (0-0.5) | **Lab Sample ID:** | 1707122-012A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:07 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Silver | 6020A | 1 | 0.13 | 1.4 | ND | | mg/Kg | 07/25/17 | 13:16 | ERR | 425658 |
| Thallium | 6020A | 1 | 1.3 | 6.8 | ND | | mg/Kg | 07/25/17 | 13:16 | ERR | 425658 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-9 (0-0.5) | **Lab Sample ID:** | 1707122-012A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:07 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 6020A | 10 | 2.3 | 2.7 | **115** | | mg/Kg | 07/21/17 | 20:47 | ERR | 425540 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-9 (0-0.5) | **Lab Sample ID:** | 1707122-012A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:07 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/21/17 | 6:15:00PM |
| **Prep Batch ID:** | 8446 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **26.1** | | % | 07/21/17 | 18:15 | PH | 425657 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.35** | | - | 07/21/17 | 18:15 | PH | 425657 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-8 (0-0.5) | **Lab Sample ID:** | 1707122-013A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:54 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 7471BP | **Prep Batch Date/Time:** | 7/21/17 | 5:30:00PM |
| **Prep Batch ID:** | 8348 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.087 | 0.52 | ND | | mg/Kg | 07/25/17 | 11:47 | BJAY | 425634 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-8 (0-0.5) | **Lab Sample ID:** | 1707122-013A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:54 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Antimony | 6020A | 1 | 0.13 | 1.0 | **0.186** | J | mg/Kg | 07/21/17 | 18:08 | ERR | 425540 |
| Arsenic | 6020A | 1 | 0.22 | 1.0 | **9.79** | | mg/Kg | 07/21/17 | 18:08 | ERR | 425540 |
| Beryllium | 6020A | 1 | 0.17 | 1.0 | ND | | mg/Kg | 07/21/17 | 18:08 | ERR | 425540 |
| Cadmium | 6020A | 1 | 0.087 | 1.0 | **0.0879** | J | mg/Kg | 07/21/17 | 18:08 | ERR | 425540 |
| Chromium | 6020A | 1 | 0.10 | 1.0 | **26.5** | | mg/Kg | 07/21/17 | 18:08 | ERR | 425540 |
| Cobalt | 6020A | 1 | 0.22 | 1.0 | **7.16** | | mg/Kg | 07/21/17 | 18:08 | ERR | 425540 |
| Copper | 6020A | 1 | 0.18 | 2.6 | **31.1** | | mg/Kg | 07/21/17 | 18:08 | ERR | 425540 |
| Lead | 6020A | 1 | 0.056 | 1.0 | **42.4** | | mg/Kg | 07/21/17 | 18:08 | ERR | 425540 |
| Molybdenum | 6020A | 1 | 0.14 | 1.0 | **0.182** | J | mg/Kg | 07/21/17 | 18:08 | ERR | 425540 |
| Nickel | 6020A | 1 | 1.3 | 5.2 | **12.7** | | mg/Kg | 07/21/17 | 18:08 | ERR | 425540 |
| Selenium | 6020A | 1 | 0.036 | 2.6 | ND | | mg/Kg | 07/21/17 | 18:08 | ERR | 425540 |
| Vanadium | 6020A | 1 | 0.29 | 26 | **27.9** | | mg/Kg | 07/21/17 | 18:08 | ERR | 425540 |
| Zinc | 6020A | 1 | 0.73 | 2.6 | **29.0** | | mg/Kg | 07/21/17 | 18:08 | ERR | 425540 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-8 (0-0.5) | **Lab Sample ID:** | 1707122-013A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:54 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Silver | 6020A | 1 | 0.10 | 1.0 | ND | | mg/Kg | 07/25/17 | 13:26 | ERR | 425658 |
| Thallium | 6020A | 1 | 1.0 | 5.2 | ND | | mg/Kg | 07/25/17 | 13:26 | ERR | 425658 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-8 (0-0.5) | **Lab Sample ID:** | 1707122-013A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:54 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 6020A | 10 | 1.7 | 2.1 | **90.7** | | mg/Kg | 07/21/17 | 20:55 | ERR | 425540 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-8 (0-0.5) | **Lab Sample ID:** | 1707122-013A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:54 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/21/17 | 6:15:00PM |
| **Prep Batch ID:** | 8446 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **3.84** | | % | 07/21/17 | 18:15 | PH | 425657 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.04** | | - | 07/21/17 | 18:15 | PH | 425657 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-8 (2.5-3) | **Lab Sample ID:** | 1707122-014A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:58 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/20/17 | 11:40:00AM |
| **Prep Batch ID:** | 8276 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 6020A | 1 | 0.26 | 1.2 | **5.70** | | mg/Kg | 07/20/17 | 17:55 | ERR | 425519 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-8 (2.5-3) | **Lab Sample ID:** | 1707122-014A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:58 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/21/17 | 6:15:00PM |
| **Prep Batch ID:** | 8446 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **19.2** | | % | 07/21/17 | 18:15 | PH | 425657 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.24** | | - | 07/21/17 | 18:15 | PH | 425657 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-10 (0-0.5) | **Lab Sample ID:** | 1707122-015A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 9:55 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 7471BP | **Prep Batch Date/Time:** | 7/21/17 | 5:30:00PM |
| **Prep Batch ID:** | 8348 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.084 | 0.51 | ND | | mg/Kg | 07/25/17 | 11:53 | BJAY | 425634 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-10 (0-0.5) | **Lab Sample ID:** | 1707122-015A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 9:55 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Antimony | 6020A | 1 | 0.12 | 1.0 | **0.163** | J | mg/Kg | 07/21/17 | 18:33 | ERR | 425540 |
| Arsenic | 6020A | 1 | 0.21 | 1.0 | **8.56** | | mg/Kg | 07/21/17 | 18:33 | ERR | 425540 |
| Beryllium | 6020A | 1 | 0.16 | 1.0 | **0.189** | J | mg/Kg | 07/21/17 | 18:33 | ERR | 425540 |
| Cadmium | 6020A | 1 | 0.084 | 1.0 | **0.0985** | J | mg/Kg | 07/21/17 | 18:33 | ERR | 425540 |
| Cobalt | 6020A | 1 | 0.21 | 1.0 | **10.8** | | mg/Kg | 07/21/17 | 18:33 | ERR | 425540 |
| Copper | 6020A | 1 | 0.17 | 2.5 | **38.8** | | mg/Kg | 07/21/17 | 18:33 | ERR | 425540 |
| Lead | 6020A | 1 | 0.054 | 1.0 | **24.2** | | mg/Kg | 07/21/17 | 18:33 | ERR | 425540 |
| Molybdenum | 6020A | 1 | 0.13 | 1.0 | **0.267** | J | mg/Kg | 07/21/17 | 18:33 | ERR | 425540 |
| Nickel | 6020A | 1 | 1.3 | 5.1 | **19.4** | | mg/Kg | 07/21/17 | 18:33 | ERR | 425540 |
| Selenium | 6020A | 1 | 0.035 | 2.5 | ND | | mg/Kg | 07/21/17 | 18:33 | ERR | 425540 |
| Vanadium | 6020A | 1 | 0.28 | 25 | **48.5** | | mg/Kg | 07/21/17 | 18:33 | ERR | 425540 |
| Zinc | 6020A | 1 | 0.71 | 2.5 | **44.1** | | mg/Kg | 07/21/17 | 18:33 | ERR | 425540 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-10 (0-0.5) | **Lab Sample ID:** | 1707122-015A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 9:55 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Chromium | 6020A | 1 | 0.098 | 1.0 | **40.5** | | mg/Kg | 07/25/17 | 13:40 | ERR | 425658 |
| Silver | 6020A | 1 | 0.099 | 1.0 | ND | | mg/Kg | 07/25/17 | 13:40 | ERR | 425658 |
| Thallium | 6020A | 1 | 1.0 | 5.1 | ND | | mg/Kg | 07/25/17 | 13:40 | ERR | 425658 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-10 (0-0.5) | **Lab Sample ID:** | 1707122-015A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 9:55 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 6020A | 10 | 1.7 | 2.0 | **114** | | mg/Kg | 07/21/17 | 21:04 | ERR | 425540 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-10 (0-0.5) | **Lab Sample ID:** | 1707122-015A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 9:55 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/21/17 | 6:15:00PM |
| **Prep Batch ID:** | 8446 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **1.12** | | % | 07/21/17 | 18:15 | PH | 425657 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.01** | | - | 07/21/17 | 18:15 | PH | 425657 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-11 (0-0.5) | **Lab Sample ID:** | 1707122-016A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 8:55 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 7471BP | **Prep Batch Date/Time:** | 7/21/17 | 5:30:00PM |
| **Prep Batch ID:** | 8348 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.084 | 0.51 | ND | | mg/Kg | 07/25/17 | 11:55 | BJAY | 425634 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-11 (0-0.5) | **Lab Sample ID:** | 1707122-016A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 8:55 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Antimony | 6020A | 1 | 0.12 | 1.0 | **0.285** | J | mg/Kg | 07/21/17 | 18:41 | ERR | 425540 |
| Arsenic | 6020A | 1 | 0.21 | 1.0 | **8.80** | | mg/Kg | 07/21/17 | 18:41 | ERR | 425540 |
| Beryllium | 6020A | 1 | 0.16 | 1.0 | **0.164** | J | mg/Kg | 07/21/17 | 18:41 | ERR | 425540 |
| Cadmium | 6020A | 1 | 0.084 | 1.0 | **0.166** | J | mg/Kg | 07/21/17 | 18:41 | ERR | 425540 |
| Cobalt | 6020A | 1 | 0.21 | 1.0 | **7.14** | | mg/Kg | 07/21/17 | 18:41 | ERR | 425540 |
| Copper | 6020A | 1 | 0.17 | 2.5 | **18.5** | | mg/Kg | 07/21/17 | 18:41 | ERR | 425540 |
| Lead | 6020A | 1 | 0.054 | 1.0 | **21.1** | | mg/Kg | 07/21/17 | 18:41 | ERR | 425540 |
| Molybdenum | 6020A | 1 | 0.13 | 1.0 | **0.491** | J | mg/Kg | 07/21/17 | 18:41 | ERR | 425540 |
| Nickel | 6020A | 1 | 1.3 | 5.1 | **14.6** | | mg/Kg | 07/21/17 | 18:41 | ERR | 425540 |
| Selenium | 6020A | 1 | 0.035 | 2.5 | ND | | mg/Kg | 07/21/17 | 18:41 | ERR | 425540 |
| Vanadium | 6020A | 1 | 0.28 | 25 | **37.0** | | mg/Kg | 07/21/17 | 18:41 | ERR | 425540 |
| Zinc | 6020A | 1 | 0.71 | 2.5 | **55.7** | | mg/Kg | 07/21/17 | 18:41 | ERR | 425540 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-11 (0-0.5) | **Lab Sample ID:** | 1707122-016A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 8:55 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Chromium | 6020A | 1 | 0.098 | 1.0 | **24.6** | | mg/Kg | 07/25/17 | 13:44 | ERR | 425658 |
| Silver | 6020A | 1 | 0.099 | 1.0 | ND | | mg/Kg | 07/25/17 | 13:44 | ERR | 425658 |
| Thallium | 6020A | 1 | 1.0 | 5.1 | ND | | mg/Kg | 07/25/17 | 13:44 | ERR | 425658 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-11 (0-0.5) | **Lab Sample ID:** | 1707122-016A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 8:55 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 6020A | 10 | 1.7 | 2.0 | **108** | | mg/Kg | 07/21/17 | 21:12 | ERR | 425540 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-11 (0-0.5) | **Lab Sample ID:** | 1707122-016A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 8:55 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/21/17 | 6:15:00PM |
| **Prep Batch ID:** | 8446 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **1.37** | | % | 07/21/17 | 18:15 | PH | 425657 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.01** | | - | 07/21/17 | 18:15 | PH | 425657 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-12 (0-0.5) | **Lab Sample ID:** | 1707122-017A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 9:25 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 7471BP | **Prep Batch Date/Time:** | 7/21/17 | 5:30:00PM |
| **Prep Batch ID:** | 8348 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.10 | 0.61 | ND | | mg/Kg | 07/25/17 | 11:57 | BJAY | 425634 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-12 (0-0.5) | **Lab Sample ID:** | 1707122-017A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 9:25 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Antimony | 6020A | 1 | 0.15 | 1.2 | **0.160** | J | mg/Kg | 07/21/17 | 18:49 | ERR | 425540 |
| Arsenic | 6020A | 1 | 0.25 | 1.2 | **16.6** | | mg/Kg | 07/21/17 | 18:49 | ERR | 425540 |
| Barium | 6020A | 1 | 1.0 | 1.2 | **53.5** | | mg/Kg | 07/21/17 | 18:49 | ERR | 425540 |
| Beryllium | 6020A | 1 | 0.19 | 1.2 | ND | | mg/Kg | 07/21/17 | 18:49 | ERR | 425540 |
| Cadmium | 6020A | 1 | 0.10 | 1.2 | ND | | mg/Kg | 07/21/17 | 18:49 | ERR | 425540 |
| Cobalt | 6020A | 1 | 0.25 | 1.2 | **5.64** | | mg/Kg | 07/21/17 | 18:49 | ERR | 425540 |
| Copper | 6020A | 1 | 0.21 | 3.0 | **12.7** | | mg/Kg | 07/21/17 | 18:49 | ERR | 425540 |
| Lead | 6020A | 1 | 0.065 | 1.2 | **53.1** | | mg/Kg | 07/21/17 | 18:49 | ERR | 425540 |
| Molybdenum | 6020A | 1 | 0.16 | 1.2 | ND | | mg/Kg | 07/21/17 | 18:49 | ERR | 425540 |
| Nickel | 6020A | 1 | 1.5 | 6.1 | **9.05** | | mg/Kg | 07/21/17 | 18:49 | ERR | 425540 |
| Selenium | 6020A | 1 | 0.042 | 3.0 | ND | | mg/Kg | 07/21/17 | 18:49 | ERR | 425540 |
| Vanadium | 6020A | 1 | 0.34 | 30 | **21.5** | J | mg/Kg | 07/21/17 | 18:49 | ERR | 425540 |
| Zinc | 6020A | 1 | 0.85 | 3.0 | **21.5** | | mg/Kg | 07/21/17 | 18:49 | ERR | 425540 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-12 (0-0.5) | **Lab Sample ID:** | 1707122-017A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 9:25 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 10:15:00AM |
| **Prep Batch ID:** | 8321 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Chromium | 6020A | 1 | 0.12 | 1.2 | **20.5** | | mg/Kg | 07/25/17 | 13:49 | ERR | 425658 |
| Silver | 6020A | 1 | 0.12 | 1.2 | ND | | mg/Kg | 07/25/17 | 13:49 | ERR | 425658 |
| Thallium | 6020A | 1 | 1.2 | 6.1 | ND | | mg/Kg | 07/25/17 | 13:49 | ERR | 425658 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-12 (0-0.5) | **Lab Sample ID:** | 1707122-017A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 9:25 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/21/17 | 6:15:00PM |
| **Prep Batch ID:** | 8446 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **17.5** | | % | 07/21/17 | 18:15 | PH | 425657 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.21** | | - | 07/21/17 | 18:15 | PH | 425657 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-12 (2.5-3) | **Lab Sample ID:** | 1707122-018A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 9:30 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/20/17 | 11:40:00AM |
| **Prep Batch ID:** | 8276 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 6020A | 1 | 0.22 | 1.1 | **4.43** | | mg/Kg | 07/20/17 | 17:59 | ERR | 425519 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-12 (2.5-3) | **Lab Sample ID:** | 1707122-018A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 9:30 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/21/17 | 6:15:00PM |
| **Prep Batch ID:** | 8446 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **6.33** | | % | 07/21/17 | 18:15 | PH | 425657 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.07** | | - | 07/21/17 | 18:15 | PH | 425657 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-13 (0-0.5) | **Lab Sample ID:** | 1707122-019A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:33 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 7471BP | **Prep Batch Date/Time:** | 7/21/17 | 5:10:00PM |
| **Prep Batch ID:** | 8337 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.083 | 0.50 | ND | | mg/Kg | 07/25/17 | 12:05 | BJAY | 425633 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-13 (0-0.5) | **Lab Sample ID:** | 1707122-019A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:33 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 4:10:00PM |
| **Prep Batch ID:** | 8336 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Antimony | 6020A | 1 | 0.12 | 1.0 | ND | | mg/Kg | 07/25/17 | 16:44 | ERR | 425557 |
| Arsenic | 6020A | 1 | 0.21 | 1.0 | **4.64** | | mg/Kg | 07/25/17 | 16:44 | ERR | 425557 |
| Beryllium | 6020A | 1 | 0.16 | 1.0 | ND | | mg/Kg | 07/25/17 | 16:44 | ERR | 425557 |
| Cadmium | 6020A | 1 | 0.084 | 1.0 | ND | | mg/Kg | 07/25/17 | 16:44 | ERR | 425557 |
| Chromium | 6020A | 1 | 0.097 | 1.0 | **20.9** | | mg/Kg | 07/25/17 | 16:44 | ERR | 425557 |
| Cobalt | 6020A | 1 | 0.21 | 1.0 | **5.78** | | mg/Kg | 07/25/17 | 16:44 | ERR | 425557 |
| Copper | 6020A | 1 | 0.17 | 2.5 | **18.8** | | mg/Kg | 07/25/17 | 16:44 | ERR | 425557 |
| Lead | 6020A | 1 | 0.054 | 1.0 | **13.1** | | mg/Kg | 07/25/17 | 16:44 | ERR | 425557 |
| Molybdenum | 6020A | 1 | 0.13 | 1.0 | ND | | mg/Kg | 07/25/17 | 16:44 | ERR | 425557 |
| Nickel | 6020A | 1 | 1.2 | 5.0 | **10.0** | | mg/Kg | 07/25/17 | 16:44 | ERR | 425557 |
| Selenium | 6020A | 1 | 0.035 | 2.5 | ND | | mg/Kg | 07/25/17 | 16:44 | ERR | 425557 |
| Silver | 6020A | 1 | 0.098 | 1.0 | ND | | mg/Kg | 07/25/17 | 16:44 | ERR | 425557 |
| Thallium | 6020A | 1 | 1.00 | 5.0 | ND | | mg/Kg | 07/25/17 | 16:44 | ERR | 425557 |
| Vanadium | 6020A | 1 | 0.28 | 25 | **25.0** | | mg/Kg | 07/25/17 | 16:44 | ERR | 425557 |
| Zinc | 6020A | 1 | 0.70 | 2.5 | **23.1** | | mg/Kg | 07/25/17 | 16:44 | ERR | 425557 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-13 (0-0.5) | **Lab Sample ID:** | 1707122-019A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:33 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 4:10:00PM |
| **Prep Batch ID:** | 8336 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 6020A | 10 | 1.7 | 2.0 | **70.0** | | mg/Kg | 07/26/17 | 17:19 | ERR | 425682 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-13 (0-0.5) | **Lab Sample ID:** | 1707122-019A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:33 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/21/17 | 6:15:00PM |
| **Prep Batch ID:** | 8446 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **0.440** | | % | 07/21/17 | 18:15 | PH | 425657 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.00** | | - | 07/21/17 | 18:15 | PH | 425657 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-14 (0-0.5) | **Lab Sample ID:** | 1707122-020A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:46 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 7471BP | **Prep Batch Date/Time:** | 7/21/17 | 5:10:00PM |
| **Prep Batch ID:** | 8337 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.083 | 0.50 | ND | | mg/Kg | 07/25/17 | 12:11 | BJAY | 425633 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-14 (0-0.5) | **Lab Sample ID:** | 1707122-020A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:46 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 4:10:00PM |
| **Prep Batch ID:** | 8336 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Antimony | 6020A | 1 | 0.12 | 1.0 | **0.188** | J | mg/Kg | 07/25/17 | 17:10 | ERR | 425557 |
| Arsenic | 6020A | 1 | 0.21 | 1.0 | **6.88** | | mg/Kg | 07/25/17 | 17:10 | ERR | 425557 |
| Beryllium | 6020A | 1 | 0.16 | 1.0 | ND | | mg/Kg | 07/25/17 | 17:10 | ERR | 425557 |
| Cadmium | 6020A | 1 | 0.084 | 1.0 | **0.115** | J | mg/Kg | 07/25/17 | 17:10 | ERR | 425557 |
| Chromium | 6020A | 1 | 0.097 | 1.0 | **28.6** | | mg/Kg | 07/25/17 | 17:10 | ERR | 425557 |
| Cobalt | 6020A | 1 | 0.21 | 1.0 | **6.99** | | mg/Kg | 07/25/17 | 17:10 | ERR | 425557 |
| Copper | 6020A | 1 | 0.17 | 2.5 | **28.3** | | mg/Kg | 07/25/17 | 17:10 | ERR | 425557 |
| Lead | 6020A | 1 | 0.054 | 1.0 | **30.2** | | mg/Kg | 07/25/17 | 17:10 | ERR | 425557 |
| Molybdenum | 6020A | 1 | 0.13 | 1.0 | **0.212** | J | mg/Kg | 07/25/17 | 17:10 | ERR | 425557 |
| Nickel | 6020A | 1 | 1.2 | 5.0 | **12.9** | | mg/Kg | 07/25/17 | 17:10 | ERR | 425557 |
| Selenium | 6020A | 1 | 0.035 | 2.5 | ND | | mg/Kg | 07/25/17 | 17:10 | ERR | 425557 |
| Silver | 6020A | 1 | 0.098 | 1.0 | ND | | mg/Kg | 07/25/17 | 17:10 | ERR | 425557 |
| Thallium | 6020A | 1 | 1.00 | 5.0 | ND | | mg/Kg | 07/25/17 | 17:10 | ERR | 425557 |
| Vanadium | 6020A | 1 | 0.28 | 25 | **29.1** | | mg/Kg | 07/25/17 | 17:10 | ERR | 425557 |
| Zinc | 6020A | 1 | 0.70 | 2.5 | **33.3** | | mg/Kg | 07/25/17 | 17:10 | ERR | 425557 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-14 (0-0.5) | **Lab Sample ID:** | 1707122-020A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:46 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 4:10:00PM |
| **Prep Batch ID:** | 8336 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 6020A | 10 | 1.7 | 2.0 | **86.1** | | mg/Kg | 07/26/17 | 17:24 | ERR | 425682 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-14 (0-0.5) | **Lab Sample ID:** | 1707122-020A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:46 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/21/17 | 6:15:00PM |
| **Prep Batch ID:** | 8446 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **0.440** | | % | 07/21/17 | 18:15 | PH | 425657 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.00** | | - | 07/21/17 | 18:15 | PH | 425657 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-15 (0-0.5) | **Lab Sample ID:** | 1707122-021A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:56 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 7471BP | **Prep Batch Date/Time:** | 7/21/17 | 5:10:00PM |
| **Prep Batch ID:** | 8337 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.11 | 0.69 | ND | | mg/Kg | 07/25/17 | 12:20 | BJAY | 425633 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-15 (0-0.5) | **Lab Sample ID:** | 1707122-021A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:56 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 4:10:00PM |
| **Prep Batch ID:** | 8336 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Antimony | 6020A | 1 | 0.18 | 1.5 | **0.462** | J | mg/Kg | 07/25/17 | 17:26 | ERR | 425557 |
| Arsenic | 6020A | 1 | 0.30 | 1.5 | **17.4** | | mg/Kg | 07/25/17 | 17:26 | ERR | 425557 |
| Beryllium | 6020A | 1 | 0.23 | 1.5 | **0.326** | J | mg/Kg | 07/25/17 | 17:26 | ERR | 425557 |
| Cadmium | 6020A | 1 | 0.12 | 1.5 | **0.183** | J | mg/Kg | 07/25/17 | 17:26 | ERR | 425557 |
| Chromium | 6020A | 1 | 0.14 | 1.5 | **50.8** | | mg/Kg | 07/25/17 | 17:26 | ERR | 425557 |
| Cobalt | 6020A | 1 | 0.31 | 1.5 | **12.7** | | mg/Kg | 07/25/17 | 17:26 | ERR | 425557 |
| Copper | 6020A | 1 | 0.25 | 3.7 | **28.4** | | mg/Kg | 07/25/17 | 17:26 | ERR | 425557 |
| Lead | 6020A | 1 | 0.078 | 1.5 | **42.9** | | mg/Kg | 07/25/17 | 17:26 | ERR | 425557 |
| Molybdenum | 6020A | 1 | 0.19 | 1.5 | **0.668** | J | mg/Kg | 07/25/17 | 17:26 | ERR | 425557 |
| Nickel | 6020A | 1 | 1.8 | 7.3 | **24.1** | | mg/Kg | 07/25/17 | 17:26 | ERR | 425557 |
| Selenium | 6020A | 1 | 0.050 | 3.7 | ND | | mg/Kg | 07/25/17 | 17:26 | ERR | 425557 |
| Silver | 6020A | 1 | 0.14 | 1.5 | ND | | mg/Kg | 07/25/17 | 17:26 | ERR | 425557 |
| Thallium | 6020A | 1 | 1.5 | 7.3 | ND | | mg/Kg | 07/25/17 | 17:26 | ERR | 425557 |
| Vanadium | 6020A | 1 | 0.41 | 37 | **61.7** | | mg/Kg | 07/25/17 | 17:26 | ERR | 425557 |
| Zinc | 6020A | 1 | 1.0 | 3.7 | **69.7** | | mg/Kg | 07/25/17 | 17:26 | ERR | 425557 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-15 (0-0.5) | **Lab Sample ID:** | 1707122-021A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:56 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 4:10:00PM |
| **Prep Batch ID:** | 8336 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 6020A | 10 | 2.4 | 2.9 | **128** | | mg/Kg | 07/26/17 | 17:30 | ERR | 425682 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-15 (0-0.5) | **Lab Sample ID:** | 1707122-021A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:56 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/21/17 | 6:45:00PM |
| **Prep Batch ID:** | 8347 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **27.2** | | % | 07/21/17 | 18:45 | PH | 425559 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.37** | | - | 07/21/17 | 18:45 | PH | 425559 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-16 (0-0.5) | **Lab Sample ID:** | 1707122-022A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 11:27 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 7471BP | **Prep Batch Date/Time:** | 7/21/17 | 5:10:00PM |
| **Prep Batch ID:** | 8337 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.088 | 0.53 | ND | | mg/Kg | 07/25/17 | 12:22 | BJAY | 425633 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-16 (0-0.5) | **Lab Sample ID:** | 1707122-022A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 11:27 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 4:10:00PM |
| **Prep Batch ID:** | 8336 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Antimony | 6020A | 1 | 0.13 | 1.1 | **0.468** | J | mg/Kg | 07/25/17 | 17:35 | ERR | 425557 |
| Arsenic | 6020A | 1 | 0.23 | 1.1 | **17.0** | | mg/Kg | 07/25/17 | 17:35 | ERR | 425557 |
| Barium | 6020A | 1 | 0.90 | 1.1 | **43.3** | | mg/Kg | 07/25/17 | 17:35 | ERR | 425557 |
| Beryllium | 6020A | 1 | 0.17 | 1.1 | **0.193** | J | mg/Kg | 07/25/17 | 17:35 | ERR | 425557 |
| Cadmium | 6020A | 1 | 0.090 | 1.1 | **0.150** | J | mg/Kg | 07/25/17 | 17:35 | ERR | 425557 |
| Cobalt | 6020A | 1 | 0.23 | 1.1 | **19.5** | | mg/Kg | 07/25/17 | 17:35 | ERR | 425557 |
| Copper | 6020A | 1 | 0.18 | 2.7 | **60.2** | | mg/Kg | 07/25/17 | 17:35 | ERR | 425557 |
| Molybdenum | 6020A | 1 | 0.14 | 1.1 | **0.416** | J | mg/Kg | 07/25/17 | 17:35 | ERR | 425557 |
| Nickel | 6020A | 1 | 1.3 | 5.4 | **55.8** | | mg/Kg | 07/25/17 | 17:35 | ERR | 425557 |
| Selenium | 6020A | 1 | 0.037 | 2.7 | ND | | mg/Kg | 07/25/17 | 17:35 | ERR | 425557 |
| Silver | 6020A | 1 | 0.11 | 1.1 | ND | | mg/Kg | 07/25/17 | 17:35 | ERR | 425557 |
| Thallium | 6020A | 1 | 1.1 | 5.4 | ND | | mg/Kg | 07/25/17 | 17:35 | ERR | 425557 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-16 (0-0.5) | **Lab Sample ID:** | 1707122-022A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 11:27 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 4:10:00PM |
| **Prep Batch ID:** | 8336 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chromium | 6020A | 25 | 0.52 | 5.4 | **92.1** | | mg/Kg | 07/26/17 | 17:35 | ERR | 425682 |
| Lead | 6020A | 25 | 0.29 | 5.4 | **121** | | mg/Kg | 07/26/17 | 17:35 | ERR | 425682 |
| Vanadium | 6020A | 25 | 1.5 | 140 | **144** | | mg/Kg | 07/26/17 | 17:35 | ERR | 425682 |
| Zinc | 6020A | 25 | 3.8 | 14 | **99.2** | | mg/Kg | 07/26/17 | 17:35 | ERR | 425682 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-16 (0-0.5) | **Lab Sample ID:** | 1707122-022A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 11:27 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/21/17 | 6:45:00PM |
| **Prep Batch ID:** | 8347 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **5.57** | | % | 07/21/17 | 18:45 | PH | 425559 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.06** | | - | 07/21/17 | 18:45 | PH | 425559 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-16 (2.5-3) | **Lab Sample ID:** | 1707122-023A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 11:39 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/20/17 | 11:40:00AM |
| **Prep Batch ID:** | 8276 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 6020A | 1 | 0.23 | 1.1 | **14.9** | | mg/Kg | 07/20/17 | 18:03 | ERR | 425519 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-16 (2.5-3) | **Lab Sample ID:** | 1707122-023A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 11:39 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/21/17 | 6:45:00PM |
| **Prep Batch ID:** | 8347 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **10.8** | | % | 07/21/17 | 18:45 | PH | 425559 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.12** | | - | 07/21/17 | 18:45 | PH | 425559 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-17 (0-0.5) | **Lab Sample ID:** | 1707122-024A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:53 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 7471BP | **Prep Batch Date/Time:** | 7/21/17 | 5:10:00PM |
| **Prep Batch ID:** | 8337 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.084 | 0.51 | ND | | mg/Kg | 07/25/17 | 12:24 | BJAY | 425633 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-17 (0-0.5) | **Lab Sample ID:** | 1707122-024A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:53 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 4:10:00PM |
| **Prep Batch ID:** | 8336 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Antimony | 6020A | 1 | 0.13 | 1.1 | **0.350** | J | mg/Kg | 07/25/17 | 18:00 | ERR | 425557 |
| Arsenic | 6020A | 1 | 0.23 | 1.1 | **13.3** | | mg/Kg | 07/25/17 | 18:00 | ERR | 425557 |
| Beryllium | 6020A | 1 | 0.17 | 1.1 | **0.188** | J | mg/Kg | 07/25/17 | 18:00 | ERR | 425557 |
| Cadmium | 6020A | 1 | 0.091 | 1.1 | **0.170** | J | mg/Kg | 07/25/17 | 18:00 | ERR | 425557 |
| Chromium | 6020A | 1 | 0.11 | 1.1 | **50.1** | | mg/Kg | 07/25/17 | 18:00 | ERR | 425557 |
| Cobalt | 6020A | 1 | 0.23 | 1.1 | **10.0** | | mg/Kg | 07/25/17 | 18:00 | ERR | 425557 |
| Copper | 6020A | 1 | 0.19 | 2.7 | **34.9** | | mg/Kg | 07/25/17 | 18:00 | ERR | 425557 |
| Lead | 6020A | 1 | 0.058 | 1.1 | **35.1** | | mg/Kg | 07/25/17 | 18:00 | ERR | 425557 |
| Molybdenum | 6020A | 1 | 0.14 | 1.1 | **0.770** | J | mg/Kg | 07/25/17 | 18:00 | ERR | 425557 |
| Nickel | 6020A | 1 | 1.4 | 5.5 | **20.7** | | mg/Kg | 07/25/17 | 18:00 | ERR | 425557 |
| Selenium | 6020A | 1 | 0.038 | 2.7 | ND | | mg/Kg | 07/25/17 | 18:00 | ERR | 425557 |
| Silver | 6020A | 1 | 0.11 | 1.1 | ND | | mg/Kg | 07/25/17 | 18:00 | ERR | 425557 |
| Thallium | 6020A | 1 | 1.1 | 5.5 | ND | | mg/Kg | 07/25/17 | 18:00 | ERR | 425557 |
| Vanadium | 6020A | 1 | 0.31 | 27 | **50.5** | | mg/Kg | 07/25/17 | 18:00 | ERR | 425557 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-17 (0-0.5) | **Lab Sample ID:** | 1707122-024A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:53 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/21/17 | 4:10:00PM |
| **Prep Batch ID:** | 8336 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 6020A | 10 | 1.8 | 2.2 | **103** | | mg/Kg | 07/26/17 | 17:40 | ERR | 425682 |
| Zinc | 6020A | 10 | 1.5 | 5.5 | **76.8** | | mg/Kg | 07/26/17 | 17:40 | ERR | 425682 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-17 (0-0.5) | **Lab Sample ID:** | 1707122-024A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:53 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/21/17 | 6:45:00PM |
| **Prep Batch ID:** | 8347 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **1.27** | | % | 07/21/17 | 18:45 | PH | 425559 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.01** | | - | 07/21/17 | 18:45 | PH | 425559 |

Torrent LABORATORY, INC.

# MB Summary Report

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707122 | **Prep Method:** | 6020S-P | **Prep Date:** | 07/20/17 | **Prep Batch:** | 8276 |
| **Matrix:** | Soil | **Analytical Method:** | 6020A | **Analyzed Date:** | 7/20/2017 | **Analytical Batch:** | 425519 |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Lab Qualifier |
|---|---|---|---|---|
| Arsenic | 0.21 | 1.0 | ND | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707122 | **Prep Method:** | 6020S-P | **Prep Date:** | 07/21/17 | **Prep Batch:** | 8321 |
| **Matrix:** | Soil | **Analytical Method:** | 6020A | **Analyzed Date:** | 7/21/2017 | **Analytical Batch:** | 425540 |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Lab Qualifier |
|---|---|---|---|---|
| Antimony | 0.12 | 1.0 | ND | |
| Arsenic | 0.21 | 1.0 | ND | |
| Barium | 0.84 | 1.0 | ND | |
| Beryllium | 0.16 | 1.0 | ND | |
| Cadmium | 0.084 | 1.0 | ND | |
| Chromium | 0.097 | 1.0 | 0.26 | J |
| Cobalt | 0.21 | 1.0 | ND | |
| Copper | 0.17 | 2.5 | ND | |
| Lead | 0.054 | 1.0 | ND | |
| Molybdenum | 0.13 | 1.0 | 0.19 | J |
| Nickel | 1.2 | 5.0 | ND | |
| Selenium | 0.035 | 2.5 | ND | |
| Thallium | 1.00 | 5.0 | ND | |
| Vanadium | 0.28 | 25 | ND | |
| Zinc | 0.70 | 2.5 | ND | |

Torrent LABORATORY, INC.

# MB Summary Report

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707122 | **Prep Method:** | 3546_PCB | **Prep Date:** | 07/21/17 | **Prep Batch:** | 8323 |
| **Matrix:** | Soil | **Analytical Method:** | SW8082A | **Analyzed Date:** | 7/21/2017 | **Analytical Batch:** | 425546 |
| **Units:** | ug/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Lab Qualifier |
|---|---|---|---|---|
| Aroclor1016 | 53 | 100 | ND | |
| Aroclor1221 | 5.0 | 100 | ND | |
| Aroclor1232 | 17 | 100 | ND | |
| Aroclor1242 | 3.0 | 100 | ND | |
| Aroclor1248 | 2.0 | 100 | ND | |
| Aroclor1254 | 2.0 | 100 | ND | |
| Aroclor1260 | 36 | 100 | ND | |
| TCMX (S) | | | 94.0 | |
| DCBP (S) | | | 99.0 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707122 | **Prep Method:** | 6020S-P | **Prep Date:** | 07/21/17 | **Prep Batch:** | 8336 |
| **Matrix:** | Soil | **Analytical Method:** | 6020A | **Analyzed Date:** | 7/25/2017 | **Analytical Batch:** | 425557 |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Lab Qualifier |
|---|---|---|---|---|
| Antimony | 0.12 | 1.0 | 0.19 | J |
| Arsenic | 0.21 | 1.0 | ND | |
| Barium | 0.84 | 1.0 | ND | |
| Beryllium | 0.16 | 1.0 | ND | |
| Cadmium | 0.084 | 1.0 | ND | |
| Chromium | 0.097 | 1.0 | 0.17 | J |
| Cobalt | 0.21 | 1.0 | ND | |
| Copper | 0.17 | 2.5 | ND | |
| Lead | 0.054 | 1.0 | ND | |
| Molybdenum | 0.13 | 1.0 | 0.20 | J |
| Nickel | 1.2 | 5.0 | ND | |
| Selenium | 0.035 | 2.5 | ND | |
| Silver | 0.098 | 1.0 | ND | |
| Thallium | 1.00 | 5.0 | ND | |
| Vanadium | 0.28 | 25 | ND | |
| Zinc | 0.70 | 2.5 | ND | |

Torrent LABORATORY, INC.

# MB Summary Report

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707122 | **Prep Method:** | 7471BP | **Prep Date:** | 07/21/17 | **Prep Batch:** | 8337 |
| **Matrix:** | Soil | **Analytical Method:** | SW7471B | **Analyzed Date:** | 7/25/2017 | **Analytical Batch:** | 425633 |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Lab Qualifier |
|---|---|---|---|---|
| Mercury | 0.083 | 0.50 | ND | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707122 | **Prep Method:** | % Water-P | **Prep Date:** | 07/21/17 | **Prep Batch:** | 8347 |
| **Matrix:** | Soil | **Analytical Method:** | ASTM D2216-90 | **Analyzed Date:** | 7/21/2017 | **Analytical Batch:** | 425559 |
| **Units:** | mg/L | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Lab Qualifier |
|---|---|---|---|---|
| % Moisture | 0.050 | 0.050 | ND | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707122 | **Prep Method:** | 7471BP | **Prep Date:** | 07/21/17 | **Prep Batch:** | 8348 |
| **Matrix:** | Soil | **Analytical Method:** | SW7471B | **Analyzed Date:** | 7/25/2017 | **Analytical Batch:** | 425634 |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Lab Qualifier |
|---|---|---|---|---|
| Mercury | 0.083 | 0.50 | ND | |

Torrent LABORATORY, INC.

# MB Summary Report

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707122 | **Prep Method:** | 3546_OCP | **Prep Date:** | 07/22/17 | **Prep Batch:** | 8352 |
| **Matrix:** | Soil | **Analytical Method:** | SW8081B | **Analyzed Date:** | 7/23/2017 | **Analytical Batch:** | 425641 |
| **Units:** | ug/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Lab Qualifier |
|---|---|---|---|---|
| alpha-BHC | 0.13 | 2.0 | ND | |
| gamma-BHC (Lindane) | 0.16 | 2.0 | ND | |
| beta-BHC | 0.32 | 2.0 | ND | |
| delta-BHC | 0.16 | 2.0 | ND | |
| Heptachlor | 0.11 | 2.0 | ND | |
| Aldrin | 0.20 | 2.0 | ND | |
| Heptachlor Epoxide | 0.078 | 2.0 | ND | |
| gamma-Chlordane | 0.16 | 2.0 | ND | |
| alpha-Chlordane | 0.17 | 2.0 | ND | |
| 4,4-DDE | 0.19 | 2.0 | ND | |
| Endosulfan I | 0.18 | 2.0 | ND | |
| Dieldrin | 0.15 | 2.0 | ND | |
| Endrin | 0.19 | 2.0 | ND | |
| 4,4-DDD | 0.57 | 2.0 | ND | |
| Endosulfan II | 0.58 | 2.0 | ND | |
| 4,4-DDT | 0.13 | 2.0 | ND | |
| Endrin Aldehyde | 0.15 | 2.0 | ND | |
| Methoxychlor | 0.20 | 2.0 | ND | |
| Endosulfan Sulfate | 0.12 | 2.0 | ND | |
| Endrin Ketone | 0.094 | 2.0 | ND | |
| Chlordane | 2.1 | 20 | ND | |
| Toxaphene | 8.5 | 50 | ND | |
| TCMX (S) | | | 92.9 | |
| DCBP (S) | | | 124 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707122 | **Prep Method:** | % Water-P | **Prep Date:** | 07/21/17 | **Prep Batch:** | 8446 |
| **Matrix:** | Soil | **Analytical Method:** | ASTM D2216-90 | **Analyzed Date:** | 7/21/2017 | **Analytical Batch:** | 425657 |
| **Units:** | % | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Lab Qualifier |
|---|---|---|---|---|
| % Moisture | 0.050 | 0.050 | ND | |

Torrent LABORATORY, INC.

# LCS/LCSD Summary Report

*Raw values are used in quality control assessment.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707122 | **Prep Method:** | 6020S-P | **Prep Date:** | 07/20/17 | **Prep Batch:** | 8276 |
| **Matrix:** | Soil | **Analytical Method:** | 6020A | **Analyzed Date:** | 7/20/2017 | **Analytical Batch:** | 425519 |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Spike Conc. | LCS % Recovery | LCSD % Recovery | LCS/LCSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 0.21 | 1.0 | ND | 25 | 90.4 | 98.9 | 8.88 | 80 - 120 | 30 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707122 | **Prep Method:** | 6020S-P | **Prep Date:** | 07/21/17 | **Prep Batch:** | 8321 |
| **Matrix:** | Soil | **Analytical Method:** | 6020A | **Analyzed Date:** | 7/21/2017 | **Analytical Batch:** | 425540 |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Spike Conc. | LCS % Recovery | LCSD % Recovery | LCS/LCSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | 0.12 | 1.0 | ND | 25 | 98.9 | 99.8 | 1.21 | 80 - 120 | 30 | |
| Arsenic | 0.21 | 1.0 | ND | 25 | 93.6 | 94.1 | 0.426 | 80 - 120 | 30 | |
| Barium | 0.84 | 1.0 | ND | 25 | 107 | 107 | 0.375 | 80 - 120 | 30 | |
| Beryllium | 0.16 | 1.0 | ND | 25 | 95.8 | 97.0 | 1.24 | 80 - 120 | 30 | |
| Cadmium | 0.084 | 1.0 | ND | 25 | 99.2 | 99.5 | 0.402 | 80 - 120 | 30 | |
| Chromium | 0.097 | 1.0 | 0.26 | 25 | 104 | 104 | 0.000 | 80 - 120 | 30 | |
| Cobalt | 0.21 | 1.0 | ND | 25 | 102 | 102 | 0.393 | 80 - 120 | 30 | |
| Copper | 0.17 | 2.5 | ND | 25 | 101 | 101 | 0.794 | 80 - 120 | 30 | |
| Lead | 0.054 | 1.0 | ND | 25 | 94.6 | 94.9 | 0.000 | 80 - 120 | 30 | |
| Molybdenum | 0.13 | 1.0 | 0.19 | 25 | 102 | 103 | 1.17 | 80 - 120 | 30 | |
| Nickel | 1.2 | 5.0 | ND | 25 | 103 | 103 | 0.000 | 80 - 120 | 30 | |
| Selenium | 0.035 | 2.5 | ND | 25 | 87.7 | 87.9 | 0.456 | 80 - 120 | 30 | |
| Thallium | 1.00 | 5.0 | ND | 25 | 90.2 | 91.1 | 0.881 | 80 - 120 | 30 | |
| Vanadium | 0.28 | 25 | ND | 25 | 95.2 | 96.4 | 1.25 | 80 - 120 | 30 | |
| Zinc | 0.70 | 2.5 | ND | 25 | 95.9 | 96.9 | 0.830 | 80 - 120 | 30 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707122 | **Prep Method:** | 3546_PCB | **Prep Date:** | 07/21/17 | **Prep Batch:** | 8323 |
| **Matrix:** | Soil | **Analytical Method:** | SW8082A | **Analyzed Date:** | 7/21/2017 | **Analytical Batch:** | 425546 |
| **Units:** | ug/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Spike Conc. | LCS % Recovery | LCSD % Recovery | LCS/LCSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| Aroclor1016 | 53 | 100 | ND | 600 | 108 | 97.5 | 9.76 | 25 - 145 | 30 | |
| Aroclor1260 | 36 | 100 | ND | 600 | 105 | 95.2 | 9.67 | 30 - 145 | 30 | |
| TCMX (S) | | | | 0.10 | 99.0 | 92.0 | | 48 - 125 | | |
| DCBP (S) | | | | 0.10 | 114 | 104 | | 48 - 135 | | |

Torrent LABORATORY, INC.

# LCS/LCSD Summary Report

*Raw values are used in quality control assessment.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707122 | **Prep Method:** | 6020S-P | **Prep Date:** | 07/21/17 | **Prep Batch:** | 8336 |
| **Matrix:** | Soil | **Analytical Method:** | 6020A | **Analyzed Date:** | 7/25/2017 | **Analytical Batch:** | 425557 |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Spike Conc. | LCS % Recovery | LCSD % Recovery | LCS/LCSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | 0.12 | 1.0 | 0.19 | 25 | 98.5 | 97.7 | 0.816 | 80 - 120 | 30 | |
| Arsenic | 0.21 | 1.0 | ND | 25 | 100 | 100 | 0.000 | 80 - 120 | 30 | |
| Barium | 0.84 | 1.0 | ND | 25 | 97.7 | 97.9 | 0.409 | 80 - 120 | 30 | |
| Beryllium | 0.16 | 1.0 | ND | 25 | 99.0 | 99.1 | 0.000 | 80 - 120 | 30 | |
| Cadmium | 0.084 | 1.0 | ND | 25 | 99.7 | 99.9 | 0.401 | 80 - 120 | 30 | |
| Chromium | 0.097 | 1.0 | 0.17 | 25 | 103 | 102 | 0.781 | 80 - 120 | 30 | |
| Cobalt | 0.21 | 1.0 | ND | 25 | 100 | 101 | 0.000 | 80 - 120 | 30 | |
| Copper | 0.17 | 2.5 | ND | 25 | 103 | 103 | 0.778 | 80 - 120 | 30 | |
| Lead | 0.054 | 1.0 | ND | 25 | 105 | 106 | 0.760 | 80 - 120 | 30 | |
| Molybdenum | 0.13 | 1.0 | 0.20 | 25 | 101 | 101 | 0.000 | 80 - 120 | 30 | |
| Nickel | 1.2 | 5.0 | ND | 25 | 101 | 101 | 0.398 | 80 - 120 | 30 | |
| Selenium | 0.035 | 2.5 | ND | 25 | 102 | 103 | 0.781 | 80 - 120 | 30 | |
| Silver | 0.098 | 1.0 | ND | 25 | 98.7 | 98.9 | 0.000 | 80 - 120 | 30 | |
| Thallium | 1.00 | 5.0 | ND | 25 | 104 | 105 | 0.000 | 80 - 120 | 30 | |
| Vanadium | 0.28 | 25 | ND | 25 | 98.8 | 98.8 | 0.000 | 80 - 120 | 30 | |
| Zinc | 0.70 | 2.5 | ND | 25 | 101 | 102 | 0.000 | 80 - 120 | 30 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707122 | **Prep Method:** | 7471BP | **Prep Date:** | 07/21/17 | **Prep Batch:** | 8337 |
| **Matrix:** | Soil | **Analytical Method:** | SW7471B | **Analyzed Date:** | 7/25/2017 | **Analytical Batch:** | 425633 |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Spike Conc. | LCS % Recovery | LCSD % Recovery | LCS/LCSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.047 | 0.50 | ND | 1.25 | 111 | 111 | 0.000 | 80 - 120 | 30 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707122 | **Prep Method:** | 7471BP | **Prep Date:** | 07/21/17 | **Prep Batch:** | 8348 |
| **Matrix:** | Soil | **Analytical Method:** | SW7471B | **Analyzed Date:** | 7/25/2017 | **Analytical Batch:** | 425634 |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Spike Conc. | LCS % Recovery | LCSD % Recovery | LCS/LCSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.047 | 0.50 | ND | 1.25 | 105 | 104 | 1.53 | 80 - 120 | 30 | |

Torrent LABORATORY, INC.

# LCS/LCSD Summary Report

*Raw values are used in quality control assessment.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707122 | **Prep Method:** | 3546_OCP | **Prep Date:** | 07/22/17 | **Prep Batch:** | 8352 |
| **Matrix:** | Soil | **Analytical Method:** | SW8081B | **Analyzed Date:** | 7/23/2017 | **Analytical Batch:** | 425641 |
| **Units:** | ug/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Spike Conc. | LCS % Recovery | LCSD % Recovery | LCS/LCSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| gamma-BHC (Lindane) | 0.16 | 2.0 | ND | 40 | 104 | 106 | 0.952 | 25 - 135 | 30 | |
| Heptachlor | 0.11 | 2.0 | ND | 40 | 99.4 | 101 | 1.00 | 40 - 130 | 30 | |
| Aldrin | 0.20 | 2.0 | ND | 40 | 104 | 105 | 0.955 | 25 - 140 | 30 | |
| Dieldrin | 0.15 | 2.0 | ND | 40 | 98.9 | 101 | 2.01 | 60 - 130 | 30 | |
| Endrin | 0.19 | 2.0 | ND | 40 | 91.9 | 94.0 | 2.15 | 55 - 135 | 30 | |
| 4,4-DDT | 0.13 | 2.0 | ND | 40 | 89.4 | 93.3 | 4.38 | 45 - 140 | 30 | |
| TCMX (S) | | | | 130 | 88.6 | 89.5 | | 48 - 125 | | |
| DCBP (S) | | | | 130 | 107 | 113 | | 38 - 135 | | |

Torrent LABORATORY, INC.

# MS/MSD Summary Report

*Raw values are used in quality control assessment.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707122 | **Prep Method:** | 6020S-P | **Prep Date:** | 07/21/17 | **Prep Batch:** | 8321 |
| **Matrix:** | **Soil** | **Analytical Method:** | 6020A | **Analyzed Date:** | July 21 | **Analytical Batch:** | 425540 |
| **Spiked Sample:** | 1707122-001A | | | | | | |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Sample Conc. | Spike Conc. | MS % Recovery | MSD % Recovery | MS/MSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | 0.12 | 1.0 | ND | 25 | 98.2 | 99.0 | 1.22 | 30.7 - 130 | 33 | |
| Arsenic | 0.21 | 1.0 | 3.35 | 25 | 88.1 | 89.4 | 1.17 | 71.0 - 121 | 33 | |
| Barium | 0.84 | 1.0 | 24.8 | 25 | 89.4 | 92.2 | 1.47 | 70.2 - 130 | 33 | |
| Beryllium | 0.16 | 1.0 | ND | 25 | 86.3 | 86.2 | 0.464 | 73.3 - 125 | 33 | |
| Cadmium | 0.084 | 1.0 | ND | 25 | 99.9 | 101 | 0.797 | 88.7 - 110 | 33 | |
| Chromium | 0.097 | 1.0 | 19.1 | 25 | 81.2 | 89.8 | 5.43 | 76.0 - 116 | 33 | |
| Cobalt | 0.21 | 1.0 | 4.19 | 25 | 91.7 | 93.0 | 1.10 | 57.4 - 122 | 33 | |
| Copper | 0.17 | 2.5 | 13.3 | 25 | 80.7 | 86.2 | 4.09 | 74.8 - 119 | 33 | |
| Lead | 0.054 | 1.0 | 5.33 | 25 | 82.7 | 84.0 | 1.15 | 57.9 - 118 | 33 | |
| Molybdenum | 0.13 | 1.0 | ND | 25 | 103 | 103 | 0.388 | 62.9 - 123 | 33 | |
| Nickel | 1.2 | 5.0 | 9.80 | 25 | 83.0 | 89.2 | 5.11 | 61.5 - 122 | 33 | |
| Selenium | 0.035 | 2.5 | ND | 25 | 86.3 | 88.1 | 1.83 | 62.0 - 111 | 33 | |
| Silver | 0.098 | 1.0 | ND | 25 | 36.8 | 37.1 | 0.758 | 81.1 - 109 | 33 | S |
| Thallium | 1.00 | 5.0 | ND | 25 | 83.8 | 84.4 | 0.943 | 39.2 - 125 | 33 | |
| Vanadium | 0.28 | 25 | ND | 25 | 86.8 | 94.1 | 4.10 | 65.8 - 122 | 33 | |
| Zinc | 0.70 | 2.5 | 20.3 | 25 | 81.0 | 83.2 | 1.22 | 59.9 - 122 | 33 | |

Torrent LABORATORY, INC.

# MS/MSD Summary Report

*Raw values are used in quality control assessment.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707122 | **Prep Method:** | 6020S-P | **Prep Date:** | 07/21/17 | **Prep Batch:** | 8336 |
| **Matrix:** | **Soil** | **Analytical Method:** | 6020A | **Analyzed Date:** | July 25 | **Analytical Batch:** | 425557 |
| **Spiked Sample:** | 1707122-019A | | | | | | |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Sample Conc. | Spike Conc. | MS % Recovery | MSD % Recovery | MS/MSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | 0.12 | 1.0 | ND | 25 | 92.2 | 90.4 | 2.19 | 30.7 - 130 | 33 | |
| Arsenic | 0.21 | 1.0 | 4.64 | 25 | 103 | 94.5 | 7.16 | 71.0 - 121 | 33 | |
| Barium | 0.84 | 1.0 | 68.7 | 25 | 134 | 57.7 | 20.4 | 70.2 - 130 | 33 | S |
| Beryllium | 0.16 | 1.0 | ND | 25 | 81.1 | 79.2 | 2.49 | 73.3 - 125 | 33 | |
| Cadmium | 0.084 | 1.0 | ND | 25 | 100 | 95.6 | 4.90 | 88.7 - 110 | 33 | |
| Chromium | 0.097 | 1.0 | 20.9 | 25 | 136 | 116 | 9.56 | 76.0 - 116 | 33 | S |
| Cobalt | 0.21 | 1.0 | 5.78 | 25 | 99.0 | 90.4 | 7.13 | 57.4 - 122 | 33 | |
| Copper | 0.17 | 2.5 | 18.8 | 25 | 108 | 87.9 | 11.8 | 74.8 - 119 | 33 | |
| Lead | 0.054 | 1.0 | 13.1 | 25 | 112 | 100 | 7.56 | 57.9 - 118 | 33 | |
| Molybdenum | 0.13 | 1.0 | ND | 25 | 97.0 | 95.0 | 1.67 | 62.9 - 123 | 33 | |
| Nickel | 1.2 | 5.0 | 10.0 | 25 | 104 | 93.4 | 7.79 | 61.5 - 122 | 33 | |
| Selenium | 0.035 | 2.5 | ND | 25 | 94.0 | 90.5 | 3.90 | 62.0 - 111 | 33 | |
| Silver | 0.098 | 1.0 | ND | 25 | 93.0 | 90.1 | 3.49 | 81.1 - 109 | 33 | |
| Thallium | 1.00 | 5.0 | ND | 25 | 90.0 | 87.8 | 2.70 | 39.2 - 125 | 33 | |
| Vanadium | 0.28 | 25 | 25.0 | 25 | 137 | 107 | 13.3 | 65.8 - 122 | 33 | S |
| Zinc | 0.70 | 2.5 | 23.1 | 25 | 128 | 109 | 8.93 | 59.9 - 122 | 33 | S |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707122 | **Prep Method:** | 7471BP | **Prep Date:** | 07/21/17 | **Prep Batch:** | 8337 |
| **Matrix:** | **Soil** | **Analytical Method:** | SW7471B | **Analyzed Date:** | 7/25/2017 | **Analytical Batch:** | 425633 |
| **Spiked Sample:** | 1707122-019A | | | | | | |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Sample Conc. | Spike Conc. | MS % Recovery | MSD % Recovery | MS/MSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.047 | 0.50 | ND | 1.25 | 108 | 112 | 2.88 | 75 - 125 | 30 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707122 | **Prep Method:** | 7471BP | **Prep Date:** | 07/21/17 | **Prep Batch:** | 8348 |
| **Matrix:** | **Soil** | **Analytical Method:** | SW7471B | **Analyzed Date:** | 7/25/2017 | **Analytical Batch:** | 425634 |
| **Spiked Sample:** | 1707122-001A | | | | | | |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Sample Conc. | Spike Conc. | MS % Recovery | MSD % Recovery | MS/MSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.047 | 0.50 | ND | 1.25 | 114 | 106 | 7.94 | 75 - 125 | 30 | |

Torrent LABORATORY, INC.

# Duplicate QC Summary Report

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707122 | **Prep Method:** | % Water-P | **Prep Date:** | 7/21/2017 | **Prep Batch:** | 8446 |
| **Matrix:** | | **Analytical Method:** | ASTM D2216-90 | **Analyzed Date:** | 07/21/17 | **Analytical Batch:** | 425657 |
| **Units:** | | | | | | **Lab Sample ID:** | 1707122-001A-DUP-8446 |

| Parameters | MDL | PQL | Sample Result | Duplicate Result | % RPD |
|---|---|---|---|---|---|
| % Moisture | 0.050 | 0.0500 | 29.5 | 33.1 | 11.50 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707122 | **Prep Method:** | % Water-P | **Prep Date:** | 7/21/2017 | **Prep Batch:** | 8446 |
| **Matrix:** | | **Analytical Method:** | ASTM D2216-90 | **Analyzed Date:** | 07/21/17 | **Analytical Batch:** | 425657 |
| **Units:** | | | | | | **Lab Sample ID:** | 1707122-011A-DUP-8446 |

| Parameters | MDL | PQL | Sample Result | Duplicate Result | % RPD |
|---|---|---|---|---|---|
| % Moisture | 0.050 | 0.0500 | 16.8 | 19.6 | 15.40 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707122 | **Prep Method:** | % Water-P | **Prep Date:** | 7/21/2017 | **Prep Batch:** | 8347 |
| **Matrix:** | | **Analytical Method:** | ASTM D2216-90 | **Analyzed Date:** | 07/21/17 | **Analytical Batch:** | 425559 |
| **Units:** | | | | | | **Lab Sample ID:** | 1707122-021A-DUP-8347 |

| Parameters | MDL | PQL | Sample Result | Duplicate Result | % RPD |
|---|---|---|---|---|---|
| % Moisture | 0.050 | 0.0500 | 27.2 | 24.2 | 11.70 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707122 | **Prep Method:** | 6020S-P | **Prep Date:** | 7/20/2017 | **Prep Batch:** | 8276 |
| **Matrix:** | | **Analytical Method:** | 6020A | **Analyzed Date:** | 07/20/17 | **Analytical Batch:** | 425519 |
| **Units:** | | | | | | **Lab Sample ID:** | 1707122-023A-DUP-8276 |

| Parameters | MDL | PQL | Sample Result | Duplicate Result | % RPD |
|---|---|---|---|---|---|
| Arsenic | 0.23 | 1.1 | 14.9 | 13.2 | 12.00 |

# Laboratory Qualifiers and Definitions

## DEFINITIONS:

| |
|---|
| **Accuracy/Bias (% Recovery)** - The closeness of agreement between an observed value and an accepted reference value. |
| **Blank (Method/Preparation Blank)** -MB/PB - An analyte-free matrix to which all reagents are added in the same volumes/proportions as used in sample processing. The method blank is used to document contamination resulting from the analytical process. |
| **Duplicate** - a field sample and/or laboratory QC sample prepared in duplicate following all of the same processes and procedures used on the original sample (sample duplicate, LCSD, MSD) |
| **Laboratory Control Sample (LCS ad LCSD)** - A known matrix spiked with compounds representative of the target analyte(s). This is used to document laboratory performance. |
| **Matrix** - the component or substrate that contains the analyte of interest (e.g., - groundwater, sediment, soil, waste water, etc) |
| **Matrix Spike (MS/MSD)** - Client sample spiked with identical concentrations of target analyte (s). The spiking occurs prior to the sample preparation and analysis. They are used to document the precision and bias of a method in a given sample matrix. |
| **Method Detection Limit (MDL)** - the minimum concentration of a substance that can be measured and reported with a 99% confidence that the analyte concentration is greater than zero |
| **Practical Quantitation Limit/Reporting Limit/Limit of Quantitation (PQL/RL/LOQ)** - a laboratory determined value at 2 to 5 times above the MDL that can be reproduced in a manner that results in a 99% confidence level that the result is both accurate and precise. PQLs/RLs/LODs reflect all preparation factors and/or dilution factors that have been applied to the sample during the preparation and/or analytical processes. |
| **Precision (%RPD)** - The agreement among a set of replicate/duplicate measurements without regard to known value of the replicates |
| **Surrogate (S) or (Surr)** - An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples. Surrogates are used in most organic analysis to demonstrate matrix compatibility with the chosen method of analysis |
| **Tentatively Identified Compound (TIC) -** A compound not contained within the analytical calibration standards but present in the GCMS library of defined compounds. When the library is searched for an unknown compound, it can frequently give a tentative identification to the compound based on retention time and primary and secondary ion match. TICs are reported as estimates and are candidates for further investigation. |
| **Units:** the unit of measure used to express the reported result - **mg/L** and ***mg/Kg*** (equivalent to PPM - parts per million in **liquid** and ***solid***), **ug/L** and ***ug/Kg*** (equivalent to PPB - parts per billion in **liquid** and ***solid***), **ug/m3**, ***mg/m3***, **ppbv** and ***ppmv*** (all units of measure for reporting concentrations in air), **%** ( equivalent to 10000 ppm or 1,000,000 ppb), **ug/Wipe** ( concentration found on the surface of a single Wipe usually taken over a 100cm2 surface) |

## LABORATORY QUALIFIERS:

**B** - Indicates when the analyte is found in the associated method or preparation blank
**D** - Surrogate is not recoverable due to the necessary dilution of the sample
**E** - Indicates the reportable value is outside of the calibration range of the instrument but within the linear range of the instrument (unless otherwise noted) Values reported with an E qualifier should be considered as estimated.
**H**- Indicates that the recommended holding time for the analyte or compound has been exceeded
**J**- Indicates a value between the method MDL and PQL and that the reported concentration should be considered as estimated rather the quantitative
**NA** - Not Analyzed
**N/A** - Not Applicable
**ND** - Not Detected at a concentration greater than the PQL/RL or, if reported to the MDL, at greater than the MDL.
**NR** - Not recoverable - a matrix spike concentration is not recoverable due to a concentration within the original sample that is greater than four times the spike concentration added
**R**- The % RPD between a duplicate set of samples is outside of the absolute values established by laboratory control charts
**S**- Spike recovery is outside of established method and/or laboratory control limits. Further explanation of the use of this qualifier should be included within a case narrative
**X** -Used to indicate that a value based on pattern identification is within the pattern range but not typical of the pattern found in standards. Further explanation may or may not be provided within the sample footnote and/or the case narrative.

# Sample Receipt Checklist

Client Name: Cornerstone(Walnut Creek)

Project Name: 3141 Taylor Road

Work Order No.: 1707122

Date and Time Received: 7/19/2017 1:35:00PM

Received By: Helena Ueng

Physically Logged By: Helena Ueng

Checklist Completed By:

Carrier Name: First Courier

**Chain of Custody (COC) Information**

| | |
|---|---|
| Chain of custody present? | Yes |
| Chain of custody signed when relinquished and received? | Yes |
| Chain of custody agrees with sample labels? | Yes |
| Custody seals intact on sample bottles? | Not Present |

**Sample Receipt Information**

| | |
|---|---|
| Custody seals intact on shipping container/cooler? | Not Present |
| Shipping Container/Cooler In Good Condition? | Yes |
| Samples in proper container/bottle? | Yes |
| Samples containers intact? | Yes |
| Sufficient sample volume for indicated test? | Yes |

**Sample Preservation and Hold Time (HT) Information**

| | | | | |
|---|---|---|---|---|
| All samples received within holding time? | Yes | | | |
| Container/Temp Blank temperature in compliance? | Yes | Temperature: | 1.0 | °C |
| Water-VOA vials have zero headspace? | | | | |
| Water-pH acceptable upon receipt? | N/A | | | |

pH Checked by: N/A

pH Adjusted by: N/A

**Comments:**

# Login Summary Report

| | | | | |
|---|---|---|---|---|
| **Client ID:** | TL5508 | Cornerstone(Walnut Creek) | **QC Level:** | II |
| **Project Name:** | 3141 Taylor Road | | **TAT Requested:** | 5+ day:5 |
| **Project # :** | 411-16-3 | | **Date Received:** | 7/19/2017 |
| **Report Due Date:** | 7/26/2017 | | **Time Received:** | 1:35 pm |

**Comments:**

**Work Order # :** ***1707122***

| WO Sample ID | Client Sample ID | Collection Date/Time | Matrix | Scheduled Disposal | Sample On Hold | Test On Hold | Requested Tests | Subbed |
|---|---|---|---|---|---|---|---|---|
| 1707122-001A | SS-101 (0-0.5) | 07/18/17 13:01 | Soil | 01/15/18 | | | PMOIST<br>Pest_S_8081OCP<br>Met_S_6020CAM17<br>Hg_S_7471B | |
| **Sample Note:** | Metals by 6020, need to be reported to the MDL to meet RL of 0.5 mg/kg<br><br>OCPs--need RLs of 2 ppb (40 ppb for Chlordane). Avoid diluting. | | | | | | | |
| 1707122-002A | SS-102 (0-0.5) | 07/18/17 13:02 | Soil | 01/15/18 | | | PCBs_S_8082A<br>Met_S_6020CAM17<br>Pest_S_8081OCP<br>Hg_S_7471B<br>PMOIST | |
| **Sample Note:** | PCBs--need RL of 50 ppb | | | | | | | |
| 1707122-003A | SS-1 (0-0.5) | 07/18/17 14:26 | Soil | 01/15/18 | | | PMOIST<br>Met_S_6020CAM17<br>Hg_S_7471B | |
| 1707122-004A | SS-2 (0-0.5) | 07/18/17 14:23 | Soil | 01/15/18 | | | PMOIST<br>Met_S_6020CAM17<br>Hg_S_7471B | |
| 1707122-005A | SS-3 (0-0.5) | 07/18/17 16:18 | Soil | 01/15/18 | | | PMOIST<br>Met_S_6020CAM17<br>Hg_S_7471B | |
| 1707122-006A | SS-4 (0-0.5) | 07/18/17 13:12 | Soil | 01/15/18 | | | PMOIST<br>Met_S_6020CAM17<br>Hg_S_7471B | |
| 1707122-007A | SS-4 (2.5-3) | 07/18/17 13:17 | Soil | 01/15/18 | | | PMOIST<br>Met_S_6020AsPb | |
| **Sample Note:** | 6020-Arsenic only | | | | | | | |
| 1707122-008A | SS-5 (0-0.5) | 07/18/17 12:50 | Soil | 01/15/18 | | | | |

# Login Summary Report

**Client ID:** TL5508 Cornerstone(Walnut Creek)

**Project Name:** 3141 Taylor Road

**Project # :** 411-16-3

**Report Due Date:** 7/26/2017

**QC Level:** II

**TAT Requested:** 5+ day:5

**Date Received:** 7/19/2017

**Time Received:** 1:35 pm

**Comments:**

**Work Order # :** ***1707122***

| WO Sample ID | Client Sample ID | Collection Date/Time | Matrix | Scheduled Disposal | Sample On Hold | Test On Hold | Requested Tests | Subbed |
|---|---|---|---|---|---|---|---|---|
| 1707122-009A | SS-6 (0-0.5) | 07/18/17 12:14 | Soil | 01/15/18 | | | PMOIST<br>Met_S_6020CAM17<br>Hg_S_7471B | |
| 1707122-010A | SS-6 (2.5-3) | 07/18/17 12:20 | Soil | 01/15/18 | | | PMOIST<br>Met_S_6020CAM17<br>Hg_S_7471B | |
| 1707122-011A | SS-7 (0-0.5) | 07/18/17 12:45 | Soil | 01/15/18 | | | PMOIST<br>Met_S_6020AsPb | |
| 1707122-012A | SS-9 (0-0.5) | 07/18/17 10:07 | Soil | 01/15/18 | | | PMOIST<br>Met_S_6020CAM17<br>Hg_S_7471B | |
| 1707122-013A | SS-8 (0-0.5) | 07/18/17 10:54 | Soil | 01/15/18 | | | PMOIST<br>Met_S_6020CAM17<br>Hg_S_7471B | |
| 1707122-014A | SS-8 (2.5-3) | 07/18/17 10:58 | Soil | 01/15/18 | | | PMOIST<br>Met_S_6020CAM17<br>Hg_S_7471B | |
| 1707122-015A | SS-10 (0-0.5) | 07/18/17 9:55 | Soil | 01/15/18 | | | PMOIST<br>Met_S_6020AsPb | |
| 1707122-016A | SS-11 (0-0.5) | 07/18/17 8:55 | Soil | 01/15/18 | | | PMOIST<br>Met_S_6020CAM17<br>Hg_S_7471B | |
| 1707122-017A | SS-12 (0-0.5) | 07/18/17 9:25 | Soil | 01/15/18 | | | PMOIST<br>Met_S_6020CAM17<br>Hg_S_7471B | |

# Login Summary Report

| | | | | |
|---|---|---|---|---|
| **Client ID:** | TL5508 | Cornerstone(Walnut Creek) | **QC Level:** | II |
| **Project Name:** | 3141 Taylor Road | | **TAT Requested:** | 5+ day:5 |
| **Project # :** | 411-16-3 | | **Date Received:** | 7/19/2017 |
| **Report Due Date:** | 7/26/2017 | | **Time Received:** | 1:35 pm |

**Comments:**

**Work Order # :** ***1707122***

| WO Sample ID | Client Sample ID | Collection Date/Time | Matrix | Scheduled Disposal | Sample On Hold | Test On Hold | Requested Tests | Subbed |
|---|---|---|---|---|---|---|---|---|
| 1707122-018A | SS-12 (2.5-3) | 07/18/17 9:30 | Soil | 01/15/18 | | | PMOIST<br>Met_S_6020AsPb | |
| 1707122-019A | SS-13 (0-0.5) | 07/18/17 10:33 | Soil | 01/15/18 | | | Hg_S_7471B<br>Met_S_6020CAM17<br>PMOIST | |
| 1707122-020A | SS-14 (0-0.5) | 07/18/17 10:46 | Soil | 01/15/18 | | | Hg_S_7471B<br>Met_S_6020CAM17<br>PMOIST | |
| 1707122-021A | SS-15 (0-0.5) | 07/18/17 10:56 | Soil | 01/15/18 | | | PMOIST<br>Met_S_6020CAM17<br>Hg_S_7471B | |
| 1707122-022A | SS-16 (0-0.5) | 07/18/17 11:27 | Soil | 01/15/18 | | | PMOIST<br>Met_S_6020CAM17<br>Hg_S_7471B | |
| 1707122-023A | SS-16 (2.5-3) | 07/18/17 11:39 | Soil | 01/15/18 | | | PMOIST<br>Met_S_6020AsPb | |
| 1707122-024A | SS-17 (0-0.5) | 07/18/17 12:53 | Soil | 01/15/18 | | | PMOIST<br>Hg_S_7471B<br>Met_S_6020CAM17 | |

Torrent LABORATORY, INC.

CORNERSTONE EARTH GROUP

# Chain of Custody Record

1707122

| | | | |
|---|---|---|---|
| Cornerstone Earth Group, Inc. | Project Manager: Peter Langtry | Site Sampler: BMJ KAK | Date: 7/18/17 |
| | Tel/Fax: 925-988-9500 ext. 217 | Lab Contact: Kathie Evans | Lab: Torrent Laboratory, Inc. |
| 1270 Springbrook Rd | Analysis Turnaround Time | | |
| Walnut Creek, CA 94597 | | | |
| (925)-988-9500 Phone | TAT if different from Below _____ | | |
| (925)-988-9501 FAX | ☐ 1 week | | |
| Project Name: 3141 Taylor Rd | ■ 3 days | | |
| Site: Loomis, CA | ☐ 2 days | | |
| Project Number: 411-16-3 | ☐ 1 day | | |

COC No: 1 of 6 COCs

Laboratory's Job No.

| | Sample Identification | Sample Date | Sample Time | Sample Type | Matrix | # of Cont. | Filtered Sample | Arsenic (EPA 6020) | CAM17 (EPA 6020) | OCPs (EPA 8081) | PCBs (EPA 8082) | HOLD | Laboratory's Sample Specific Notes: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -001A | SS-101 (0-0.5) | 7/18/17 | 01:01 | Liner | Sol | 1 | | | X | X | | | |
| -002A | SS-102 (0-0.5) | | 01:02 | | | | | | X | X | X | | |
| -003A | SS-1 (0-0.5) | | 14:26 | | | | | | X | | | | |
| -004A | SS-2 (0-0.5) | | 14:23 | | | | | | X | | | | |
| -005A | SS-3 (0-0.5) | | 16:18 | | | | | | X | | | | |
| -006A | SS-4 (0-0.5) | | 13:12 | | | | | | X | | | | |
| -007A | SS-4 (2.5-3) | | 13:17 | | | | | X | | | | | |
| -008A | SS-5 (0-0.5) | | 12:50 | | | | | | X | | | | |
| -009A | SS-6 (0-0.5) | | 12:14 | | | | | | X | | | | |
| -010A | SS-6 (2.5-3) | | 12:20 | | | | | X | ~~X~~ PCBs | | | | Arsenic Only |
| -011A | SS-7 (0-0.5) | | 12:45 | | | | | | X | | | | |
| -012A | SS-9 (0-0.5) | | 10:07 | | | | | | X | | | | |

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

**Possible Hazard Identification**

☐ Non-Hazardous ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

**Sample Disposal**

☐ Return to Client ☐ Disposal by Lab ☐ Archive For _____ Months

**Special Instructions/QC Requirements & Comments: If additional sample is needed, please use the liner.**

Please CC: Brent Johnson, bjohnson@cornerstoneearth.com, with results

Please report all soil analyses on dry weight basis.

| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
|---|---|---|---|---|---|
| [signature] | Cornerstone Earth Group | 7/19/17 11:30 | [signature] | 1st CLASS | 7/19 11:30 |
| [signature] | 1st CLASS | 7/19/17 1:35 | [signature] | Torrent | 7/19/17 13:35 |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |

PCS Temp = 1°C #1

Torrent LABORATORY, INC.

CORNERSTONE EARTH GROUP

# Chain of Custody Record

1707122

| | | | |
|---|---|---|---|
| Cornerstone Earth Group, Inc. | Project Manager: Peter Langtry | Site Sampler: BMJ / KAK | Date: 7/18/17 |
| | Tel/Fax: 925-988-9500 ext. 217 | Lab Contact: Kathie Evans | Lab: Torrent Laboratory, Inc. |
| 1270 Springbrook Rd | Analysis Turnaround Time | | |
| Walnut Creek, CA 94597 | | | |
| (925)-988-9500 Phone | TAT if different from Below _____ | | |
| (925)-988-9501 FAX | ☐ 1 week | | |
| Project Name: 3141 Taylor Rd | ■ 3 days | | |
| Site: Loomis, CA | ☐ 2 days | | |
| Project Number: 411-16-3 | ☐ 1 day | | |

COC No: 2 of 6 COCs

Laboratory's Job No.

| | Sample Identification | Sample Date | Sample Time | Sample Type | Matrix | # of Cont. | Filtered Sample | Arsenic (EPA 6020) | CAM17 (EPA 6020) | OCPs (EPA 8081) | PCBs (EPA 8082) | HOLD | Laboratory's Sample Specific Notes: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -013A | SS-8 (0-0.5) | 7/18/17 | 10:54 | Liner | Soil | 1 | | | X | | | | |
| -014A | SS-8 (2.5-3) | | 10:58 | | | | | X | | | | | |
| -015A | SS-~~9~~ BJ 10 (0-0.5) | | 09:55 | | | | | | X | | | | |
| -016A | SS-11 (0-0.5) | | 08:55 | | | | | | X | | | | |
| -017A | SS-12 (0-0.5) | | 09:25 | | | | | | X | | | | |
| -018A | SS-12 (2.5-3) | | 09:30 | | | | | X | | | | | |
| -019A | SS-13 (0-0.5) | | 10:33 | | | | | | X | | | | |
| -020A | SS-14 (0-0.5) | | 10:46 | | | | | | X | | | | |
| -021A | SS-15 (0-0.5) | | 10:56 | | | | | | X | | | | |
| -022A | SS-16 (0-0.5) | | 11:27 | | | | | | X | | | | |
| -023A | SS-16 (BJ 2.5-3) | | 11:39 | | | | | X | | | | | |
| -024A | SS-17 (0-0.5) | | 12:53 | | | | | | X | | | | |

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other 1

*Possible Hazard Identification*

☐ Non-Hazardous ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

*Sample Disposal*

☐ *Return to Client* ☐ *Disposal by Lab* ☐ *Archive For* _____ *Months*

**Special Instructions/QC Requirements & Comments: If additional sample is needed, please use the liner.**

Please CC: Brent Johnson, bjohnson@cornerstoneearth.com, with results

Please report all soil analyses on dry weight basis

| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
|---|---|---|---|---|---|
| [signature] | Cornerstone Earth Group | 7/19/17 11:30 | Derek | 1st Class | 7/19 1130 |
| Relinquished by: Derek | Company: 1st Class | Date/Time: 7/19/17 | Received by: 1:35 [signature] | Company: Torrent | Date/Time: 7/19/17 13:35 |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |

FCS Temp=1°C #1

Cornerstone(Walnut Creek)
1270 Springbrook Rd., Ste. 101
Walnut Creek, California 94597
Tel: 925 988 9500
Fax: 925 988 9501

RE: 3141 Taylor Road

Work Order No.: 1707125

Dear Peter Langtry:

Torrent Laboratory, Inc. received 22 sample(s) on July 19, 2017 for the analyses presented in the following Report.

All data for associated QC met EPA or laboratory specification(s) except where noted in the case narrative.

Torrent Laboratory, Inc. is certified by the State of California, ELAP #1991. If you have any questions regarding these test results, please feel free to contact the Project Management Team at (408)263-5258; ext 204.

Patti L Sandrock
QA Officer

July 27, 2017
Date

**Date:** 7/27/2017

**Client:** Cornerstone(Walnut Creek)

**Project:** 3141 Taylor Road

**Work Order:** 1707125

## CASE NARRATIVE

No issues encountered with the receiving, preparation, analysis or reporting of the results associated with this work order.

Unless otherwise indicated in the following narrative, no results have been method and/or field blank corrected.

Reported results relate only to the items/samples tested by the laboratory.

This report shall not be reproduced, except in full, without the written approval of Torrent Analytical, Inc.

Data is reported as dry weight. Where necessary, results are reported to the MDL to meet client reporting limits of 0.5 mg/kg for metals, 50 ug/kg for PCBs and 2 ug/kg for Pesticides (40 ug/kg for Toxaphene and Chlordane).

Although the EBQ-1 sample DCPB surrogate was outside of laboratory control limits (low bias) in the 8081 OCP analysis, insufficient sample was available for re-extraction and re-analysis. The TCMX surrogate is in control limits and the Method Blank, LCS and LCSD surrogates are all within laboratory control limits.

REVISIONS

Report revised to report metals and PCB data to the MDL as detailed in the above case narrative. The previously issued report did not have any metals data reported to the MDL. In addition, OCP data in the previous report was not reported as dry weight; that has been corrected such that OCP data is reported as dry weight in this revision.

Rev. 1 (7/27/17)

Torrent LABORATORY, INC.

# Sample Result Summary

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date Received:** 07/19/17
**Date Reported:** 07/27/17

**SS-41 (0-0.5)** 1707125-001

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Antimony | 6020A | 1 | 0.14 | 1.2 | 0.652 | mg/Kg |
| Arsenic | 6020A | 1 | 0.25 | 1.2 | 12.9 | mg/Kg |
| Beryllium | 6020A | 1 | 0.19 | 1.2 | 0.231 | mg/Kg |
| Cadmium | 6020A | 1 | 0.10 | 1.2 | 0.239 | mg/Kg |
| Chromium | 6020A | 1 | 0.12 | 1.2 | 51.4 | mg/Kg |
| Cobalt | 6020A | 1 | 0.25 | 1.2 | 10.5 | mg/Kg |
| Copper | 6020A | 1 | 0.20 | 3.0 | 39.7 | mg/Kg |
| Lead | 6020A | 1 | 0.064 | 1.2 | 49.2 | mg/Kg |
| Molybdenum | 6020A | 1 | 0.16 | 1.2 | 0.434 | mg/Kg |
| Nickel | 6020A | 1 | 1.5 | 6.0 | 21.8 | mg/Kg |
| Silver | 6020A | 1 | 0.12 | 1.2 | 0.120 | mg/Kg |
| Vanadium | 6020A | 1 | 0.34 | 30 | 51.3 | mg/Kg |
| Barium | 6020A | 10 | 2.0 | 2.4 | 99.5 | mg/Kg |
| Zinc | 6020A | 10 | 1.7 | 6.0 | 122 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 16.7 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.20 | % |
| gamma-Chlordane | SW8081B | 3 | 0.59 | 7.2 | 7.73 | ug/Kg |
| alpha-Chlordane | SW8081B | 3 | 0.62 | 7.2 | 7.24 | ug/Kg |
| 4,4-DDE | SW8081B | 3 | 0.70 | 7.2 | 34.0 | ug/Kg |
| 4,4-DDT | SW8081B | 3 | 0.46 | 7.2 | 25.2 | ug/Kg |
| Chlordane | SW8081B | 3 | 7.6 | 72 | 157 | ug/Kg |

Torrent LABORATORY, INC.

# Sample Result Summary

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date Received:** 07/19/17
**Date Reported:** 07/27/17

**SS-42 (0-0.5)** 1707125-002

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Antimony | 6020A | 1 | 0.17 | 1.4 | 1.02 | mg/Kg |
| Arsenic | 6020A | 1 | 0.29 | 1.4 | 10.3 | mg/Kg |
| Barium | 6020A | 1 | 1.2 | 1.4 | 68.7 | mg/Kg |
| Chromium | 6020A | 1 | 0.14 | 1.4 | 43.4 | mg/Kg |
| Cobalt | 6020A | 1 | 0.29 | 1.4 | 8.06 | mg/Kg |
| Copper | 6020A | 1 | 0.24 | 3.5 | 38.0 | mg/Kg |
| Lead | 6020A | 1 | 0.075 | 1.4 | 33.2 | mg/Kg |
| Molybdenum | 6020A | 1 | 0.18 | 1.4 | 0.374 | mg/Kg |
| Nickel | 6020A | 1 | 1.7 | 7.0 | 18.9 | mg/Kg |
| Vanadium | 6020A | 1 | 0.39 | 35 | 42.1 | mg/Kg |
| Zinc | 6020A | 1 | 0.98 | 3.5 | 63.6 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 28.6 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.40 | % |
| gamma-Chlordane | SW8081B | 3 | 0.68 | 8.4 | 2.07 | ug/Kg |
| alpha-Chlordane | SW8081B | 3 | 0.73 | 8.4 | 1.51 | ug/Kg |
| 4,4-DDE | SW8081B | 3 | 0.81 | 8.4 | 45.3 | ug/Kg |
| 4,4-DDT | SW8081B | 3 | 0.54 | 8.4 | 55.8 | ug/Kg |
| Chlordane | SW8081B | 3 | 8.9 | 84 | 50.7 | ug/Kg |

**SS-43 (0-0.5)** 1707125-003

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Antimony | 6020A | 1 | 0.15 | 1.2 | 0.192 | mg/Kg |
| Arsenic | 6020A | 1 | 0.25 | 1.2 | 9.99 | mg/Kg |
| Barium | 6020A | 1 | 1.0 | 1.2 | 65.4 | mg/Kg |
| Beryllium | 6020A | 1 | 0.19 | 1.2 | 0.196 | mg/Kg |
| Cadmium | 6020A | 1 | 0.10 | 1.2 | 0.140 | mg/Kg |
| Chromium | 6020A | 1 | 0.12 | 1.2 | 46.9 | mg/Kg |
| Cobalt | 6020A | 1 | 0.26 | 1.2 | 8.41 | mg/Kg |
| Copper | 6020A | 1 | 0.21 | 3.1 | 23.3 | mg/Kg |
| Lead | 6020A | 1 | 0.065 | 1.2 | 8.56 | mg/Kg |
| Molybdenum | 6020A | 1 | 0.16 | 1.2 | 0.339 | mg/Kg |
| Nickel | 6020A | 1 | 1.5 | 6.1 | 21.4 | mg/Kg |
| Vanadium | 6020A | 1 | 0.34 | 31 | 51.5 | mg/Kg |
| Zinc | 6020A | 25 | 4.3 | 15 | 276 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 17.7 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.22 | % |
| 4,4-DDE | SW8081B | 3 | 0.71 | 7.3 | 21.8 | ug/Kg |
| 4,4-DDT | SW8081B | 3 | 0.47 | 7.3 | 15.8 | ug/Kg |

Torrent LABORATORY, INC.

# Sample Result Summary

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date Received:** 07/19/17
**Date Reported:** 07/27/17

**SS-44 (0-0.5)** 1707125-004

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Antimony | 6020A | 1 | 0.21 | 1.7 | 0.445 | mg/Kg |
| Arsenic | 6020A | 1 | 0.36 | 1.7 | 9.33 | mg/Kg |
| Barium | 6020A | 1 | 1.4 | 1.7 | 63.9 | mg/Kg |
| Cadmium | 6020A | 1 | 0.14 | 1.7 | 0.347 | mg/Kg |
| Chromium | 6020A | 1 | 0.17 | 1.7 | 72.3 | mg/Kg |
| Cobalt | 6020A | 1 | 0.36 | 1.7 | 7.48 | mg/Kg |
| Copper | 6020A | 1 | 0.29 | 4.3 | 31.6 | mg/Kg |
| Lead | 6020A | 1 | 0.091 | 1.7 | 38.1 | mg/Kg |
| Molybdenum | 6020A | 1 | 0.22 | 1.7 | 2.55 | mg/Kg |
| Nickel | 6020A | 1 | 2.1 | 8.6 | 35.4 | mg/Kg |
| Vanadium | 6020A | 1 | 0.48 | 43 | 35.5 | mg/Kg |
| Zinc | 6020A | 10 | 2.4 | 8.6 | 136 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 41.6 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.71 | % |
| 4,4-DDE | SW8081B | 3 | 1.00 | 10 | 250 | ug/Kg |
| 4,4-DDT | SW8081B | 3 | 0.66 | 10 | 55.6 | ug/Kg |

**SS-45 (0-0.5)** 1707125-005

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Antimony | 6020A | 1 | 0.13 | 1.1 | 0.224 | mg/Kg |
| Arsenic | 6020A | 1 | 0.23 | 1.1 | 13.2 | mg/Kg |
| Barium | 6020A | 1 | 0.90 | 1.1 | 58.8 | mg/Kg |
| Beryllium | 6020A | 1 | 0.17 | 1.1 | 0.195 | mg/Kg |
| Cadmium | 6020A | 1 | 0.090 | 1.1 | 0.154 | mg/Kg |
| Chromium | 6020A | 1 | 0.10 | 1.1 | 39.9 | mg/Kg |
| Cobalt | 6020A | 1 | 0.23 | 1.1 | 12.4 | mg/Kg |
| Copper | 6020A | 1 | 0.18 | 2.7 | 20.3 | mg/Kg |
| Lead | 6020A | 1 | 0.058 | 1.1 | 19.1 | mg/Kg |
| Molybdenum | 6020A | 1 | 0.14 | 1.1 | 0.340 | mg/Kg |
| Nickel | 6020A | 1 | 1.3 | 5.4 | 16.7 | mg/Kg |
| Vanadium | 6020A | 1 | 0.30 | 27 | 49.8 | mg/Kg |
| Zinc | 6020A | 25 | 3.8 | 14 | 206 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 7.48 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.08 | % |
| 4,4-DDE | SW8081B | 3 | 0.63 | 6.5 | 114 | ug/Kg |
| 4,4-DDT | SW8081B | 3 | 0.42 | 6.5 | 44.4 | ug/Kg |

Torrent LABORATORY, INC.

# Sample Result Summary

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date Received:** 07/19/17
**Date Reported:** 07/27/17

**SS-46 (0-0.5)** 1707125-006

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Antimony | 6020A | 1 | 0.12 | 1.0 | 0.379 | mg/Kg |
| Arsenic | 6020A | 1 | 0.21 | 1.0 | 12.3 | mg/Kg |
| Beryllium | 6020A | 1 | 0.16 | 1.0 | 0.198 | mg/Kg |
| Cadmium | 6020A | 1 | 0.084 | 1.0 | 0.125 | mg/Kg |
| Chromium | 6020A | 1 | 0.098 | 1.0 | 46.4 | mg/Kg |
| Cobalt | 6020A | 1 | 0.21 | 1.0 | 8.76 | mg/Kg |
| Copper | 6020A | 1 | 0.17 | 2.5 | 24.5 | mg/Kg |
| Lead | 6020A | 1 | 0.054 | 1.0 | 14.9 | mg/Kg |
| Molybdenum | 6020A | 1 | 0.13 | 1.0 | 0.456 | mg/Kg |
| Nickel | 6020A | 1 | 1.3 | 5.1 | 18.8 | mg/Kg |
| Vanadium | 6020A | 1 | 0.28 | 25 | 53.8 | mg/Kg |
| Barium | 6020A | 10 | 1.7 | 2.0 | 71.1 | mg/Kg |
| Zinc | 6020A | 10 | 1.4 | 5.1 | 75.4 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 0.710 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.01 | % |
| 4,4-DDE | SW8081B | 3 | 0.59 | 6.1 | 85.0 | ug/Kg |
| 4,4-DDT | SW8081B | 3 | 0.39 | 6.1 | 16.2 | ug/Kg |

**SS-47 (0-0.5)** 1707125-007

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Arsenic | 6020A | 1 | 0.53 | 2.5 | 4.48 | mg/Kg |
| Barium | 6020A | 1 | 2.1 | 2.5 | 24.8 | mg/Kg |
| Chromium | 6020A | 1 | 0.25 | 2.5 | 19.7 | mg/Kg |
| Cobalt | 6020A | 1 | 0.53 | 2.5 | 6.16 | mg/Kg |
| Copper | 6020A | 1 | 0.43 | 6.4 | 17.8 | mg/Kg |
| Lead | 6020A | 1 | 0.14 | 2.5 | 11.2 | mg/Kg |
| Molybdenum | 6020A | 1 | 0.33 | 2.5 | 0.429 | mg/Kg |
| Nickel | 6020A | 1 | 3.2 | 13 | 10.1 | mg/Kg |
| Vanadium | 6020A | 1 | 0.71 | 64 | 14.5 | mg/Kg |
| Zinc | 6020A | 1 | 1.8 | 6.4 | 23.1 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 60.7 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 2.54 | % |
| 4,4-DDE | SW8081B | 3 | 1.5 | 15 | 65.5 | ug/Kg |
| 4,4-DDT | SW8081B | 3 | 0.98 | 15 | 14.8 | ug/Kg |

Torrent LABORATORY, INC.

# Sample Result Summary

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date Received:** 07/19/17
**Date Reported:** 07/27/17

**SS-48 (0-0.5)** 1707125-008

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Arsenic | 6020A | 1 | 0.28 | 1.4 | 1.08 | mg/Kg |
| Barium | 6020A | 1 | 1.1 | 1.4 | 7.64 | mg/Kg |
| Chromium | 6020A | 1 | 0.13 | 1.4 | 6.99 | mg/Kg |
| Cobalt | 6020A | 1 | 0.28 | 1.4 | 0.793 | mg/Kg |
| Copper | 6020A | 1 | 0.23 | 3.4 | 3.50 | mg/Kg |
| Lead | 6020A | 1 | 0.072 | 1.4 | 1.36 | mg/Kg |
| Nickel | 6020A | 1 | 1.7 | 6.8 | 2.72 | mg/Kg |
| Vanadium | 6020A | 1 | 0.38 | 34 | 3.69 | mg/Kg |
| Zinc | 6020A | 1 | 0.95 | 3.4 | 4.90 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 26.0 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.35 | % |

**SS-49 (0-0.5)** 1707125-009

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Arsenic | 6020A | 1 | 0.31 | 1.5 | 5.37 | mg/Kg |
| Barium | 6020A | 1 | 1.3 | 1.5 | 37.6 | mg/Kg |
| Chromium | 6020A | 1 | 0.15 | 1.5 | 37.4 | mg/Kg |
| Cobalt | 6020A | 1 | 0.32 | 1.5 | 7.49 | mg/Kg |
| Copper | 6020A | 1 | 0.26 | 3.8 | 27.2 | mg/Kg |
| Lead | 6020A | 1 | 0.080 | 1.5 | 3.45 | mg/Kg |
| Nickel | 6020A | 1 | 1.9 | 7.5 | 16.5 | mg/Kg |
| Vanadium | 6020A | 1 | 0.42 | 38 | 37.8 | mg/Kg |
| Zinc | 6020A | 1 | 1.1 | 3.8 | 35.2 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 33.4 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.50 | % |
| 4,4-DDE | SW8081B | 3 | 0.87 | 9.0 | 12.2 | ug/Kg |

**SS-50 (0-0.5)** 1707125-010

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 28.7 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.40 | % |

**SS-50 (1-1.5)** 1707125-011

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 16.8 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.20 | % |

Torrent LABORATORY, INC.

# Sample Result Summary

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date Received:** 07/19/17
**Date Reported:** 07/27/17

**SS-50 (2-3)** 1707125-012

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 25.6 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.34 | % |

**SS-12A (0-0.5)** 1707125-013

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Arsenic | 6020A | 1 | 0.25 | 1.2 | 8.09 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 17.2 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.21 | % |

**SS-12B (0-0.5)** 1707125-014

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Arsenic | 6020A | 1 | 0.21 | 1.0 | 21.0 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 0.810 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.01 | % |

**SS-12C (0-0.5)** 1707125-015

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Arsenic | 6020A | 1 | 0.21 | 1.0 | 17.7 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 1.86 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.02 | % |

**SS-12D (0-0.5)** 1707125-016

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Arsenic | 6020A | 1 | 0.29 | 1.4 | 41.1 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 28.1 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.39 | % |

**BG-1 (0.5-1)** 1707125-017

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Arsenic | 6020A | 1 | 0.27 | 1.3 | 4.60 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 22.7 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.29 | % |

Torrent LABORATORY, INC.

## Sample Result Summary

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date Received:** 07/19/17
**Date Reported:** 07/27/17

**BG-2 (0.5-1)** 1707125-018

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Arsenic | 6020A | 1 | 0.28 | 1.3 | 5.20 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 24.7 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.33 | % |

**BG-3 (0.5-1)** 1707125-019

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Arsenic | 6020A | 1 | 0.26 | 1.3 | 4.29 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 19.9 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.25 | % |

**BG-4 (0.5-1)** 1707125-020

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Arsenic | 6020A | 1 | 0.21 | 1.0 | 4.55 | mg/Kg |
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | 2.16 | % |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | 1.02 | % |

**EqB-1** 1707125-021

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|
| Barium | SW6020A | 1 | 0.066 | 0.50 | 2.3 | ug/L |
| Chromium | SW6020A | 1 | 0.044 | 0.50 | 2.2 | ug/L |
| Molybdenum | SW6020A | 1 | 0.018 | 0.50 | 1.0 | ug/L |
| Nickel | SW6020A | 1 | 0.30 | 1.0 | 1.6 | ug/L |
| Zinc | SW6020A | 1 | 0.59 | 2.0 | 9.7 | ug/L |

**Trip Blank** 1707125-022

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Unit |
|---|---|---|---|---|---|---|

**All compounds were non-detectable for this sample.**

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-41 (0-0.5) | **Lab Sample ID:** | 1707125-001A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 13:24 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 7471BP | **Prep Batch Date/Time:** | 7/25/17 | 4:10:00PM |
| **Prep Batch ID:** | 8445 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.10 | 0.60 | ND | | mg/Kg | 07/26/17 | 11:32 | BJAY | 425666 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-41 (0-0.5) | **Lab Sample ID:** | 1707125-001A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 13:24 | | |
| **SDG:** | | | |

| | | | |
|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/24/17 10:45:00AM |
| **Prep Batch ID:** | 8367 | **Prep Analyst:** | BJAY |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Antimony | 6020A | 1 | 0.14 | 1.2 | **0.652** | J | mg/Kg | 07/26/17 | 13:15 | ERR | 425652 |
| Arsenic | 6020A | 1 | 0.25 | 1.2 | **12.9** | | mg/Kg | 07/26/17 | 13:15 | ERR | 425652 |
| Beryllium | 6020A | 1 | 0.19 | 1.2 | **0.231** | J | mg/Kg | 07/26/17 | 13:15 | ERR | 425652 |
| Cadmium | 6020A | 1 | 0.10 | 1.2 | **0.239** | J | mg/Kg | 07/26/17 | 13:15 | ERR | 425652 |
| Chromium | 6020A | 1 | 0.12 | 1.2 | **51.4** | | mg/Kg | 07/26/17 | 13:15 | ERR | 425652 |
| Cobalt | 6020A | 1 | 0.25 | 1.2 | **10.5** | | mg/Kg | 07/26/17 | 13:15 | ERR | 425652 |
| Copper | 6020A | 1 | 0.20 | 3.0 | **39.7** | | mg/Kg | 07/26/17 | 13:15 | ERR | 425652 |
| Lead | 6020A | 1 | 0.064 | 1.2 | **49.2** | | mg/Kg | 07/26/17 | 13:15 | ERR | 425652 |
| Molybdenum | 6020A | 1 | 0.16 | 1.2 | **0.434** | J | mg/Kg | 07/26/17 | 13:15 | ERR | 425652 |
| Nickel | 6020A | 1 | 1.5 | 6.0 | **21.8** | | mg/Kg | 07/26/17 | 13:15 | ERR | 425652 |
| Selenium | 6020A | 1 | 0.041 | 3.0 | ND | | mg/Kg | 07/26/17 | 13:15 | ERR | 425652 |
| Silver | 6020A | 1 | 0.12 | 1.2 | **0.120** | J | mg/Kg | 07/26/17 | 13:15 | ERR | 425652 |
| Thallium | 6020A | 1 | 1.2 | 6.0 | ND | | mg/Kg | 07/26/17 | 13:15 | ERR | 425652 |
| Vanadium | 6020A | 1 | 0.34 | 30 | **51.3** | | mg/Kg | 07/26/17 | 13:15 | ERR | 425652 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-41 (0-0.5) | **Lab Sample ID:** | 1707125-001A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 13:24 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/24/17 | 10:45:00AM |
| **Prep Batch ID:** | 8367 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 6020A | 10 | 2.0 | 2.4 | **99.5** | | mg/Kg | 07/26/17 | 18:23 | ERR | 425682 |
| Zinc | 6020A | 10 | 1.7 | 6.0 | **122** | | mg/Kg | 07/26/17 | 18:23 | ERR | 425682 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-41 (0-0.5) | **Lab Sample ID:** | 1707125-001A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 13:24 | | |
| **SDG:** | | | |

| | | | |
|---|---|---|---|
| **Prep Method:** | 3546_PCB | **Prep Batch Date/Time:** | 7/25/17 1:04:00PM |
| **Prep Batch ID:** | 8423 | **Prep Analyst:** | SNARASIMHAN |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Aroclor1016 | SW8082A | 1 | 64 | 120 | ND | | ug/Kg | 07/26/17 | 4:37 | mk | 425624 |
| Aroclor1221 | SW8082A | 1 | 6.0 | 120 | ND | | ug/Kg | 07/26/17 | 4:37 | mk | 425624 |
| Aroclor1232 | SW8082A | 1 | 20 | 120 | ND | | ug/Kg | 07/26/17 | 4:37 | mk | 425624 |
| Aroclor1242 | SW8082A | 1 | 3.6 | 120 | ND | | ug/Kg | 07/26/17 | 4:37 | mk | 425624 |
| Aroclor1248 | SW8082A | 1 | 2.4 | 120 | ND | | ug/Kg | 07/26/17 | 4:37 | mk | 425624 |
| Aroclor1254 | SW8082A | 1 | 2.4 | 120 | ND | | ug/Kg | 07/26/17 | 4:37 | mk | 425624 |
| Aroclor1260 | SW8082A | 1 | 43 | 120 | ND | | ug/Kg | 07/26/17 | 4:37 | mk | 425624 |
| | | | Acceptance Limits | | | | | | | | |
| TCMX (S) | SW8082A | | 48 - 125 | | **86.0** | | % | 07/26/17 | 4:37 | mk | 425624 |
| DCBP (S) | SW8082A | | 48 - 135 | | **131** | | % | 07/26/17 | 4:37 | mk | 425624 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-41 (0-0.5) | **Lab Sample ID:** | 1707125-001A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 13:24 | | |
| **SDG:** | | | |

| | | | |
|---|---|---|---|
| **Prep Method:** | 3546_OCP | **Prep Batch Date/Time:** | 7/25/17 10:47:00AM |
| **Prep Batch ID:** | 8412 | **Prep Analyst:** | SNARASIMHAN |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| alpha-BHC | SW8081B | 3 | 0.46 | 7.2 | ND | | ug/Kg | 07/26/17 | 1:51 | LA | 425673 |
| gamma-BHC (Lindane) | SW8081B | 3 | 0.57 | 7.2 | ND | | ug/Kg | 07/26/17 | 1:51 | LA | 425673 |
| beta-BHC | SW8081B | 3 | 1.1 | 7.2 | ND | | ug/Kg | 07/26/17 | 1:51 | LA | 425673 |
| delta-BHC | SW8081B | 3 | 0.56 | 7.2 | ND | | ug/Kg | 07/26/17 | 1:51 | LA | 425673 |
| Heptachlor | SW8081B | 3 | 0.38 | 7.2 | ND | | ug/Kg | 07/26/17 | 1:51 | LA | 425673 |
| Aldrin | SW8081B | 3 | 0.70 | 7.2 | ND | | ug/Kg | 07/26/17 | 1:51 | LA | 425673 |
| Heptachlor Epoxide | SW8081B | 3 | 0.28 | 7.2 | ND | | ug/Kg | 07/26/17 | 1:51 | LA | 425673 |
| gamma-Chlordane | SW8081B | 3 | 0.59 | 7.2 | **7.73** | | ug/Kg | 07/26/17 | 1:51 | LA | 425673 |
| alpha-Chlordane | SW8081B | 3 | 0.62 | 7.2 | **7.24** | | ug/Kg | 07/26/17 | 1:51 | LA | 425673 |
| 4,4-DDE | SW8081B | 3 | 0.70 | 7.2 | **34.0** | | ug/Kg | 07/26/17 | 1:51 | LA | 425673 |
| Endosulfan I | SW8081B | 3 | 0.66 | 7.2 | ND | | ug/Kg | 07/26/17 | 1:51 | LA | 425673 |
| Dieldrin | SW8081B | 3 | 0.53 | 7.2 | ND | | ug/Kg | 07/26/17 | 1:51 | LA | 425673 |
| Endrin | SW8081B | 3 | 0.68 | 7.2 | ND | | ug/Kg | 07/26/17 | 1:51 | LA | 425673 |
| 4,4-DDD | SW8081B | 3 | 2.0 | 7.2 | ND | | ug/Kg | 07/26/17 | 1:51 | LA | 425673 |
| Endosulfan II | SW8081B | 3 | 2.1 | 7.2 | ND | | ug/Kg | 07/26/17 | 1:51 | LA | 425673 |
| 4,4-DDT | SW8081B | 3 | 0.46 | 7.2 | **25.2** | | ug/Kg | 07/26/17 | 1:51 | LA | 425673 |
| Endrin Aldehyde | SW8081B | 3 | 0.54 | 7.2 | ND | | ug/Kg | 07/26/17 | 1:51 | LA | 425673 |
| Methoxychlor | SW8081B | 3 | 0.72 | 7.2 | ND | | ug/Kg | 07/26/17 | 1:51 | LA | 425673 |
| Endosulfan Sulfate | SW8081B | 3 | 0.42 | 7.2 | ND | | ug/Kg | 07/26/17 | 1:51 | LA | 425673 |
| Endrin Ketone | SW8081B | 3 | 0.34 | 7.2 | ND | | ug/Kg | 07/26/17 | 1:51 | LA | 425673 |
| Chlordane | SW8081B | 3 | 7.6 | 72 | **157** | | ug/Kg | 07/26/17 | 1:51 | LA | 425673 |
| Toxaphene | SW8081B | 3 | 31 | 180 | ND | | ug/Kg | 07/26/17 | 1:51 | LA | 425673 |
| | | | Acceptance Limits | | | | | | | | |
| TCMX (S) | SW8081B | | 48 - 125 | | **86.8** | | % | 07/26/17 | 1:51 | LA | 425673 |
| DCBP (S) | SW8081B | | 38 - 135 | | **110** | | % | 07/26/17 | 1:51 | LA | 425673 |

**NOTE:** Sample diluted due to nature of the matrix (dark, viscous extract)

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-41 (0-0.5) | **Lab Sample ID:** | 1707125-001A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 13:24 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/24/17 | 9:40:00PM |
| **Prep Batch ID:** | 8441 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **16.7** | | % | 07/24/17 | 21:40 | PH | 425654 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.20** | | - | 07/24/17 | 21:40 | PH | 425654 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-42 (0-0.5) | **Lab Sample ID:** | 1707125-002A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 14:00 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 7471BP | **Prep Batch Date/Time:** | 7/25/17 | 4:10:00PM |
| **Prep Batch ID:** | 8445 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.12 | 0.70 | ND | | mg/Kg | 07/26/17 | 11:35 | BJAY | 425666 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-42 (0-0.5) | **Lab Sample ID:** | 1707125-002A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 14:00 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/24/17 | 10:45:00AM |
| **Prep Batch ID:** | 8367 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Antimony | 6020A | 1 | 0.17 | 1.4 | **1.02** | J | mg/Kg | 07/26/17 | 13:40 | ERR | 425652 |
| Arsenic | 6020A | 1 | 0.29 | 1.4 | **10.3** | | mg/Kg | 07/26/17 | 13:40 | ERR | 425652 |
| Barium | 6020A | 1 | 1.2 | 1.4 | **68.7** | | mg/Kg | 07/26/17 | 13:40 | ERR | 425652 |
| Beryllium | 6020A | 1 | 0.22 | 1.4 | ND | | mg/Kg | 07/26/17 | 13:40 | ERR | 425652 |
| Cadmium | 6020A | 1 | 0.12 | 1.4 | ND | | mg/Kg | 07/26/17 | 13:40 | ERR | 425652 |
| Chromium | 6020A | 1 | 0.14 | 1.4 | **43.4** | | mg/Kg | 07/26/17 | 13:40 | ERR | 425652 |
| Cobalt | 6020A | 1 | 0.29 | 1.4 | **8.06** | | mg/Kg | 07/26/17 | 13:40 | ERR | 425652 |
| Copper | 6020A | 1 | 0.24 | 3.5 | **38.0** | | mg/Kg | 07/26/17 | 13:40 | ERR | 425652 |
| Lead | 6020A | 1 | 0.075 | 1.4 | **33.2** | | mg/Kg | 07/26/17 | 13:40 | ERR | 425652 |
| Molybdenum | 6020A | 1 | 0.18 | 1.4 | **0.374** | J | mg/Kg | 07/26/17 | 13:40 | ERR | 425652 |
| Nickel | 6020A | 1 | 1.7 | 7.0 | **18.9** | | mg/Kg | 07/26/17 | 13:40 | ERR | 425652 |
| Selenium | 6020A | 1 | 0.048 | 3.5 | ND | | mg/Kg | 07/26/17 | 13:40 | ERR | 425652 |
| Silver | 6020A | 1 | 0.14 | 1.4 | ND | | mg/Kg | 07/26/17 | 13:40 | ERR | 425652 |
| Thallium | 6020A | 1 | 1.4 | 7.0 | ND | | mg/Kg | 07/26/17 | 13:40 | ERR | 425652 |
| Vanadium | 6020A | 1 | 0.39 | 35 | **42.1** | | mg/Kg | 07/26/17 | 13:40 | ERR | 425652 |
| Zinc | 6020A | 1 | 0.98 | 3.5 | **63.6** | | mg/Kg | 07/26/17 | 13:40 | ERR | 425652 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-42 (0-0.5) | **Lab Sample ID:** | 1707125-002A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 14:00 | | |
| **SDG:** | | | |

| | | | |
|---|---|---|---|
| **Prep Method:** | 3546_PCB | **Prep Batch Date/Time:** | 7/25/17 1:04:00PM |
| **Prep Batch ID:** | 8423 | **Prep Analyst:** | SNARASIMHAN |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Aroclor1016 | SW8082A | 1 | 74 | 140 | ND | | ug/Kg | 07/26/17 | 4:51 | mk | 425624 |
| Aroclor1221 | SW8082A | 1 | 7.0 | 140 | ND | | ug/Kg | 07/26/17 | 4:51 | mk | 425624 |
| Aroclor1232 | SW8082A | 1 | 24 | 140 | ND | | ug/Kg | 07/26/17 | 4:51 | mk | 425624 |
| Aroclor1242 | SW8082A | 1 | 4.2 | 140 | ND | | ug/Kg | 07/26/17 | 4:51 | mk | 425624 |
| Aroclor1248 | SW8082A | 1 | 2.8 | 140 | ND | | ug/Kg | 07/26/17 | 4:51 | mk | 425624 |
| Aroclor1254 | SW8082A | 1 | 2.8 | 140 | ND | | ug/Kg | 07/26/17 | 4:51 | mk | 425624 |
| Aroclor1260 | SW8082A | 1 | 50 | 140 | ND | | ug/Kg | 07/26/17 | 4:51 | mk | 425624 |
| | | | Acceptance Limits | | | | | | | | |
| TCMX (S) | SW8082A | | 48 - 125 | | **83.0** | | % | 07/26/17 | 4:51 | mk | 425624 |
| DCBP (S) | SW8082A | | 48 - 135 | | **123** | | % | 07/26/17 | 4:51 | mk | 425624 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-42 (0-0.5) | **Lab Sample ID:** | 1707125-002A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 14:00 | | |
| **SDG:** | | | |

| | | | |
|---|---|---|---|
| **Prep Method:** | 3546_OCP | **Prep Batch Date/Time:** | 7/25/17 10:47:00AM |
| **Prep Batch ID:** | 8412 | **Prep Analyst:** | SNARASIMHAN |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| alpha-BHC | SW8081B | 3 | 0.53 | 8.4 | ND | | ug/Kg | 07/26/17 | 2:06 | LA | 425673 |
| gamma-BHC (Lindane) | SW8081B | 3 | 0.67 | 8.4 | ND | | ug/Kg | 07/26/17 | 2:06 | LA | 425673 |
| beta-BHC | SW8081B | 3 | 1.3 | 8.4 | ND | | ug/Kg | 07/26/17 | 2:06 | LA | 425673 |
| delta-BHC | SW8081B | 3 | 0.65 | 8.4 | ND | | ug/Kg | 07/26/17 | 2:06 | LA | 425673 |
| Heptachlor | SW8081B | 3 | 0.44 | 8.4 | ND | | ug/Kg | 07/26/17 | 2:06 | LA | 425673 |
| Aldrin | SW8081B | 3 | 0.82 | 8.4 | ND | | ug/Kg | 07/26/17 | 2:06 | LA | 425673 |
| Heptachlor Epoxide | SW8081B | 3 | 0.33 | 8.4 | ND | | ug/Kg | 07/26/17 | 2:06 | LA | 425673 |
| gamma-Chlordane | SW8081B | 3 | 0.68 | 8.4 | **2.07** | J | ug/Kg | 07/26/17 | 2:06 | LA | 425673 |
| alpha-Chlordane | SW8081B | 3 | 0.73 | 8.4 | **1.51** | J | ug/Kg | 07/26/17 | 2:06 | LA | 425673 |
| 4,4-DDE | SW8081B | 3 | 0.81 | 8.4 | **45.3** | | ug/Kg | 07/26/17 | 2:06 | LA | 425673 |
| Endosulfan I | SW8081B | 3 | 0.77 | 8.4 | ND | | ug/Kg | 07/26/17 | 2:06 | LA | 425673 |
| Dieldrin | SW8081B | 3 | 0.62 | 8.4 | ND | | ug/Kg | 07/26/17 | 2:06 | LA | 425673 |
| Endrin | SW8081B | 3 | 0.79 | 8.4 | ND | | ug/Kg | 07/26/17 | 2:06 | LA | 425673 |
| 4,4-DDD | SW8081B | 3 | 2.4 | 8.4 | ND | | ug/Kg | 07/26/17 | 2:06 | LA | 425673 |
| Endosulfan II | SW8081B | 3 | 2.4 | 8.4 | ND | | ug/Kg | 07/26/17 | 2:06 | LA | 425673 |
| 4,4-DDT | SW8081B | 3 | 0.54 | 8.4 | **55.8** | | ug/Kg | 07/26/17 | 2:06 | LA | 425673 |
| Endrin Aldehyde | SW8081B | 3 | 0.63 | 8.4 | ND | | ug/Kg | 07/26/17 | 2:06 | LA | 425673 |
| Methoxychlor | SW8081B | 3 | 0.84 | 8.4 | ND | | ug/Kg | 07/26/17 | 2:06 | LA | 425673 |
| Endosulfan Sulfate | SW8081B | 3 | 0.49 | 8.4 | ND | | ug/Kg | 07/26/17 | 2:06 | LA | 425673 |
| Endrin Ketone | SW8081B | 3 | 0.39 | 8.4 | ND | | ug/Kg | 07/26/17 | 2:06 | LA | 425673 |
| Chlordane | SW8081B | 3 | 8.9 | 84 | **50.7** | J | ug/Kg | 07/26/17 | 2:06 | LA | 425673 |
| Toxaphene | SW8081B | 3 | 36 | 210 | ND | | ug/Kg | 07/26/17 | 2:06 | LA | 425673 |
| | | | Acceptance Limits | | | | | | | | |
| TCMX (S) | SW8081B | | 48 - 125 | | **80.8** | | % | 07/26/17 | 2:06 | LA | 425673 |
| DCBP (S) | SW8081B | | 38 - 135 | | **103** | | % | 07/26/17 | 2:06 | LA | 425673 |

**NOTE:** Sample diluted due to nature of the matrix (dark, viscous extract)

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-42 (0-0.5) | **Lab Sample ID:** | 1707125-002A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 14:00 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/24/17 | 9:40:00PM |
| **Prep Batch ID:** | 8441 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **28.6** | | % | 07/24/17 | 21:40 | PH | 425654 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.40** | | - | 07/24/17 | 21:40 | PH | 425654 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-43 (0-0.5) | **Lab Sample ID:** | 1707125-003A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:21 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 7471BP | **Prep Batch Date/Time:** | 7/25/17 | 4:10:00PM |
| **Prep Batch ID:** | 8445 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.10 | 0.61 | ND | | mg/Kg | 07/26/17 | 11:39 | BJAY | 425666 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-43 (0-0.5) | **Lab Sample ID:** | 1707125-003A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:21 | | |
| **SDG:** | | | |

| | | | |
|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/24/17 10:45:00AM |
| **Prep Batch ID:** | 8367 | **Prep Analyst:** | BJAY |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Antimony | 6020A | 1 | 0.15 | 1.2 | **0.192** | J | mg/Kg | 07/26/17 | 13:57 | ERR | 425652 |
| Arsenic | 6020A | 1 | 0.25 | 1.2 | **9.99** | | mg/Kg | 07/26/17 | 13:57 | ERR | 425652 |
| Barium | 6020A | 1 | 1.0 | 1.2 | **65.4** | | mg/Kg | 07/26/17 | 13:57 | ERR | 425652 |
| Beryllium | 6020A | 1 | 0.19 | 1.2 | **0.196** | J | mg/Kg | 07/26/17 | 13:57 | ERR | 425652 |
| Cadmium | 6020A | 1 | 0.10 | 1.2 | **0.140** | J | mg/Kg | 07/26/17 | 13:57 | ERR | 425652 |
| Chromium | 6020A | 1 | 0.12 | 1.2 | **46.9** | | mg/Kg | 07/26/17 | 13:57 | ERR | 425652 |
| Cobalt | 6020A | 1 | 0.26 | 1.2 | **8.41** | | mg/Kg | 07/26/17 | 13:57 | ERR | 425652 |
| Copper | 6020A | 1 | 0.21 | 3.1 | **23.3** | | mg/Kg | 07/26/17 | 13:57 | ERR | 425652 |
| Lead | 6020A | 1 | 0.065 | 1.2 | **8.56** | | mg/Kg | 07/26/17 | 13:57 | ERR | 425652 |
| Molybdenum | 6020A | 1 | 0.16 | 1.2 | **0.339** | J | mg/Kg | 07/26/17 | 13:57 | ERR | 425652 |
| Nickel | 6020A | 1 | 1.5 | 6.1 | **21.4** | | mg/Kg | 07/26/17 | 13:57 | ERR | 425652 |
| Selenium | 6020A | 1 | 0.042 | 3.1 | ND | | mg/Kg | 07/26/17 | 13:57 | ERR | 425652 |
| Silver | 6020A | 1 | 0.12 | 1.2 | ND | | mg/Kg | 07/26/17 | 13:57 | ERR | 425652 |
| Thallium | 6020A | 1 | 1.2 | 6.1 | ND | | mg/Kg | 07/26/17 | 13:57 | ERR | 425652 |
| Vanadium | 6020A | 1 | 0.34 | 31 | **51.5** | | mg/Kg | 07/26/17 | 13:57 | ERR | 425652 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-43 (0-0.5) | **Lab Sample ID:** | 1707125-003A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:21 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/24/17 | 10:45:00AM |
| **Prep Batch ID:** | 8367 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Zinc | 6020A | 25 | 4.3 | 15 | **276** | | mg/Kg | 07/26/17 | 18:29 | ERR | 425682 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-43 (0-0.5) | **Lab Sample ID:** | 1707125-003A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:21 | | |
| **SDG:** | | | |

| | | | |
|---|---|---|---|
| **Prep Method:** | 3546_OCP | **Prep Batch Date/Time:** | 7/25/17 10:47:00AM |
| **Prep Batch ID:** | 8412 | **Prep Analyst:** | SNARASIMHAN |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| alpha-BHC | SW8081B | 3 | 0.46 | 7.3 | ND | | ug/Kg | 07/26/17 | 2:21 | LA | 425673 |
| gamma-BHC (Lindane) | SW8081B | 3 | 0.58 | 7.3 | ND | | ug/Kg | 07/26/17 | 2:21 | LA | 425673 |
| beta-BHC | SW8081B | 3 | 1.2 | 7.3 | ND | | ug/Kg | 07/26/17 | 2:21 | LA | 425673 |
| delta-BHC | SW8081B | 3 | 0.57 | 7.3 | ND | | ug/Kg | 07/26/17 | 2:21 | LA | 425673 |
| Heptachlor | SW8081B | 3 | 0.38 | 7.3 | ND | | ug/Kg | 07/26/17 | 2:21 | LA | 425673 |
| Aldrin | SW8081B | 3 | 0.71 | 7.3 | ND | | ug/Kg | 07/26/17 | 2:21 | LA | 425673 |
| Heptachlor Epoxide | SW8081B | 3 | 0.29 | 7.3 | ND | | ug/Kg | 07/26/17 | 2:21 | LA | 425673 |
| gamma-Chlordane | SW8081B | 3 | 0.60 | 7.3 | ND | | ug/Kg | 07/26/17 | 2:21 | LA | 425673 |
| alpha-Chlordane | SW8081B | 3 | 0.63 | 7.3 | ND | | ug/Kg | 07/26/17 | 2:21 | LA | 425673 |
| 4,4-DDE | SW8081B | 3 | 0.71 | 7.3 | **21.8** | | ug/Kg | 07/26/17 | 2:21 | LA | 425673 |
| Endosulfan I | SW8081B | 3 | 0.67 | 7.3 | ND | | ug/Kg | 07/26/17 | 2:21 | LA | 425673 |
| Dieldrin | SW8081B | 3 | 0.54 | 7.3 | ND | | ug/Kg | 07/26/17 | 2:21 | LA | 425673 |
| Endrin | SW8081B | 3 | 0.69 | 7.3 | ND | | ug/Kg | 07/26/17 | 2:21 | LA | 425673 |
| 4,4-DDD | SW8081B | 3 | 2.1 | 7.3 | ND | | ug/Kg | 07/26/17 | 2:21 | LA | 425673 |
| Endosulfan II | SW8081B | 3 | 2.1 | 7.3 | ND | | ug/Kg | 07/26/17 | 2:21 | LA | 425673 |
| 4,4-DDT | SW8081B | 3 | 0.47 | 7.3 | **15.8** | | ug/Kg | 07/26/17 | 2:21 | LA | 425673 |
| Endrin Aldehyde | SW8081B | 3 | 0.55 | 7.3 | ND | | ug/Kg | 07/26/17 | 2:21 | LA | 425673 |
| Methoxychlor | SW8081B | 3 | 0.73 | 7.3 | ND | | ug/Kg | 07/26/17 | 2:21 | LA | 425673 |
| Endosulfan Sulfate | SW8081B | 3 | 0.43 | 7.3 | ND | | ug/Kg | 07/26/17 | 2:21 | LA | 425673 |
| Endrin Ketone | SW8081B | 3 | 0.34 | 7.3 | ND | | ug/Kg | 07/26/17 | 2:21 | LA | 425673 |
| Chlordane | SW8081B | 3 | 7.7 | 73 | ND | | ug/Kg | 07/26/17 | 2:21 | LA | 425673 |
| Toxaphene | SW8081B | 3 | 31 | 180 | ND | | ug/Kg | 07/26/17 | 2:21 | LA | 425673 |
| | | | Acceptance Limits | | | | | | | | |
| TCMX (S) | SW8081B | | 48 - 125 | | **80.3** | | % | 07/26/17 | 2:21 | LA | 425673 |
| DCBP (S) | SW8081B | | 38 - 135 | | **93.0** | | % | 07/26/17 | 2:21 | LA | 425673 |

**NOTE:** Sample diluted due to nature of the matrix (dark, viscous extract)

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-43 (0-0.5) | **Lab Sample ID:** | 1707125-003A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:21 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/24/17 | 9:40:00PM |
| **Prep Batch ID:** | 8441 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **17.7** | | % | 07/24/17 | 21:40 | PH | 425654 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.22** | | - | 07/24/17 | 21:40 | PH | 425654 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-44 (0-0.5) | **Lab Sample ID:** | 1707125-004A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:41 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 7471BP | **Prep Batch Date/Time:** | 7/25/17 | 4:10:00PM |
| **Prep Batch ID:** | 8445 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.14 | 0.86 | ND | | mg/Kg | 07/26/17 | 11:41 | BJAY | 425666 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-44 (0-0.5) | **Lab Sample ID:** | 1707125-004A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:41 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/24/17 | 10:45:00AM |
| **Prep Batch ID:** | 8367 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Antimony | 6020A | 1 | 0.21 | 1.7 | **0.445** | J | mg/Kg | 07/26/17 | 14:22 | ERR | 425652 |
| Arsenic | 6020A | 1 | 0.36 | 1.7 | **9.33** | | mg/Kg | 07/26/17 | 14:22 | ERR | 425652 |
| Barium | 6020A | 1 | 1.4 | 1.7 | **63.9** | | mg/Kg | 07/26/17 | 14:22 | ERR | 425652 |
| Beryllium | 6020A | 1 | 0.27 | 1.7 | ND | | mg/Kg | 07/26/17 | 14:22 | ERR | 425652 |
| Cadmium | 6020A | 1 | 0.14 | 1.7 | **0.347** | J | mg/Kg | 07/26/17 | 14:22 | ERR | 425652 |
| Chromium | 6020A | 1 | 0.17 | 1.7 | **72.3** | | mg/Kg | 07/26/17 | 14:22 | ERR | 425652 |
| Cobalt | 6020A | 1 | 0.36 | 1.7 | **7.48** | | mg/Kg | 07/26/17 | 14:22 | ERR | 425652 |
| Copper | 6020A | 1 | 0.29 | 4.3 | **31.6** | | mg/Kg | 07/26/17 | 14:22 | ERR | 425652 |
| Lead | 6020A | 1 | 0.091 | 1.7 | **38.1** | | mg/Kg | 07/26/17 | 14:22 | ERR | 425652 |
| Molybdenum | 6020A | 1 | 0.22 | 1.7 | **2.55** | | mg/Kg | 07/26/17 | 14:22 | ERR | 425652 |
| Nickel | 6020A | 1 | 2.1 | 8.6 | **35.4** | | mg/Kg | 07/26/17 | 14:22 | ERR | 425652 |
| Selenium | 6020A | 1 | 0.059 | 4.3 | ND | | mg/Kg | 07/26/17 | 14:22 | ERR | 425652 |
| Silver | 6020A | 1 | 0.17 | 1.7 | ND | | mg/Kg | 07/26/17 | 14:22 | ERR | 425652 |
| Thallium | 6020A | 1 | 1.7 | 8.6 | ND | | mg/Kg | 07/26/17 | 14:22 | ERR | 425652 |
| Vanadium | 6020A | 1 | 0.48 | 43 | **35.5** | J | mg/Kg | 07/26/17 | 14:22 | ERR | 425652 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-44 (0-0.5) | **Lab Sample ID:** | 1707125-004A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:41 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/24/17 | 10:45:00AM |
| **Prep Batch ID:** | 8367 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Zinc | 6020A | 10 | 2.4 | 8.6 | **136** | | mg/Kg | 07/26/17 | 18:34 | ERR | 425682 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-44 (0-0.5) | **Lab Sample ID:** | 1707125-004A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:41 | | |
| **SDG:** | | | |

| | | | |
|---|---|---|---|
| **Prep Method:** | 3546_OCP | **Prep Batch Date/Time:** | 7/25/17 10:47:00AM |
| **Prep Batch ID:** | 8412 | **Prep Analyst:** | SNARASIMHAN |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| alpha-BHC | SW8081B | 3 | 0.65 | 10 | ND | | ug/Kg | 07/26/17 | 2:36 | LA | 425673 |
| gamma-BHC (Lindane) | SW8081B | 3 | 0.82 | 10 | ND | | ug/Kg | 07/26/17 | 2:36 | LA | 425673 |
| beta-BHC | SW8081B | 3 | 1.6 | 10 | ND | | ug/Kg | 07/26/17 | 2:36 | LA | 425673 |
| delta-BHC | SW8081B | 3 | 0.80 | 10 | ND | | ug/Kg | 07/26/17 | 2:36 | LA | 425673 |
| Heptachlor | SW8081B | 3 | 0.54 | 10 | ND | | ug/Kg | 07/26/17 | 2:36 | LA | 425673 |
| Aldrin | SW8081B | 3 | 1.0 | 10 | ND | | ug/Kg | 07/26/17 | 2:36 | LA | 425673 |
| Heptachlor Epoxide | SW8081B | 3 | 0.40 | 10 | ND | | ug/Kg | 07/26/17 | 2:36 | LA | 425673 |
| gamma-Chlordane | SW8081B | 3 | 0.84 | 10 | ND | | ug/Kg | 07/26/17 | 2:36 | LA | 425673 |
| alpha-Chlordane | SW8081B | 3 | 0.89 | 10 | ND | | ug/Kg | 07/26/17 | 2:36 | LA | 425673 |
| 4,4-DDE | SW8081B | 3 | 1.00 | 10 | **250** | | ug/Kg | 07/26/17 | 2:36 | LA | 425673 |
| Endosulfan I | SW8081B | 3 | 0.94 | 10 | ND | | ug/Kg | 07/26/17 | 2:36 | LA | 425673 |
| Dieldrin | SW8081B | 3 | 0.76 | 10 | ND | | ug/Kg | 07/26/17 | 2:36 | LA | 425673 |
| Endrin | SW8081B | 3 | 0.96 | 10 | ND | | ug/Kg | 07/26/17 | 2:36 | LA | 425673 |
| 4,4-DDD | SW8081B | 3 | 2.9 | 10 | ND | | ug/Kg | 07/26/17 | 2:36 | LA | 425673 |
| Endosulfan II | SW8081B | 3 | 3.0 | 10 | ND | | ug/Kg | 07/26/17 | 2:36 | LA | 425673 |
| 4,4-DDT | SW8081B | 3 | 0.66 | 10 | **55.6** | | ug/Kg | 07/26/17 | 2:36 | LA | 425673 |
| Endrin Aldehyde | SW8081B | 3 | 0.77 | 10 | ND | | ug/Kg | 07/26/17 | 2:36 | LA | 425673 |
| Methoxychlor | SW8081B | 3 | 1.0 | 10 | ND | | ug/Kg | 07/26/17 | 2:36 | LA | 425673 |
| Endosulfan Sulfate | SW8081B | 3 | 0.60 | 10 | ND | | ug/Kg | 07/26/17 | 2:36 | LA | 425673 |
| Endrin Ketone | SW8081B | 3 | 0.48 | 10 | ND | | ug/Kg | 07/26/17 | 2:36 | LA | 425673 |
| Chlordane | SW8081B | 3 | 11 | 100 | ND | | ug/Kg | 07/26/17 | 2:36 | LA | 425673 |
| Toxaphene | SW8081B | 3 | 44 | 260 | ND | | ug/Kg | 07/26/17 | 2:36 | LA | 425673 |
| | | | Acceptance Limits | | | | | | | | |
| TCMX (S) | SW8081B | | 48 - 125 | | **91.3** | | % | 07/26/17 | 2:36 | LA | 425673 |
| DCBP (S) | SW8081B | | 38 - 135 | | **112** | | % | 07/26/17 | 2:36 | LA | 425673 |

**NOTE:** Sample diluted due to nature of the matrix (dark, viscous extract)

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-44 (0-0.5) | **Lab Sample ID:** | 1707125-004A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 12:41 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/24/17 | 9:40:00PM |
| **Prep Batch ID:** | 8441 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **41.6** | | % | 07/24/17 | 21:40 | PH | 425654 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.71** | | - | 07/24/17 | 21:40 | PH | 425654 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-45 (0-0.5) | **Lab Sample ID:** | 1707125-005A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 11:32 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 7471BP | **Prep Batch Date/Time:** | 7/25/17 | 4:10:00PM |
| **Prep Batch ID:** | 8445 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.090 | 0.54 | ND | | mg/Kg | 07/26/17 | 11:43 | BJAY | 425666 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-45 (0-0.5) | **Lab Sample ID:** | 1707125-005A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 11:32 | | |
| **SDG:** | | | |

| | | | |
|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/24/17 10:45:00AM |
| **Prep Batch ID:** | 8367 | **Prep Analyst:** | BJAY |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Antimony | 6020A | 1 | 0.13 | 1.1 | **0.224** | J | mg/Kg | 07/26/17 | 14:30 | ERR | 425652 |
| Arsenic | 6020A | 1 | 0.23 | 1.1 | **13.2** | | mg/Kg | 07/26/17 | 14:30 | ERR | 425652 |
| Barium | 6020A | 1 | 0.90 | 1.1 | **58.8** | | mg/Kg | 07/26/17 | 14:30 | ERR | 425652 |
| Beryllium | 6020A | 1 | 0.17 | 1.1 | **0.195** | J | mg/Kg | 07/26/17 | 14:30 | ERR | 425652 |
| Cadmium | 6020A | 1 | 0.090 | 1.1 | **0.154** | J | mg/Kg | 07/26/17 | 14:30 | ERR | 425652 |
| Chromium | 6020A | 1 | 0.10 | 1.1 | **39.9** | | mg/Kg | 07/26/17 | 14:30 | ERR | 425652 |
| Cobalt | 6020A | 1 | 0.23 | 1.1 | **12.4** | | mg/Kg | 07/26/17 | 14:30 | ERR | 425652 |
| Copper | 6020A | 1 | 0.18 | 2.7 | **20.3** | | mg/Kg | 07/26/17 | 14:30 | ERR | 425652 |
| Lead | 6020A | 1 | 0.058 | 1.1 | **19.1** | | mg/Kg | 07/26/17 | 14:30 | ERR | 425652 |
| Molybdenum | 6020A | 1 | 0.14 | 1.1 | **0.340** | J | mg/Kg | 07/26/17 | 14:30 | ERR | 425652 |
| Nickel | 6020A | 1 | 1.3 | 5.4 | **16.7** | | mg/Kg | 07/26/17 | 14:30 | ERR | 425652 |
| Selenium | 6020A | 1 | 0.037 | 2.7 | ND | | mg/Kg | 07/26/17 | 14:30 | ERR | 425652 |
| Silver | 6020A | 1 | 0.11 | 1.1 | ND | | mg/Kg | 07/26/17 | 14:30 | ERR | 425652 |
| Thallium | 6020A | 1 | 1.1 | 5.4 | ND | | mg/Kg | 07/26/17 | 14:30 | ERR | 425652 |
| Vanadium | 6020A | 1 | 0.30 | 27 | **49.8** | | mg/Kg | 07/26/17 | 14:30 | ERR | 425652 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-45 (0-0.5) | **Lab Sample ID:** | 1707125-005A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 11:32 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/24/17 | 10:45:00AM |
| **Prep Batch ID:** | 8367 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Zinc | 6020A | 25 | 3.8 | 14 | **206** | | mg/Kg | 07/26/17 | 18:39 | ERR | 425682 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-45 (0-0.5) | **Lab Sample ID:** | 1707125-005A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 11:32 | | |
| **SDG:** | | | |

| | | | |
|---|---|---|---|
| **Prep Method:** | 3546_OCP | **Prep Batch Date/Time:** | 7/25/17 10:47:00AM |
| **Prep Batch ID:** | 8412 | **Prep Analyst:** | SNARASIMHAN |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| alpha-BHC | SW8081B | 3 | 0.41 | 6.5 | ND | | ug/Kg | 07/26/17 | 2:51 | LA | 425673 |
| gamma-BHC (Lindane) | SW8081B | 3 | 0.52 | 6.5 | ND | | ug/Kg | 07/26/17 | 2:51 | LA | 425673 |
| beta-BHC | SW8081B | 3 | 1.0 | 6.5 | ND | | ug/Kg | 07/26/17 | 2:51 | LA | 425673 |
| delta-BHC | SW8081B | 3 | 0.50 | 6.5 | ND | | ug/Kg | 07/26/17 | 2:51 | LA | 425673 |
| Heptachlor | SW8081B | 3 | 0.34 | 6.5 | ND | | ug/Kg | 07/26/17 | 2:51 | LA | 425673 |
| Aldrin | SW8081B | 3 | 0.63 | 6.5 | ND | | ug/Kg | 07/26/17 | 2:51 | LA | 425673 |
| Heptachlor Epoxide | SW8081B | 3 | 0.25 | 6.5 | ND | | ug/Kg | 07/26/17 | 2:51 | LA | 425673 |
| gamma-Chlordane | SW8081B | 3 | 0.53 | 6.5 | ND | | ug/Kg | 07/26/17 | 2:51 | LA | 425673 |
| alpha-Chlordane | SW8081B | 3 | 0.56 | 6.5 | ND | | ug/Kg | 07/26/17 | 2:51 | LA | 425673 |
| 4,4-DDE | SW8081B | 3 | 0.63 | 6.5 | **114** | | ug/Kg | 07/26/17 | 2:51 | LA | 425673 |
| Endosulfan I | SW8081B | 3 | 0.59 | 6.5 | ND | | ug/Kg | 07/26/17 | 2:51 | LA | 425673 |
| Dieldrin | SW8081B | 3 | 0.48 | 6.5 | ND | | ug/Kg | 07/26/17 | 2:51 | LA | 425673 |
| Endrin | SW8081B | 3 | 0.61 | 6.5 | ND | | ug/Kg | 07/26/17 | 2:51 | LA | 425673 |
| 4,4-DDD | SW8081B | 3 | 1.8 | 6.5 | ND | | ug/Kg | 07/26/17 | 2:51 | LA | 425673 |
| Endosulfan II | SW8081B | 3 | 1.9 | 6.5 | ND | | ug/Kg | 07/26/17 | 2:51 | LA | 425673 |
| 4,4-DDT | SW8081B | 3 | 0.42 | 6.5 | **44.4** | | ug/Kg | 07/26/17 | 2:51 | LA | 425673 |
| Endrin Aldehyde | SW8081B | 3 | 0.49 | 6.5 | ND | | ug/Kg | 07/26/17 | 2:51 | LA | 425673 |
| Methoxychlor | SW8081B | 3 | 0.65 | 6.5 | ND | | ug/Kg | 07/26/17 | 2:51 | LA | 425673 |
| Endosulfan Sulfate | SW8081B | 3 | 0.38 | 6.5 | ND | | ug/Kg | 07/26/17 | 2:51 | LA | 425673 |
| Endrin Ketone | SW8081B | 3 | 0.30 | 6.5 | ND | | ug/Kg | 07/26/17 | 2:51 | LA | 425673 |
| Chlordane | SW8081B | 3 | 6.8 | 65 | ND | | ug/Kg | 07/26/17 | 2:51 | LA | 425673 |
| Toxaphene | SW8081B | 3 | 28 | 160 | ND | | ug/Kg | 07/26/17 | 2:51 | LA | 425673 |
| | | | Acceptance Limits | | | | | | | | |
| TCMX (S) | SW8081B | | 48 - 125 | | **94.6** | | % | 07/26/17 | 2:51 | LA | 425673 |
| DCBP (S) | SW8081B | | 38 - 135 | | **108** | | % | 07/26/17 | 2:51 | LA | 425673 |

**NOTE:** Sample diluted due to nature of the matrix (dark, viscous extract)

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-45 (0-0.5) | **Lab Sample ID:** | 1707125-005A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 11:32 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/24/17 | 9:40:00PM |
| **Prep Batch ID:** | 8441 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **7.48** | | % | 07/24/17 | 21:40 | PH | 425654 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.08** | | - | 07/24/17 | 21:40 | PH | 425654 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-46 (0-0.5) | **Lab Sample ID:** | 1707125-006A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 11:18 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 7471BP | **Prep Batch Date/Time:** | 7/25/17 | 4:10:00PM |
| **Prep Batch ID:** | 8445 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.084 | 0.51 | ND | | mg/Kg | 07/26/17 | 11:51 | BJAY | 425666 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-46 (0-0.5) | **Lab Sample ID:** | 1707125-006A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 11:18 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/24/17 | 10:45:00AM |
| **Prep Batch ID:** | 8367 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Antimony | 6020A | 1 | 0.12 | 1.0 | **0.379** | J | mg/Kg | 07/26/17 | 14:39 | ERR | 425652 |
| Arsenic | 6020A | 1 | 0.21 | 1.0 | **12.3** | | mg/Kg | 07/26/17 | 14:39 | ERR | 425652 |
| Beryllium | 6020A | 1 | 0.16 | 1.0 | **0.198** | J | mg/Kg | 07/26/17 | 14:39 | ERR | 425652 |
| Cadmium | 6020A | 1 | 0.084 | 1.0 | **0.125** | J | mg/Kg | 07/26/17 | 14:39 | ERR | 425652 |
| Chromium | 6020A | 1 | 0.098 | 1.0 | **46.4** | | mg/Kg | 07/26/17 | 14:39 | ERR | 425652 |
| Cobalt | 6020A | 1 | 0.21 | 1.0 | **8.76** | | mg/Kg | 07/26/17 | 14:39 | ERR | 425652 |
| Copper | 6020A | 1 | 0.17 | 2.5 | **24.5** | | mg/Kg | 07/26/17 | 14:39 | ERR | 425652 |
| Lead | 6020A | 1 | 0.054 | 1.0 | **14.9** | | mg/Kg | 07/26/17 | 14:39 | ERR | 425652 |
| Molybdenum | 6020A | 1 | 0.13 | 1.0 | **0.456** | J | mg/Kg | 07/26/17 | 14:39 | ERR | 425652 |
| Nickel | 6020A | 1 | 1.3 | 5.1 | **18.8** | | mg/Kg | 07/26/17 | 14:39 | ERR | 425652 |
| Selenium | 6020A | 1 | 0.035 | 2.5 | ND | | mg/Kg | 07/26/17 | 14:39 | ERR | 425652 |
| Silver | 6020A | 1 | 0.099 | 1.0 | ND | | mg/Kg | 07/26/17 | 14:39 | ERR | 425652 |
| Thallium | 6020A | 1 | 1.0 | 5.1 | ND | | mg/Kg | 07/26/17 | 14:39 | ERR | 425652 |
| Vanadium | 6020A | 1 | 0.28 | 25 | **53.8** | | mg/Kg | 07/26/17 | 14:39 | ERR | 425652 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-46 (0-0.5) | **Lab Sample ID:** | 1707125-006A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 11:18 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/24/17 | 10:45:00AM |
| **Prep Batch ID:** | 8367 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 6020A | 10 | 1.7 | 2.0 | **71.1** | | mg/Kg | 07/26/17 | 18:45 | ERR | 425682 |
| Zinc | 6020A | 10 | 1.4 | 5.1 | **75.4** | | mg/Kg | 07/26/17 | 18:45 | ERR | 425682 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-46 (0-0.5) | **Lab Sample ID:** | 1707125-006A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 11:18 | | |
| **SDG:** | | | |

| | | | |
|---|---|---|---|
| **Prep Method:** | 3546_OCP | **Prep Batch Date/Time:** | 7/25/17 12:59:00PM |
| **Prep Batch ID:** | 8421 | **Prep Analyst:** | SNARASIMHAN |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| alpha-BHC | SW8081B | 3 | 0.38 | 6.1 | ND | | ug/Kg | 07/26/17 | 3:06 | LA | 425673 |
| gamma-BHC (Lindane) | SW8081B | 3 | 0.48 | 6.1 | ND | | ug/Kg | 07/26/17 | 3:06 | LA | 425673 |
| beta-BHC | SW8081B | 3 | 0.96 | 6.1 | ND | | ug/Kg | 07/26/17 | 3:06 | LA | 425673 |
| delta-BHC | SW8081B | 3 | 0.47 | 6.1 | ND | | ug/Kg | 07/26/17 | 3:06 | LA | 425673 |
| Heptachlor | SW8081B | 3 | 0.32 | 6.1 | ND | | ug/Kg | 07/26/17 | 3:06 | LA | 425673 |
| Aldrin | SW8081B | 3 | 0.59 | 6.1 | ND | | ug/Kg | 07/26/17 | 3:06 | LA | 425673 |
| Heptachlor Epoxide | SW8081B | 3 | 0.24 | 6.1 | ND | | ug/Kg | 07/26/17 | 3:06 | LA | 425673 |
| gamma-Chlordane | SW8081B | 3 | 0.49 | 6.1 | ND | | ug/Kg | 07/26/17 | 3:06 | LA | 425673 |
| alpha-Chlordane | SW8081B | 3 | 0.52 | 6.1 | ND | | ug/Kg | 07/26/17 | 3:06 | LA | 425673 |
| 4,4-DDE | SW8081B | 3 | 0.59 | 6.1 | **85.0** | | ug/Kg | 07/26/17 | 3:06 | LA | 425673 |
| Endosulfan I | SW8081B | 3 | 0.55 | 6.1 | ND | | ug/Kg | 07/26/17 | 3:06 | LA | 425673 |
| Dieldrin | SW8081B | 3 | 0.45 | 6.1 | ND | | ug/Kg | 07/26/17 | 3:06 | LA | 425673 |
| Endrin | SW8081B | 3 | 0.57 | 6.1 | ND | | ug/Kg | 07/26/17 | 3:06 | LA | 425673 |
| 4,4-DDD | SW8081B | 3 | 1.7 | 6.1 | ND | | ug/Kg | 07/26/17 | 3:06 | LA | 425673 |
| Endosulfan II | SW8081B | 3 | 1.7 | 6.1 | ND | | ug/Kg | 07/26/17 | 3:06 | LA | 425673 |
| 4,4-DDT | SW8081B | 3 | 0.39 | 6.1 | **16.2** | | ug/Kg | 07/26/17 | 3:06 | LA | 425673 |
| Endrin Aldehyde | SW8081B | 3 | 0.46 | 6.1 | ND | | ug/Kg | 07/26/17 | 3:06 | LA | 425673 |
| Methoxychlor | SW8081B | 3 | 0.61 | 6.1 | ND | | ug/Kg | 07/26/17 | 3:06 | LA | 425673 |
| Endosulfan Sulfate | SW8081B | 3 | 0.35 | 6.1 | ND | | ug/Kg | 07/26/17 | 3:06 | LA | 425673 |
| Endrin Ketone | SW8081B | 3 | 0.28 | 6.1 | ND | | ug/Kg | 07/26/17 | 3:06 | LA | 425673 |
| Chlordane | SW8081B | 3 | 6.4 | 61 | ND | | ug/Kg | 07/26/17 | 3:06 | LA | 425673 |
| Toxaphene | SW8081B | 3 | 26 | 150 | ND | | ug/Kg | 07/26/17 | 3:06 | LA | 425673 |
| | | | Acceptance Limits | | | | | | | | |
| TCMX (S) | SW8081B | | 48 - 125 | | **89.1** | | % | 07/26/17 | 3:06 | LA | 425673 |
| DCBP (S) | SW8081B | | 38 - 135 | | **102** | | % | 07/26/17 | 3:06 | LA | 425673 |

**NOTE:** Sample diluted due to nature of the matrix (dark, viscous extract)

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-46 (0-0.5) | **Lab Sample ID:** | 1707125-006A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 11:18 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/24/17 | 9:40:00PM |
| **Prep Batch ID:** | 8441 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **0.710** | | % | 07/24/17 | 21:40 | PH | 425654 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.01** | | - | 07/24/17 | 21:40 | PH | 425654 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-47 (0-0.5) | **Lab Sample ID:** | 1707125-007A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 14:35 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 7471BP | **Prep Batch Date/Time:** | 7/25/17 | 4:10:00PM |
| **Prep Batch ID:** | 8445 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.21 | 1.3 | ND | | mg/Kg | 07/26/17 | 11:53 | BJAY | 425666 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-47 (0-0.5) | **Lab Sample ID:** | 1707125-007A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 14:35 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/24/17 | 10:45:00AM |
| **Prep Batch ID:** | 8367 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Antimony | 6020A | 1 | 0.31 | 2.5 | ND | | mg/Kg | 07/26/17 | 14:47 | ERR | 425652 |
| Arsenic | 6020A | 1 | 0.53 | 2.5 | **4.48** | | mg/Kg | 07/26/17 | 14:47 | ERR | 425652 |
| Barium | 6020A | 1 | 2.1 | 2.5 | **24.8** | | mg/Kg | 07/26/17 | 14:47 | ERR | 425652 |
| Beryllium | 6020A | 1 | 0.41 | 2.5 | ND | | mg/Kg | 07/26/17 | 14:47 | ERR | 425652 |
| Cadmium | 6020A | 1 | 0.21 | 2.5 | ND | | mg/Kg | 07/26/17 | 14:47 | ERR | 425652 |
| Chromium | 6020A | 1 | 0.25 | 2.5 | **19.7** | | mg/Kg | 07/26/17 | 14:47 | ERR | 425652 |
| Cobalt | 6020A | 1 | 0.53 | 2.5 | **6.16** | | mg/Kg | 07/26/17 | 14:47 | ERR | 425652 |
| Copper | 6020A | 1 | 0.43 | 6.4 | **17.8** | | mg/Kg | 07/26/17 | 14:47 | ERR | 425652 |
| Lead | 6020A | 1 | 0.14 | 2.5 | **11.2** | | mg/Kg | 07/26/17 | 14:47 | ERR | 425652 |
| Molybdenum | 6020A | 1 | 0.33 | 2.5 | **0.429** | J | mg/Kg | 07/26/17 | 14:47 | ERR | 425652 |
| Nickel | 6020A | 1 | 3.2 | 13 | **10.1** | J | mg/Kg | 07/26/17 | 14:47 | ERR | 425652 |
| Selenium | 6020A | 1 | 0.088 | 6.4 | ND | | mg/Kg | 07/26/17 | 14:47 | ERR | 425652 |
| Silver | 6020A | 1 | 0.25 | 2.5 | ND | | mg/Kg | 07/26/17 | 14:47 | ERR | 425652 |
| Thallium | 6020A | 1 | 2.5 | 13 | ND | | mg/Kg | 07/26/17 | 14:47 | ERR | 425652 |
| Vanadium | 6020A | 1 | 0.71 | 64 | **14.5** | J | mg/Kg | 07/26/17 | 14:47 | ERR | 425652 |
| Zinc | 6020A | 1 | 1.8 | 6.4 | **23.1** | | mg/Kg | 07/26/17 | 14:47 | ERR | 425652 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-47 (0-0.5) | **Lab Sample ID:** | 1707125-007A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 14:35 | | |
| **SDG:** | | | |

| | | | |
|---|---|---|---|
| **Prep Method:** | 3546_OCP | **Prep Batch Date/Time:** | 7/25/17 12:59:00PM |
| **Prep Batch ID:** | 8421 | **Prep Analyst:** | SNARASIMHAN |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| alpha-BHC | SW8081B | 3 | 0.97 | 15 | ND | | ug/Kg | 07/26/17 | 3:21 | LA | 425673 |
| gamma-BHC (Lindane) | SW8081B | 3 | 1.2 | 15 | ND | | ug/Kg | 07/26/17 | 3:21 | LA | 425673 |
| beta-BHC | SW8081B | 3 | 2.4 | 15 | ND | | ug/Kg | 07/26/17 | 3:21 | LA | 425673 |
| delta-BHC | SW8081B | 3 | 1.2 | 15 | ND | | ug/Kg | 07/26/17 | 3:21 | LA | 425673 |
| Heptachlor | SW8081B | 3 | 0.80 | 15 | ND | | ug/Kg | 07/26/17 | 3:21 | LA | 425673 |
| Aldrin | SW8081B | 3 | 1.5 | 15 | ND | | ug/Kg | 07/26/17 | 3:21 | LA | 425673 |
| Heptachlor Epoxide | SW8081B | 3 | 0.59 | 15 | ND | | ug/Kg | 07/26/17 | 3:21 | LA | 425673 |
| gamma-Chlordane | SW8081B | 3 | 1.2 | 15 | ND | | ug/Kg | 07/26/17 | 3:21 | LA | 425673 |
| alpha-Chlordane | SW8081B | 3 | 1.3 | 15 | ND | | ug/Kg | 07/26/17 | 3:21 | LA | 425673 |
| 4,4-DDE | SW8081B | 3 | 1.5 | 15 | **65.5** | | ug/Kg | 07/26/17 | 3:21 | LA | 425673 |
| Endosulfan I | SW8081B | 3 | 1.4 | 15 | ND | | ug/Kg | 07/26/17 | 3:21 | LA | 425673 |
| Dieldrin | SW8081B | 3 | 1.1 | 15 | ND | | ug/Kg | 07/26/17 | 3:21 | LA | 425673 |
| Endrin | SW8081B | 3 | 1.4 | 15 | ND | | ug/Kg | 07/26/17 | 3:21 | LA | 425673 |
| 4,4-DDD | SW8081B | 3 | 4.3 | 15 | ND | | ug/Kg | 07/26/17 | 3:21 | LA | 425673 |
| Endosulfan II | SW8081B | 3 | 4.4 | 15 | ND | | ug/Kg | 07/26/17 | 3:21 | LA | 425673 |
| 4,4-DDT | SW8081B | 3 | 0.98 | 15 | **14.8** | J | ug/Kg | 07/26/17 | 3:21 | LA | 425673 |
| Endrin Aldehyde | SW8081B | 3 | 1.2 | 15 | ND | | ug/Kg | 07/26/17 | 3:21 | LA | 425673 |
| Methoxychlor | SW8081B | 3 | 1.5 | 15 | ND | | ug/Kg | 07/26/17 | 3:21 | LA | 425673 |
| Endosulfan Sulfate | SW8081B | 3 | 0.89 | 15 | ND | | ug/Kg | 07/26/17 | 3:21 | LA | 425673 |
| Endrin Ketone | SW8081B | 3 | 0.72 | 15 | ND | | ug/Kg | 07/26/17 | 3:21 | LA | 425673 |
| Chlordane | SW8081B | 3 | 16 | 150 | ND | | ug/Kg | 07/26/17 | 3:21 | LA | 425673 |
| Toxaphene | SW8081B | 3 | 65 | 380 | ND | | ug/Kg | 07/26/17 | 3:21 | LA | 425673 |
| | | | Acceptance Limits | | | | | | | | |
| TCMX (S) | SW8081B | | 48 - 125 | | **91.0** | | % | 07/26/17 | 3:21 | LA | 425673 |
| DCBP (S) | SW8081B | | 38 - 135 | | **101** | | % | 07/26/17 | 3:21 | LA | 425673 |

**NOTE:** Sample diluted due to nature of the matrix (dark, viscous extract)

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-47 (0-0.5) | **Lab Sample ID:** | 1707125-007A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 14:35 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/24/17 | 9:40:00PM |
| **Prep Batch ID:** | 8441 | **Prep Analyst:** | PHUFANO | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **60.7** | | % | 07/24/17 | 21:40 | PH | 425654 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **2.54** | | - | 07/24/17 | 21:40 | PH | 425654 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-48 (0-0.5) | **Lab Sample ID:** | 1707125-008A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 14:43 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 7471BP | **Prep Batch Date/Time:** | 7/25/17 | 4:10:00PM |
| **Prep Batch ID:** | 8445 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.11 | 0.68 | ND | | mg/Kg | 07/26/17 | 11:55 | BJAY | 425666 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-48 (0-0.5) | **Lab Sample ID:** | 1707125-008A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 14:43 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/24/17 | 10:45:00AM |
| **Prep Batch ID:** | 8367 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Antimony | 6020A | 1 | 0.16 | 1.4 | ND | | mg/Kg | 07/26/17 | 14:55 | ERR | 425652 |
| Arsenic | 6020A | 1 | 0.28 | 1.4 | **1.08** | J | mg/Kg | 07/26/17 | 14:55 | ERR | 425652 |
| Barium | 6020A | 1 | 1.1 | 1.4 | **7.64** | | mg/Kg | 07/26/17 | 14:55 | ERR | 425652 |
| Beryllium | 6020A | 1 | 0.22 | 1.4 | ND | | mg/Kg | 07/26/17 | 14:55 | ERR | 425652 |
| Cadmium | 6020A | 1 | 0.11 | 1.4 | ND | | mg/Kg | 07/26/17 | 14:55 | ERR | 425652 |
| Chromium | 6020A | 1 | 0.13 | 1.4 | **6.99** | | mg/Kg | 07/26/17 | 14:55 | ERR | 425652 |
| Cobalt | 6020A | 1 | 0.28 | 1.4 | **0.793** | J | mg/Kg | 07/26/17 | 14:55 | ERR | 425652 |
| Copper | 6020A | 1 | 0.23 | 3.4 | **3.50** | | mg/Kg | 07/26/17 | 14:55 | ERR | 425652 |
| Lead | 6020A | 1 | 0.072 | 1.4 | **1.36** | | mg/Kg | 07/26/17 | 14:55 | ERR | 425652 |
| Molybdenum | 6020A | 1 | 0.18 | 1.4 | ND | | mg/Kg | 07/26/17 | 14:55 | ERR | 425652 |
| Nickel | 6020A | 1 | 1.7 | 6.8 | **2.72** | J | mg/Kg | 07/26/17 | 14:55 | ERR | 425652 |
| Selenium | 6020A | 1 | 0.047 | 3.4 | ND | | mg/Kg | 07/26/17 | 14:55 | ERR | 425652 |
| Silver | 6020A | 1 | 0.13 | 1.4 | ND | | mg/Kg | 07/26/17 | 14:55 | ERR | 425652 |
| Thallium | 6020A | 1 | 1.3 | 6.8 | ND | | mg/Kg | 07/26/17 | 14:55 | ERR | 425652 |
| Vanadium | 6020A | 1 | 0.38 | 34 | **3.69** | J | mg/Kg | 07/26/17 | 14:55 | ERR | 425652 |
| Zinc | 6020A | 1 | 0.95 | 3.4 | **4.90** | | mg/Kg | 07/26/17 | 14:55 | ERR | 425652 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-48 (0-0.5) | **Lab Sample ID:** | 1707125-008A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 14:43 | | |
| **SDG:** | | | |

| | | | |
|---|---|---|---|
| **Prep Method:** | 3546_OCP | **Prep Batch Date/Time:** | 7/25/17 12:59:00PM |
| **Prep Batch ID:** | 8421 | **Prep Analyst:** | SNARASIMHAN |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| alpha-BHC | SW8081B | 1 | 0.17 | 2.7 | ND | | ug/Kg | 07/26/17 | 4:22 | LA | 425673 |
| gamma-BHC (Lindane) | SW8081B | 1 | 0.21 | 2.7 | ND | | ug/Kg | 07/26/17 | 4:22 | LA | 425673 |
| beta-BHC | SW8081B | 1 | 0.43 | 2.7 | ND | | ug/Kg | 07/26/17 | 4:22 | LA | 425673 |
| delta-BHC | SW8081B | 1 | 0.21 | 2.7 | ND | | ug/Kg | 07/26/17 | 4:22 | LA | 425673 |
| Heptachlor | SW8081B | 1 | 0.14 | 2.7 | ND | | ug/Kg | 07/26/17 | 4:22 | LA | 425673 |
| Aldrin | SW8081B | 1 | 0.26 | 2.7 | ND | | ug/Kg | 07/26/17 | 4:22 | LA | 425673 |
| Heptachlor Epoxide | SW8081B | 1 | 0.11 | 2.7 | ND | | ug/Kg | 07/26/17 | 4:22 | LA | 425673 |
| gamma-Chlordane | SW8081B | 1 | 0.22 | 2.7 | ND | | ug/Kg | 07/26/17 | 4:22 | LA | 425673 |
| alpha-Chlordane | SW8081B | 1 | 0.23 | 2.7 | ND | | ug/Kg | 07/26/17 | 4:22 | LA | 425673 |
| 4,4-DDE | SW8081B | 1 | 0.26 | 2.7 | ND | | ug/Kg | 07/26/17 | 4:22 | LA | 425673 |
| Endosulfan I | SW8081B | 1 | 0.25 | 2.7 | ND | | ug/Kg | 07/26/17 | 4:22 | LA | 425673 |
| Dieldrin | SW8081B | 1 | 0.20 | 2.7 | ND | | ug/Kg | 07/26/17 | 4:22 | LA | 425673 |
| Endrin | SW8081B | 1 | 0.25 | 2.7 | ND | | ug/Kg | 07/26/17 | 4:22 | LA | 425673 |
| 4,4-DDD | SW8081B | 1 | 0.76 | 2.7 | ND | | ug/Kg | 07/26/17 | 4:22 | LA | 425673 |
| Endosulfan II | SW8081B | 1 | 0.78 | 2.7 | ND | | ug/Kg | 07/26/17 | 4:22 | LA | 425673 |
| 4,4-DDT | SW8081B | 1 | 0.17 | 2.7 | ND | | ug/Kg | 07/26/17 | 4:22 | LA | 425673 |
| Endrin Aldehyde | SW8081B | 1 | 0.20 | 2.7 | ND | | ug/Kg | 07/26/17 | 4:22 | LA | 425673 |
| Methoxychlor | SW8081B | 1 | 0.27 | 2.7 | ND | | ug/Kg | 07/26/17 | 4:22 | LA | 425673 |
| Endosulfan Sulfate | SW8081B | 1 | 0.16 | 2.7 | ND | | ug/Kg | 07/26/17 | 4:22 | LA | 425673 |
| Endrin Ketone | SW8081B | 1 | 0.13 | 2.7 | ND | | ug/Kg | 07/26/17 | 4:22 | LA | 425673 |
| Chlordane | SW8081B | 1 | 2.8 | 27 | ND | | ug/Kg | 07/26/17 | 4:22 | LA | 425673 |
| Toxaphene | SW8081B | 1 | 12 | 68 | ND | | ug/Kg | 07/26/17 | 4:22 | LA | 425673 |
| | | | Acceptance Limits | | | | | | | | |
| TCMX (S) | SW8081B | | 48 - 125 | | **90.1** | | % | 07/26/17 | 4:22 | LA | 425673 |
| DCBP (S) | SW8081B | | 38 - 135 | | **109** | | % | 07/26/17 | 4:22 | LA | 425673 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-48 (0-0.5) | **Lab Sample ID:** | 1707125-008A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 14:43 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/25/17 | 11:00:00AM |
| **Prep Batch ID:** | 8447 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **26.0** | | % | 07/25/17 | 11:00 | PP | 425660 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.35** | | - | 07/25/17 | 11:00 | PP | 425660 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-49 (0-0.5) | **Lab Sample ID:** | 1707125-009A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 14:50 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 7471BP | **Prep Batch Date/Time:** | 7/25/17 | 4:10:00PM |
| **Prep Batch ID:** | 8445 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7471B | 1 | 0.13 | 0.75 | ND | | mg/Kg | 07/26/17 | 11:57 | BJAY | 425666 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-49 (0-0.5) | **Lab Sample ID:** | 1707125-009A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 14:50 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/24/17 | 10:45:00AM |
| **Prep Batch ID:** | 8367 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Antimony | 6020A | 1 | 0.18 | 1.5 | ND | | mg/Kg | 07/26/17 | 15:04 | ERR | 425652 |
| Arsenic | 6020A | 1 | 0.31 | 1.5 | **5.37** | | mg/Kg | 07/26/17 | 15:04 | ERR | 425652 |
| Barium | 6020A | 1 | 1.3 | 1.5 | **37.6** | | mg/Kg | 07/26/17 | 15:04 | ERR | 425652 |
| Beryllium | 6020A | 1 | 0.24 | 1.5 | ND | | mg/Kg | 07/26/17 | 15:04 | ERR | 425652 |
| Cadmium | 6020A | 1 | 0.13 | 1.5 | ND | | mg/Kg | 07/26/17 | 15:04 | ERR | 425652 |
| Chromium | 6020A | 1 | 0.15 | 1.5 | **37.4** | | mg/Kg | 07/26/17 | 15:04 | ERR | 425652 |
| Cobalt | 6020A | 1 | 0.32 | 1.5 | **7.49** | | mg/Kg | 07/26/17 | 15:04 | ERR | 425652 |
| Copper | 6020A | 1 | 0.26 | 3.8 | **27.2** | | mg/Kg | 07/26/17 | 15:04 | ERR | 425652 |
| Lead | 6020A | 1 | 0.080 | 1.5 | **3.45** | | mg/Kg | 07/26/17 | 15:04 | ERR | 425652 |
| Molybdenum | 6020A | 1 | 0.20 | 1.5 | ND | | mg/Kg | 07/26/17 | 15:04 | ERR | 425652 |
| Nickel | 6020A | 1 | 1.9 | 7.5 | **16.5** | | mg/Kg | 07/26/17 | 15:04 | ERR | 425652 |
| Selenium | 6020A | 1 | 0.052 | 3.8 | ND | | mg/Kg | 07/26/17 | 15:04 | ERR | 425652 |
| Silver | 6020A | 1 | 0.15 | 1.5 | ND | | mg/Kg | 07/26/17 | 15:04 | ERR | 425652 |
| Thallium | 6020A | 1 | 1.5 | 7.5 | ND | | mg/Kg | 07/26/17 | 15:04 | ERR | 425652 |
| Vanadium | 6020A | 1 | 0.42 | 38 | **37.8** | | mg/Kg | 07/26/17 | 15:04 | ERR | 425652 |
| Zinc | 6020A | 1 | 1.1 | 3.8 | **35.2** | | mg/Kg | 07/26/17 | 15:04 | ERR | 425652 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-49 (0-0.5) | **Lab Sample ID:** | 1707125-009A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 14:50 | | |
| **SDG:** | | | |

| | | | |
|---|---|---|---|
| **Prep Method:** | 3546_OCP | **Prep Batch Date/Time:** | 7/25/17 12:59:00PM |
| **Prep Batch ID:** | 8421 | **Prep Analyst:** | SNARASIMHAN |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| alpha-BHC | SW8081B | 3 | 0.57 | 9.0 | ND | | ug/Kg | 07/26/17 | 4:37 | LA | 425673 |
| gamma-BHC (Lindane) | SW8081B | 3 | 0.72 | 9.0 | ND | | ug/Kg | 07/26/17 | 4:37 | LA | 425673 |
| beta-BHC | SW8081B | 3 | 1.4 | 9.0 | ND | | ug/Kg | 07/26/17 | 4:37 | LA | 425673 |
| delta-BHC | SW8081B | 3 | 0.70 | 9.0 | ND | | ug/Kg | 07/26/17 | 4:37 | LA | 425673 |
| Heptachlor | SW8081B | 3 | 0.47 | 9.0 | ND | | ug/Kg | 07/26/17 | 4:37 | LA | 425673 |
| Aldrin | SW8081B | 3 | 0.88 | 9.0 | ND | | ug/Kg | 07/26/17 | 4:37 | LA | 425673 |
| Heptachlor Epoxide | SW8081B | 3 | 0.35 | 9.0 | ND | | ug/Kg | 07/26/17 | 4:37 | LA | 425673 |
| gamma-Chlordane | SW8081B | 3 | 0.73 | 9.0 | ND | | ug/Kg | 07/26/17 | 4:37 | LA | 425673 |
| alpha-Chlordane | SW8081B | 3 | 0.78 | 9.0 | ND | | ug/Kg | 07/26/17 | 4:37 | LA | 425673 |
| 4,4-DDE | SW8081B | 3 | 0.87 | 9.0 | **12.2** | | ug/Kg | 07/26/17 | 4:37 | LA | 425673 |
| Endosulfan I | SW8081B | 3 | 0.82 | 9.0 | ND | | ug/Kg | 07/26/17 | 4:37 | LA | 425673 |
| Dieldrin | SW8081B | 3 | 0.67 | 9.0 | ND | | ug/Kg | 07/26/17 | 4:37 | LA | 425673 |
| Endrin | SW8081B | 3 | 0.85 | 9.0 | ND | | ug/Kg | 07/26/17 | 4:37 | LA | 425673 |
| 4,4-DDD | SW8081B | 3 | 2.5 | 9.0 | ND | | ug/Kg | 07/26/17 | 4:37 | LA | 425673 |
| Endosulfan II | SW8081B | 3 | 2.6 | 9.0 | ND | | ug/Kg | 07/26/17 | 4:37 | LA | 425673 |
| 4,4-DDT | SW8081B | 3 | 0.58 | 9.0 | ND | | ug/Kg | 07/26/17 | 4:37 | LA | 425673 |
| Endrin Aldehyde | SW8081B | 3 | 0.68 | 9.0 | ND | | ug/Kg | 07/26/17 | 4:37 | LA | 425673 |
| Methoxychlor | SW8081B | 3 | 0.90 | 9.0 | ND | | ug/Kg | 07/26/17 | 4:37 | LA | 425673 |
| Endosulfan Sulfate | SW8081B | 3 | 0.53 | 9.0 | ND | | ug/Kg | 07/26/17 | 4:37 | LA | 425673 |
| Endrin Ketone | SW8081B | 3 | 0.42 | 9.0 | ND | | ug/Kg | 07/26/17 | 4:37 | LA | 425673 |
| Chlordane | SW8081B | 3 | 9.5 | 90 | ND | | ug/Kg | 07/26/17 | 4:37 | LA | 425673 |
| Toxaphene | SW8081B | 3 | 38 | 230 | ND | | ug/Kg | 07/26/17 | 4:37 | LA | 425673 |
| | | | Acceptance Limits | | | | | | | | |
| TCMX (S) | SW8081B | | 48 - 125 | | **93.5** | | % | 07/26/17 | 4:37 | LA | 425673 |
| DCBP (S) | SW8081B | | 38 - 135 | | **114** | | % | 07/26/17 | 4:37 | LA | 425673 |

**NOTE:** Sample diluted due to nature of the matrix (dark, viscous extract)

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-49 (0-0.5) | **Lab Sample ID:** | 1707125-009A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 14:50 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/25/17 | 11:00:00AM |
| **Prep Batch ID:** | 8447 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **33.4** | | % | 07/25/17 | 11:00 | PP | 425660 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.50** | | - | 07/25/17 | 11:00 | PP | 425660 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-50 (0-0.5) | **Lab Sample ID:** | 1707125-010A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 15:56 | | |
| **SDG:** | | | |

| | | | |
|---|---|---|---|
| **Prep Method:** | 3546_PCB | **Prep Batch Date/Time:** | 7/25/17 1:04:00PM |
| **Prep Batch ID:** | 8423 | **Prep Analyst:** | SNARASIMHAN |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Aroclor1016 | SW8082A | 1 | 74 | 140 | ND | | ug/Kg | 07/26/17 | 5:05 | mk | 425624 |
| Aroclor1221 | SW8082A | 1 | 7.0 | 140 | ND | | ug/Kg | 07/26/17 | 5:05 | mk | 425624 |
| Aroclor1232 | SW8082A | 1 | 24 | 140 | ND | | ug/Kg | 07/26/17 | 5:05 | mk | 425624 |
| Aroclor1242 | SW8082A | 1 | 4.2 | 140 | ND | | ug/Kg | 07/26/17 | 5:05 | mk | 425624 |
| Aroclor1248 | SW8082A | 1 | 2.8 | 140 | ND | | ug/Kg | 07/26/17 | 5:05 | mk | 425624 |
| Aroclor1254 | SW8082A | 1 | 2.8 | 140 | ND | | ug/Kg | 07/26/17 | 5:05 | mk | 425624 |
| Aroclor1260 | SW8082A | 1 | 50 | 140 | ND | | ug/Kg | 07/26/17 | 5:05 | mk | 425624 |
| | | | Acceptance Limits | | | | | | | | |
| TCMX (S) | SW8082A | | 48 - 125 | | **92.0** | | % | 07/26/17 | 5:05 | mk | 425624 |
| DCBP (S) | SW8082A | | 48 - 135 | | **134** | | % | 07/26/17 | 5:05 | mk | 425624 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-50 (0-0.5) | **Lab Sample ID:** | 1707125-010A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 15:56 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/25/17 | 11:00:00AM |
| **Prep Batch ID:** | 8447 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **28.7** | | % | 07/25/17 | 11:00 | PP | 425660 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.40** | | - | 07/25/17 | 11:00 | PP | 425660 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-50 (1-1.5) | **Lab Sample ID:** | 1707125-011A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 16:00 | | |
| **SDG:** | | | |

| | | | |
|---|---|---|---|
| **Prep Method:** | 3546_PCB | **Prep Batch Date/Time:** | 7/25/17 1:04:00PM |
| **Prep Batch ID:** | 8423 | **Prep Analyst:** | SNARASIMHAN |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Aroclor1016 | SW8082A | 1 | 64 | 120 | ND | | ug/Kg | 07/26/17 | 5:19 | mk | 425624 |
| Aroclor1221 | SW8082A | 1 | 6.0 | 120 | ND | | ug/Kg | 07/26/17 | 5:19 | mk | 425624 |
| Aroclor1232 | SW8082A | 1 | 20 | 120 | ND | | ug/Kg | 07/26/17 | 5:19 | mk | 425624 |
| Aroclor1242 | SW8082A | 1 | 3.6 | 120 | ND | | ug/Kg | 07/26/17 | 5:19 | mk | 425624 |
| Aroclor1248 | SW8082A | 1 | 2.4 | 120 | ND | | ug/Kg | 07/26/17 | 5:19 | mk | 425624 |
| Aroclor1254 | SW8082A | 1 | 2.4 | 120 | ND | | ug/Kg | 07/26/17 | 5:19 | mk | 425624 |
| Aroclor1260 | SW8082A | 1 | 43 | 120 | ND | | ug/Kg | 07/26/17 | 5:19 | mk | 425624 |
| | | | Acceptance Limits | | | | | | | | |
| TCMX (S) | SW8082A | | 48 - 125 | | **94.0** | | % | 07/26/17 | 5:19 | mk | 425624 |
| DCBP (S) | SW8082A | | 48 - 135 | | **132** | | % | 07/26/17 | 5:19 | mk | 425624 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-50 (1-1.5) | **Lab Sample ID:** | 1707125-011A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 16:00 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/25/17 | 11:00:00AM |
| **Prep Batch ID:** | 8447 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **16.8** | | % | 07/25/17 | 11:00 | PP | 425660 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.20** | | - | 07/25/17 | 11:00 | PP | 425660 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-50 (2-3) | **Lab Sample ID:** | 1707125-012A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 16:05 | | |
| **SDG:** | | | |

| | | | |
|---|---|---|---|
| **Prep Method:** | 3546_PCB | **Prep Batch Date/Time:** | 7/25/17 1:04:00PM |
| **Prep Batch ID:** | 8423 | **Prep Analyst:** | SNARASIMHAN |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***The results shown below are reported using their MDL.*** | | | | | | | | | | | |
| Aroclor1016 | SW8082A | 1 | 71 | 130 | ND | | ug/Kg | 07/26/17 | 6:30 | mk | 425624 |
| Aroclor1221 | SW8082A | 1 | 6.7 | 130 | ND | | ug/Kg | 07/26/17 | 6:30 | mk | 425624 |
| Aroclor1232 | SW8082A | 1 | 23 | 130 | ND | | ug/Kg | 07/26/17 | 6:30 | mk | 425624 |
| Aroclor1242 | SW8082A | 1 | 4.0 | 130 | ND | | ug/Kg | 07/26/17 | 6:30 | mk | 425624 |
| Aroclor1248 | SW8082A | 1 | 2.7 | 130 | ND | | ug/Kg | 07/26/17 | 6:30 | mk | 425624 |
| Aroclor1254 | SW8082A | 1 | 2.7 | 130 | ND | | ug/Kg | 07/26/17 | 6:30 | mk | 425624 |
| Aroclor1260 | SW8082A | 1 | 48 | 130 | ND | | ug/Kg | 07/26/17 | 6:30 | mk | 425624 |
| | | | Acceptance Limits | | | | | | | | |
| TCMX (S) | SW8082A | | 48 - 125 | | **94.0** | | % | 07/26/17 | 6:30 | mk | 425624 |
| DCBP (S) | SW8082A | | 48 - 135 | | **135** | | % | 07/26/17 | 6:30 | mk | 425624 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-50 (2-3) | **Lab Sample ID:** | 1707125-012A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 16:05 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/25/17 | 11:00:00AM |
| **Prep Batch ID:** | 8447 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **25.6** | | % | 07/25/17 | 11:00 | PP | 425660 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.34** | | - | 07/25/17 | 11:00 | PP | 425660 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-12A (0-0.5) | **Lab Sample ID:** | 1707125-013A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 9:38 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/20/17 | 11:40:00AM |
| **Prep Batch ID:** | 8276 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 6020A | 1 | 0.25 | 1.2 | **8.09** | | mg/Kg | 07/20/17 | 18:29 | ERR | 425519 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-12A (0-0.5) | **Lab Sample ID:** | 1707125-013A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 9:38 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/25/17 | 11:00:00AM |
| **Prep Batch ID:** | 8447 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **17.2** | | % | 07/25/17 | 11:00 | PP | 425660 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.21** | | - | 07/25/17 | 11:00 | PP | 425660 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-12B (0-0.5) | **Lab Sample ID:** | 1707125-014A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 9:45 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/20/17 | 11:40:00AM |
| **Prep Batch ID:** | 8276 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 6020A | 1 | 0.21 | 1.0 | **21.0** | | mg/Kg | 07/20/17 | 18:33 | ERR | 425519 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-12B (0-0.5) | **Lab Sample ID:** | 1707125-014A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 9:45 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/25/17 | 11:00:00AM |
| **Prep Batch ID:** | 8447 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **0.810** | | % | 07/25/17 | 11:00 | PP | 425660 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.01** | | - | 07/25/17 | 11:00 | PP | 425660 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-12C (0-0.5) | **Lab Sample ID:** | 1707125-015A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 9:49 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/20/17 | 11:40:00AM |
| **Prep Batch ID:** | 8276 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 6020A | 1 | 0.21 | 1.0 | **17.7** | | mg/Kg | 07/20/17 | 18:38 | ERR | 425519 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-12C (0-0.5) | **Lab Sample ID:** | 1707125-015A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 9:49 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/25/17 | 11:00:00AM |
| **Prep Batch ID:** | 8447 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **1.86** | | % | 07/25/17 | 11:00 | PP | 425660 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.02** | | - | 07/25/17 | 11:00 | PP | 425660 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-12D (0-0.5) | **Lab Sample ID:** | 1707125-016A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 9:54 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/20/17 | 11:40:00AM |
| **Prep Batch ID:** | 8276 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 6020A | 1 | 0.29 | 1.4 | **41.1** | | mg/Kg | 07/20/17 | 18:42 | ERR | 425519 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SS-12D (0-0.5) | **Lab Sample ID:** | 1707125-016A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 9:54 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/25/17 | 11:00:00AM |
| **Prep Batch ID:** | 8447 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **28.1** | | % | 07/25/17 | 11:00 | PP | 425660 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.39** | | - | 07/25/17 | 11:00 | PP | 425660 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | BG-1 (0.5-1) | **Lab Sample ID:** | 1707125-017A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 8:48 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/20/17 | 11:40:00AM |
| **Prep Batch ID:** | 8276 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 6020A | 1 | 0.27 | 1.3 | **4.60** | | mg/Kg | 07/20/17 | 18:46 | ERR | 425519 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | BG-1 (0.5-1) | **Lab Sample ID:** | 1707125-017A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 8:48 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/25/17 | 11:00:00AM |
| **Prep Batch ID:** | 8447 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **22.7** | | % | 07/25/17 | 11:00 | PP | 425660 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.29** | | - | 07/25/17 | 11:00 | PP | 425660 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | BG-2 (0.5-1) | **Lab Sample ID:** | 1707125-018A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 8:43 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/20/17 | 11:40:00AM |
| **Prep Batch ID:** | 8276 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 6020A | 1 | 0.28 | 1.3 | **5.20** | | mg/Kg | 07/20/17 | 18:51 | ERR | 425519 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | BG-2 (0.5-1) | **Lab Sample ID:** | 1707125-018A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 8:43 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/25/17 | 11:00:00AM |
| **Prep Batch ID:** | 8447 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **24.7** | | % | 07/25/17 | 11:00 | PP | 425660 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.33** | | - | 07/25/17 | 11:00 | PP | 425660 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | BG-3 (0.5-1) | **Lab Sample ID:** | 1707125-019A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:20 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/20/17 | 11:40:00AM |
| **Prep Batch ID:** | 8276 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 6020A | 1 | 0.26 | 1.3 | **4.29** | | mg/Kg | 07/20/17 | 18:55 | ERR | 425519 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | BG-3 (0.5-1) | **Lab Sample ID:** | 1707125-019A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:20 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/25/17 | 11:00:00AM |
| **Prep Batch ID:** | 8447 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **19.9** | | % | 07/25/17 | 11:00 | PP | 425660 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.25** | | - | 07/25/17 | 11:00 | PP | 425660 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | BG-4 (0.5-1) | **Lab Sample ID:** | 1707125-020A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:25 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020S-P | **Prep Batch Date/Time:** | 7/20/17 | 11:40:00AM |
| **Prep Batch ID:** | 8276 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 6020A | 1 | 0.21 | 1.0 | **4.55** | | mg/Kg | 07/20/17 | 19:08 | ERR | 425519 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | BG-4 (0.5-1) | **Lab Sample ID:** | 1707125-020A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Soil |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 10:25 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | % Water-P | **Prep Batch Date/Time:** | 7/25/17 | 11:00:00AM |
| **Prep Batch ID:** | 8447 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % Moisture | ASTM D2216-90 | 1 | 0.050 | 0.050 | **2.16** | | % | 07/25/17 | 11:00 | PP | 425660 |
| Dry Weight Factor | ASTM D2216-90 | 1 | | | **1.02** | | - | 07/25/17 | 11:00 | PP | 425660 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | EqB-1 | **Lab Sample ID:** | 1707125-021A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Water |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 8:31 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 7470AP | **Prep Batch Date/Time:** | 7/24/17 | 10:45:00AM |
| **Prep Batch ID:** | 8368 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | SW7470A | 1 | 0.00013 | 0.00020 | ND | | mg/L | 07/24/17 | 16:40 | BJAY | 425630 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | EqB-1 | **Lab Sample ID:** | 1707125-021A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Water |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 8:31 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 6020W-P | **Prep Batch Date/Time:** | 7/24/17 | 10:45:00AM |
| **Prep Batch ID:** | 8424 | **Prep Analyst:** | BJAY | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | SW6020A | 1 | 0.019 | 0.50 | ND | | ug/L | 07/26/17 | 11:59 | ERR | 425651 |
| Arsenic | SW6020A | 1 | 0.19 | 0.50 | ND | | ug/L | 07/26/17 | 11:59 | ERR | 425651 |
| Barium | SW6020A | 1 | 0.066 | 0.50 | **2.3** | | ug/L | 07/26/17 | 11:59 | ERR | 425651 |
| Beryllium | SW6020A | 1 | 0.018 | 0.50 | ND | | ug/L | 07/26/17 | 11:59 | ERR | 425651 |
| Cadmium | SW6020A | 1 | 0.033 | 0.50 | ND | | ug/L | 07/26/17 | 11:59 | ERR | 425651 |
| Chromium | SW6020A | 1 | 0.044 | 0.50 | **2.2** | | ug/L | 07/26/17 | 11:59 | ERR | 425651 |
| Cobalt | SW6020A | 1 | 0.026 | 0.50 | ND | | ug/L | 07/26/17 | 11:59 | ERR | 425651 |
| Copper | SW6020A | 1 | 0.64 | 2.0 | ND | | ug/L | 07/26/17 | 11:59 | ERR | 425651 |
| Lead | SW6020A | 1 | 0.031 | 0.50 | ND | | ug/L | 07/26/17 | 11:59 | ERR | 425651 |
| Molybdenum | SW6020A | 1 | 0.018 | 0.50 | **1.0** | | ug/L | 07/26/17 | 11:59 | ERR | 425651 |
| Nickel | SW6020A | 1 | 0.30 | 1.0 | **1.6** | | ug/L | 07/26/17 | 11:59 | ERR | 425651 |
| Selenium | SW6020A | 1 | 0.034 | 0.50 | ND | | ug/L | 07/26/17 | 11:59 | ERR | 425651 |
| Silver | SW6020A | 1 | 0.012 | 0.50 | ND | | ug/L | 07/26/17 | 11:59 | ERR | 425651 |
| Thallium | SW6020A | 1 | 0.0040 | 0.50 | ND | | ug/L | 07/26/17 | 11:59 | ERR | 425651 |
| Vanadium | SW6020A | 1 | 0.020 | 0.50 | ND | | ug/L | 07/26/17 | 11:59 | ERR | 425651 |
| Zinc | SW6020A | 1 | 0.59 | 2.0 | **9.7** | | ug/L | 07/26/17 | 11:59 | ERR | 425651 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | EqB-1 | **Lab Sample ID:** | 1707125-021B |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Water |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 8:31 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 3510_PCB | **Prep Batch Date/Time:** | 7/24/17 | 2:51:00PM |
| **Prep Batch ID:** | 8387 | **Prep Analyst:** | MKAUR | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aroclor1016 | SW8082A | 1 | 0.70 | 10 | ND | | ug/L | 07/24/17 | 15:53 | mk | 425620 |
| Aroclor1221 | SW8082A | 1 | 5.6 | 10 | ND | | ug/L | 07/24/17 | 15:53 | mk | 425620 |
| Aroclor1232 | SW8082A | 1 | 1.2 | 10 | ND | | ug/L | 07/24/17 | 15:53 | mk | 425620 |
| Aroclor1242 | SW8082A | 1 | 3.8 | 10 | ND | | ug/L | 07/24/17 | 15:53 | mk | 425620 |
| Aroclor1248 | SW8082A | 1 | 5.5 | 10 | ND | | ug/L | 07/24/17 | 15:53 | mk | 425620 |
| Aroclor1254 | SW8082A | 1 | 0.20 | 10 | ND | | ug/L | 07/24/17 | 15:53 | mk | 425620 |
| Aroclor1260 | SW8082A | 1 | 0.50 | 10 | ND | | ug/L | 07/24/17 | 15:53 | mk | 425620 |
| | | | Acceptance Limits | | | | | | | | |
| TCMX (S) | SW8082A | | 70 - 125 | | **108** | | % | 07/24/17 | 15:53 | mk | 425620 |
| DCBP (S) | SW8082A | | 30 - 135 | | **118** | | % | 07/24/17 | 15:53 | mk | 425620 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | EqB-1 | **Lab Sample ID:** | 1707125-021B |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Water |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 8:31 | | |
| **SDG:** | | | |

| | | | | |
|---|---|---|---|---|
| **Prep Method:** | 3510_OCP | **Prep Batch Date/Time:** | 7/19/17 | 4:09:00PM |
| **Prep Batch ID:** | 8257 | **Prep Analyst:** | LIMBAT | |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| alpha-BHC | SW8081B | 1 | 0.00065 | 0.020 | ND | | ug/L | 07/21/17 | 14:53 | LA | 425638 |
| gamma-BHC (Lindane) | SW8081B | 1 | 0.0019 | 0.020 | ND | | ug/L | 07/21/17 | 14:53 | LA | 425638 |
| beta-BHC | SW8081B | 1 | 0.0046 | 0.020 | ND | | ug/L | 07/21/17 | 14:53 | LA | 425638 |
| delta-BHC | SW8081B | 1 | 0.0010 | 0.020 | ND | | ug/L | 07/21/17 | 14:53 | LA | 425638 |
| Heptachlor | SW8081B | 1 | 0.010 | 0.020 | ND | | ug/L | 07/21/17 | 14:53 | LA | 425638 |
| Aldrin | SW8081B | 1 | 0.00085 | 0.020 | ND | | ug/L | 07/21/17 | 14:53 | LA | 425638 |
| Heptachlor Epoxide | SW8081B | 1 | 0.0031 | 0.020 | ND | | ug/L | 07/21/17 | 14:53 | LA | 425638 |
| gamma-Chlordane | SW8081B | 1 | 0.0040 | 0.020 | ND | | ug/L | 07/21/17 | 14:53 | LA | 425638 |
| alpha-Chlordane | SW8081B | 1 | 0.0035 | 0.020 | ND | | ug/L | 07/21/17 | 14:53 | LA | 425638 |
| 4,4-DDE | SW8081B | 1 | 0.0088 | 0.020 | ND | | ug/L | 07/21/17 | 14:53 | LA | 425638 |
| Endosulfan I | SW8081B | 1 | 0.0060 | 0.020 | ND | | ug/L | 07/21/17 | 14:53 | LA | 425638 |
| Dieldrin | SW8081B | 1 | 0.0031 | 0.020 | ND | | ug/L | 07/21/17 | 14:53 | LA | 425638 |
| Endrin | SW8081B | 1 | 0.0034 | 0.020 | ND | | ug/L | 07/21/17 | 14:53 | LA | 425638 |
| 4,4-DDD | SW8081B | 1 | 0.0028 | 0.020 | ND | | ug/L | 07/21/17 | 14:53 | LA | 425638 |
| Endosulfan II | SW8081B | 1 | 0.0021 | 0.020 | ND | | ug/L | 07/21/17 | 14:53 | LA | 425638 |
| 4,4-DDT | SW8081B | 1 | 0.0051 | 0.020 | ND | | ug/L | 07/21/17 | 14:53 | LA | 425638 |
| Endrin Aldehyde | SW8081B | 1 | 0.014 | 0.020 | ND | | ug/L | 07/21/17 | 14:53 | LA | 425638 |
| Methoxychlor | SW8081B | 1 | 0.0046 | 0.020 | ND | | ug/L | 07/21/17 | 14:53 | LA | 425638 |
| Endosulfan Sulfate | SW8081B | 1 | 0.0027 | 0.020 | ND | | ug/L | 07/21/17 | 14:53 | LA | 425638 |
| Endrin Ketone | SW8081B | 1 | 0.0080 | 0.020 | ND | | ug/L | 07/21/17 | 14:53 | LA | 425638 |
| Chlordane | SW8081B | 1 | 0.13 | 0.25 | ND | | ug/L | 07/21/17 | 14:53 | LA | 425638 |
| Toxaphene | SW8081B | 1 | 0.31 | 1.0 | ND | | ug/L | 07/21/17 | 14:53 | LA | 425638 |
| | | | Acceptance Limits | | | | | | | | |
| TCMX (S) | SW8081B | | 35 - 105 | | **46.2** | | % | 07/21/17 | 14:53 | LA | 425638 |
| DCBP (S) | SW8081B | | 44 - 101 | | **12.2** | S | % | 07/21/17 | 14:53 | LA | 425638 |

**NOTE:** S-surrogate outside of control limits

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | Trip Blank | **Lab Sample ID:** | 1707125-022A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Water |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 8:31 | | |
| **SDG:** | | | |

| | | | |
|---|---|---|---|
| **Prep Method:** | 5030VOC | **Prep Batch Date/Time:** | 7/20/17 10:33:00AM |
| **Prep Batch ID:** | 8314 | **Prep Analyst:** | BPATEL |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | SW8260B | 1 | 0.26 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| Chloromethane | SW8260B | 1 | 0.17 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| Vinyl Chloride | SW8260B | 1 | 0.21 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| Bromomethane | SW8260B | 1 | 0.21 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| Chloroethane | SW8260B | 1 | 0.11 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| Trichlorofluoromethane | SW8260B | 1 | 0.19 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| 1,1-Dichloroethene | SW8260B | 1 | 0.14 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| Freon 113 | SW8260B | 1 | 0.34 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| Methylene Chloride | SW8260B | 1 | 0.13 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| trans-1,2-Dichloroethene | SW8260B | 1 | 0.16 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| MTBE | SW8260B | 1 | 0.077 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| tert-Butanol | SW8260B | 1 | 7.4 | 10 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| Diisopropyl ether (DIPE) | SW8260B | 1 | 0.12 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| 1,1-Dichloroethane | SW8260B | 1 | 0.12 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| ETBE | SW8260B | 1 | 0.064 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| cis-1,2-Dichloroethene | SW8260B | 1 | 0.15 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| 2,2-Dichloropropane | SW8260B | 1 | 0.094 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| Bromochloromethane | SW8260B | 1 | 0.15 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| Chloroform | SW8260B | 1 | 0.12 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| Carbon Tetrachloride | SW8260B | 1 | 0.16 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| 1,1,1-Trichloroethane | SW8260B | 1 | 0.16 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| 1,1-Dichloropropene | SW8260B | 1 | 0.19 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| Benzene | SW8260B | 1 | 0.16 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| TAME | SW8260B | 1 | 0.072 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| 1,2-Dichloroethane | SW8260B | 1 | 0.11 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| Trichloroethylene | SW8260B | 1 | 0.15 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| Dibromomethane | SW8260B | 1 | 0.11 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| 1,2-Dichloropropane | SW8260B | 1 | 0.089 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| Bromodichloromethane | SW8260B | 1 | 0.076 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| cis-1,3-Dichloropropene | SW8260B | 1 | 0.078 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| Toluene | SW8260B | 1 | 0.14 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| Tetrachloroethylene | SW8260B | 1 | 0.24 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| trans-1,3-Dichloropropene | SW8260B | 1 | 0.22 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| 1,1,2-Trichloroethane | SW8260B | 1 | 0.076 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| Dibromochloromethane | SW8260B | 1 | 0.18 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |

Torrent LABORATORY, INC.

# SAMPLE RESULTS

**Report prepared for:** Peter Langtry
Cornerstone(Walnut Creek)

**Date/Time Received:** 07/19/17, 1:35 pm
**Date Reported:** 07/27/17

| | | | |
|---|---|---|---|
| **Client Sample ID:** | Trip Blank | **Lab Sample ID:** | 1707125-022A |
| **Project Name/Location:** | 3141 Taylor Road | **Sample Matrix:** | Water |
| **Project Number:** | 411-16-3 | | |
| **Date/Time Sampled:** | 07/18/17 / 8:31 | | |
| **SDG:** | | | |

| | | | |
|---|---|---|---|
| **Prep Method:** | 5030VOC | **Prep Batch Date/Time:** | 7/20/17 10:33:00AM |
| **Prep Batch ID:** | 8314 | **Prep Analyst:** | BPATEL |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,3-Dichloropropane | SW8260B | 1 | 0.22 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| 1,2-Dibromoethane | SW8260B | 1 | 0.079 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| Chlorobenzene | SW8260B | 1 | 0.16 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| Ethyl Benzene | SW8260B | 1 | 0.20 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| 1,1,1,2-Tetrachloroethane | SW8260B | 1 | 0.087 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| m,p-Xylene | SW8260B | 1 | 0.39 | 1.0 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| o-Xylene | SW8260B | 1 | 0.15 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| Styrene | SW8260B | 1 | 0.11 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| Bromoform | SW8260B | 1 | 0.076 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| Isopropyl Benzene | SW8260B | 1 | 0.22 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| n-Propylbenzene | SW8260B | 1 | 0.30 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| Bromobenzene | SW8260B | 1 | 0.15 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| 1,1,2,2-Tetrachloroethane | SW8260B | 1 | 0.079 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| 2-Chlorotoluene | SW8260B | 1 | 0.25 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| 1,3,5-Trimethylbenzene | SW8260B | 1 | 0.24 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| 1,2,3-Trichloropropane | SW8260B | 1 | 0.15 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| 4-Chlorotoluene | SW8260B | 1 | 0.22 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| tert-Butylbenzene | SW8260B | 1 | 0.26 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| 1,2,4-Trimethylbenzene | SW8260B | 1 | 0.23 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| sec-Butyl Benzene | SW8260B | 1 | 0.30 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| p-Isopropyltoluene | SW8260B | 1 | 0.27 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| 1,3-Dichlorobenzene | SW8260B | 1 | 0.17 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| 1,4-Dichlorobenzene | SW8260B | 1 | 0.18 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| n-Butylbenzene | SW8260B | 1 | 0.27 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| 1,2-Dichlorobenzene | SW8260B | 1 | 0.16 | 0.50 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| 1,2-Dibromo-3-Chloropropane | SW8260B | 1 | 0.76 | 2.0 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| Hexachlorobutadiene | SW8260B | 1 | 0.62 | 2.0 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| 1,2,4-Trichlorobenzene | SW8260B | 1 | 0.93 | 2.0 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| Naphthalene | SW8260B | 1 | 1.2 | 2.0 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| 1,2,3-Trichlorobenzene | SW8260B | 1 | 1.2 | 2.0 | ND | | ug/L | 07/20/17 | 22:08 | BP | 425531 |
| (S) Dibromofluoromethane | SW8260B | | 61.2 - 131 | | **131** | | % | 07/20/17 | 22:08 | BP | 425531 |
| (S) Toluene-d8 | SW8260B | | 75.1 - 127 | | **94.8** | | % | 07/20/17 | 22:08 | BP | 425531 |
| (S) 4-Bromofluorobenzene | SW8260B | | 64.1 - 120 | | **94.5** | | % | 07/20/17 | 22:08 | BP | 425531 |

Torrent LABORATORY, INC.

# MB Summary Report

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|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707125 | **Prep Method:** | 3510_OCP | **Prep Date:** | 07/19/17 | **Prep Batch:** | 8257 |
| **Matrix:** | Water | **Analytical Method:** | SW8081B | **Analyzed Date:** | 7/20/2017 | **Analytical Batch:** | 425503 |
| **Units:** | ug/L | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Lab Qualifier |
|---|---|---|---|---|
| alpha-BHC | 0.00065 | 0.020 | ND | |
| gamma-BHC (Lindane) | 0.0019 | 0.020 | ND | |
| beta-BHC | 0.0046 | 0.020 | ND | |
| delta-BHC | 0.0010 | 0.020 | ND | |
| Heptachlor | 0.010 | 0.020 | ND | |
| Aldrin | 0.00085 | 0.020 | ND | |
| Heptachlor Epoxide | 0.0031 | 0.020 | ND | |
| gamma-Chlordane | 0.0040 | 0.020 | ND | |
| alpha-Chlordane | 0.0035 | 0.020 | ND | |
| 4,4-DDE | 0.0088 | 0.020 | ND | |
| Endosulfan I | 0.0060 | 0.020 | ND | |
| Dieldrin | 0.0031 | 0.020 | ND | |
| Endrin | 0.0034 | 0.020 | ND | |
| 4,4-DDD | 0.0028 | 0.020 | ND | |
| Endosulfan II | 0.0021 | 0.020 | ND | |
| 4,4-DDT | 0.0051 | 0.020 | ND | |
| Endrin Aldehyde | 0.014 | 0.020 | ND | |
| Methoxychlor | 0.0046 | 0.020 | ND | |
| Endosulfan Sulfate | 0.0027 | 0.020 | ND | |
| Endrin Ketone | 0.0080 | 0.020 | ND | |
| Chlordane | 0.13 | 0.25 | ND | |
| Toxaphene | 0.31 | 1.0 | ND | |
| TCMX (S) | | | 72.6 | |
| DCBP (S) | | | 51.6 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707125 | **Prep Method:** | 6020S-P | **Prep Date:** | 07/20/17 | **Prep Batch:** | 8276 |
| **Matrix:** | Soil | **Analytical Method:** | 6020A | **Analyzed Date:** | 7/20/2017 | **Analytical Batch:** | 425519 |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Lab Qualifier |
|---|---|---|---|---|
| Arsenic | 0.21 | 1.0 | ND | |

Torrent LABORATORY, INC.

# MB Summary Report

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|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707125 | **Prep Method:** | 5030VOC | **Prep Date:** | 07/20/17 | **Prep Batch:** | 8314 |
| **Matrix:** | Water | **Analytical Method:** | SW8260B | **Analyzed Date:** | 7/20/2017 | **Analytical Batch:** | 425531 |
| **Units:** | ug/L | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Lab Qualifier |
|---|---|---|---|---|
| Dichlorodifluoromethane | 0.26 | 0.50 | ND | |
| Chloromethane | 0.17 | 0.50 | 0.17 | |
| Vinyl Chloride | 0.21 | 0.50 | ND | |
| Bromomethane | 0.21 | 0.50 | ND | |
| Chloroethane | 0.11 | 0.50 | ND | |
| Trichlorofluoromethane | 0.19 | 0.50 | ND | |
| 1,1-Dichloroethene | 0.14 | 0.50 | ND | |
| Freon 113 | 0.34 | 0.50 | ND | |
| Methylene Chloride | 0.13 | 0.50 | ND | |
| trans-1,2-Dichloroethene | 0.16 | 0.50 | ND | |
| MTBE | 0.077 | 0.50 | ND | |
| tert-Butanol | 7.4 | 10 | ND | |
| Diisopropyl ether (DIPE) | 0.12 | 0.50 | ND | |
| 1,1-Dichloroethane | 0.12 | 0.50 | ND | |
| ETBE | 0.064 | 0.50 | ND | |
| cis-1,2-Dichloroethene | 0.15 | 0.50 | ND | |
| 2,2-Dichloropropane | 0.094 | 0.50 | ND | |
| Bromochloromethane | 0.15 | 0.50 | ND | |
| Chloroform | 0.12 | 0.50 | ND | |
| Carbon Tetrachloride | 0.16 | 0.50 | ND | |
| 1,1,1-Trichloroethane | 0.16 | 0.50 | ND | |
| 1,1-Dichloropropene | 0.19 | 0.50 | ND | |
| Benzene | 0.16 | 0.50 | ND | |
| TAME | 0.072 | 0.50 | ND | |
| 1,2-Dichloroethane | 0.11 | 0.50 | 0.12 | |
| Trichloroethylene | 0.15 | 0.50 | ND | |
| Dibromomethane | 0.11 | 0.50 | ND | |
| 1,2-Dichloropropane | 0.089 | 0.50 | ND | |
| Bromodichloromethane | 0.076 | 0.50 | ND | |
| cis-1,3-Dichloropropene | 0.078 | 0.50 | ND | |
| Toluene | 0.14 | 0.50 | ND | |
| Tetrachloroethylene | 0.24 | 0.50 | ND | |
| trans-1,3-Dichloropropene | 0.22 | 0.50 | ND | |
| 1,1,2-Trichloroethane | 0.076 | 0.50 | ND | |
| Dibromochloromethane | 0.18 | 0.50 | ND | |
| 1,3-Dichloropropane | 0.22 | 0.50 | ND | |
| 1,2-Dibromoethane | 0.079 | 0.50 | ND | |
| Chlorobenzene | 0.16 | 0.50 | ND | |
| Ethyl Benzene | 0.20 | 0.50 | ND | |
| 1,1,1,2-Tetrachloroethane | 0.087 | 0.50 | ND | |
| m,p-Xylene | 0.39 | 1.0 | ND | |

Torrent LABORATORY, INC.

# MB Summary Report

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|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707125 | **Prep Method:** | 5030VOC | **Prep Date:** | 07/20/17 | **Prep Batch:** | 8314 |
| **Matrix:** | Water | **Analytical Method:** | SW8260B | **Analyzed Date:** | 7/20/2017 | **Analytical Batch:** | 425531 |
| **Units:** | ug/L | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Lab Qualifier |
|---|---|---|---|---|
| o-Xylene | 0.15 | 0.50 | ND | |
| Styrene | 0.11 | 0.50 | ND | |
| Bromoform | 0.076 | 0.50 | ND | |
| Isopropyl Benzene | 0.22 | 0.50 | ND | |
| n-Propylbenzene | 0.30 | 0.50 | ND | |
| Bromobenzene | 0.15 | 0.50 | ND | |
| 1,1,2,2-Tetrachloroethane | 0.079 | 0.50 | ND | |
| 2-Chlorotoluene | 0.25 | 0.50 | ND | |
| 1,3,5-Trimethylbenzene | 0.24 | 0.50 | ND | |
| 1,2,3-Trichloropropane | 0.15 | 0.50 | ND | |
| 4-Chlorotoluene | 0.22 | 0.50 | ND | |
| tert-Butylbenzene | 0.26 | 0.50 | ND | |
| 1,2,4-Trimethylbenzene | 0.23 | 0.50 | ND | |
| sec-Butyl Benzene | 0.30 | 0.50 | ND | |
| p-Isopropyltoluene | 0.27 | 0.50 | ND | |
| 1,3-Dichlorobenzene | 0.17 | 0.50 | ND | |
| 1,4-Dichlorobenzene | 0.18 | 0.50 | ND | |
| n-Butylbenzene | 0.27 | 0.50 | ND | |
| 1,2-Dichlorobenzene | 0.16 | 0.50 | ND | |
| 1,2-Dibromo-3-Chloropropane | 0.76 | 2.0 | ND | |
| Hexachlorobutadiene | 0.62 | 2.0 | ND | |
| 1,2,4-Trichlorobenzene | 0.93 | 2.0 | ND | |
| Naphthalene | 1.2 | 2.0 | ND | |
| 1,2,3-Trichlorobenzene | 1.2 | 2.0 | ND | |
| (S) Dibromofluoromethane | | | 118 | |
| (S) Toluene-d8 | | | 91.4 | |
| (S) 4-Bromofluorobenzene | | | 91.6 | |

# MB Summary Report

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707125 | **Prep Method:** | 6020S-P | **Prep Date:** | 07/24/17 | **Prep Batch:** | 8367 |
| **Matrix:** | Soil | **Analytical Method:** | 6020A | **Analyzed Date:** | 7/26/2017 | **Analytical Batch:** | 425652 |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Lab Qualifier |
|---|---|---|---|---|
| Antimony | 0.12 | 1.0 | 0.20 | J |
| Arsenic | 0.21 | 1.0 | ND | |
| Barium | 0.84 | 1.0 | ND | |
| Beryllium | 0.16 | 1.0 | ND | |
| Cadmium | 0.084 | 1.0 | ND | |
| Chromium | 0.097 | 1.0 | 0.11 | J |
| Cobalt | 0.21 | 1.0 | ND | |
| Copper | 0.17 | 2.5 | ND | |
| Lead | 0.054 | 1.0 | ND | |
| Molybdenum | 0.13 | 1.0 | ND | |
| Nickel | 1.2 | 5.0 | ND | |
| Selenium | 0.035 | 2.5 | ND | |
| Silver | 0.098 | 1.0 | 0.10 | J |
| Thallium | 1.00 | 5.0 | ND | |
| Vanadium | 0.28 | 25 | ND | |
| Zinc | 0.70 | 2.5 | 1.6 | J |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707125 | **Prep Method:** | 7470AP | **Prep Date:** | 07/24/17 | **Prep Batch:** | 8368 |
| **Matrix:** | Water | **Analytical Method:** | SW7470A | **Analyzed Date:** | 7/24/2017 | **Analytical Batch:** | 425630 |
| **Units:** | mg/L | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Lab Qualifier |
|---|---|---|---|---|
| Mercury | 0.00013 | 0.00020 | ND | |

# MB Summary Report

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707125 | **Prep Method:** | 3510_PCB | **Prep Date:** | 07/24/17 | **Prep Batch:** | 8387 |
| **Matrix:** | Water | **Analytical Method:** | SW8082A | **Analyzed Date:** | 7/24/2017 | **Analytical Batch:** | 425620 |
| **Units:** | ug/L | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Lab Qualifier |
|---|---|---|---|---|
| Aroclor1016 | 0.70 | 10 | ND | |
| Aroclor1221 | 5.6 | 10 | ND | |
| Aroclor1232 | 1.2 | 10 | ND | |
| Aroclor1242 | 3.8 | 10 | ND | |
| Aroclor1248 | 5.5 | 10 | ND | |
| Aroclor1254 | 0.20 | 10 | ND | |
| Aroclor1260 | 0.50 | 10 | ND | |
| TCMX (S) | | | 112 | |
| DCBP (S) | | | 120 | |

# MB Summary Report

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707125 | **Prep Method:** | 3546_OCP | **Prep Date:** | 07/25/17 | **Prep Batch:** | 8412 |
| **Matrix:** | Soil | **Analytical Method:** | SW8081B | **Analyzed Date:** | 7/26/2017 | **Analytical Batch:** | 425687 |
| **Units:** | ug/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Lab Qualifier |
|---|---|---|---|---|
| alpha-BHC | 0.13 | 2.0 | ND | |
| gamma-BHC (Lindane) | 0.16 | 2.0 | ND | |
| beta-BHC | 0.32 | 2.0 | ND | |
| delta-BHC | 0.16 | 2.0 | ND | |
| Heptachlor | 0.11 | 2.0 | ND | |
| Aldrin | 0.20 | 2.0 | ND | |
| Heptachlor Epoxide | 0.078 | 2.0 | ND | |
| gamma-Chlordane | 0.16 | 2.0 | ND | |
| alpha-Chlordane | 0.17 | 2.0 | ND | |
| 4,4-DDE | 0.19 | 2.0 | ND | |
| Endosulfan I | 0.18 | 2.0 | ND | |
| Dieldrin | 0.15 | 2.0 | ND | |
| Endrin | 0.19 | 2.0 | ND | |
| 4,4-DDD | 0.57 | 2.0 | ND | |
| Endosulfan II | 0.58 | 2.0 | ND | |
| 4,4-DDT | 0.13 | 2.0 | ND | |
| Endrin Aldehyde | 0.15 | 2.0 | ND | |
| Methoxychlor | 0.20 | 2.0 | ND | |
| Endosulfan Sulfate | 0.12 | 2.0 | ND | |
| Endrin Ketone | 0.094 | 2.0 | ND | |
| Chlordane | 2.1 | 20 | ND | |
| Toxaphene | 8.5 | 50 | ND | |
| TCMX (S) | | | 85.8 | |
| DCBP (S) | | | 96.9 | |

# MB Summary Report

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707125 | **Prep Method:** | 3546_OCP | **Prep Date:** | 07/25/17 | **Prep Batch:** | 8421 |
| **Matrix:** | Soil | **Analytical Method:** | SW8081B | **Analyzed Date:** | 7/26/2017 | **Analytical Batch:** | 425673 |
| **Units:** | ug/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Lab Qualifier |
|---|---|---|---|---|
| alpha-BHC | 0.13 | 2.0 | ND | |
| gamma-BHC (Lindane) | 0.16 | 2.0 | ND | |
| beta-BHC | 0.32 | 2.0 | ND | |
| delta-BHC | 0.16 | 2.0 | ND | |
| Heptachlor | 0.11 | 2.0 | ND | |
| Aldrin | 0.20 | 2.0 | ND | |
| Heptachlor Epoxide | 0.078 | 2.0 | ND | |
| gamma-Chlordane | 0.16 | 2.0 | ND | |
| alpha-Chlordane | 0.17 | 2.0 | ND | |
| 4,4-DDE | 0.19 | 2.0 | ND | |
| Endosulfan I | 0.18 | 2.0 | ND | |
| Dieldrin | 0.15 | 2.0 | ND | |
| Endrin | 0.19 | 2.0 | ND | |
| 4,4-DDD | 0.57 | 2.0 | ND | |
| Endosulfan II | 0.58 | 2.0 | ND | |
| 4,4-DDT | 0.13 | 2.0 | ND | |
| Endrin Aldehyde | 0.15 | 2.0 | ND | |
| Methoxychlor | 0.20 | 2.0 | ND | |
| Endosulfan Sulfate | 0.12 | 2.0 | ND | |
| Endrin Ketone | 0.094 | 2.0 | ND | |
| Chlordane | 2.1 | 20 | ND | |
| Toxaphene | 8.5 | 50 | ND | |
| TCMX (S) | | | 85.6 | |
| DCBP (S) | | | 99.5 | |

# MB Summary Report

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707125 | **Prep Method:** | 3546_PCB | **Prep Date:** | 07/25/17 | **Prep Batch:** | 8423 |
| **Matrix:** | Soil | **Analytical Method:** | SW8082A | **Analyzed Date:** | 7/26/2017 | **Analytical Batch:** | 425624 |
| **Units:** | ug/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Lab Qualifier |
|---|---|---|---|---|
| Aroclor1016 | 53 | 100 | ND | |
| Aroclor1221 | 5.0 | 100 | ND | |
| Aroclor1232 | 17 | 100 | ND | |
| Aroclor1242 | 3.0 | 100 | ND | |
| Aroclor1248 | 2.0 | 100 | ND | |
| Aroclor1254 | 2.0 | 100 | ND | |
| Aroclor1260 | 36 | 100 | ND | |
| TCMX (S) | | | 88.0 | |
| DCBP (S) | | | 101 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707125 | **Prep Method:** | 6020W-P | **Prep Date:** | 07/24/17 | **Prep Batch:** | 8424 |
| **Matrix:** | Water | **Analytical Method:** | SW6020A | **Analyzed Date:** | 7/26/2017 | **Analytical Batch:** | 425651 |
| **Units:** | ug/L | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Lab Qualifier |
|---|---|---|---|---|
| Antimony | 0.019 | 0.50 | 0.047 | |
| Arsenic | 0.19 | 0.50 | ND | |
| Barium | 0.066 | 0.50 | 0.38 | |
| Beryllium | 0.018 | 0.50 | ND | |
| Cadmium | 0.033 | 0.50 | ND | |
| Chromium | 0.044 | 0.50 | 0.092 | |
| Cobalt | 0.026 | 0.50 | ND | |
| Copper | 0.64 | 2.0 | ND | |
| Lead | 0.031 | 0.50 | 0.057 | |
| Molybdenum | 0.018 | 0.50 | 0.033 | |
| Nickel | 0.30 | 1.0 | ND | |
| Selenium | 0.034 | 0.50 | ND | |
| Silver | 0.012 | 0.50 | 0.021 | |
| Thallium | 0.0040 | 0.50 | 0.025 | |
| Vanadium | 0.020 | 0.50 | ND | |
| Zinc | 0.59 | 2.0 | ND | |

Torrent LABORATORY, INC.

# MB Summary Report

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707125 | **Prep Method:** | % Water-P | **Prep Date:** | 07/24/17 | **Prep Batch:** | 8441 |
| **Matrix:** | Soil | **Analytical Method:** | ASTM D2216-90 | **Analyzed Date:** | 7/24/2017 | **Analytical Batch:** | 425654 |
| **Units:** | mg/L | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Lab Qualifier |
|---|---|---|---|---|
| % Moisture | 0.050 | 0.050 | ND | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707125 | **Prep Method:** | 7471BP | **Prep Date:** | 07/25/17 | **Prep Batch:** | 8445 |
| **Matrix:** | Soil | **Analytical Method:** | SW7471B | **Analyzed Date:** | 7/26/2017 | **Analytical Batch:** | 425666 |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Lab Qualifier |
|---|---|---|---|---|
| Mercury | 0.083 | 0.50 | ND | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707125 | **Prep Method:** | % Water-P | **Prep Date:** | 07/25/17 | **Prep Batch:** | 8447 |
| **Matrix:** | Soil | **Analytical Method:** | ASTM D2216-90 | **Analyzed Date:** | 7/25/2017 | **Analytical Batch:** | 425660 |
| **Units:** | % | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Lab Qualifier |
|---|---|---|---|---|
| % Moisture | 0.050 | 0.050 | ND | |

Torrent LABORATORY, INC.

# LCS/LCSD Summary Report

*Raw values are used in quality control assessment.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707125 | **Prep Method:** | 3510_OCP | **Prep Date:** | 07/19/17 | **Prep Batch:** | 8257 |
| **Matrix:** | Water | **Analytical Method:** | SW8081B | **Analyzed Date:** | 7/20/2017 | **Analytical Batch:** | 425503 |
| **Units:** | ug/L | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Spike Conc. | LCS % Recovery | LCSD % Recovery | LCS/LCSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| gamma-BHC (Lindane) | 0.0019 | 0.020 | ND | 0.200 | 75.2 | 81.2 | 7.69 | 25 - 135 | 30 | |
| gamma-BHC (Lindane) | 0.010 | 0.020 | ND | 0.200 | 69.6 | 78.4 | 12.2 | 40 - 130 | 30 | |
| Aldrin | 0.00085 | 0.020 | ND | 0.200 | 67.2 | 74.7 | 10.6 | 25 - 140 | 30 | |
| Dieldrin | 0.031 | 0.020 | ND | 0.200 | 84.9 | 84.6 | 0.590 | 60 - 130 | 30 | |
| Endrin | 0.0034 | 0.020 | ND | 0.200 | 91.8 | 90.2 | 2.20 | 55 - 135 | 30 | |
| 4,4-DDT | 0.0051 | 0.020 | ND | 0.200 | 96.3 | 93.4 | 3.16 | 45 - 140 | 30 | |
| TCMX (S) | | | | 100 | 57.6 | 69.7 | | 35 - 105 | | |
| DCBP (S) | | | | 100 | 61.4 | 54.9 | | 44 - 101 | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707125 | **Prep Method:** | 6020S-P | **Prep Date:** | 07/20/17 | **Prep Batch:** | 8276 |
| **Matrix:** | Soil | **Analytical Method:** | 6020A | **Analyzed Date:** | 7/20/2017 | **Analytical Batch:** | 425519 |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Spike Conc. | LCS % Recovery | LCSD % Recovery | LCS/LCSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 0.21 | 1.0 | ND | 25 | 90.4 | 98.9 | 8.88 | 80 - 120 | 30 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707125 | **Prep Method:** | 5030VOC | **Prep Date:** | 07/20/17 | **Prep Batch:** | 8314 |
| **Matrix:** | Water | **Analytical Method:** | SW8260B | **Analyzed Date:** | 7/20/2017 | **Analytical Batch:** | 425531 |
| **Units:** | ug/L | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Spike Conc. | LCS % Recovery | LCSD % Recovery | LCS/LCSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 0.14 | 0.50 | ND | 17.9 | 107 | 107 | 0.000 | 61.4 - 129 | 30 | |
| Benzene | 0.16 | 0.50 | 0.17 | 17.9 | 102 | 109 | 6.90 | 66.9 - 140 | 30 | |
| Trichloroethylene | 0.15 | 0.50 | ND | 17.9 | 99.5 | 100 | 0.560 | 69.3 - 144 | 30 | |
| Toluene | 0.14 | 0.50 | ND | 17.9 | 95.6 | 102 | 6.23 | 76.6 - 123 | 30 | |
| Chlorobenzene | 0.16 | 0.50 | ND | 17.9 | 94.6 | 99.3 | 4.62 | 73.9 - 137 | 30 | |
| (S) Dibromofluoromethane | | | | 17.9 | 112 | 113 | | 61.2 - 131 | | |
| (S) Toluene-d8 | | | | 17.9 | 101 | 106 | | 75.1 - 127 | | |
| (S) 4-Bromofluorobenzene | | | | 17.9 | 96.5 | 100 | | 64.1 - 120 | | |

Torrent LABORATORY, INC.

# LCS/LCSD Summary Report

*Raw values are used in quality control assessment.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707125 | **Prep Method:** | 6020S-P | **Prep Date:** | 07/24/17 | **Prep Batch:** | 8367 |
| **Matrix:** | Soil | **Analytical Method:** | 6020A | **Analyzed Date:** | 7/26/2017 | **Analytical Batch:** | 425652 |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Spike Conc. | LCS % Recovery | LCSD % Recovery | LCS/LCSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | 0.12 | 1.0 | 0.20 | 25 | 91.1 | 90.8 | 0.440 | 80 - 120 | 30 | |
| Arsenic | 0.21 | 1.0 | ND | 25 | 112 | 113 | 0.355 | 80 - 120 | 30 | |
| Barium | 0.84 | 1.0 | ND | 25 | 91.9 | 91.7 | 0.436 | 80 - 120 | 30 | |
| Beryllium | 0.16 | 1.0 | ND | 25 | 93.5 | 93.7 | 0.000 | 80 - 120 | 30 | |
| Cadmium | 0.084 | 1.0 | ND | 25 | 97.0 | 96.6 | 0.412 | 80 - 120 | 30 | |
| Chromium | 0.097 | 1.0 | 0.11 | 25 | 107 | 107 | 0.374 | 80 - 120 | 30 | |
| Cobalt | 0.21 | 1.0 | ND | 25 | 97.4 | 98.1 | 0.409 | 80 - 120 | 30 | |
| Copper | 0.17 | 2.5 | ND | 25 | 97.5 | 98.4 | 0.816 | 80 - 120 | 30 | |
| Lead | 0.054 | 1.0 | ND | 25 | 106 | 107 | 0.752 | 80 - 120 | 30 | |
| Molybdenum | 0.13 | 1.0 | ND | 25 | 99.9 | 99.4 | 0.401 | 80 - 120 | 30 | |
| Nickel | 1.2 | 5.0 | ND | 25 | 97.3 | 98.1 | 0.820 | 80 - 120 | 30 | |
| Selenium | 0.035 | 2.5 | ND | 25 | 98.1 | 97.3 | 0.820 | 80 - 120 | 30 | |
| Silver | 0.098 | 1.0 | 0.10 | 25 | 98.1 | 98.2 | 0.000 | 80 - 120 | 30 | |
| Thallium | 1.00 | 5.0 | ND | 25 | 108 | 109 | 1.11 | 80 - 120 | 30 | |
| Vanadium | 0.28 | 25 | ND | 25 | 96.8 | 97.3 | 0.412 | 80 - 120 | 30 | |
| Zinc | 0.70 | 2.5 | 1.6 | 25 | 101 | 101 | 0.000 | 80 - 120 | 30 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707125 | **Prep Method:** | 7470AP | **Prep Date:** | 07/24/17 | **Prep Batch:** | 8368 |
| **Matrix:** | Water | **Analytical Method:** | SW7470A | **Analyzed Date:** | 7/24/2017 | **Analytical Batch:** | 425630 |
| **Units:** | mg/L | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Spike Conc. | LCS % Recovery | LCSD % Recovery | LCS/LCSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.00013 | 0.00020 | ND | 0.015 | 94.3 | 82.2 | 13.6 | 80 - 120 | 20 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707125 | **Prep Method:** | 3510_PCB | **Prep Date:** | 07/24/17 | **Prep Batch:** | 8387 |
| **Matrix:** | Water | **Analytical Method:** | SW8082A | **Analyzed Date:** | 7/24/2017 | **Analytical Batch:** | 425620 |
| **Units:** | ug/L | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Spike Conc. | LCS % Recovery | LCSD % Recovery | LCS/LCSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| Aroclor1016 | 0.70 | 10 | ND | 50 | 119 | 117 | 1.87 | 25 - 145 | 30 | |
| Aroclor1260 | 0.50 | 10 | ND | 50 | 111 | 111 | 0.180 | 30 - 145 | 30 | |
| TCMX (S) | | | | 50 | 112 | 110 | | 70 - 125 | | |
| DCBP (S) | | | | 50 | 120 | 118 | | 30 - 135 | | |

Torrent LABORATORY, INC.

# LCS/LCSD Summary Report

*Raw values are used in quality control assessment.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707125 | **Prep Method:** | 3546_OCP | **Prep Date:** | 07/25/17 | **Prep Batch:** | 8412 |
| **Matrix:** | Soil | **Analytical Method:** | SW8081B | **Analyzed Date:** | 7/26/2017 | **Analytical Batch:** | 425687 |
| **Units:** | ug/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Spike Conc. | LCS % Recovery | LCSD % Recovery | LCS/LCSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| gamma-BHC (Lindane) | 0.16 | 2.0 | ND | 40 | 75.4 | 75.0 | 0.333 | 25 - 135 | 30 | |
| Heptachlor | 0.11 | 2.0 | ND | 40 | 73.1 | 73.2 | 0.000 | 40 - 130 | 30 | |
| Aldrin | 0.20 | 2.0 | ND | 40 | 74.6 | 74.0 | 0.673 | 25 - 140 | 30 | |
| Dieldrin | 0.15 | 2.0 | ND | 40 | 71.6 | 70.7 | 1.40 | 60 - 130 | 30 | |
| Endrin | 0.19 | 2.0 | ND | 40 | 73.2 | 71.9 | 1.72 | 55 - 135 | 30 | |
| 4,4-DDT | 0.13 | 2.0 | ND | 40 | 74.8 | 72.0 | 3.75 | 45 - 140 | 30 | |
| TCMX (S) | | | | 100 | 85.5 | 84.2 | | 48 - 125 | | |
| DCBP (S) | | | | 100 | 98.5 | 96.0 | | 38 - 135 | | |

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|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707125 | **Prep Method:** | 3546_OCP | **Prep Date:** | 07/25/17 | **Prep Batch:** | 8421 |
| **Matrix:** | Soil | **Analytical Method:** | SW8081B | **Analyzed Date:** | 7/26/2017 | **Analytical Batch:** | 425673 |
| **Units:** | ug/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Spike Conc. | LCS % Recovery | LCSD % Recovery | LCS/LCSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| gamma-BHC (Lindane) | 0.16 | 2.0 | ND | 40 | 77.9 | 74.8 | 4.26 | 25 - 135 | 30 | |
| Heptachlor | 0.11 | 2.0 | ND | 40 | 77.0 | 73.7 | 4.31 | 40 - 130 | 30 | |
| Aldrin | 0.20 | 2.0 | ND | 40 | 77.0 | 74.0 | 3.97 | 25 - 140 | 30 | |
| Dieldrin | 0.15 | 2.0 | ND | 40 | 73.2 | 70.7 | 3.47 | 60 - 130 | 30 | |
| Endrin | 0.19 | 2.0 | ND | 40 | 74.5 | 72.8 | 2.38 | 55 - 135 | 30 | |
| 4,4-DDT | 0.13 | 2.0 | ND | 40 | 80.2 | 80.1 | 0.312 | 45 - 140 | 30 | |
| TCMX (S) | | | | 100 | 92.9 | 86.4 | | 48 - 125 | | |
| DCBP (S) | | | | 100 | 101 | 100 | | 38 - 135 | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707125 | **Prep Method:** | 3546_PCB | **Prep Date:** | 07/25/17 | **Prep Batch:** | 8423 |
| **Matrix:** | Soil | **Analytical Method:** | SW8082A | **Analyzed Date:** | 7/26/2017 | **Analytical Batch:** | 425624 |
| **Units:** | ug/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Spike Conc. | LCS % Recovery | LCSD % Recovery | LCS/LCSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| Aroclor1016 | 53 | 100 | ND | 600 | 104 | 93.3 | 11.0 | 25 - 145 | 30 | |
| Aroclor1260 | 36 | 100 | ND | 600 | 114 | 102 | 11.3 | 30 - 145 | 30 | |
| TCMX (S) | | | | 0.10 | 96.0 | 87.0 | | 48 - 125 | | |
| DCBP (S) | | | | 0.10 | 131 | 129 | | 48 - 135 | | |

Torrent LABORATORY, INC.

# LCS/LCSD Summary Report

*Raw values are used in quality control assessment.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707125 | **Prep Method:** | 6020W-P | **Prep Date:** | 07/24/17 | **Prep Batch:** | 8424 |
| **Matrix:** | Water | **Analytical Method:** | SW6020A | **Analyzed Date:** | 7/26/2017 | **Analytical Batch:** | 425651 |
| **Units:** | ug/L | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Spike Conc. | LCS % Recovery | LCSD % Recovery | LCS/LCSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | 0.019 | 0.50 | 0.047 | 50 | 103 | 102 | 0.783 | 80 - 120 | 20 | |
| Arsenic | 0.19 | 0.50 | ND | 50 | 101 | 101 | 0.593 | 80 - 120 | 20 | |
| Barium | 0.066 | 0.50 | 0.38 | 50 | 110 | 103 | 6.78 | 80 - 120 | 20 | |
| Beryllium | 0.018 | 0.50 | ND | 50 | 104 | 104 | 0.192 | 80 - 120 | 20 | |
| Cadmium | 0.033 | 0.50 | ND | 50 | 109 | 108 | 0.925 | 80 - 120 | 20 | |
| Chromium | 0.044 | 0.50 | 0.092 | 50 | 115 | 112 | 2.82 | 80 - 120 | 20 | |
| Cobalt | 0.026 | 0.50 | ND | 50 | 107 | 105 | 2.08 | 80 - 120 | 20 | |
| Copper | 0.64 | 2.0 | ND | 50 | 104 | 102 | 2.13 | 80 - 120 | 20 | |
| Lead | 0.031 | 0.50 | 0.057 | 50 | 115 | 112 | 2.47 | 80 - 120 | 20 | |
| Molybdenum | 0.018 | 0.50 | 0.033 | 50 | 109 | 107 | 2.04 | 80 - 120 | 20 | |
| Nickel | 0.30 | 1.0 | ND | 50 | 107 | 105 | 2.26 | 80 - 120 | 20 | |
| Selenium | 0.034 | 0.50 | ND | 50 | 107 | 105 | 1.32 | 80 - 120 | 20 | |
| Silver | 0.012 | 0.50 | 0.021 | 50 | 103 | 103 | 0.388 | 80 - 120 | 20 | |
| Thallium | 0.0040 | 0.50 | 0.025 | 50 | 114 | 112 | 1.24 | 80 - 120 | 20 | |
| Vanadium | 0.020 | 0.50 | ND | 50 | 106 | 104 | 1.71 | 80 - 120 | 20 | |
| Zinc | 0.59 | 2.0 | ND | 50 | 113 | 112 | 1.25 | 80 - 120 | 20 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707125 | **Prep Method:** | 7471BP | **Prep Date:** | 07/25/17 | **Prep Batch:** | 8445 |
| **Matrix:** | Soil | **Analytical Method:** | SW7471B | **Analyzed Date:** | 7/26/2017 | **Analytical Batch:** | 425666 |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Method Blank Conc. | Spike Conc. | LCS % Recovery | LCSD % Recovery | LCS/LCSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.047 | 0.50 | ND | 1.25 | 95.3 | 102 | 6.50 | 80 - 120 | 30 | |

Torrent LABORATORY, INC.

# MS/MSD Summary Report

*Raw values are used in quality control assessment.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707125 | **Prep Method:** | 6020S-P | **Prep Date:** | 07/24/17 | **Prep Batch:** | 8367 |
| **Matrix:** | **Soil** | **Analytical Method:** | 6020A | **Analyzed Date:** | July 26 | **Analytical Batch:** | 425652 |
| **Spiked Sample:** | 1707125-001A | | | | | | |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Sample Conc. | Spike Conc. | MS % Recovery | MSD % Recovery | MS/MSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | 0.12 | 1.0 | ND | 25 | 87.6 | 92.9 | 6.06 | 30.7 - 130 | 33 | |
| Arsenic | 0.21 | 1.0 | 10.7 | 25 | 110 | 111 | 0.261 | 71.0 - 121 | 33 | |
| Barium | 0.84 | 1.0 | 83.0 | 25 | 108 | 109 | 0.000 | 70.2 - 130 | 33 | |
| Beryllium | 0.16 | 1.0 | ND | 25 | 76.4 | 75.9 | 0.519 | 73.3 - 125 | 33 | |
| Cadmium | 0.084 | 1.0 | ND | 25 | 100 | 100 | 0.000 | 88.7 - 110 | 33 | |
| Chromium | 0.097 | 1.0 | 42.8 | 25 | 111 | 103 | 3.02 | 76.0 - 116 | 33 | |
| Cobalt | 0.21 | 1.0 | 8.72 | 25 | 88.5 | 89.3 | 0.969 | 57.4 - 122 | 33 | |
| Copper | 0.17 | 2.5 | 33.1 | 25 | 84.2 | 81.6 | 1.30 | 74.8 - 119 | 33 | |
| Lead | 0.054 | 1.0 | 41.0 | 25 | 105 | 98.9 | 2.26 | 57.9 - 118 | 33 | |
| Molybdenum | 0.13 | 1.0 | ND | 25 | 101 | 105 | 3.82 | 62.9 - 123 | 33 | |
| Nickel | 1.2 | 5.0 | 18.2 | 25 | 88.3 | 87.6 | 0.498 | 61.5 - 122 | 33 | |
| Selenium | 0.035 | 2.5 | ND | 25 | 94.2 | 95.8 | 1.69 | 62.0 - 111 | 33 | |
| Silver | 0.098 | 1.0 | ND | 25 | 95.0 | 96.2 | 1.25 | 81.1 - 109 | 33 | |
| Thallium | 1.00 | 5.0 | ND | 25 | 93.6 | 95.0 | 1.26 | 39.2 - 125 | 33 | |
| Vanadium | 0.28 | 25 | 42.8 | 25 | 92.9 | 93.9 | 0.454 | 65.8 - 122 | 33 | |
| Zinc | 0.70 | 2.5 | 92.8 | 25 | 106 | 119 | 3.31 | 59.9 - 122 | 33 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707125 | **Prep Method:** | 3510_PCB | **Prep Date:** | 07/24/17 | **Prep Batch:** | 8387 |
| **Matrix:** | **Water** | **Analytical Method:** | SW8082A | **Analyzed Date:** | 7/25/2017 | **Analytical Batch:** | 425620 |
| **Spiked Sample:** | 1707125-021B | | | | | | |
| **Units:** | ug/L | | | | | | |

| Parameters | MDL | PQL | Sample Conc. | Spike Conc. | MS % Recovery | MSD % Recovery | MS/MSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| Aroclor1016 | 0.700 | 10.0 | ND | 50 | 78.6 | 79.4 | 1.01 | 25 - 145 | 30 | |
| Aroclor1260 | 0.500 | 10.0 | ND | 50 | 64.8 | 68.2 | 5.11 | 30 - 145 | 30 | |
| TCMX (S) | | | | 50 | 88.0 | 84.0 | | 70 - 125 | | |
| DCBP (S) | | | | 50 | 96.0 | 90.0 | | 30 - 135 | | |

Torrent LABORATORY, INC.

# MS/MSD Summary Report

*Raw values are used in quality control assessment.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707125 | **Prep Method:** | 3546_PCB | **Prep Date:** | 07/25/17 | **Prep Batch:** | 8423 |
| **Matrix:** | **Soil** | **Analytical Method:** | SW8082A | **Analyzed Date:** | 7/26/2017 | **Analytical Batch:** | 425624 |
| **Spiked Sample:** | 1707125-001A | | | | | | |
| **Units:** | ug/Kg | | | | | | |

| Parameters | MDL | PQL | Sample Conc. | Spike Conc. | MS % Recovery | MSD % Recovery | MS/MSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| Aroclor1016 | 53.0 | 100 | ND | 600 | 86.0 | 86.0 | 0.000 | 25 - 145 | 30 | |
| Aroclor1260 | 36.0 | 100 | ND | 600 | 77.8 | 90.5 | 14.2 | 30 - 145 | 30 | |
| TCMX (S) | | | | 0.10 | 89.0 | 90.0 | | 48 - 125 | | |
| DCBP (S) | | | | 0.10 | 133 | 133 | | 48 - 135 | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707125 | **Prep Method:** | 6020W-P | **Prep Date:** | 07/24/17 | **Prep Batch:** | 8424 |
| **Matrix:** | **Water** | **Analytical Method:** | SW6020A | **Analyzed Date:** | July 26 | **Analytical Batch:** | 425651 |
| **Spiked Sample:** | 1707125-021A | | | | | | |
| **Units:** | ug/L | | | | | | |

| Parameters | MDL | PQL | Sample Conc. | Spike Conc. | MS % Recovery | MSD % Recovery | MS/MSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | 0.019 | 0.50 | ND | 50 | 96.3 | 95.3 | 1.04 | 75 - 125 | 20 | |
| Arsenic | 0.19 | 0.50 | ND | 50 | 97.4 | 100 | 3.02 | 75 - 125 | 20 | |
| Barium | 0.066 | 0.50 | 2.30 | 50 | 101 | 99.3 | 1.53 | 75 - 125 | 20 | |
| Beryllium | 0.018 | 0.50 | ND | 50 | 94.2 | 93.9 | 0.213 | 75 - 125 | 20 | |
| Cadmium | 0.033 | 0.50 | ND | 50 | 99.3 | 98.8 | 0.403 | 75 - 125 | 20 | |
| Chromium | 0.044 | 0.50 | 2.20 | 50 | 111 | 111 | 0.693 | 75 - 125 | 20 | |
| Cobalt | 0.026 | 0.50 | ND | 50 | 103 | 102 | 0.194 | 75 - 125 | 20 | |
| Copper | 0.64 | 2.0 | ND | 50 | 96.9 | 97.0 | 0.202 | 75 - 125 | 20 | |
| Lead | 0.031 | 0.50 | ND | 50 | 111 | 110 | 1.44 | 75 - 125 | 20 | |
| Molybdenum | 0.018 | 0.50 | 1.00 | 50 | 107 | 107 | 0.551 | 75 - 125 | 20 | |
| Nickel | 0.30 | 1.0 | 1.60 | 50 | 102 | 101 | 0.574 | 75 - 125 | 20 | |
| Selenium | 0.034 | 0.50 | ND | 50 | 89.1 | 88.9 | 0.224 | 75 - 125 | 20 | |
| Silver | 0.012 | 0.50 | ND | 50 | 100 | 100 | 0.199 | 75 - 125 | 20 | |
| Thallium | 0.0040 | 0.50 | ND | 50 | 111 | 111 | 0.180 | 75 - 125 | 20 | |
| Vanadium | 0.020 | 0.50 | ND | 50 | 104 | 105 | 0.581 | 75 - 125 | 20 | |
| Zinc | 0.59 | 2.0 | 9.70 | 50 | 94.5 | 95.8 | 1.05 | 75 - 125 | 20 | |

# MS/MSD Summary Report

*Raw values are used in quality control assessment.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707125 | **Prep Method:** | 7471BP | **Prep Date:** | 07/25/17 | **Prep Batch:** | 8445 |
| **Matrix:** | **Soil** | **Analytical Method:** | SW7471B | **Analyzed Date:** | 7/26/2017 | **Analytical Batch:** | 425666 |
| **Spiked Sample:** | 1707125-001A | | | | | | |
| **Units:** | mg/Kg | | | | | | |

| Parameters | MDL | PQL | Sample Conc. | Spike Conc. | MS % Recovery | MSD % Recovery | MS/MSD % RPD | % Recovery Limits | % RPD Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.047 | 0.50 | ND | 1.25 | 97.0 | 94.4 | 3.28 | 75 - 125 | 30 | |

# Duplicate QC Summary Report

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707125 | **Prep Method:** | % Water-P | **Prep Date:** | 7/24/2017 | **Prep Batch:** | 8441 |
| **Matrix:** | | **Analytical Method:** | ASTM D2216-90 | **Analyzed Date:** | 07/24/17 | **Analytical Batch:** | 425654 |
| **Units:** | | | | | | **Lab Sample ID:** | 1707125-001A-DUP-8441 |

| Parameters | MDL | PQL | Sample Result | Duplicate Result | % RPD |
|---|---|---|---|---|---|
| % Moisture | 0.050 | 0.0500 | 16.7 | 17.2 | 2.95 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707125 | **Prep Method:** | % Water-P | **Prep Date:** | 7/25/2017 | **Prep Batch:** | 8447 |
| **Matrix:** | | **Analytical Method:** | ASTM D2216-90 | **Analyzed Date:** | 07/25/17 | **Analytical Batch:** | 425660 |
| **Units:** | | | | | | **Lab Sample ID:** | 1707125-008A-DUP-8447 |

| Parameters | MDL | PQL | Sample Result | Duplicate Result | % RPD |
|---|---|---|---|---|---|
| % Moisture | 0.050 | 0.0500 | 26.0 | 27.7 | 6.33 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707125 | **Prep Method:** | % Water-P | **Prep Date:** | 7/25/2017 | **Prep Batch:** | 8447 |
| **Matrix:** | | **Analytical Method:** | ASTM D2216-90 | **Analyzed Date:** | 07/25/17 | **Analytical Batch:** | 425660 |
| **Units:** | | | | | | **Lab Sample ID:** | 1707125-017A-DUP-8447 |

| Parameters | MDL | PQL | Sample Result | Duplicate Result | % RPD |
|---|---|---|---|---|---|
| % Moisture | 0.050 | 0.0500 | 22.7 | 22.7 | 0.00 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Work Order:** | 1707125 | **Prep Method:** | 6020S-P | **Prep Date:** | 7/20/2017 | **Prep Batch:** | 8276 |
| **Matrix:** | | **Analytical Method:** | 6020A | **Analyzed Date:** | 07/20/17 | **Analytical Batch:** | 425519 |
| **Units:** | | | | | | **Lab Sample ID:** | 1707125-020A-DUP-8276 |

| Parameters | MDL | PQL | Sample Result | Duplicate Result | % RPD |
|---|---|---|---|---|---|
| Arsenic | 0.21 | 1.0 | 4.55 | 3.47 | 27.00 |

# Laboratory Qualifiers and Definitions

## DEFINITIONS:

| |
|---|
| **Accuracy/Bias (% Recovery)** - The closeness of agreement between an observed value and an accepted reference value. |
| **Blank (Method/Preparation Blank)** -MB/PB - An analyte-free matrix to which all reagents are added in the same volumes/proportions as used in sample processing. The method blank is used to document contamination resulting from the analytical process. |
| **Duplicate** - a field sample and/or laboratory QC sample prepared in duplicate following all of the same processes and procedures used on the original sample (sample duplicate, LCSD, MSD) |
| **Laboratory Control Sample (LCS ad LCSD)** - A known matrix spiked with compounds representative of the target analyte(s). This is used to document laboratory performance. |
| **Matrix** - the component or substrate that contains the analyte of interest (e.g., - groundwater, sediment, soil, waste water, etc) |
| **Matrix Spike (MS/MSD)** - Client sample spiked with identical concentrations of target analyte (s). The spiking occurs prior to the sample preparation and analysis. They are used to document the precision and bias of a method in a given sample matrix. |
| **Method Detection Limit (MDL)** - the minimum concentration of a substance that can be measured and reported with a 99% confidence that the analyte concentration is greater than zero |
| **Practical Quantitation Limit/Reporting Limit/Limit of Quantitation (PQL/RL/LOQ)** - a laboratory determined value at 2 to 5 times above the MDL that can be reproduced in a manner that results in a 99% confidence level that the result is both accurate and precise. PQLs/RLs/LODs reflect all preparation factors and/or dilution factors that have been applied to the sample during the preparation and/or analytical processes. |
| **Precision (%RPD)** - The agreement among a set of replicate/duplicate measurements without regard to known value of the replicates |
| **Surrogate (S) or (Surr)** - An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples. Surrogates are used in most organic analysis to demonstrate matrix compatibility with the chosen method of analysis |
| **Tentatively Identified Compound (TIC) -** A compound not contained within the analytical calibration standards but present in the GCMS library of defined compounds. When the library is searched for an unknown compound, it can frequently give a tentative identification to the compound based on retention time and primary and secondary ion match. TICs are reported as estimates and are candidates for further investigation. |
| **Units:** the unit of measure used to express the reported result - **mg/L** and ***mg/Kg*** (equivalent to PPM - parts per million in **liquid** and ***solid***), **ug/L** and ***ug/Kg*** (equivalent to PPB - parts per billion in **liquid** and ***solid***), **ug/m3**, ***mg/m3***, **ppbv** and ***ppmv*** (all units of measure for reporting concentrations in air), **%** ( equivalent to 10000 ppm or 1,000,000 ppb), **ug/Wipe** ( concentration found on the surface of a single Wipe usually taken over a 100cm2 surface) |

## LABORATORY QUALIFIERS:

**B** - Indicates when the analyte is found in the associated method or preparation blank
**D** - Surrogate is not recoverable due to the necessary dilution of the sample
**E** - Indicates the reportable value is outside of the calibration range of the instrument but within the linear range of the instrument (unless otherwise noted) Values reported with an E qualifier should be considered as estimated.
**H**- Indicates that the recommended holding time for the analyte or compound has been exceeded
**J**- Indicates a value between the method MDL and PQL and that the reported concentration should be considered as estimated rather the quantitative
**NA** - Not Analyzed
**N/A** - Not Applicable
**ND** - Not Detected at a concentration greater than the PQL/RL or, if reported to the MDL, at greater than the MDL.
**NR** - Not recoverable - a matrix spike concentration is not recoverable due to a concentration within the original sample that is greater than four times the spike concentration added
**R**- The % RPD between a duplicate set of samples is outside of the absolute values established by laboratory control charts
**S**- Spike recovery is outside of established method and/or laboratory control limits. Further explanation of the use of this qualifier should be included within a case narrative
**X** -Used to indicate that a value based on pattern identification is within the pattern range but not typical of the pattern found in standards. Further explanation may or may not be provided within the sample footnote and/or the case narrative.

# Sample Receipt Checklist

Client Name: Cornerstone(Walnut Creek)

Project Name: 3141 Taylor Road

Work Order No.: 1707125

Date and Time Received: 7/19/2017 1:35:00PM

Received By: Helena Ueng

Physically Logged By: Helena Ueng

Checklist Completed By:

Carrier Name: First Courier

**Chain of Custody (COC) Information**

| | |
|---|---|
| Chain of custody present? | Yes |
| Chain of custody signed when relinquished and received? | Yes |
| Chain of custody agrees with sample labels? | Yes |
| Custody seals intact on sample bottles? | Not Present |

**Sample Receipt Information**

| | |
|---|---|
| Custody seals intact on shipping container/cooler? | Not Present |
| Shipping Container/Cooler In Good Condition? | Yes |
| Samples in proper container/bottle? | Yes |
| Samples containers intact? | Yes |
| Sufficient sample volume for indicated test? | Yes |

**Sample Preservation and Hold Time (HT) Information**

| | | | | |
|---|---|---|---|---|
| All samples received within holding time? | Yes | | | |
| Container/Temp Blank temperature in compliance? | Yes | Temperature: | 1.0 | °C |
| Water-VOA vials have zero headspace? | No VOA vials submitted | | | |
| Water-pH acceptable upon receipt? | | | | |

pH Checked by: Helena Ueng

pH Adjusted by: N/A

**Comments:**

# Login Summary Report

| | | | | |
|---|---|---|---|---|
| **Client ID:** | TL5508 | Cornerstone(Walnut Creek) | **QC Level:** | II |
| **Project Name:** | 3141 Taylor Road | | **TAT Requested:** | 5+ day:5 |
| **Project # :** | 411-16-3 | | **Date Received:** | 7/19/2017 |
| **Report Due Date:** | 7/26/2017 | | **Time Received:** | 1:35 pm |

**Comments:**

**Work Order # :** ***1707125***

| WO Sample ID | Client Sample ID | Collection Date/Time | Matrix | Scheduled Disposal | Sample On Hold | Test On Hold | Requested Tests | Subbed |
|---|---|---|---|---|---|---|---|---|
| 1707125-001A | SS-41 (0-0.5) | 07/18/17 13:24 | Soil | 01/15/18 | | | PMOIST<br>PCBs_S_8082A<br>Pest_S_8081OCP<br>Hg_S_7471B<br>Met_S_6020CAM17 | |
| **Sample Note:** | Metals by 6020, need to be reported to the MDL to meet RL of 0.5 mg/kg. PCBs need RL of 50 ppb.<br><br>OCPs--need RLs of 2 ppb (40 ppb for Chlordane). Avoid diluting. | | | | | | | |
| 1707125-002A | SS-42 (0-0.5) | 07/18/17 14:00 | Soil | 01/15/18 | | | PMOIST<br>PCBs_S_8082A<br>Pest_S_8081OCP<br>Hg_S_7471B<br>Met_S_6020CAM17 | |
| 1707125-003A | SS-43 (0-0.5) | 07/18/17 12:21 | Soil | 01/15/18 | | | PMOIST<br>Pest_S_8081OCP<br>Hg_S_7471B<br>Met_S_6020CAM17 | |
| 1707125-004A | SS-44 (0-0.5) | 07/18/17 12:41 | Soil | 01/15/18 | | | PMOIST<br>Pest_S_8081OCP<br>Hg_S_7471B<br>Met_S_6020CAM17 | |
| 1707125-005A | SS-45 (0-0.5) | 07/18/17 11:32 | Soil | 01/15/18 | | | PMOIST<br>Pest_S_8081OCP<br>Hg_S_7471B<br>Met_S_6020CAM17 | |
| 1707125-006A | SS-46 (0-0.5) | 07/18/17 11:18 | Soil | 01/15/18 | | | PMOIST<br>Pest_S_8081OCP<br>Hg_S_7471B<br>Met_S_6020CAM17 | |
| 1707125-007A | SS-47 (0-0.5) | 07/18/17 14:35 | Soil | 01/15/18 | | | PMOIST | |

# Login Summary Report

**Client ID:** TL5508 Cornerstone(Walnut Creek)
**Project Name:** 3141 Taylor Road
**Project # :** 411-16-3
**Report Due Date:** 7/26/2017

**QC Level:** II
**TAT Requested:** 5+ day:5
**Date Received:** 7/19/2017
**Time Received:** 1:35 pm

**Comments:**

**Work Order # :** ***1707125***

| WO Sample ID | Client Sample ID | Collection Date/Time | Matrix | Scheduled Disposal | Sample On Hold | Test On Hold | Requested Tests | Subbed |
|---|---|---|---|---|---|---|---|---|
| 1707125-008A | SS-48 (0-0.5) | 07/18/17 14:43 | Soil | 01/15/18 | | | Pest_S_8081OCP<br>Hg_S_7471B<br>Met_S_6020CAM17<br>PMOIST | |
| 1707125-009A | SS-49 (0-0.5) | 07/18/17 14:50 | Soil | 01/15/18 | | | Pest_S_8081OCP<br>Hg_S_7471B<br>Met_S_6020CAM17<br>PMOIST | |
| 1707125-010A | SS-50 (0-0.5) | 07/18/17 15:56 | Soil | 01/15/18 | | | Pest_S_8081OCP<br>Hg_S_7471B<br>Met_S_6020CAM17<br>PMOIST | |
| 1707125-011A | SS-50 (1-1.5) | 07/18/17 16:00 | Soil | 01/15/18 | | | PCBs_S_8082A<br>PMOIST | |
| 1707125-012A | SS-50 (2-3) | 07/18/17 16:05 | Soil | 01/15/18 | | | PCBs_S_8082A<br>PMOIST | |
| 1707125-013A | SS-12A (0-0.5) | 07/18/17 9:38 | Soil | 01/15/18 | | | PCBs_S_8082A<br>PMOIST | |
| **Sample Note:** | 6020-Arsenic only | | | | | | Met_S_6020AsPb | |
| 1707125-014A | SS-12B (0-0.5) | 07/18/17 9:45 | Soil | 01/15/18 | | | PMOIST<br>Met_S_6020AsPb | |
| 1707125-015A | SS-12C (0-0.5) | 07/18/17 9:49 | Soil | 01/15/18 | | | PMOIST<br>Met_S_6020AsPb | |
| 1707125-016A | SS-12D (0-0.5) | 07/18/17 9:54 | Soil | 01/15/18 | | | PMOIST<br>Met_S_6020AsPb | |
| 1707125-017A | BG-1 (0.5-1) | 07/18/17 8:48 | Soil | 01/15/18 | | | PMOIST<br>Met_S_6020AsPb<br>PMOIST | |

# Login Summary Report

| | | | | |
|---|---|---|---|---|
| **Client ID:** | TL5508 | Cornerstone(Walnut Creek) | **QC Level:** | II |
| **Project Name:** | 3141 Taylor Road | | **TAT Requested:** | 5+ day:5 |
| **Project # :** | 411-16-3 | | **Date Received:** | 7/19/2017 |
| **Report Due Date:** | 7/26/2017 | | **Time Received:** | 1:35 pm |

**Comments:**

**Work Order # :** ***1707125***

| WO Sample ID | Client Sample ID | Collection Date/Time | Matrix | Scheduled Disposal | Sample On Hold | Test On Hold | Requested Tests | Subbed |
|---|---|---|---|---|---|---|---|---|
| 1707125-018A | BG-2 (0.5-1) | 07/18/17 8:43 | Soil | 01/15/18 | | | Met_S_6020AsPb<br>PMOIST | |
| 1707125-019A | BG-3 (0.5-1) | 07/18/17 10:20 | Soil | 01/15/18 | | | Met_S_6020AsPb<br>PMOIST | |
| 1707125-020A | BG-4 (0.5-1) | 07/18/17 10:25 | Soil | 01/15/18 | | | Met_S_6020AsPb<br>PMOIST | |
| 1707125-021A | EqB-1 | 07/18/17 8:31 | Water | 09/02/17 | | | Met_S_6020AsPb<br>Hg_W_7470A<br>Met_W_6020A | |
| **Sample Note:** | 6020/7470- CAM17 | | | | | | | |
| 1707125-021B | EqB-1 | 07/18/17 8:31 | Water | 09/02/17 | | | PCBs_W_8082A<br>Pest_W_8081OCP | |
| 1707125-022A | Trip Blank | 07/18/17 8:31 | Water | 09/02/17 | | | VOC_W_8260B | |

Torrent LABORATORY, INC.

CORNERSTONE EARTH GROUP

# Chain of Custody Record

1707125

| | | | |
|---|---|---|---|
| Cornerstone Earth Group, Inc. | Project Manager: Peter Langtry | Site Sampler: BMJ / KAK | Date: 07-18-17 |
| | Tel/Fax: 925-988-9500 ext. 217 | Lab Contact: Kathie Evans | Lab: Torrent Laboratory, Inc. |
| 1270 Springbrook Rd | Analysis Turnaround Time | | |
| Walnut Creek, CA 94597 | | | |
| (925)-988-9500 Phone | TAT if different from Below _____ | | |
| (925)-988-9501 FAX | ☐ 1 week | | |
| Project Name: 3141 Taylor Rd | ■ 3 days | | |
| Site: Loomis, CA | ☐ 2 days | | |
| Project Number: 411-16-3 | ☐ 1 day | | |

COC No: 5 of 6 COCs

Laboratory's Job No.

| | Sample Identification | Sample Date | Sample Time | Sample Type | Matrix | # of Cont. | Filtered Sample | Arsenic (EPA 6020) | CAM17 (EPA 6020) | OCPs (EPA 8081) | PCBs (EPA 8082) | HOLD | Laboratory's Sample Specific Notes: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 001A | SS-41 (0-0.5) | 7/18/17 | 1324 | Liner | soil | 1 | | | X | X | X | | |
| 002A | SS-42 (0-0.5) | | 1400 | | | | | | X | X | X | | |
| 003A | SS-43 (0-0.5) | | 1221 | | | | | | X | X | | | |
| 004A | SS-44 (0-0.5) | | 1241 | | | | | | X | X | | | |
| 005A | SS-45 (0-0.5) | | 1132 | | | | | | X | X | | | |
| 006A | SS-46 (0-0.5) | | 1118 | | | | | | X | X | | | |
| 007A | SS-47 (0-0.5) | | 1435 | | | | | | X | X | | | |
| 008A ~~009A~~ | SS-48 (0-0.5) | | 1443 | | | | | | X | X | | | |
| 009A ~~10A~~ | SS-49 (0-0.5) | | 1450 | | | | | | X | X | | | |
| 010A ~~011A~~ | SS-50 (0-0.5) | | 1550 | | | | | | | | X | | |
| 011A ~~12A~~ | SS-50 (1-1.5) | | 1600 | | | | | | | | X | | |
| 012A | SS-50 (2-3) | — | 1605 | — | — | — | | | | | X | | |

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

**Possible Hazard Identification**

☐ Non-Hazardous ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

**Sample Disposal**

☐ Return to Client ☐ Disposal by Lab ☐ Archive For _____ Months

**Special Instructions/QC Requirements & Comments: If additional sample is needed, please use the liner.**
Please CC: Brent Johnson, bjohnson@cornerstoneearth.com, with results

Please report all soil analyes on dry weight basis

| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
|---|---|---|---|---|---|
| [signature] | Cornerstone Earth Group | 7/19/17 11:00 | [signature] | 1st CLASS | 7/19 11:30 |
| [signature] | 1st CLASS | 7/19/17 | [signature] 1:35 | Torrent | 7/19/17 1:35 |
| | | | | | |

FCS Temp = 1°C #1

Torrent LABORATORY, INC.

CORNERSTONE EARTH GROUP

# Chain of Custody Record

1707125

| | | | |
|---|---|---|---|
| Cornerstone Earth Group, Inc. | Project Manager: Peter Langtry | Site Sampler: BMJ / KAK | Date: 07-18-17 |
| | Tel/Fax: 925-988-9500 ext. 217 | Lab Contact: Kathie Evans | Lab: Torrent Laboratory, Inc. |
| 1270 Springbrook Rd | Analysis Turnaround Time | | |
| Walnut Creek, CA 94597 | | | |
| (925)-988-9500 Phone | TAT if different from Below _____ | | |
| (925)-988-9501 FAX | ☐ 1 week | | |
| Project Name: 3141 Taylor Rd | ■ 3 days | | |
| Site: Loomis, CA | ☐ 2 days | | |
| Project Number: 411-16-3 | ☐ 1 day | | |

COC No: 6 of 6 COCs

Laboratory's Job No.

| | Sample Identification | Sample Date | Sample Time | Sample Type | Matrix | # of Cont. | Filtered Sample | Arsenic (EPA 6020) | CAM17 (EPA 6020) | OCPs (EPA 8081) | PCBs (EPA 8082) | VOC (EPA 8260B) | HOLD | Laboratory's Sample Specific Notes: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 013A | SS-12A (0-0.5) | 7/18/17 | 0938 | Liner | soil | 1 | | X | | | | | | |
| 014A | SS-12B (0-0.5) | | 0945 | | | | | X | | | | | | |
| 015A | SS-12C (0-0.5) | | 0949 | | | | | X | | | | | | |
| 016A | SS-12D (0-0.5) | | 0954 | | | | | X | | | | | | |
| 017A | BG-1 (0.5-1) | 7/18/17 | 0848 | Liner | soil | 1 | | X | | | | | | |
| 018A | BG-2 (0.5-1) | | 0843 | | | | | X | | | | | | |
| 019A | BG-3 (0.5-1) | | 1020 | | | | | X | | | | | | |
| 020A | BG-4 (0.5-1) | | 1025 | | | | | X | | | | | | |
| 021A | EqB-1 | 7/18/17 | 8:31 | Bottles | water | 3 | | | X | X | X | | | |
| 022A | Trip Blank | | | Bottles | | | | | | | | X | | |

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other 1,2,3,4

**Possible Hazard Identification**

☐ Non-Hazardous ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

**Sample Disposal**

☐ Return to Client ☐ Disposal by Lab ☐ Archive For _____ Months

**Special Instructions/QC Requirements & Comments: If additional sample is needed, please use the liner.**

Please CC: Brent Johnson, bjohnson@cornerstoneearth.com, with results

Please report all soil analyses on dry weight basis

| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
|---|---|---|---|---|---|
| [signature] | Cornerstone Earth Group | 7/19/17 11:30 | [signature] | 1st Class | 7/19 11:30 |
| DEREK | 1st Class | 7/19/17 | 1:35 [signature] | Torrent | 7/19/17 13:35 |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |

FCS Temp = 1°C #1

# APPENDIX C – LEVEL II DATA VALIDATION PACKAGE

**LABORATORY DATA CONSULTANTS, INC.**
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

Cornerstone Earth
1270 Springbrook Road, Suite 101
Walnut Creek, CA 94597
ATTN: Mr. Brent M. Johnson

August 16, 2017

SUBJECT: 3141 Taylor Road, Data Validation

Dear Mr. Johnson,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on August 1, 2017. Attachment 1 is a summary of the samples that were reviewed for each analysis.

**LDC Project #39191:**

| SDG # | Fraction |
|---|---|
| 1707122, 1707124, 1707125 | Volatiles, Chlorinated Pesticides, Polychlorinated Biphenyls, Metals |

The data validation was performed under Level II guidelines. The analyses were validated using the following documents, as applicable to each method:

- USEPA National Functional Guidelines for Organic Superfund Methods Data Review , January 2017
- USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review , January 2017
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; Update IV, February 2007; update V, July 2014

Please feel free to contact us if you have any questions.

Sincerely,

Christina Rink

Christina Rink
Project Manager/Chemist

378 pages-EM

Attachment 1

**Level II**

# LDC #39191 (Cornerstone - Walnut Creek, CA / 3141 Taylor Road)

| LDC | SDG# | DATE REC'D | (3) DATE DUE | VOA (8260B) | | Pest. (8081B) | | PCBs (8082A) | | Metals (6020A /7000) | | As (6020A) | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Matrix: | Water/Soil | | | W | S | W | S | W | S | W | S | W | S | W | S | W | S | W | S | W | S | W | S | W | S | W | S | W | S | W | S | W | S |
| A | 1707122 | 08/01/17 | 08/22/17 | - | - | 0 | 2 | 0 | 1 | 0 | 19 | 0 | 5 | | | | | | | | | | | | | | | | | | | | |
| B | 1707124 | 08/01/17 | 08/22/17 | - | - | 0 | 16 | 0 | 16 | 0 | 23 | 0 | 1 | | | | | | | | | | | | | | | | | | | | |
| C | 1707125 | 08/01/17 | 08/22/17 | 1 | 0 | 1 | 9 | 1 | 5 | 1 | 9 | 0 | 8 | | | | | | | | | | | | | | | | | | | | |
| Total | T/CR | | | 1 | 0 | 1 | 27 | 1 | 22 | 1 | 51 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 118 |

Shaded cells indicate Level IV validation (all other cells are Level II validation). These sample counts do not include MS/MSD, and DUPs

V:\LOGIN\Cornerstone\Taylor Road\39191ST.wpd

# Laboratory Data Consultants, Inc.
# Data Validation Report

**Project/Site Name:** 3141 Taylor Road

**LDC Report Date:** August 15, 2017

**Parameters:** Metals

**Validation Level:** Level II

**Laboratory:** Torrent Laboratory, Inc.

**Sample Delivery Group (SDG):** 1707122

| Sample Identification | Laboratory Sample Identification | Matrix | Collection Date |
|---|---|---|---|
| SS-101(0-0.5) | 1707122-001 | Soil | 07/18/17 |
| SS-102(0-0.5) | 1707122-002 | Soil | 07/18/17 |
| SS-1(0-0.5) | 1707122-003 | Soil | 07/18/17 |
| SS-2(0-0.5) | 1707122-004 | Soil | 07/18/17 |
| SS-3(0-0.5) | 1707122-005 | Soil | 07/18/17 |
| SS-4(0-0.5) | 1707122-006 | Soil | 07/18/17 |
| SS-4(2.5-3) | 1707122-007 | Soil | 07/18/17 |
| SS-5(0-0.5) | 1707122-008 | Soil | 07/18/17 |
| SS-6(0-0.5) | 1707122-009 | Soil | 07/18/17 |
| SS-6(2.5-3) | 1707122-010 | Soil | 07/18/17 |
| SS-7(0-0.5) | 1707122-011 | Soil | 07/18/17 |
| SS-9(0-0.5) | 1707122-012 | Soil | 07/18/17 |
| SS-8(0-0.5) | 1707122-013 | Soil | 07/18/17 |
| SS-8(2.5-3) | 1707122-014 | Soil | 07/18/17 |
| SS-10(0-0.5) | 1707122-015 | Soil | 07/18/17 |
| SS-11(0-0.5) | 1707122-016 | Soil | 07/18/17 |
| SS-12(0-0.5) | 1707122-017 | Soil | 07/18/17 |
| SS-12(2.5-3) | 1707122-018 | Soil | 07/18/17 |
| SS-13(0-0.5) | 1707122-019 | Soil | 07/18/17 |
| SS-14(0-0.5) | 1707122-020 | Soil | 07/18/17 |
| SS-15(0-0.5) | 1707122-021 | Soil | 07/18/17 |
| SS-16(0-0.5) | 1707122-022 | Soil | 07/18/17 |
| SS-16(2.5-3) | 1707122-023 | Soil | 07/18/17 |
| SS-17(0-0.5) | 1707122-024 | Soil | 07/18/17 |
| SS-101(0-0.5)MS | 1707122-001MS | Soil | 07/18/17 |
| SS-101(0-0.5)MSD | 1707122-001MSD | Soil | 07/18/17 |

| Sample Identification | Laboratory Sample Identification | Matrix | Collection Date |
|---|---|---|---|
| SS-13(0-0.5)MS | 1707122-019MS | Soil | 07/18/17 |
| SS-13(0-0.5)MSD | 1707122-019MSD | Soil | 07/18/17 |
| SS-16(2.5-3)DUP | 1707122-023DUP | Soil | 07/18/17 |

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Copper, Lead, Molybdenum, Nickel, Selenium, Silver, Thallium, Vanadium, and Zinc by Environmental Protection Agency (EPA) SW 846 Method 6020A
Mercury by EPA SW 846 Method 7471B

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met.

## II. ICPMS Tune

ICP-MS tune data were not reviewed for Level II validation.

## III. Instrument Calibration

Initial and continuing calibrations data were not reviewed for Level II validation.

## IV. ICP Interference Check Sample Analysis

ICP Interference check sample (ICS) analysis data were not reviewed for Level II validation.

## V. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks with the following exceptions:

| Blank ID | Analyte | Maximum Concentration | Associated Samples |
|---|---|---|---|
| PB (prep blank) | Chromium<br>Molybdenum | 0.26 mg/Kg<br>0.19 mg/Kg | SS-101(0-0.5)<br>SS-102(0-0.5)<br>SS-1(0-0.5)<br>SS-2(0-0.5)<br>SS-3(0-0.5)<br>SS-4(0-0.5)<br>SS-5(0-0.5)<br>SS-6(0-0.5)<br>SS-7(0-0.5)<br>SS-9(0-0.5)<br>SS-8(0-0.5)<br>SS-10(0-0.5)<br>SS-11(0-0.5)<br>SS-12(0-0.5) |
| PB (prep blank) | Antimony<br>Chromium<br>Molybdenum | 0.19 mg/Kg<br>0.17 mg/Kg<br>0.20 mg/Kg | SS-13(0-0.5)<br>SS-14(0-0.5)<br>SS-15(0-0.5)<br>SS-16(0-0.5)<br>SS-17(0-0.5) |

Data qualification by the laboratory blanks was based on the maximum contaminant concentration in the laboratory blanks in the analysis of each analyte. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated laboratory blanks with the following exceptions:

| Sample | Analyte | Reported Concentration | Modified Final Concentration |
|---|---|---|---|
| SS-102(0-0.5) | Molybdenum | 0.846 mg/Kg | 0.846U mg/Kg |
| SS-1(0-0.5) | Molybdenum | 0.252 mg/Kg | 0.252U mg/Kg |
| SS-2(0-0.5) | Molybdenum | 0.706 mg/Kg | 0.706U mg/Kg |
| SS-3(0-0.5) | Molybdenum | 0.462 mg/Kg | 0.462U mg/Kg |
| SS-4(0-0.5) | Molybdenum | 0.373 mg/Kg | 0.373U mg/Kg |
| SS-5(0-0.5) | Molybdenum | 0.146 mg/Kg | 0.146U mg/Kg |
| SS-6(0-0.5) | Molybdenum | 0.298 mg/Kg | 0.298U mg/Kg |
| SS-7(0-0.5) | Molybdenum | 0.250 mg/Kg | 0.250U mg/Kg |
| SS-9(0-0.5) | Molybdenum | 0.265 mg/Kg | 0.265U mg/Kg |
| SS-8(0-0.5) | Molybdenum | 0.182 mg/Kg | 0.182U mg/Kg |
| SS-10(0-0.5) | Molybdenum | 0.267 mg/Kg | 0.267U mg/Kg |
| SS-11(0-0.5) | Molybdenum | 0.491 mg/Kg | 0.491U mg/Kg |
| SS-14(0-0.5) | Antimony<br>Molybdenum | 0.188 mg/Kg<br>0.212 mg/Kg | 0.188U mg/Kg<br>0.212U mg/Kg |
| SS-15(0-0.5) | Antimony<br>Molybdenum | 0.462 mg/Kg<br>0.668 mg/Kg | 0.462U mg/Kg<br>0.668U mg/Kg |
| SS-16(0-0.5) | Antimony<br>Molybdenum | 0.468 mg/Kg<br>0.416 mg/Kg | 0.468U mg/Kg<br>0.416U mg/Kg |
| SS-17(0-0.5) | Antimony<br>Molybdenum | 0.350 mg/Kg<br>0.770 mg/Kg | 0.350U mg/Kg<br>0.770U mg/Kg |

## VI. Field Blanks

Sample EqB-1 (from SDG 1707125) was identified as an equipment blank. No contaminants were found with the following exceptions:

| Blank ID | Collection Date | Analyte | Concentration | Associated Samples |
|---|---|---|---|---|
| EqB-1 | 07/18/17 | Barium<br>Chromium<br>Molybdenum<br>Nickel<br>Zinc | 2.3 ug/L<br>2.2 ug/L<br>1.0 ug/L<br>1.6 ug/L<br>9.7 ug/L | SS-101(0-0.5)<br>SS-102(0-0.5)<br>SS-1(0-0.5)<br>SS-2(0-0.5)<br>SS-3(0-0.5)<br>SS-4(0-0.5)<br>SS-5(0-0.5)<br>SS-6(0-0.5)<br>SS-7(0-0.5)<br>SS-9(0-0.5)<br>SS-8(0-0.5)<br>SS-10(0-0.5)<br>SS-11(0-0.5)<br>SS-12(0-0.5)<br>SS-13(0-0.5)<br>SS-14(0-0.5)<br>SS-15(0-0.5)<br>SS-16(0-0.5)<br>SS-17(0-0.5) |

Sample concentrations were compared to concentrations detected in the field blanks. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated field blanks.

## VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

| Spike ID (Associated Samples) | Analyte | MS (%R) (Limits) | MSD (%R) (Limits) | Flag | A or P |
|---|---|---|---|---|---|
| SS-101(0-0.5)MS/MSD<br>(SS-101(0-0.5)<br>SS-102(0-0.5)<br>SS-1(0-0.5)<br>SS-2(0-0.5)<br>SS-3(0-0.5)<br>SS-4(0-0.5)<br>SS-5(0-0.5)<br>SS-6(0-0.5)<br>SS-7(0-0.5)<br>SS-9(0-0.5)<br>SS-8(0-0.5)<br>SS-10(0-0.5)<br>SS-11(0-0.5)<br>SS-12(0-0.5)) | Silver | 36.8 (81.1-109) | 37.1 (81.1-109) | J (all detects)<br>UJ (all non-detects) | A |
| SS-13(0-0.5)MS/MSD<br>(SS-13(0-0.5)<br>SS-14(0-0.5)<br>SS-15(0-0.5)<br>SS-16(0-0.5)<br>SS-17(0-0.5)) | Barium | 134 (70.2-130) | 57.7 (70.2-130) | J (all detects) | A |

| Spike ID (Associated Samples) | Analyte | MS (%R) (Limits) | MSD (%R) (Limits) | Flag | A or P |
|---|---|---|---|---|---|
| SS-13(0-0.5)MS/MSD<br>(SS-13(0-0.5)<br>SS-14(0-0.5)<br>SS-15(0-0.5)<br>SS-16(0-0.5)<br>SS-17(0-0.5)) | Chromium<br>Vanadium<br>Zinc | 136 (76.0-116)<br>137 (65.8-122)<br>128 (59.9-122) | -<br>-<br>- | J (all detects)<br>J (all detects)<br>J (all detects) | A |

Relative percent differences (RPD) were within QC limits.

## VIII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

## IX. Serial Dilution

Serial dilution was not performed for this SDG.

## X. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## XI. Field Duplicates

Samples SS-101(0-0.5) and SS-47(0-0.5) (from SDG 1707125) and samples SS-102(0-0.5) and SS-28(0-0.5) (from SDG 1707124) were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

| Analyte | Concentration (mg/Kg) | | RPD |
|---|---|---|---|
| | SS-101(0-0.5) | SS-47(0-0.5) | |
| Arsenic | 3.35 | 4.48 | 29 |
| Barium | 24.8 | 24.8 | 0 |
| Cobalt | 4.19 | 6.16 | 38 |
| Chromium | 19.1 | 19.7 | 3 |
| Copper | 13.3 | 17.8 | 29 |
| Lead | 5.33 | 11.2 | 71 |
| Molybdenum | 0.13U | 0.429 | Not calculable |

| Analyte | Concentration (mg/Kg) | | RPD |
|---|---|---|---|
| | SS-101(0-0.5) | SS-47(0-0.5) | |
| Nickel | 9.80 | 10.1 | 3 |
| Vanadium | 21.3 | 14.5 | 38 |
| Zinc | 20.3 | 23.1 | 13 |

| Analyte | Concentration (mg/Kg) | | RPD |
|---|---|---|---|
| | SS-102(0-0.5) | SS-28(0-0.5) | |
| Antimony | 0.356 | 0.20U | Not calculable |
| Arsenic | 8.49 | 7.45 | 13 |
| Beryllium | 0.172 | 0.27U | Not calculable |
| Barium | 87.5 | 64.1 | 31 |
| Cadmium | 0.165 | 0.14U | Not calculable |
| Chromium | 23.7 | 24.5 | 3 |
| Cobalt | 6.07 | 6.19 | 2 |
| Copper | 22.9 | 22.1 | 4 |
| Lead | 38.9 | 46.2 | 17 |
| Molybdenum | 0.846 | 1.99 | 81 |
| Nickel | 13.8 | 14.0 | 1 |
| Silver | 0.250 | 0.16U | Not calculable |
| Vanadium | 40.7 | 30.4 | 29 |
| Zinc | 112 | 229 | 69 |

## XII. Internal Standards (ICP-MS)

Internal standards data were not reviewed for Level II validation.

## XIII. Sample Result Verification

Raw data were not reviewed for Level II validation.

## XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to MS/MSD %R, data were qualified as estimated in nineteen samples.

Due to laboratory blank contamination, data were qualified as not detected in sixteen samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

## 3141 Taylor Road
## Metals - Data Qualification Summary - SDG 1707122

| Sample | Analyte | Flag | A or P | Reason |
|---|---|---|---|---|
| SS-101(0-0.5)<br>SS-102(0-0.5)<br>SS-1(0-0.5)<br>SS-2(0-0.5)<br>SS-3(0-0.5)<br>SS-4(0-0.5)<br>SS-5(0-0.5)<br>SS-6(0-0.5)<br>SS-7(0-0.5)<br>SS-9(0-0.5)<br>SS-8(0-0.5)<br>SS-10(0-0.5)<br>SS-11(0-0.5)<br>SS-12(0-0.5) | Silver | J (all detects)<br>UJ (all non-detects) | A | Matrix spike/Matrix spike duplicate (%R) |
| SS-13(0-0.5)<br>SS-14(0-0.5)<br>SS-15(0-0.5)<br>SS-16(0-0.5)<br>SS-17(0-0.5) | Barium<br>Chromium<br>Vanadium<br>Zinc | J (all detects)<br>J (all detects)<br>J (all detects)<br>J (all detects) | A | Matrix spike/Matrix spike duplicate (%R) |

## 3141 Taylor Road
## Metals - Laboratory Blank Data Qualification Summary - SDG 1707122

| Sample | Analyte | Modified Final Concentration | A or P |
|---|---|---|---|
| SS-102(0-0.5) | Molybdenum | 0.846U mg/Kg | A |
| SS-1(0-0.5) | Molybdenum | 0.252U mg/Kg | A |
| SS-2(0-0.5) | Molybdenum | 0.706U mg/Kg | A |
| SS-3(0-0.5) | Molybdenum | 0.462U mg/Kg | A |
| SS-4(0-0.5) | Molybdenum | 0.373U mg/Kg | A |
| SS-5(0-0.5) | Molybdenum | 0.146U mg/Kg | A |
| SS-6(0-0.5) | Molybdenum | 0.298U mg/Kg | A |
| SS-7(0-0.5) | Molybdenum | 0.250U mg/Kg | A |
| SS-9(0-0.5) | Molybdenum | 0.265U mg/Kg | A |
| SS-8(0-0.5) | Molybdenum | 0.182U mg/Kg | A |

| Sample | Analyte | Modified Final Concentration | A or P |
|---|---|---|---|
| SS-10(0-0.5) | Molybdenum | 0.267U mg/Kg | A |
| SS-11(0-0.5) | Molybdenum | 0.491U mg/Kg | A |
| SS-14(0-0.5) | Antimony<br>Molybdenum | 0.188U mg/Kg<br>0.212U mg/Kg | A |
| SS-15(0-0.5) | Antimony<br>Molybdenum | 0.462U mg/Kg<br>0.668U mg/Kg | A |
| SS-16(0-0.5) | Antimony<br>Molybdenum | 0.468U mg/Kg<br>0.416U mg/Kg | A |
| SS-17(0-0.5) | Antimony<br>Molybdenum | 0.350U mg/Kg<br>0.770U mg/Kg | A |

## 3141 Taylor Road
## Metals - Field Blank Data Qualification Summary - SDG 1707122

No Sample Data Qualified in this SDG

LDC #: 39191A4a

SDG #: 1707122

Laboratory: Torrent Laboratory, Inc.

# VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 08/10/17

Page: 1 of 2

Reviewer: ATL

2nd Reviewer: a

**METHOD:** Metals (EPA SW 846 Method 6020A/7471B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

| | Validation Area | | Comments |
|---|---|---|---|
| I. | Sample receipt/Technical holding times | A / A | |
| II. | ICP/MS Tune | N | |
| III. | Instrument Calibration | N | |
| IV. | ICP Interference Check Sample (ICS) Analysis | N | |
| V. | Laboratory Blanks | SW | |
| VI. | Field Blanks | SW | EB = EqB1 (From SDG # 1707125-1) |
| VII. | Matrix Spike/Matrix Spike Duplicates | SW | |
| VIII. | Duplicate sample analysis | A | |
| IX. | Serial Dilution | N | |
| X. | Laboratory control samples | A | LCS/LCSD |
| XI. | Field Duplicates | SW | ~~(1,3), (2,4)~~ - (1, SS-47(0-0.5)) (2, SS-28(0-0.5)) SDG: 1707125 SDG: 1707124 |
| XII. | Internal Standard (ICP-MS) | N | |
| XIII. | Sample Result Verification | N | |
| XIV. | Overall Assessment of Data | A | |

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

| | Client ID | Lab ID | Matrix | Date |
|---|---|---|---|---|
| 1 | SS-101(0-0.5) | 1707122-001 | Soil | 07/18/17 |
| 2 | SS-102(0-0.5) | 1707122-002 | Soil | 07/18/17 |
| 3 | SS-1(0-0.5) | 1707122-003 | Soil | 07/18/17 |
| 4 | SS-2(0-0.5) | 1707122-004 | Soil | 07/18/17 |
| 5 | SS-3(0-0.5) | 1707122-005 | Soil | 07/18/17 |
| 6 | SS-4(0-0.5) | 1707122-006 | Soil | 07/18/17 |
| 7 | SS-4(2.5-3) | 1707122-007 | Soil | 07/18/17 |
| 8 | SS-5(0-0.5) | 1707122-008 | Soil | 07/18/17 |
| 9 | SS-6(0-0.5) | 1707122-009 | Soil | 07/18/17 |
| 10 | SS-6(2.5-3) | 1707122-010 | Soil | 07/18/17 |
| 11 | SS-7(0-0.5) | 1707122-011 | Soil | 07/18/17 |
| 12 | SS-9(0-0.5) | 1707122-012 | Soil | 07/18/17 |
| 13 | SS-8(0-0.5) | 1707122-013 | Soil | 07/18/17 |
| 14 | SS-8(2.5-3) | 1707122-014 | Soil | 07/18/17 |
| 15 | SS-10(0-0.5) | 1707122-015 | Soil | 07/18/17 |

LDC #: 39191A4a

SDG #: 1707122

Laboratory: Torrent Laboratory, Inc.

# VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 08/10/17

Page: 2 of 2

Reviewer: ATL

2nd Reviewer: a

**METHOD:** Metals (EPA SW 846 Method 6020A/7471B)

| | Client ID | Lab ID | Matrix | Date |
|---|---|---|---|---|
| 16 | SS-11(0-0.5) | 1707122-016 | Soil | 07/18/17 |
| 17 | SS-12(0-0.5) | 1707122-017 | Soil | 07/18/17 |
| 18 | SS-12(2.5-3) | 1707122-018 | Soil | 07/18/17 |
| 19 | SS-13(0-0.5) | 1707122-019 | Soil | 07/18/17 |
| 20 | SS-14(0-0.5) | 1707122-020 | Soil | 07/18/17 |
| 21 | SS-15(0-0.5) | 1707122-021 | Soil | 07/18/17 |
| 22 | SS-16(0-0.5) | 1707122-022 | Soil | 07/18/17 |
| 23 | SS-16(2.5-3) | 1707122-023 | Soil | 07/18/17 |
| 24 | SS-17(0-0.5) | 1707122-024 | Soil | 07/18/17 |
| 25 | SS-101(0-0.5)MS | 1707122-001MS | Soil | 07/18/17 |
| 26 | SS-101(0-0.5)MSD | 1707122-001MSD | Soil | 07/18/17 |
| 27 | SS-13(0-0.5)MS | 1707122-019MS | Soil | 07/18/17 |
| 28 | SS-13(0-0.5)MSD | 1707122-019MSD | Soil | 07/18/17 |
| 29 | ~~SS-16(2.5-A~~ SS-16(2.5-3)DUP | 1707122-023DUP | ↓ | ↓ |
| 30 | | | | |
| 31 | | | | |
| 32 | | | | |
| 33 | | | | |

Notes:

LDC #: 39194A4a

# VALIDATION FINDINGS WORKSHEET
## Sample Specific Element Reference


Reviewer: ATL
2nd reviewer: G

All circled elements are applicable to each sample.

| Sample ID | Matrix | Target Analyte List (TAL) |
|---|---|---|
| 7,10,14,18,23 | SOIL | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| 1->6,8,9 | ↓ | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| 11->13,15,16,17 | ↓ | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| 19->22,24 | ↓ | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| QC | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| 25->28 | SOIL | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| 29 | ↓ | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| **Analysis Method** | | |
| ICP | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| ICP-MS | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| GFAA | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |

Comments: Mercury by CVAA if performed

LDC #: 39191A4a

**VALIDATION FINDINGS WORKSHEET**
**PB/ICB/CCB QUALIFIED SAMPLES**


Reviewer: ATL
2nd Reviewer:

**METHOD:** Trace metals (EPA SW 864 Method 6010B/6020/7000)
Soil preparation factor applied: NA
Sample Concentration units, unless otherwise noted: mg/kg
Associated Samples: 1 to 6, 8,9, 11 to 13, 15 to 17

| Analyte | Maximum PB[a] (mg/Kg) | Maximum PB[a] (ug/L) | Maximum ICB/CCB[a] (mg/L) | Action Level | 2 | 3 | 4 | 5 | 6 | 8 | 9 | 11 | 12 | 13 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cr | 0.26 | | | 1.3 | | | | | | | | | | | | |
| Mo | 0.19 | | | 0.95 | 0.846 | 0.252 | 0.706 | 0.462 | 0.373 | 0.146 | 0.298 | 0.250 | 0.265 | 0.182 | 0.267 | 0.491 |

Sample Concentration units, unless otherwise noted: mg/kg
Associated Samples: 19 to 22, 24

| Analyte | Maximum PB[a] (mg/Kg) | Maximum PB[a] (ug/L) | Maximum ICB/CCB[a] (mg/L) | Action Level | 20 | 21 | 22 | 24 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sb | 0.19 | | | 0.95 | 0.188 | 0.462 | 0.468 | 0.350 | | | | | |
| Cr | 0.17 | | | 0.85 | | | | | | | | | |
| Mo | 0.20 | | | 1.0 | 0.212 | 0.668 | 0.416 | 0.770 | | | | | |

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".
Note : a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

LDC #: 39191A4a

# VALIDATION FINDINGS WORKSHEET
## Field Blanks


Reviewer: ATL
2nd Reviewer: a

**METHOD:** Trace Metals (EPA SW846 6010B/7000)

**Blank units:** ug/L **Associated sample units:** mg/kg
**Sampling date:** 07/18/17 Soil factor applied _____
**Field blank type:** (circle one) Field Blank / Rinsate / Other: FB Associated Samples: ~~all~~ 1-6,8,9,11-13,15-17,19-22,24

| Analyte | Blank ID | Sample Identification | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | EqB-1 (From SDG#1717125-1) | Action Limit | | | | | | | | | | |
| Ba | 2.3 | 0.0115 | | | | | | | | | | |
| Cr | 2.2 | 0.011 | | | | | | | | | | |
| Mo | 1.0 | 0.005 | | | | | | | | | | |
| Ni | 1.6 | 0.008 | | | | | | | | | | |
| Zn | 9.7 | 0.0485 | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
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| | | | | | | | | | | | | |

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Samples with analyte concentrations within five times the associated field blank concentration are listed above, these sample results were qualified as not detected, "U".

LDC #: 39191A4a

# VALIDATION FINDINGS WORKSHEET
## Matrix Spike/Matrix Spike Duplicates


Reviewer: ATL
2nd Reviewer: C

**METHOD**: Trace metals (EPA SW 846 Method 6010/6020/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y N N/A Were matrix spike percent recoveries (%R) within the control limits of ~~75-125?~~ lab limit If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

Y N N/A Were all duplicate sample relative percent differences (RPD) ≤ 20% for samples?

**LEVEL IV ONLY:**

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

| # | MS/MSD ID | Matrix | Analyte | MS %Recovery | MSD %Recovery | RPD (Limits) | Associated Samples | Qualifications |
|---|---|---|---|---|---|---|---|---|
| | 25/26 | S | Ag | 36.8 (81.1-109) | 37.1(81.1-109) | | 1 to 6,8,9,11 to 13, 15 to 17 | J/UJ/A (detect/non-detect) |
| | 27/28 | S | Ba | 134 (70.2-130) | 57.7(70.2-130) | | 19 to 22,24 | J/UJ/A (all detect) |
| | 27/28 | S | Cr | 136 (76.0-116) | | | 19 to 22,24 | Jdet/A (all detect) |
| | 27/28 | S | V | 137 (65.8-122) | | | 19 to 22,24 | Jdet/A (all detect) |
| | 27/28 | S | Zn | 128 (59.9-122) | | | 19 to 22,24 | Jdet/A (all detect) |
| | | | | | | | | |
| | | | | | | | | |

Comments: 42/43: Ba,V > 4x

LDC#: 39191A4a

# VALIDATION FINDINGS WORKSHEET
## Field Duplicates


Reviewer: ATL
2nd Reviewer:

**METHOD**: Metals (EPA Method 6010B/6020A7000)

| Analyte | Concentration (mg/kg) | | RPD | |
|---|---|---|---|---|
| | 1 | SS-47 (0-0.5) | | |
| Arsenic | 3.35 | 4.48 | 29 | |
| Barium | 24.8 | 24.8 | 0 | |
| Cobalt | 4.19 | 6.16 | 38 | |
| Chromium | 19.1 | 19.7 | 3 | |
| Copper | 13.3 | 17.8 | 29 | |
| Lead | 5.33 | 11.2 | 71 | |
| Molybdenum | 0.13 U | 0.429 | NC | |
| Nickel | 9.80 | 10.1 | 3 | |
| Vanadium | 21.3 | 14.5 | 38 | |
| Zinc | 20.3 | 23.1 | 13 | |

V:\FIELD DUPLICATES\Field Duplicates\FD_inorganic\2017\39191A4a.wpd

LDC#: 39191A4a

# VALIDATION FINDINGS WORKSHEET

**Field Duplicates**



Reviewer: ATL

2nd Reviewer: O

**METHOD**: Metals (EPA Method 6010B/6020A7000)

| Analyte | Concentration (mg/kg) | | RPD | |
|---|---|---|---|---|
| | 2 | SS-28 (0-0.5) | | |
| Antimony | 0.356 | 0.20U | NC | |
| Arsenic | 8.49 | 7.45 | 13 | |
| Beryllium | 0.172 | 0.27U | NC | |
| Barium | 87.5 | 64.1 | 31 | |
| Cadmium | 0.165 | 0.14U | NC | |
| Chromium | 23.7 | 24.5 | 3 | |
| Cobalt | 6.07 | 6.19 | 2 | |
| Copper | 22.9 | 22.1 | 4 | |
| Lead | 38.9 | 46.2 | 17 | |
| Molybdenum | 0.846 | 1.99 | 81 | |
| Nickel | 13.8 | 14.0 | 1 | |
| Silver | 0.250 | 0.16U | NC | |
| Vanadium | 40.7 | 30.4 | 29 | |
| Zinc | 112 | 229 | 69 | |

# Laboratory Data Consultants, Inc.
# Data Validation Report

**Project/Site Name:** 3141 Taylor Road

**LDC Report Date:** August 16, 2017

**Parameters:** Chlorinated Pesticides

**Validation Level:** Level II

**Laboratory:** Torrent Laboratory, Inc.

**Sample Delivery Group (SDG):** 1707122

| Sample Identification | Laboratory Sample Identification | Matrix | Collection Date |
|---|---|---|---|
| SS-101(0-0.5) | 1707122-001 | Soil | 07/18/17 |
| SS-102(0-0.5) | 1707122-002 | Soil | 07/18/17 |

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Chlorinated Pesticides by Environmental Protection Agency (EPA) SW 846 Method 8081A

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## II. GC Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

## III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

## IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

## V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## VI. Field Blanks

Sample EqB-1 (from SDG 1707125) was identified as an equipment blank. No contaminants were found.

## VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

## VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

## IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## X. Field Duplicates

Samples SS-101(0-0.5) and SS-47(0-0.5) (from SDG 1707125) and samples SS-102(0-0.5) and SS-28(0-0.5) (from SDG 1707124) were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

| Compound | Concentration (ug/Kg) | | RPD |
|---|---|---|---|
| | SS-101(0-0.5) | SS-47(0-0.5) | |
| 4,4-DDE | 37.8 | 65.5 | 54 |
| 4,4-DDT | 3.01 | 14.8 | 132 |

| Compound | Concentration (ug/Kg) | | RPD |
|---|---|---|---|
| | SS-102(0-0.5) | SS-28(0-0.5) | |
| 4,4-DDE | 45.2 | 99.6 | 75 |
| 4,4-DDD | 6.5U | 4.29 | Not calculable |
| 4,4-DDT | 12.5 | 24.2 | 64 |

## XI. Compound Quantitation

Raw data were not reviewed for Level II validation.

## XII. Target Compound Identification

Raw data were not reviewed for Level II validation.

## XIII. System Performance

Raw data were not reviewed for Level II validation.

## XIII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**3141 Taylor Road**
**Chlorinated Pesticides - Data Qualification Summary - SDG 1707122**

No Sample Data Qualified in this SDG

**3141 Taylor Road**
**Chlorinated Pesticides - Laboratory Blank Data Qualification Summary - SDG 1707122**

No Sample Data Qualified in this SDG

**3141 Taylor Road**
**Chlorinated Pesticides - Field Blank Data Qualification Summary - SDG 1707122**

No Sample Data Qualified in this SDG

LDC #: 39191A3a

SDG #: 1707122

Laboratory: Torrent Laboratory, Inc.

# VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 08/14/17

Page: 1 of 1

Reviewer: JK

2nd Reviewer: O

**METHOD:** GC Chlorinated Pesticides (EPA SW846 Method 8081A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

| | Validation Area | | Comments |
|---|---|---|---|
| I. | Sample receipt/Technical holding times | A, A | |
| II. | GC Instrument Performance Check | N | |
| III. | Initial calibration/ICV | N/N | |
| IV. | Continuing calibration | N | |
| V. | Laboratory Blanks | A | |
| VI. | Field blanks | ND | EB= EqB-1 (1707125) |
| VII. | Surrogate spikes | A | |
| VIII. | Matrix spike/Matrix spike duplicates | N | CS |
| IX. | Laboratory control samples | A | LCS/D |
| X. | Field duplicates | SW | (1, SS-47(0-0.5)) (SDG: 1707125) |
| XI. | Compound quantitation/RL/LOQ/LODs | N | (2, SS-28(0-0.5) (SDG: 1707124)) |
| XII. | Target compound identification | N | |
| XIII. | System Performance | N | |
| XIV | Overall assessment of data | A | |

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

| | Client ID | Lab ID | Matrix | Date |
|---|---|---|---|---|
| + 1 | SS-101(0-0.5) | 1707122-001 | Soil | 07/18/17 |
| 2 | SS-102(0-0.5) | 1707122-002 | Soil | 07/18/17 |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |

Notes:

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|---|---|---|---|---|---|---|---|
| - | 425641 MB | | | | | | |
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LDC#: 39191A3a

**VALIDATION FINDINGS WORKSHEET**
**Field Duplicates**

Page: 1 of 1
Reviewer: JVG
2nd Reviewer: [illegible]

**METHOD**: GC Pest (EPA SW 846 Method 8081A)

| Compound | Concentration (ug/Kg) | | RPD |
|---|---|---|---|
| | 1 | SS-47 (0-0.5) | |
| 4,4-DDE | 37.8 | 65.5 | 54 |
| 4,4-DDT | 3.01 | 14.8 | 132 |

| Compound | Concentration (ug/Kg) | | RPD |
|---|---|---|---|
| | 2 | SS-28 (0-0.5) | |
| 4,4-DDE | 45.2 | 99.6 | 75 |
| 4,4-DDD | 6.5U | 4.29 | NC |
| 4,4-DDT | 12.5 | 24.2 | 64 |

# Laboratory Data Consultants, Inc.
# Data Validation Report

**Project/Site Name:** 3141 Taylor Road

**LDC Report Date:** August 16, 2017

**Parameters:** Polychlorinated Biphenyls

**Validation Level:** Level II

**Laboratory:** Torrent Laboratory, Inc.

**Sample Delivery Group (SDG):** 1707122

| Sample Identification | Laboratory Sample Identification | Matrix | Collection Date |
|---|---|---|---|
| SS-102(0-0.5) | 1707122-002 | Soil | 07/18/17 |

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polychlorinated Biphenyls (PCBs) by Environmental Protection Agency (EPA) SW 846 Method 8082A

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## II. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

## III. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

## IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## V. Field Blanks

Sample EqB-1 (from SDG 1707125) was identified as an equipment blank. No contaminants were found.

## VI. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

## VII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

## VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## IX. Field Duplicates

Samples SS-102(0-0.5) and SS-28(0-0.5) (from SDG 1707124) were identified as field duplicates. No results were detected in any of the samples.

## X. Compound Quantitation

Raw data were not reviewed for Level II validation.

## XI. Target Compound Identification

Raw data were not reviewed for Level II validation.

## XII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**3141 Taylor Road**
**Polychlorinated Biphenyls - Data Qualification Summary - SDG 1707122**

No Sample Data Qualified in this SDG

**3141 Taylor Road**
**Polychlorinated Biphenyls - Laboratory Blank Data Qualification Summary - SDG 1707122**

No Sample Data Qualified in this SDG

**3141 Taylor Road**
**Polychlorinated Biphenyls - Field Blank Data Qualification Summary - SDG 1707122**

No Sample Data Qualified in this SDG

LDC #: 39191A3b

SDG #: 1707122

Laboratory: Torrent Laboratory, Inc.

# VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 08/14/17

Page: 1 of 1

Reviewer: SVG

2nd Reviewer: [illegible]

**METHOD:** GC Polychlorinated Biphenyls (EPA SW846 Method 8082A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

| | Validation Area | | Comments |
|---|---|---|---|
| I. | Sample receipt/Technical holding times | A / A | |
| II. | Initial calibration/ICV | N/N | |
| III. | Continuing calibration | N | |
| IV. | Laboratory Blanks | A | |
| V. | Field blanks | ND | EB= EQB-1 (1707125) |
| VI. | Surrogate spikes | A | |
| VII. | Matrix spike/Matrix spike duplicates | N | CS |
| VIII. | Laboratory control samples | A | LCS/D |
| IX. | Field duplicates | ND SW | (1, SS-208(0-0.5) (SDG: 1707124)) |
| X. | Compound quantitation/RL/LOQ/LODs | N | |
| XI. | Target compound identification | N | |
| XII | Overall assessment of data | A | |

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

| | Client ID | Lab ID | Matrix | Date |
|---|---|---|---|---|
| 1 | SS-102(0-0.5) | 1707122-002 | Soil | 07/18/17 |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
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| 12 | | | | |

Notes:

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| - | 425546 MB | | | | | | |
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# Laboratory Data Consultants, Inc.
# Data Validation Report

**Project/Site Name:** 3141 Taylor Road

**LDC Report Date:** August 15, 2017

**Parameters:** Metals

**Validation Level:** Level II

**Laboratory:** Torrent Laboratory, Inc.

**Sample Delivery Group (SDG):** 1707124

| Sample Identification | Laboratory Sample Identification | Matrix | Collection Date |
|---|---|---|---|
| SS-18(0-0.5) | 1707124-001 | Soil | 07/18/17 |
| SS-19(0-0.5) | 1707124-002 | Soil | 07/18/17 |
| SS-20(0-0.5) | 1707124-003 | Soil | 07/18/17 |
| SS-21(0-0.5) | 1707124-004 | Soil | 07/18/17 |
| SS-22(0-0.5) | 1707124-005 | Soil | 07/18/17 |
| SS-22(2.5-3) | 1707124-006 | Soil | 07/18/17 |
| SS-23(0-0.5) | 1707124-007 | Soil | 07/18/17 |
| SS-24(0-0.5) | 1707124-008 | Soil | 07/18/17 |
| SS-25(0-0.5) | 1707124-009 | Soil | 07/18/17 |
| SS-26(0-0.5) | 1707124-010 | Soil | 07/18/17 |
| SS-27(0-0.5) | 1707124-011 | Soil | 07/18/17 |
| SS-28(0-0.5) | 1707124-012 | Soil | 07/18/17 |
| SS-29(0-0.5) | 1707124-013 | Soil | 07/18/17 |
| SS-30(0-0.5) | 1707124-014 | Soil | 07/18/17 |
| SS-31(0-0.5) | 1707124-015 | Soil | 07/18/17 |
| SS-32(0-0.5) | 1707124-016 | Soil | 07/18/17 |
| SS-33(0-0.5) | 1707124-017 | Soil | 07/18/17 |
| SS-34(0-0.5) | 1707124-018 | Soil | 07/18/17 |
| SS-35(0-0.5) | 1707124-019 | Soil | 07/18/17 |
| SS-36(0-0.5) | 1707124-020 | Soil | 07/18/17 |
| SS-37(0-0.5) | 1707124-021 | Soil | 07/18/17 |
| SS-38(0-0.5) | 1707124-022 | Soil | 07/18/17 |
| SS-39(0-0.5) | 1707124-023 | Soil | 07/18/17 |
| SS-40(0-0.5) | 1707124-024 | Soil | 07/18/17 |
| SS-28(0-0.5)MS | 1707124-012MS | Soil | 07/18/17 |
| SS-28(0-0.5)MSD | 1707124-012MSD | Soil | 07/18/17 |
| SS-22(2.5-3)DUP | 1707124-006DUP | Soil | 07/18/17 |
| SS-40(0-0.5)DUP | 1707124-024DUP | Soil | 07/18/17 |

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Copper, Lead, Molybdenum, Nickel, Selenium, Silver, Thallium, Vanadium, and Zinc by Environmental Protection Agency (EPA) SW 846 Method 6020A
Mercury by EPA SW 846 Method 7471B

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met.

## II. ICPMS Tune

ICP-MS tune data were not reviewed for Level II validation.

## III. Instrument Calibration

Initial and continuing calibrations data were not reviewed for Level II validation.

## IV. ICP Interference Check Sample Analysis

ICP Interference check sample (ICS) analysis data were not reviewed for Level II validation.

## V. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks with the following exceptions:

| Blank ID | Analyte | Maximum Concentration | Associated Samples |
|---|---|---|---|
| PB (prep blank) | Antimony<br>Chromium<br>Molybdenum | 0.19 mg/Kg<br>0.17 mg/Kg<br>0.20 mg/Kg | SS-18(0-0.5)<br>SS-19(0-0.5)<br>SS-20(0-0.5)<br>SS-21(0-0.5)<br>SS-22(0-0.5)<br>SS-23(0-0.5)<br>SS-24(0-0.5)<br>SS-25(0-0.5)<br>SS-26(0-0.5)<br>SS-27(0-0.5) |
| PB (prep blank) | Chromium<br>Lead<br>Molybdenum<br>Selenium<br>Zinc | 0.14 mg/Kg<br>0.23 mg/Kg<br>0.20 mg/Kg<br>0.14 mg/Kg<br>0.97 mg/Kg | SS-28(0-0.5)<br>SS-29(0-0.5)<br>SS-30(0-0.5)<br>SS-31(0-0.5)<br>SS-32(0-0.5)<br>SS-33(0-0.5)<br>SS-34(0-0.5)<br>SS-35(0-0.5)<br>SS-36(0-0.5)<br>SS-37(0-0.5)<br>SS-38(0-0.5)<br>SS-39(0-0.5)<br>SS-40(0-0.5) |

Data qualification by the laboratory blanks was based on the maximum contaminant concentration in the laboratory blanks in the analysis of each analyte. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated laboratory blanks with the following exceptions:

| Sample | Analyte | Reported Concentration | Modified Final Concentration |
|---|---|---|---|
| SS-18(0-0.5) | Antimony<br>Molybdenum | 0.182 mg/Kg<br>0.314 mg/Kg | 0.182U mg/Kg<br>0.314U mg/Kg |
| SS-19(0-0.5) | Antimony<br>Molybdenum | 0.295 mg/Kg<br>0.418 mg/Kg | 0.295U mg/Kg<br>0.418U mg/Kg |
| SS-20(0-0.5) | Antimony<br>Molybdenum | 0.257 mg/Kg<br>0.223 mg/Kg | 0.257U mg/Kg<br>0.223U mg/Kg |
| SS-21(0-0.5) | Antimony | 0.131 mg/Kg | 0.131U mg/Kg |
| SS-22(0-0.5) | Antimony<br>Molybdenum | 0.166 mg/Kg<br>0.168 mg/Kg | 0.166U mg/Kg<br>0.168U mg/Kg |
| SS-23(0-0.5) | Antimony<br>Molybdenum | 0.163 mg/Kg<br>0.264 mg/Kg | 0.163U mg/Kg<br>0.264U mg/Kg |
| SS-24(0-0.5) | Antimony<br>Molybdenum | 0.143 mg/Kg<br>0.132 mg/Kg | 0.143U mg/Kg<br>0.132U mg/Kg |
| SS-25(0-0.5) | Antimony<br>Molybdenum | 0.876 mg/Kg<br>0.228 mg/Kg | 0.876U mg/Kg<br>0.228U mg/Kg |
| SS-26(0-0.5) | Antimony<br>Molybdenum | 0.363 mg/Kg<br>0.292 mg/Kg | 0.363U mg/Kg<br>0.292U mg/Kg |
| SS-27(0-0.5) | Antimony<br>Molybdenum | 0.489 mg/Kg<br>0.341 mg/Kg | 0.489U mg/Kg<br>0.341U mg/Kg |
| SS-39(0-0.5) | Molybdenum<br>Selenium | 0.254 mg/Kg<br>0.131 mg/Kg | 0.254U mg/Kg<br>0.131U mg/Kg |

## VI. Field Blanks

Sample EqB-1 (from SDG 1707125) was identified as an equipment blank. No contaminants were found with the following exceptions:

| Blank ID | Collection Date | Analyte | Concentration | Associated Samples |
|---|---|---|---|---|
| EqB-1 | 07/18/17 | Barium<br>Chromium<br>Molybdenum<br>Nickel<br>Zinc | 2.3 ug/L<br>2.2 ug/L<br>1.0 ug/L<br>1.6 ug/L<br>9.7 ug/L | SS-18(0-0.5)<br>SS-19(0-0.5)<br>SS-20(0-0.5)<br>SS-21(0-0.5)<br>SS-22(0-0.5)<br>SS-23(0-0.5)<br>SS-24(0-0.5)<br>SS-25(0-0.5)<br>SS-26(0-0.5)<br>SS-27(0-0.5)<br>SS-28(0-0.5)<br>SS-29(0-0.5)<br>SS-30(0-0.5)<br>SS-31(0-0.5)<br>SS-32(0-0.5)<br>SS-33(0-0.5)<br>SS-34(0-0.5)<br>SS-35(0-0.5)<br>SS-36(0-0.5)<br>SS-37(0-0.5)<br>SS-38(0-0.5)<br>SS-39(0-0.5)<br>SS-40(0-0.5) |

Sample concentrations were compared to concentrations detected in the field blanks. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated field blanks.

## VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

| Spike ID (Associated Samples) | Analyte | MS (%R) (Limits) | MSD (%R) (Limits) | Flag | A or P |
|---|---|---|---|---|---|
| SS-13(0-0.5)MS/MSD<br>(SS-18(0-0.5)<br>SS-19(0-0.5)<br>SS-20(0-0.5)<br>SS-21(0-0.5)<br>SS-22(0-0.5)<br>SS-23(0-0.5)<br>SS-24(0-0.5)<br>SS-25(0-0.5)<br>SS-26(0-0.5)<br>SS-27(0-0.5)) | Barium | 134 (70.2-130) | 57.7 (70.2-130) | J (all detects) | A |

| Spike ID (Associated Samples) | Analyte | MS (%R) (Limits) | MSD (%R) (Limits) | Flag | A or P |
|---|---|---|---|---|---|
| SS-13(0-0.5)MS/MSD<br>(SS-18(0-0.5)<br>SS-19(0-0.5)<br>SS-20(0-0.5)<br>SS-21(0-0.5)<br>SS-22(0-0.5)<br>SS-23(0-0.5)<br>SS-24(0-0.5)<br>SS-25(0-0.5)<br>SS-26(0-0.5)<br>SS-27(0-0.5)) | Chromium<br>Vanadium<br>Zinc | 136 (76.0-116)<br>137 (65.8-122)<br>128 (59.9-122) | -<br>-<br>- | J (all detects)<br>J (all detects)<br>J (all detects) | A |
| SS-28(0-0.5)MS/MSD<br>(SS-28(0-0.5)<br>SS-29(0-0.5)<br>SS-30(0-0.5)<br>SS-31(0-0.5)<br>SS-32(0-0.5)<br>SS-33(0-0.5)<br>SS-34(0-0.5)<br>SS-35(0-0.5)<br>SS-36(0-0.5)<br>SS-37(0-0.5)<br>SS-38(0-0.5)<br>SS-39(0-0.5)<br>SS-40(0-0.5)) | Barium<br>Cadmium<br>Copper<br>Lead | -<br>88.1 (88.7-110)<br>-<br>54.0 (57.9-118) | 66.1 (70.2-130)<br>86.6 (88.7-110)<br>65.3 (74.8-119)<br>34.4 (57.9-118) | J (all detects)<br>UJ (all non-detects) | A |

For SS-28(0-0.5)MS/MSD, no data were qualified for Zinc percent recoveries (%R) outside the QC limits since the parent sample results were greater than 4X the spike concentration.

Relative percent differences (RPD) were within QC limits.

## VIII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

## IX. Serial Dilution

Serial dilution was not performed for this SDG.

## X. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## XI. Field Duplicates

Samples SS-102(0.05) (from SDG 1707122) and SS-28(0-0.5) were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

| Analyte | Concentration (mg/Kg) | | RPD |
|---|---|---|---|
| | SS-102(0.05) | SS-28(0-0.5) | |
| Antimony | 0.356 | 0.20U | Not calculable |
| Arsenic | 8.49 | 7.45 | 13 |
| Beryllium | 0.172 | 0.27U | Not calculable |
| Barium | 87.5 | 64.1 | 31 |
| Cadmium | 0.165 | 0.14U | Not calculable |
| Chromium | 23.7 | 24.5 | 3 |
| Cobalt | 6.07 | 6.19 | 2 |
| Copper | 22.9 | 22.1 | 4 |
| Lead | 38.9 | 46.2 | 17 |
| Molybdenum | 0.846 | 1.99 | 81 |
| Nickel | 13.8 | 14.0 | 1 |
| Silver | 0.250 | 0.16U | Not calculable |
| Vanadium | 40.7 | 30.4 | 29 |
| Zinc | 112 | 229 | 69 |

## XII. Internal Standards (ICP-MS)

Internal standards data were not reviewed for Level II validation.

## XIII. Sample Result Verification

Raw data were not reviewed for Level II validation.

## XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to MS/MSD %R, data were qualified as estimated in twenty-three samples.

Due to laboratory blank contamination, data were qualified as not detected in eleven samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

## 3141 Taylor Road
## Metals - Data Qualification Summary - SDG 1707124

| Sample | Analyte | Flag | A or P | Reason |
|---|---|---|---|---|
| SS-18(0-0.5)<br>SS-19(0-0.5)<br>SS-20(0-0.5)<br>SS-21(0-0.5)<br>SS-22(0-0.5)<br>SS-23(0-0.5)<br>SS-24(0-0.5)<br>SS-25(0-0.5)<br>SS-26(0-0.5)<br>SS-27(0-0.5) | Barium<br>Chromium<br>Vanadium<br>Zinc | J (all detects)<br>J (all detects)<br>J (all detects)<br>J (all detects) | A | Matrix spike/Matrix spike duplicate (%R) |
| SS-28(0-0.5)<br>SS-29(0-0.5)<br>SS-30(0-0.5)<br>SS-31(0-0.5)<br>SS-32(0-0.5)<br>SS-33(0-0.5)<br>SS-34(0-0.5)<br>SS-35(0-0.5)<br>SS-36(0-0.5)<br>SS-37(0-0.5)<br>SS-38(0-0.5)<br>SS-39(0-0.5)<br>SS-40(0-0.5) | Barium<br>Cadmium<br>Copper<br>Lead | J (all detects)<br>UJ (all non-detects) | A | Matrix spike/Matrix spike duplicate (%R) |

## 3141 Taylor Road
## Metals - Laboratory Blank Data Qualification Summary - SDG 1707124

| Sample | Analyte | Modified Final Concentration | A or P |
|---|---|---|---|
| SS-18(0-0.5) | Antimony<br>Molybdenum | 0.182U mg/Kg<br>0.314U mg/Kg | A |
| SS-19(0-0.5) | Antimony<br>Molybdenum | 0.295U mg/Kg<br>0.418U mg/Kg | A |
| SS-20(0-0.5) | Antimony<br>Molybdenum | 0.257U mg/Kg<br>0.223U mg/Kg | A |
| SS-21(0-0.5) | Antimony | 0.131U mg/Kg | A |
| SS-22(0-0.5) | Antimony<br>Molybdenum | 0.166U mg/Kg<br>0.168U mg/Kg | A |
| SS-23(0-0.5) | Antimony<br>Molybdenum | 0.163U mg/Kg<br>0.264U mg/Kg | A |
| SS-24(0-0.5) | Antimony<br>Molybdenum | 0.143U mg/Kg<br>0.132U mg/Kg | A |

| Sample | Analyte | Modified Final Concentration | A or P |
|---|---|---|---|
| SS-25(0-0.5) | Antimony<br>Molybdenum | 0.876U mg/Kg<br>0.228U mg/Kg | A |
| SS-26(0-0.5) | Antimony<br>Molybdenum | 0.363U mg/Kg<br>0.292U mg/Kg | A |
| SS-27(0-0.5) | Antimony<br>Molybdenum | 0.489U mg/Kg<br>0.341U mg/Kg | A |
| SS-39(0-0.5) | Molybdenum<br>Selenium | 0.254U mg/Kg<br>0.131U mg/Kg | A |

## 3141 Taylor Road
## Metals - Field Blank Data Qualification Summary - SDG 1707124

No Sample Data Qualified in this SDG

LDC #: 39191B4a

SDG #: 1707124

Laboratory: Torrent Laboratory, Inc.

# VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 08/10/17

Page: 1 of 2

Reviewer: ATL

2nd Reviewer: [illegible]

**METHOD:** Metals (EPA SW 846 Method 6020A/7471B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

| | Validation Area | | Comments |
|---|---|---|---|
| I. | Sample receipt/Technical holding times | A / A | |
| II. | ICP/MS Tune | N | |
| III. | Instrument Calibration | N | |
| IV. | ICP Interference Check Sample (ICS) Analysis | N | |
| V. | Laboratory Blanks | SW | |
| VI. | Field Blanks | SW | EB = EQB-1 (From SDG # 1707125-1) |
| VII. | Matrix Spike/Matrix Spike Duplicates | SW | From SDG # 1707122-1 (SS-13 (0-0.5) MS/MSD) |
| VIII. | Duplicate sample analysis | A | ↓ (SS-16 (2.5-3) DUP) |
| IX. | Serial Dilution | N | |
| X. | Laboratory control samples | A | LCS/LCSD |
| XI. | Field Duplicates | SW | (12, SS-102 (0-0.5) (SDG: 1707122)) |
| XII. | Internal Standard (ICP-MS) | N | |
| XIII. | Sample Result Verification | N | |
| XIV | Overall Assessment of Data | A | |

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

| | Client ID | Lab ID | Matrix | Date |
|---|---|---|---|---|
| 1 | SS-18(0-0.5) | 1707124-001 | Soil | 07/18/17 |
| 2 | SS-19(0-0.5) | 1707124-002 | Soil | 07/18/17 |
| 3 | SS-20(0-0.5) | 1707124-003 | Soil | 07/18/17 |
| 4 | SS-21(0-0.5) | 1707124-004 | Soil | 07/18/17 |
| 5 | SS-22(0-0.5) | 1707124-005 | Soil | 07/18/17 |
| 6 | SS-22(2.5-3) | 1707124-006 | Soil | 07/18/17 |
| 7 | SS-23(0-0.5) | 1707124-007 | Soil | 07/18/17 |
| 8 | SS-24(0-0.5) | 1707124-008 | Soil | 07/18/17 |
| 9 | SS-25(0-0.5) | 1707124-009 | Soil | 07/18/17 |
| 10 | SS-26(0-0.5) | 1707124-010 | Soil | 07/18/17 |
| 11 | SS-27(0-0.5) | 1707124-011 | Soil | 07/18/17 |
| 12 | SS-28(0-0.5) | 1707124-012 | Soil | 07/18/17 |
| 13 | SS-29(0-0.5) | 1707124-013 | Soil | 07/18/17 |
| 14 | SS-30(0-0.5) | 1707124-014 | Soil | 07/18/17 |
| 15 | SS-31(0-0.5) | 1707124-015 | Soil | 07/18/17 |

LDC #: 39191B4a

SDG #: 1707124

Laboratory: Torrent Laboratory, Inc.

# VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 08/10/17



Reviewer: AIL

2nd Reviewer: [illegible]

**METHOD:** Metals (EPA SW 846 Method 6020A/7471B)

| | Client ID | Lab ID | Matrix | Date |
|---|---|---|---|---|
| 16 | SS-32(0-0.5) | 1707124-016 | Soil | 07/18/17 |
| 17 | SS-33(0-0.5) | 1707124-017 | Soil | 07/18/17 |
| 18 | SS-34(0-0.5) | 1707124-018 | Soil | 07/18/17 |
| 19 | SS-35(0-0.5) | 1707124-019 | Soil | 07/18/17 |
| 20 | SS-36(0-0.5) | 1707124-020 | Soil | 07/18/17 |
| 21 | SS-37(0-0.5) | 1707124-021 | Soil | 07/18/17 |
| 22 | SS-38(0-0.5) | 1707124-022 | Soil | 07/18/17 |
| 23 | SS-39(0-0.5) | 1707124-023 | Soil | 07/18/17 |
| 24 | SS-40(0-0.5) | 1707124-024 | Soil | 07/18/17 |
| 25 | SS-28(0-0.5)MS | 1707124-012MS | Soil | 07/18/17 |
| 26 | SS-28(0-0.5)MSD | 1707124-012MSD | Soil | 07/18/17 |
| 27 | SS-22 (2.5-3) DUP | 1707124-006DUP | ↓ | ↓ |
| 28 | SS-40 (0-0.5) DUP | 1707124-024DUP | ↓ | ↓ |
| 29 | | | | |
| 30 | | | | |
| 31 | | | | |

Notes:

LDC #: 39191B4a

# VALIDATION FINDINGS WORKSHEET
## Sample Specific Element Reference


Reviewer: ATL
2nd reviewer: a

All circled elements are applicable to each sample.

| Sample ID | Matrix | Target Analyte List (TAL) |
|---|---|---|
| 1-5 | SOIL | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ |
| 6 | ↓ | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ |
| 7-24 | ↓ | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ |
| QC | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ |
| 25, 26 | SOIL | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ |
| 27 | ↓ | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ |
| 28 | ↓ | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ |
| **Analysis Method** | | |
| ICP | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ |
| ICP-MS | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ |
| GFAA | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ |

Comments: Mercury by CVAA if performed

LDC #: 39191B4a

**VALIDATION FINDINGS WORKSHEET**
**PB/ICB/CCB QUALIFIED SAMPLES**


Reviewer: ATL
2nd Reviewer: a

**METHOD:** Trace metals (EPA SW 864 Method 6010B/6020/7000)
Soil preparation factor applied: NA
Sample Concentration units, unless otherwise noted: mg/kg
Associated Samples: 1 to 5, 7 to 11

| Analyte | Maximum PB[a] (mg/Kg) | Maximum PB[a] (ug/L) | Maximum ICB/CCB[a] (mg/L) | Action Level | 1 | 2 | 3 | 4 | 5 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sb | 0.19 | | | 0.95 | 0.182 | 0.295 | 0.257 | 0.131 | 0.166 | 0.163 | 0.143 | 0.876 | 0.363 | 0.489 |
| Cr | 0.17 | | | 0.85 | | | | | | | | | | |
| Mo | 0.20 | | | 1.0 | 0.314 | 0.418 | 0.223 | | 0.168 | 0.264 | 0.132 | 0.228 | 0.292 | 0.341 |

Sample Concentration units, unless otherwise noted: mg/kg
Associated Samples: 12 to 24

| Analyte | Maximum PB[a] (mg/Kg) | Maximum PB[a] (ug/L) | Maximum ICB/CCB[a] (mg/L) | Action Level | 23 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cr | 0.14 | | | 0.70 | | | | | | | | | |
| Pb | 0.23 | | | 1.15 | | | | | | | | | |
| Mo | 0.20 | | | 1.0 | 0.254 | | | | | | | | |
| Se | 0.14 | | | 0.70 | 0.131 | | | | | | | | |
| Zn | 0.97 | | | 4.85 | | | | | | | | | |

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".
Note : a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

LDC #: 39191B4a

# VALIDATION FINDINGS WORKSHEET
## Field Blanks


Reviewer: ATL
2nd Reviewer: a

**METHOD:** Trace Metals (EPA SW846 6010B/7000)

**Blank units:** ug/L **Associated sample units:** mg/kg
**Sampling date:** 07/18/17 Soil factor applied _____
**Field blank type:** (circle one) Field Blank / Rinsate / Other: EB Associated Samples: ~~all~~ 1-5, 7-24

| Analyte | Blank ID | Sample Identification | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | EqB-1 (From SDG#1717125-1) | Action Limit | | | | | | | | | | |
| Ba | 2.3 | 0.0115 | | | | | | | | | | |
| Cr | 2.2 | 0.011 | | | | | | | | | | |
| Mo | 1.0 | 0.005 | | | | | | | | | | |
| Ni | 1.6 | 0.008 | | | | | | | | | | |
| Zn | 9.7 | 0.0485 | | | | | | | | | | |
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CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Samples with analyte concentrations within five times the associated field blank concentration are listed above, these sample results were qualified as not detected, "U".

LDC #: 39191B4a

# VALIDATION FINDINGS WORKSHEET
## Matrix Spike/Matrix Spike Duplicates


Reviewer: ATL
2nd Reviewer:

**METHOD**: Trace metals (EPA SW 846 Method 6010/6020/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y N N/A Were matrix spike percent recoveries (%R) within the control limits of 75-125? (lab limits) If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

Y N N/A Were all duplicate sample relative percent differences (RPD) ≤ 20% for samples?

**LEVEL IV ONLY:**

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

| # | MS/MSD ID | Matrix | Analyte | MS %Recovery | MSD %Recovery | RPD (Limits) | Associated Samples | Qualifications |
|---|---|---|---|---|---|---|---|---|
| | SS-13(0-0.5)MS/MSD From SDG#1707122-1 | S | Ba | 134 (70.2-130) | 57.7(70.2-130) | | 1 to 5, 7 to 11 | J/UJ/A (all detect) |
| | SS-13(0-0.5)MS/MSD From SDG#1707122-1 | S | Cr | 136 (76.0-116) | | | 1 to 5, 7 to 11 | Jdet/A (all detect) |
| | SS-13(0-0.5)MS/MSD From SDG#1707122-1 | S | V | 137 (65.8-122) | | | 1 to 5, 7 to 11 | Jdet/A (all detect) |
| | SS-13(0-0.5)MS/MSD From SDG#1707122-1 | S | Zn | 128 (59.9-122) | | | 1 to 5, 7 to 11 | Jdet/A (all detect) |
| | 25/26 | S | Ba | | 66.1 (70.2-130) | | 12 to 24 | J/UJ/A (all detect) |
| | 25/26 | S | Cd | 88.1 (88.7-110) | 86.6 (88.7-110) | | 12 to 24 | J/UJ/A (non-detect/detect) |
| | 25/26 | S | Cu | | 65.3 (74.8-119) | | 12 to 24 | J/UJ/A (all detect) |
| | 25/26 | S | Pb | 54.0 (57.9-118) | 34.4 (57.9-118) | | 12 to 24 | J/UJ/A (all detect) |

Comments: 25/26: Zn > 4x

LDC#: 39191B4a

# VALIDATION FINDINGS WORKSHEET
## Field Duplicates


Reviewer: ATL
2nd Reviewer:

**METHOD**: Metals (EPA Method 6010B/6020A7000)

V:\FIELD DUPLICATES\Field Duplicates\FD_inorganic\2017\39191B4a.wpd

| Analyte | Concentration (mg/kg) | | RPD | |
|---|---|---|---|---|
| | ~~12~~ SS-102(0-0.5) | ~~SS-102 (0-0.5)~~ 12 | | |
| Antimony | 0.356 | 0.20U | NC | |
| Arsenic | 8.49 | 7.45 | 13 | |
| Beryllium | 0.172 | 0.27U | NC | |
| Barium | 87.5 | 64.1 | 31 | |
| Cadmium | 0.165 | 0.14U | NC | |
| Chromium | 23.7 | 24.5 | 3 | |
| Cobalt | 6.07 | 6.19 | 2 | |
| Copper | 22.9 | 22.1 | 4 | |
| Lead | 38.9 | 46.2 | 17 | |
| Molybdenum | 0.846 | 1.99 | 81 | |
| Nickel | 13.8 | 14.0 | 1 | |
| Silver | 0.250 | 0.16U | NC | |
| Vanadium | 40.7 | 30.4 | 29 | |
| Zinc | 112 | 229 | 69 | |

# Laboratory Data Consultants, Inc.
# Data Validation Report

**Project/Site Name:** 3141 Taylor Road

**LDC Report Date:** August 15, 2017

**Parameters:** Chlorinated Pesticides

**Validation Level:** Level II

**Laboratory:** Torrent Laboratory, Inc.

**Sample Delivery Group (SDG):** 1707124

| Sample Identification | Laboratory Sample Identification | Matrix | Collection Date |
|---|---|---|---|
| SS-25(0-0.5) | 1707124-009 | Soil | 07/18/17 |
| SS-26(0-0.5) | 1707124-010 | Soil | 07/18/17 |
| SS-27(0-0.5) | 1707124-011 | Soil | 07/18/17 |
| SS-28(0-0.5) | 1707124-012 | Soil | 07/18/17 |
| SS-29(0-0.5) | 1707124-013 | Soil | 07/18/17 |
| SS-30(0-0.5) | 1707124-014 | Soil | 07/18/17 |
| SS-31(0-0.5) | 1707124-015 | Soil | 07/18/17 |
| SS-32(0-0.5) | 1707124-016 | Soil | 07/18/17 |
| SS-33(0-0.5) | 1707124-017 | Soil | 07/18/17 |
| SS-34(0-0.5) | 1707124-018 | Soil | 07/18/17 |
| SS-35(0-0.5) | 1707124-019 | Soil | 07/18/17 |
| SS-36(0-0.5) | 1707124-020 | Soil | 07/18/17 |
| SS-37(0-0.5) | 1707124-021 | Soil | 07/18/17 |
| SS-38(0-0.5) | 1707124-022 | Soil | 07/18/17 |
| SS-39(0-0.5) | 1707124-023 | Soil | 07/18/17 |
| SS-40(0-0.5) | 1707124-024 | Soil | 07/18/17 |
| SS-30(0-0.5)MS | 1707124-014MS | Soil | 07/18/17 |
| SS-30(0-0.5)MSD | 1707124-014MSD | Soil | 07/18/17 |

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Chlorinated Pesticides by Environmental Protection Agency (EPA) SW 846 Method 8081A

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## II. GC Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

## III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

## IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

## V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## VI. Field Blanks

Sample EqB-1 (from SDG 1707125) was identified as an equipment blank. No contaminants were found.

## VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

## VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## X. Field Duplicates

Samples SS-102(0-0.5) (from SDG 1707122) and SS-28(0-0.5) were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

| Compound | Concentration (ug/Kg) | | RPD |
|---|---|---|---|
| | SS-102 (0-0.5) | SS-28(0-0.5) | |
| 4,4-DDE | 45.2 | 99.6 | 75 |
| 4,4-DDD | 6.5U | 4.29 | Not calculable |
| 4,4-DDT | 12.5 | 24.2 | 64 |

## XI. Compound Quantitation

Raw data were not reviewed for Level II validation.

## XII. Target Compound Identification

Raw data were not reviewed for Level II validation.

## XIII. System Performance

Raw data were not reviewed for Level II validation.

## XIII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**3141 Taylor Road**
**Chlorinated Pesticides - Data Qualification Summary - SDG 1707124**

No Sample Data Qualified in this SDG

**3141 Taylor Road**
**Chlorinated Pesticides - Laboratory Blank Data Qualification Summary - SDG 1707124**

No Sample Data Qualified in this SDG

**3141 Taylor Road**
**Chlorinated Pesticides - Field Blank Data Qualification Summary - SDG 1707124**

No Sample Data Qualified in this SDG

LDC #: 39191B3a

SDG #: 1707124

Laboratory: Torrent Laboratory, Inc.

# VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 08/14/17

Page: 1 of 2

Reviewer: SW

2nd Reviewer: [illegible]

**METHOD:** GC Chlorinated Pesticides (EPA SW846 Method 8081A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

| | Validation Area | | Comments |
|---|---|---|---|
| I. | Sample receipt/Technical holding times | A, A | |
| II. | GC Instrument Performance Check | N | |
| III. | Initial calibration/ICV | N/N | |
| IV. | Continuing calibration | N | |
| V. | Laboratory Blanks | A | |
| VI. | Field blanks | ND | EB= EqB-1 (1707125) |
| VII. | Surrogate spikes | A | |
| VIII. | Matrix spike/Matrix spike duplicates | A | |
| IX. | Laboratory control samples | A | LCS/D |
| X. | Field duplicates | SW | (4, SS-102(0-0.5) SDG: 1707122) |
| XI. | Compound quantitation/RL/LOQ/LODs | N | |
| XII. | Target compound identification | N | |
| XIII. | System Performance | N | |
| XIV. | Overall assessment of data | A | |

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

| | Client ID | Lab ID | Matrix | Date |
|---|---|---|---|---|
| 1 | SS-25(0-0.5) | 1707124-009 | Soil | 07/18/17 |
| 2 | SS-26(0-0.5) | 1707124-010 | Soil | 07/18/17 |
| 3 | SS-27(0-0.5) | 1707124-011 | Soil | 07/18/17 |
| 4 | SS-28(0-0.5) | 1707124-012 | Soil | 07/18/17 |
| 5 | SS-29(0-0.5) | 1707124-013 | Soil | 07/18/17 |
| 6 | SS-30(0-0.5) | 1707124-014 | Soil | 07/18/17 |
| 7 | SS-31(0-0.5) | 1707124-015 | Soil | 07/18/17 |
| 8 | SS-32(0-0.5) | 1707124-016 | Soil | 07/18/17 |
| 9 | SS-33(0-0.5) | 1707124-017 | Soil | 07/18/17 |
| 10 | SS-34(0-0.5) | 1707124-018 | Soil | 07/18/17 |
| 11 | SS-35(0-0.5) | 1707124-019 | Soil | 07/18/17 |
| 12 | SS-36(0-0.5) | 1707124-020 | Soil | 07/18/17 |
| 13 | SS-37(0-0.5) | 1707124-021 | Soil | 07/18/17 |
| 14 | SS-38(0-0.5) | 1707124-022 | Soil | 07/18/17 |
| 15 | SS-39(0-0.5) | 1707124-023 | Soil | 07/18/17 |

LDC #: 39191B3a

SDG #: 1707124

Laboratory: Torrent Laboratory, Inc.

# VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 08/14/17

Page: 2 of 2

Reviewer: JVG

2nd Reviewer: C

**METHOD:** GC Chlorinated Pesticides (EPA SW846 Method 8081A)

| | Client ID | Lab ID | Matrix | Date |
|---|---|---|---|---|
| 16 | SS-40(0-0.5) | 1707124-024 | Soil | 07/18/17 |
| 17 | SS-30(0-0.5)MS | 1707124-014MS | Soil | 07/18/17 |
| 18 | SS-30(0-0.5)MSD | 1707124-014MSD | Soil | 07/18/17 |
| 19 | | | | |
| 20 | | | | |
| 21 | | | | |
| 22 | | | | |
| 23 | | | | |

Notes:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 425687 MB | | | | | | |
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LDC#: 39191B3a

**VALIDATION FINDINGS WORKSHEET**
**Field Duplicates**

Page: 1 of 1
Reviewer: JVG
2nd Reviewer: [illegible]

**METHOD**: GC Pest (EPA SW 846 Method 8081A)

| Compound | Concentration (ug/Kg) | | RPD |
|---|---|---|---|
| | SS-102(0-0.5) | ~~SS-102 (0-0.5)~~ 4 | |
| 4,4-DDE | 45.2 | 99.6 | 75 |
| 4,4-DDD | 6.5U | 4.29 | NC |
| 4,4-DDT | 12.5 | 24.2 | 64 |

V:\FIELD DUPLICATES\Field Duplicates\FD_Organics\2017\39191B3a.wpd

# Laboratory Data Consultants, Inc.
# Data Validation Report

**Project/Site Name:** 3141 Taylor Road

**LDC Report Date:** August 15, 2017

**Parameters:** Polychlorinated Biphenyls

**Validation Level:** Level II

**Laboratory:** Torrent Laboratory, Inc.

**Sample Delivery Group (SDG):** 1707124

| Sample Identification | Laboratory Sample Identification | Matrix | Collection Date |
|---|---|---|---|
| SS-25(0-0.5) | 1707124-009 | Soil | 07/18/17 |
| SS-26(0-0.5) | 1707124-010 | Soil | 07/18/17 |
| SS-27(0-0.5) | 1707124-011 | Soil | 07/18/17 |
| SS-28(0-0.5) | 1707124-012 | Soil | 07/18/17 |
| SS-29(0-0.5) | 1707124-013 | Soil | 07/18/17 |
| SS-30(0-0.5) | 1707124-014 | Soil | 07/18/17 |
| SS-31(0-0.5) | 1707124-015 | Soil | 07/18/17 |
| SS-32(0-0.5) | 1707124-016 | Soil | 07/18/17 |
| SS-33(0-0.5) | 1707124-017 | Soil | 07/18/17 |
| SS-34(0-0.5) | 1707124-018 | Soil | 07/18/17 |
| SS-35(0-0.5) | 1707124-019 | Soil | 07/18/17 |
| SS-36(0-0.5) | 1707124-020 | Soil | 07/18/17 |
| SS-37(0-0.5) | 1707124-021 | Soil | 07/18/17 |
| SS-38(0-0.5) | 1707124-022 | Soil | 07/18/17 |
| SS-39(0-0.5) | 1707124-023 | Soil | 07/18/17 |
| SS-40(0-0.5) | 1707124-024 | Soil | 07/18/17 |
| SS-29(0-0.5)MS | 1707124-013MS | Soil | 07/18/17 |
| SS-29(0-0.5)MSD | 1707124-013MSD | Soil | 07/18/17 |

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polychlorinated Biphenyls (PCBs) by Environmental Protection Agency (EPA) SW 846 Method 8082A

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## II. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

## III. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

## IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## V. Field Blanks

Sample EqB-1 (from SDG 1707125) was identified as an equipment blank. No contaminants were found.

## VI. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

## VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## IX. Field Duplicates

Samples SS-28(0-0.5) and SS-102(0-0.5) (from SDG 1707122) were identified as field duplicates. No results were detected in any of the samples.

## X. Compound Quantitation

Raw data were not reviewed for Level II validation.

## XI. Target Compound Identification

Raw data were not reviewed for Level II validation.

## XII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**3141 Taylor Road**
**Polychlorinated Biphenyls - Data Qualification Summary - SDG 1707124**

No Sample Data Qualified in this SDG

**3141 Taylor Road**
**Polychlorinated Biphenyls - Laboratory Blank Data Qualification Summary - SDG 1707124**

No Sample Data Qualified in this SDG

**3141 Taylor Road**
**Polychlorinated Biphenyls - Field Blank Data Qualification Summary - SDG 1707124**

No Sample Data Qualified in this SDG

LDC #: 39191B3b

SDG #: 1707124

Laboratory: Torrent Laboratory, Inc.

# VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 08/14/17

Page: 1 of 2

Reviewer: JG

2nd Reviewer: [illegible]

**METHOD:** GC Polychlorinated Biphenyls (EPA SW846 Method 8082A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

| | Validation Area | | Comments |
|---|---|---|---|
| I. | Sample receipt/Technical holding times | A / A | |
| II. | Initial calibration/ICV | N/N | |
| III. | Continuing calibration | N | |
| IV. | Laboratory Blanks | A | |
| V. | Field blanks | ND | EB= EqB-1 (1707125) |
| VI. | Surrogate spikes | A | |
| VII. | Matrix spike/Matrix spike duplicates | A | |
| VIII. | Laboratory control samples | A | LCS 5 |
| IX. | Field duplicates ND | ~~SW~~ | (4, SS-102 (0-0.5) SDG: 1707122) |
| X. | Compound quantitation/RL/LOQ/LODs | N | |
| XI. | Target compound identification | N | |
| XII. | Overall assessment of data | A | |

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

| | Client ID | Lab ID | Matrix | Date |
|---|---|---|---|---|
| 1 | SS-25(0-0.5) | 1707124-009 | Soil | 07/18/17 |
| 2 | SS-26(0-0.5) | 1707124-010 | Soil | 07/18/17 |
| 3 | SS-27(0-0.5) | 1707124-011 | Soil | 07/18/17 |
| 4 | SS-28(0-0.5) | 1707124-012 | Soil | 07/18/17 |
| 5 | SS-29(0-0.5) | 1707124-013 | Soil | 07/18/17 |
| 6 | SS-30(0-0.5) | 1707124-014 | Soil | 07/18/17 |
| 7 | SS-31(0-0.5) | 1707124-015 | Soil | 07/18/17 |
| 8 | SS-32(0-0.5) | 1707124-016 | Soil | 07/18/17 |
| 9 | SS-33(0-0.5) | 1707124-017 | Soil | 07/18/17 |
| 10 | SS-34(0-0.5) | 1707124-018 | Soil | 07/18/17 |
| 11 | SS-35(0-0.5) | 1707124-019 | Soil | 07/18/17 |
| 12 | SS-36(0-0.5) | 1707124-020 | Soil | 07/18/17 |
| 13 | SS-37(0-0.5) | 1707124-021 | Soil | 07/18/17 |
| 14 | SS-38(0-0.5) | 1707124-022 | Soil | 07/18/17 |
| 15 | SS-39(0-0.5) | 1707124-023 | Soil | 07/18/17 |
| 16 | SS-40(0-0.5) | 1707124-024 | Soil | 07/18/17 |
| 17 | SS-29(0-0.5)MS | 1707124-013MS | Soil | 07/18/17 |

LDC #: 39191B3b

SDG #: 1707124

Laboratory: Torrent Laboratory, Inc.

# VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 08/14/17

Page: 2 of 2

Reviewer: SW

2nd Reviewer: C

**METHOD:** GC Polychlorinated Biphenyls (EPA SW846 Method 8082A)

| | Client ID | Lab ID | Matrix | Date |
|---|---|---|---|---|
| 18 | SS-29(0-0.5)MSD | 1707124-013MSD | Soil | 07/18/17 |
| 19 | | | | |
| 20 | | | | |
| 21 | | | | |
| 22 | | | | |
| 23 | | | | |

Notes:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 425664 MB | | | | | | |
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# Laboratory Data Consultants, Inc.
# Data Validation Report

**Project/Site Name:** 3141 Taylor Road

**LDC Report Date:** August 15, 2017

**Parameters:** Volatiles

**Validation Level:** Level II

**Laboratory:** Torrent Laboratory, Inc.

**Sample Delivery Group (SDG):** 1707125

| Sample Identification | Laboratory Sample Identification | Matrix | Collection Date |
|---|---|---|---|
| Trip Blank | 1707125-022 | Water | 07/18/17 |

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) by Environmental Protection Agency (EPA) SW 846 Method 8260B

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

## III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

## IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

## V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks with the following exceptions:

| Blank ID | Analysis Date | Compound | Concentration | Associated Samples |
|---|---|---|---|---|
| 425531MB | 07/20/17 | 1,2-Dichloroethane<br>Chloromethane | 0.12 ug/L<br>0.17 ug/L | All samples in SDG 1707125 |

Sample concentrations were compared to concentrations detected in the laboratory blanks. The sample concentrations were either not detected or were significantly greater (>10X for common contaminants, >5X for other contaminants) than the concentrations found in the associated laboratory blanks.

## VI. Field Blanks

Sample Trip Blank was identified as a trip blank. No contaminants were found.

## VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

## VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

## IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## X. Field Duplicates

No field duplicates were identified in this SDG.

## XI. Internal Standards

Internal standards data were not reviewed for Level II validation.

## XII. Compound Quantitation

Raw data were not reviewed for Level II validation.

## XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

## XIV. System Performance

Raw data were not reviewed for Level II validation.

## XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**3141 Taylor Road**
**Volatiles - Data Qualification Summary - SDG 1707125**

No Sample Data Qualified in this SDG

**3141 Taylor Road**
**Volatiles - Laboratory Blank Data Qualification Summary - SDG 1707125**

No Sample Data Qualified in this SDG

**3141 Taylor Road**
**Volatiles - Field Blank Data Qualification Summary - SDG 1707125**

No Sample Data Qualified in this SDG

LDC #: 39191C1

SDG #: 1707125

Laboratory: Torrent Laboratory, Inc.

# VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 08/14/17

Page: 1 of 1

Reviewer: SVL

2nd Reviewer:

**METHOD:** GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

| | Validation Area | | Comments |
|---|---|---|---|
| I. | Sample receipt/Technical holding times | A / A | |
| II. | GC/MS Instrument performance check | N | |
| III. | Initial calibration/ICV | N/N | |
| IV. | Continuing calibration | N | |
| V. | Laboratory Blanks | SW | |
| VI. | Field blanks | ND | TB = 1 |
| VII. | Surrogate spikes | A | |
| VIII. | Matrix spike/Matrix spike duplicates | N | |
| IX. | Laboratory control samples | A | LCS/D |
| X. | Field duplicates | N | |
| XI. | Internal standards | N | |
| XII. | Compound quantitation RL/LOQ/LODs | N | |
| XIII. | Target compound identification | N | |
| XIV. | System performance | N | |
| XV. | Overall assessment of data | A | |

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

| | Client ID | Lab ID | Matrix | Date |
|---|---|---|---|---|
| 1 | Trip Blank | 1707125-022 | Water | 07/18/17 |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |

Notes:

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|---|---|---|---|---|---|---|---|
| +1 | 425534 MB | | | | | | |
| | ~~425687~~ | | | | | | |
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# TARGET COMPOUND WORKSHEET

**METHOD: VOA**

| | | | | | |
|---|---|---|---|---|---|
| A. Chloromethane | AA. Tetrachloroethene | AAA. 1,3,5-Trimethylbenzene | AAAA. Ethyl tert-butyl ether | A1. 1,3-Butadiene | A2. |
| B. Bromomethane | BB. 1,1,2,2-Tetrachloroethane | BBB. 4-Chlorotoluene | BBBB. tert-Amyl methyl ether | B1. Hexane | B2. |
| C. Vinyl choride | CC. Toluene | CCC. tert-Butylbenzene | CCCC. 1-Chlorohexane | C1. Heptane | C2. |
| D. Chloroethane | DD. Chlorobenzene | DDD. 1,2,4-Trimethylbenzene | DDDD. Isopropyl alcohol | D1. Propylene | D2. |
| E. Methylene chloride | EE. Ethylbenzene | EEE. sec-Butylbenzene | EEEE. Acetonitrile | E1. Freon 11 | E2. |
| F. Acetone | FF. Styrene | FFF. 1,3-Dichlorobenzene | FFFF. Acrolein | F1. Freon 12 | F2. |
| G. Carbon disulfide | GG. Xylenes, total | GGG. p-Isopropyltoluene | GGGG. Acrylonitrile | G1. Freon 113 | G2. |
| H. 1,1-Dichloroethene | HH. Vinyl acetate | HHH. 1,4-Dichlorobenzene | HHHH. 1,4-Dioxane | H1. Freon 114 | H2. |
| I. 1,1-Dichloroethane | II. 2-Chloroethylvinyl ether | III. n-Butylbenzene | IIII. Isobutyl alcohol | I1. 2-Nitropropane | I2. |
| J. 1,2-Dichloroethene, total | JJ. Dichlorodifluoromethane | JJJ. 1,2-Dichlorobenzene | JJJJ. Methacrylonitrile | J1. Dimethyl disulfide | J2. |
| K. Chloroform | KK. Trichlorofluoromethane | KKK. 1,2,4-Trichlorobenzene | KKKK. Propionitrile | K1. 2,3-Dimethyl pentane | K2. |
| L. 1,2-Dichloroethane | LL. Methyl-tert-butyl ether | LLL. Hexachlorobutadiene | LLLL. Ethyl ether | L1. 2,4-Dimethyl pentane | L2. |
| M. 2-Butanone | MM. 1,2-Dibromo-3-chloropropane | MMM. Naphthalene | MMMM. Benzyl chloride | M1. 3,3-Dimethyl pentane | M2. |
| N. 1,1,1-Trichloroethane | NN. Methyl ethyl ketone | NNN. 1,2,3-Trichlorobenzene | NNNN. Iodomethane | N1. 2-Methylpentane | N2. |
| O. Carbon tetrachloride | OO. 2,2-Dichloropropane | OOO. 1,3,5-Trichlorobenzene | OOOO.1,1-Difluoroethane | O1. 3-Methylpentane | O2. |
| P. Bromodichloromethane | PP. Bromochloromethane | PPP. trans-1,2-Dichloroethene | PPPP. Tetrahydrofuran | P1. 3-Ethylpentane | P2. |
| Q. 1,2-Dichloropropane | QQ. 1,1-Dichloropropene | QQQ. cis-1,2-Dichloroethene | QQQQ. Methyl acetate | Q1. 2,2-Dimethylpentane | Q2. |
| R. cis-1,3-Dichloropropene | RR. Dibromomethane | RRR. m,p-Xylenes | RRRR. Ethyl acetate | R1. 2,2,3- Trimethylbutane | R2. |
| S. Trichloroethene | SS. 1,3-Dichloropropane | SSS. o-Xylene | SSSS. Cyclohexane | S1. 2,2,4-Trimethylpentane | S2. |
| T. Dibromochloromethane | TT. 1,2-Dibromoethane | TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane | TTTT. Methylcyclohexane | T1. 2-Methylhexane | T2. |
| U. 1,1,2-Trichloroethane | UU. 1,1,1,2-Tetrachloroethane | UUU. 1,2-Dichlorotetrafluoroethane | UUUU. Allyl chloride | U1. Nonanal | U2. |
| V. Benzene | VV. Isopropylbenzene | VVV. 4-Ethyltoluene | VVVV. Methyl methacrylate | V1. 2-Methylnaphthalene | V2. |
| W. trans-1,3-Dichloropropene | WW. Bromobenzene | WWW. Ethanol | WWWW. Ethyl methacrylate | W1. Methanol | W2. |
| X. Bromoform | XX. 1,2,3-Trichloropropane | XXX. Di-isopropyl ether | XXXX. cis-1,4-Dichloro-2-butene | X1. 1,2,3-Trimethylbenzene | X2. |
| Y. 4-Methyl-2-pentanone | YY. n-Propylbenzene | YYY. tert-Butanol | YYYY. trans-1,4-Dichloro-2-butene | Y1. | Y2. |
| Z. 2-Hexanone | ZZ. 2-Chlorotoluene | ZZZ. tert-Butyl alcohol | ZZZZ. Pentachloroethane | Z1. | Z2. |

LDC #: 39191 C1

# VALIDATION FINDINGS WORKSHEET
## Blanks

Page: 1 of 1
Reviewer: JVG
2nd Reviewer:

**METHOD:** GC/MS VOA (EPA SW 846 Method 8260B)
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
Y N N/A Was a method blank associated with every sample in this SDG?
Y N N/A Was a method blank analyzed at least once every 12 hours for each matrix and concentration?
Y N N/A Was there contamination in the method blanks? If yes, please see the qualifications below.

**Blank analysis date:** 07/20/17
**Conc. units:** ug/L
Associated Samples: All (ND)

| Compound | Blank ID | Sample Identification | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 425531 MB | | | | | | | | | |
| L | 0.12 | | | | | | | | | |
| A | 0.17 | | | | | | | | | |
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**Blank analysis date:**
**Conc. units:**
Associated Samples:

| Compound | Blank ID | Sample Identification | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |
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All results were qualified using the criteria stated below except those circled.

Note: Common contaminants such as Methylene chloride, Acetone, 2-Butanone, Carbon disulfide and TICs that were detected in samples within ten times the associated method blank concentration were qualified as not detected, "U". Other contaminants within five times the method blank concentration were also qualified as not detected, "U".

# Laboratory Data Consultants, Inc.
# Data Validation Report

**Project/Site Name:** 3141 Taylor Road

**LDC Report Date:** August 15, 2017

**Parameters:** Chlorinated Pesticides

**Validation Level:** Level II

**Laboratory:** Torrent Laboratory, Inc.

**Sample Delivery Group (SDG):** 1707125

| Sample Identification | Laboratory Sample Identification | Matrix | Collection Date |
|---|---|---|---|
| SS-41(0-0.5) | 1707125-001 | Soil | 07/18/17 |
| SS-42(0-0.5) | 1707125-002 | Soil | 07/18/17 |
| SS-43(0-0.5) | 1707125-003 | Soil | 07/18/17 |
| SS-44(0-0.5) | 1707125-004 | Soil | 07/18/17 |
| SS-45(0-0.5) | 1707125-005 | Soil | 07/18/17 |
| SS-46(0-0.5) | 1707125-006 | Soil | 07/18/17 |
| SS-47(0-0.5) | 1707125-007 | Soil | 07/18/17 |
| SS-48(0-0.5) | 1707125-008 | Soil | 07/18/17 |
| SS-49(0-0.5) | 1707125-009 | Soil | 07/18/17 |
| EqB-1 | 1707125-021 | Water | 07/18/17 |

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Chlorinated Pesticides by Environmental Protection Agency (EPA) SW 846 Method 8081A

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## II. GC Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

## III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

## IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

## V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## VI. Field Blanks

Sample EqB-1 was identified as an equipment blank. No contaminants were found.

## VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits with the following exceptions:

| Sample | Surrogate | %R (Limits) | Affected Compound | Flag | A or P |
|---|---|---|---|---|---|
| EqB-1 | Decachlorobiphenyl | 12.2 (44-101) | All compounds | UJ (all non-detects) | P |

## VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

## IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## X. Field Duplicates

Samples SS-101(0-0.5) (from SDG 1707122) and SS-47(0-0.5) were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

| Compound | Concentration (ug/Kg) | | RPD |
|---|---|---|---|
| | SS-101(0-0.5) | SS-47(0-0.5) | |
| 4,4-DDE | 37.8 | 65.5 | 54 |
| 4,4-DDT | 3.01 | 14.8 | 132 |

## XI. Compound Quantitation

Raw data were not reviewed for Level II validation.

## XII. Target Compound Identification

Raw data were not reviewed for Level II validation.

## XIII. System Performance

Raw data were not reviewed for Level II validation.

## XIII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to surrogate %R, data were qualified as estimated in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

**3141 Taylor Road**
**Chlorinated Pesticides - Data Qualification Summary - SDG 1707125**

| Sample | Compound | Flag | A or P | Reason |
|---|---|---|---|---|
| EqB-1 | All compounds | UJ (all non-detects) | P | Surrogate spikes (%R) |

**3141 Taylor Road**
**Chlorinated Pesticides - Laboratory Blank Data Qualification Summary - SDG 1707125**

No Sample Data Qualified in this SDG

**3141 Taylor Road**
**Chlorinated Pesticides - Field Blank Data Qualification Summary - SDG 1707125**

No Sample Data Qualified in this SDG

LDC #: 39191C3a
SDG #: 1707125
Laboratory: Torrent Laboratory, Inc.

# VALIDATION COMPLETENESS WORKSHEET
Level II

Date: 08/14/17
Page: 1 of 1
Reviewer: OVG
2nd Reviewer: [illegible]

**METHOD:** GC Chlorinated Pesticides (EPA SW846 Method 8081A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

| | Validation Area | | Comments |
|---|---|---|---|
| I. | Sample receipt/Technical holding times | A/A | |
| II. | GC Instrument Performance Check | N | |
| III. | Initial calibration/ICV | N/N | |
| IV. | Continuing calibration | N | |
| V. | Laboratory Blanks | A | |
| VI. | Field blanks | ND | EB = 10 |
| VII. | Surrogate spikes | SW | |
| VIII. | Matrix spike/Matrix spike duplicates | N | CS |
| IX. | Laboratory control samples | A | LCS/D |
| X. | Field duplicates | SW | (7, SS-101(0-0.5) SDG: 1707122) |
| XI. | Compound quantitation/RL/LOQ/LODs | N | |
| XII. | Target compound identification | N | |
| XIII. | System Performance | N | |
| XIV | Overall assessment of data | A | |

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

| | Client ID | Lab ID | Matrix | Date |
|---|---|---|---|---|
| 1 | SS-41(0-0.5) | 1707125-001 | Soil | 07/18/17 |
| 2 | SS-42(0-0.5) | 1707125-002 | Soil | 07/18/17 |
| 3 | SS-43(0-0.5) | 1707125-003 | Soil | 07/18/17 |
| 4 | SS-44(0-0.5) | 1707125-004 | Soil | 07/18/17 |
| 5 | SS-45(0-0.5) | 1707125-005 | Soil | 07/18/17 |
| 6 | SS-46(0-0.5) | 1707125-006 | Soil | 07/18/17 |
| 7 | SS-47(0-0.5) | 1707125-007 | Soil | 07/18/17 |
| 8 | SS-48(0-0.5) | 1707125-008 | Soil | 07/18/17 |
| 9 | SS-49(0-0.5) | 1707125-009 | Soil | 07/18/17 |
| 10 | EqB-1 | 1707125-021 | Water | 07/18/17 |
| 11 | | | | |
| 12 | | | | |
| 13 | 425503 MB | | | |
| 14 | 425687 | | | |
| 15 | 425673 | | | |

LDC #: 39191 C3a

# VALIDATION FINDINGS WORKSHEET
## Surrogate Spikes


Reviewer: JVG
2nd Reviewer:

**METHOD:** GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

Please see qualification below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were surrogates spiked into all samples, standards and blanks?
Y N N/A Did all surrogate percent recoveries (%R) meet the QC limits?

| # | Sample ID | Column | Surrogate Compound | %R (Limits) | Qualifications |
|---|---|---|---|---|---|
| | 10 (MD) | NS | B | 12.2 ( 44-101 ) | J/UJ/P |
| | | | | ( ) | |
| | | | | ( ) | |
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| Letter Designation | Surrogate Compound | Recovery QC Limits (Soil) | Recovery QC Limits (Water) | Comments |
|---|---|---|---|---|
| A | Tetrachloro-m-xylene | | | |
| B | Decachlorobiphenyl | | | |

LDC#: 39191C3a

**VALIDATION FINDINGS WORKSHEET**
**Field Duplicates**

Page: 1 of 1
Reviewer: JVG
2nd Reviewer: _____

**METHOD**: GC Pest (EPA SW 846 Method 8081A)

| Compound | Concentration (ug/Kg) | | RPD |
|---|---|---|---|
| | SS-101 (0-0.5) | 7 | |
| 4,4-DDE | 37.8 | 65.5 | 54 |
| 4,4-DDT | 3.01 | 14.8 | 132 |

V:\FIELD DUPLICATES\Field Duplicates\FD_Organics\2017\39191C3a.wpd

# Laboratory Data Consultants, Inc.
# Data Validation Report

**Project/Site Name:** 3141 Taylor Road

**LDC Report Date:** August 15, 2017

**Parameters:** Polychlorinated Biphenyls

**Validation Level:** Level II

**Laboratory:** Torrent Laboratory, Inc.

**Sample Delivery Group (SDG):** 1707125

| Sample Identification | Laboratory Sample Identification | Matrix | Collection Date |
|---|---|---|---|
| SS-41(0-0.5) | 1707125-001 | Soil | 07/18/17 |
| SS-42(0-0.5) | 1707125-002 | Soil | 07/18/17 |
| SS-50(0-0.5) | 1707125-010 | Soil | 07/18/17 |
| SS-50(1-1.5) | 1707125-011 | Soil | 07/18/17 |
| SS-50(2-3) | 1707125-012 | Soil | 07/18/17 |
| EqB-1 | 1707125-021 | Water | 07/18/17 |
| SS-41(0-0.5)MS | 1707125-001MS | Soil | 07/18/17 |
| SS-41(0-0.5)MSD | 1707125-001MSD | Soil | 07/18/17 |
| EqB-1MS | 1707125-021MS | Water | 07/18/17 |
| EqB-1MSD | 1707125-021MSD | Water | 07/18/17 |

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polychlorinated Biphenyls (PCBs) by Environmental Protection Agency (EPA) SW 846 Method 8082A

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## II. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

## III. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

## IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## V. Field Blanks

Sample EqB-1 was identified as an equipment blank. No contaminants were found.

## VI. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

## VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## IX. Field Duplicates

No field duplicates were identified in this SDG.

## X. Compound Quantitation

Raw data were not reviewed for Level II validation.

## XI. Target Compound Identification

Raw data were not reviewed for Level II validation.

## XII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**3141 Taylor Road**
**Polychlorinated Biphenyls - Data Qualification Summary - SDG 1707125**

No Sample Data Qualified in this SDG

**3141 Taylor Road**
**Polychlorinated Biphenyls - Laboratory Blank Data Qualification Summary - SDG 1707125**

No Sample Data Qualified in this SDG

**3141 Taylor Road**
**Polychlorinated Biphenyls - Field Blank Data Qualification Summary - SDG 1707125**

No Sample Data Qualified in this SDG

LDC #: 39191C3b

# VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 08/14/17

SDG #: 1707125

Page: 1 of 1

Laboratory: Torrent Laboratory, Inc.

Reviewer: [illegible]

2nd Reviewer: [illegible]

**METHOD:** GC Polychlorinated Biphenyls (EPA SW846 Method 8082A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

| | Validation Area | | Comments |
|---|---|---|---|
| I. | Sample receipt/Technical holding times | A / A | |
| II. | Initial calibration/ICV | N/N | |
| III. | Continuing calibration | N | |
| IV. | Laboratory Blanks | A | |
| V. | Field blanks | ND | EB = 6 |
| VI. | Surrogate spikes | A | |
| VII. | Matrix spike/Matrix spike duplicates | A | |
| VIII. | Laboratory control samples | A | LCS/D |
| IX. | Field duplicates | N | |
| X. | Compound quantitation/RL/LOQ/LODs | N | |
| XI. | Target compound identification | N | |
| XII. | Overall assessment of data | A | |

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

| | Client ID | Lab ID | Matrix | Date |
|---|---|---|---|---|
| 1 | SS-41(0-0.5) | 1707125-001 | Soil | 07/18/17 |
| 2 | SS-42(0-0.5) | 1707125-002 | Soil | 07/18/17 |
| 3 | SS-50(0-0.5) | 1707125-010 | Soil | 07/18/17 |
| 4 | SS-50(1-1.5) | 1707125-011 | Soil | 07/18/17 |
| 5 | SS-50(2-3) | 1707125-012 | Soil | 07/18/17 |
| 6 | EqB-1 | 1707125-021 | Water | 07/18/17 |
| 7 | SS-41(0-0.5)MS | 1707125-001MS | Soil | 07/18/17 |
| 8 | SS-41(0-0.5)MSD | 1707125-001MSD | Soil | 07/18/17 |
| 9 | EqB-1MS | 1707125-021MS | Water | 07/18/17 |
| 10 | EqB-1MSD | 1707125-021MSD | Water | 07/18/17 |
| 11 | | | | |
| 12 | | | | |
| 13 | | | | |

Notes:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | 425620 MB | | | | | | |
| 2 | 425624 | | | | | | |
| | | | | | | | |

# Laboratory Data Consultants, Inc.
# Data Validation Report

**Project/Site Name:** 3141 Taylor Road

**LDC Report Date:** August 15, 2017

**Parameters:** Metals

**Validation Level:** Level II

**Laboratory:** Torrent Laboratory, Inc.

**Sample Delivery Group (SDG):** 1707125

| Sample Identification | Laboratory Sample Identification | Matrix | Collection Date |
|---|---|---|---|
| SS-41(0-0.5) | 1707125-001 | Soil | 07/18/17 |
| SS-42(0-0.5) | 1707125-002 | Soil | 07/18/17 |
| SS-43(0-0.5) | 1707125-003 | Soil | 07/18/17 |
| SS-44(0-0.5) | 1707125-004 | Soil | 07/18/17 |
| SS-45(0-0.5) | 1707125-005 | Soil | 07/18/17 |
| SS-46(0-0.5) | 1707125-006 | Soil | 07/18/17 |
| SS-47(0-0.5) | 1707125-007 | Soil | 07/18/17 |
| SS-48(0-0.5) | 1707125-008 | Soil | 07/18/17 |
| SS-49(0-0.5) | 1707125-009 | Soil | 07/18/17 |
| SS-12A(0-0.5) | 1707125-013 | Soil | 07/18/17 |
| SS-12B(0-0.5) | 1707125-014 | Soil | 07/18/17 |
| SS-12C(0-0.5) | 1707125-015 | Soil | 07/18/17 |
| SS-12D(0-0.5) | 1707125-016 | Soil | 07/18/17 |
| BG-1(0.5-1) | 1707125-017 | Soil | 07/18/17 |
| BG-2(0.5-1) | 1707125-018 | Soil | 07/18/17 |
| BG-3(0.5-1) | 1707125-019 | Soil | 07/18/17 |
| BG-4(0.5-1) | 1707125-020 | Soil | 07/18/17 |
| EqB-1 | 1707125-021 | Water | 07/18/17 |
| SS-41(0-0.5)MS | 1707125-001MS | Soil | 07/18/17 |
| SS-41(0-0.5)MSD | 1707125-001MSD | Soil | 07/18/17 |
| EqB-1MS | 1707125-021MS | Water | 07/18/17 |
| EqB-1MSD | 1707125-021MSD | Water | 07/18/17 |
| BG-4(0.5-1)DUP | 1707125-020DUP | Soil | 07/18/17 |

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Copper, Lead, Molybdenum, Nickel, Selenium, Silver, Thallium, Vanadium, and Zinc by Environmental Protection Agency (EPA) SW 846 Method 6020A
Mercury by EPA SW 846 Methods 7470A/7471B

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met.

## II. ICPMS Tune

ICP-MS tune data were not reviewed for Level II validation.

## III. Instrument Calibration

Initial and continuing calibrations data were not reviewed for Level II validation.

## IV. ICP Interference Check Sample Analysis

ICP Interference check sample (ICS) analysis data were not reviewed for Level II validation.

## V. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks with the following exceptions:

| Blank ID | Analyte | Maximum Concentration | Associated Samples |
|---|---|---|---|
| PB (prep blank) | Antimony<br>Chromium<br>Silver<br>Zinc | 0.20 mg/Kg<br>0.11 mg/Kg<br>0.10 mg/Kg<br>1.6 mg/Kg | SS-41(0-0.5)<br>SS-42(0-0.5)<br>SS-43(0-0.5)<br>SS-44(0-0.5)<br>SS-45(0-0.5)<br>SS-46(0-0.5)<br>SS-47(0-0.5)<br>SS-48(0-0.5)<br>SS-49(0-0.5) |
| PB (prep blank) | Antimony<br>Barium<br>Chromium<br>Lead<br>Molybdenum<br>Silver<br>Thallium | 0.047 ug/L<br>0.38 ug/L<br>0.092 ug/L<br>0.057 ug/L<br>0.033 ug/L<br>0.021 ug/L<br>0.025 ug/L | EqB-1 |

Data qualification by the laboratory blanks was based on the maximum contaminant concentration in the laboratory blanks in the analysis of each analyte. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated laboratory blanks with the following exceptions:

| Sample | Analyte | Reported Concentration | Modified Final Concentration |
|---|---|---|---|
| SS-41(0-0.5) | Antimony<br>Silver | 0.652 mg/Kg<br>0.120 mg/Kg | 0.652U mg/Kg<br>0.120U mg/Kg |
| SS-43(0-0.5) | Antimony | 0.192 mg/Kg | 0.192U mg/Kg |
| SS-44(0-0.5) | Antimony | 0.445 mg/Kg | 0.445U mg/Kg |
| SS-45(0-0.5) | Antimony | 0.224 mg/Kg | 0.224U mg/Kg |
| SS-46(0-0.5) | Antimony | 0.379 mg/Kg | 0.379U mg/Kg |
| SS-48(0-0.5) | Zinc | 4.90 mg/Kg | 4.90U mg/Kg |

## VI. Field Blanks

Sample EqB-1 was identified as an equipment blank. No contaminants were found with the following exceptions:

| Blank ID | Collection Date | Analyte | Concentration | Associated Samples |
|---|---|---|---|---|
| EqB-1 | 07/18/17 | Barium<br>Chromium<br>Molybdenum<br>Nickel<br>Zinc | 2.3 ug/L<br>2.2 ug/L<br>1.0 ug/L<br>1.6 ug/L<br>9.7 ug/L | SS-41(0-0.5)<br>SS-42(0-0.5)<br>SS-43(0-0.5)<br>SS-44(0-0.5)<br>SS-45(0-0.5)<br>SS-46(0-0.5)<br>SS-47(0-0.5)<br>SS-48(0-0.5)<br>SS-49(0-0.5) |

Sample concentrations were compared to concentrations detected in the field blanks. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated field blanks.

## VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## VIII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

## IX. Serial Dilution

Serial dilution was not performed for this SDG.

## X. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

## XI. Field Duplicates

Samples SS-101(0.05) (from SDG 1707122) and SS-47(0-0.5) were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

| Analyte | Concentration (mg/Kg) | | RPD |
|---|---|---|---|
| | SS-101(0.05) | SS-47(0-0.5) | |
| Arsenic | 3.35 | 4.48 | 29 |
| Barium | 24.8 | 24.8 | 0 |
| Cobalt | 4.19 | 6.16 | 38 |
| Chromium | 19.1 | 19.7 | 3 |
| Copper | 13.3 | 17.8 | 29 |
| Lead | 5.33 | 11.2 | 71 |
| Molybdenum | 0.13 U | 0.429 | Not calculable |
| Nickel | 9.80 | 10.1 | 3 |
| Vanadium | 21.3 | 14.5 | 38 |
| Zinc | 20.3 | 23.1 | 13 |

## XII. Internal Standards (ICP-MS)

Internal standards data were not reviewed for Level II validation.

## XIII. Sample Result Verification

Raw data were not reviewed for Level II validation.

## XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to laboratory blank contamination, data were qualified as not detected in eleven samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Based upon the data validation all other results are considered valid and usable for all purposes.

**3141 Taylor Road**
**Metals - Data Qualification Summary - SDG 1707125**

No Sample Data Qualified in this SDG

**3141 Taylor Road**
**Metals - Laboratory Blank Data Qualification Summary - SDG 1707125**

| Sample | Analyte | Modified Final Concentration | A or P |
|---|---|---|---|
| SS-41(0-0.5) | Antimony<br>Silver | 0.652U mg/Kg<br>0.120U mg/Kg | A |
| SS-43(0-0.5) | Antimony | 0.192U mg/Kg | A |
| SS-44(0-0.5) | Antimony | 0.445U mg/Kg | A |
| SS-45(0-0.5) | Antimony | 0.224U mg/Kg | A |
| SS-46(0-0.5) | Antimony | 0.379U mg/Kg | A |
| SS-48(0-0.5) | Zinc | 4.90U mg/Kg | A |

**3141 Taylor Road**
**Metals - Field Blank Data Qualification Summary - SDG 1707125**

No Sample Data Qualified in this SDG

LDC #: 39191C4a

SDG #: 1707125

Laboratory: Torrent Laboratory, Inc.

# VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 08/10/17

Page: 1 of 2

Reviewer: ATL

2nd Reviewer: O

**METHOD:** Metals (EPA SW 846 Method 6020A/7470A/7471B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

| | Validation Area | | Comments |
|---|---|---|---|
| I. | Sample receipt/Technical holding times | A/A | |
| II. | ICP/MS Tune | N | |
| III. | Instrument Calibration | N | |
| IV. | ICP Interference Check Sample (ICS) Analysis | N | |
| V. | Laboratory Blanks | SW | |
| VI. | Field Blanks | SW | 18 = EB |
| VII. | Matrix Spike/Matrix Spike Duplicates | A | |
| VIII. | Duplicate sample analysis | A | From SDG # 1707122 / SDG # 1707124 |
| IX. | Serial Dilution | N | |
| X. | Laboratory control samples | A | LCS |
| XI. | Field Duplicates | SW | (7, SS-101(0-0.5)) SDG: 1707122 |
| XII. | Internal Standard (ICP-MS) | N | |
| XIII. | Sample Result Verification | N | |
| XIV | Overall Assessment of Data | A | |

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

| | Client ID | Lab ID | Matrix | Date |
|---|---|---|---|---|
| 1 | SS-41(0-0.5) | 1707125-001 | Soil | 07/18/17 |
| 2 | SS-42(0-0.5) | 1707125-002 | Soil | 07/18/17 |
| 3 | SS-43(0-0.5) | 1707125-003 | Soil | 07/18/17 |
| 4 | SS-44(0-0.5) | 1707125-004 | Soil | 07/18/17 |
| 5 | SS-45(0-0.5) | 1707125-005 | Soil | 07/18/17 |
| 6 | SS-46(0-0.5) | 1707125-006 | Soil | 07/18/17 |
| 7 | SS-47(0-0.5) | 1707125-007 | Soil | 07/18/17 |
| 8 | SS-48(0-0.5) | 1707125-008 | Soil | 07/18/17 |
| 9 | SS-49(0-0.5) | 1707125-009 | Soil | 07/18/17 |
| 10 | SS-12A(0-0.5) | 1707125-013 | Soil | 07/18/17 |
| 11 | SS-12B(0-0.5) | 1707125-014 | Soil | 07/18/17 |
| 12 | SS-12C(0-0.5) | 1707125-015 | Soil | 07/18/17 |
| 13 | SS-12D(0-0.5) | 1707125-016 | Soil | 07/18/17 |
| 14 | BG-1(0.5-1) | 1707125-017 | Soil | 07/18/17 |
| 15 | BG-2(0.5-1) | 1707125-018 | Soil | 07/18/17 |

LDC #: 39191C4a

SDG #: 1707125

Laboratory: Torrent Laboratory, Inc.

# VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 08/10/17

Page: 2 of 2

Reviewer: AT

2nd Reviewer: [illegible]

**METHOD:** Metals (EPA SW 846 Method 6020A/7470A/7471B)

| | Client ID | Lab ID | Matrix | Date |
|---|---|---|---|---|
| 16 | BG-3(0.5-1) | 1707125-019 | Soil | 07/18/17 |
| 17 | BG-4(0.5-1) | 1707125-020 | Soil | 07/18/17 |
| 18 | EqB-1 | 1707125-021 | Water | 07/18/17 |
| 19 | SS-41(0-0.5)MS | 1707125-001MS | Soil | 07/18/17 |
| 20 | SS-41(0-0.5)MSD | 1707125-001MSD | Soil | 07/18/17 |
| 21 | EqB-1MS | 1707125-021MS | Water | 07/18/17 |
| 22 | EqB-1MSD | 1707125-021MSD | Water | 07/18/17 |
| 23 | BG-4(0.5-1)DUP | 1707125-020DUP | ↓ | ↓ |
| 24 | | | | |
| 25 | | | | |
| 26 | | | | |
| 27 | | | | |

Notes:

LDC #: 39191C4a

# VALIDATION FINDINGS WORKSHEET
## Sample Specific Element Reference


Reviewer: ATL
2nd reviewer: [illegible]

All circled elements are applicable to each sample.

| Sample ID | Matrix | Target Analyte List (TAL) |
|---|---|---|
| 1→9,18 | SOIL/W | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| 10→17 | SOIL | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| QC | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| 19,20 | SOIL | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| 21,22 | water | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| 23 | SOIL | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| **Analysis Method** | | |
| ICP | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| ICP-MS | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___ |
| GFAA | | Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, |

Comments: Mercury by CVAA if performed

LDC #: 39191C4a

**VALIDATION FINDINGS WORKSHEET**
**PB/ICB/CCB QUALIFIED SAMPLES**


Reviewer: ATL
2nd Reviewer:

**METHOD:** Trace metals (EPA SW 864 Method 6010B/6020/7000)
Soil preparation factor applied: NA
Sample Concentration units, unless otherwise noted: mg/kg
Associated Samples: 1 to 9

| Analyte | Maximum PB[a] (mg/Kg) | Maximum PB[a] (ug/L) | Maximum ICB/CCB[a] (mg/L) | Action Level | 1 | 3 | 4 | 5 | 6 | 8 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sb | 0.20 | | | 1.0 | 0.652 | 0.192 | 0.445 | 0.224 | 0.379 | | | | | |
| Cr | 0.11 | | | 0.55 | | | | | | | | | | |
| Ag | 0.10 | | | 0.50 | 0.120 | | | | | | | | | |
| Zn | 1.6 | | | 8 | | | | | | 4.90 | | | | |

Sample Concentration units, unless otherwise noted: ug/l
Associated Samples: 18

| Analyte | Maximum PB[a] (mg/Kg) | Maximum PB[a] (ug/L) | Maximum ICB/CCB[a] (mg/L) | Action Level | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sb | | 0.047 | | 0.235 | | | | | | | | | |
| Ba | | 0.38 | | 1.90 | | | | | | | | | |
| Cr | | 0.092 | | 0.46 | | | | | | | | | |
| Pb | | 0.057 | | 0.285 | | | | | | | | | |
| Mo | | 0.033 | | 0.165 | | | | | | | | | |
| Ag | | 0.021 | | 0.105 | | | | | | | | | |
| Tl | | 0.025 | | 0.125 | | | | | | | | | |

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".
Note : a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

LDC #: 39191C4a

# VALIDATION FINDINGS WORKSHEET
## Field Blanks


Reviewer: ATL
2nd Reviewer: a

**METHOD:** Trace Metals (EPA SW846 6010B/7000)

**Blank units:** ug/L **Associated sample units:** mg/kg
**Sampling date:** 07/18/17 Soil factor applied _____
**Field blank type:** (circle one) Field Blank / Rinsate / Other: FB Associated Samples: 1 to ~~17~~ 9

| Analyte | Blank ID | Sample Identification | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 18 | Action Limit | | | | | | | | | | | |
| Ba | 2.3 | 0.0115 | | | | | | | | | | | |
| Cr | 2.2 | 0.011 | | | | | | | | | | | |
| Mo | 1.0 | 0.005 | | | | | | | | | | | |
| Ni | 1.6 | 0.008 | | | | | | | | | | | |
| Zn | 9.7 | 0.0485 | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Samples with analyte concentrations within five times the associated field blank concentration are listed above, these sample results were qualified as not detected, "U".

LDC#: 39191C4a

# VALIDATION FINDINGS WORKSHEET
## Field Duplicates


Reviewer: ATL
2nd Reviewer: a

**METHOD**: Metals (EPA Method 6010B/6020A7000)

| Analyte | Concentration (mg/kg) | | RPD | |
|---|---|---|---|---|
| | Ss-101 (0-0.5) | 7 | | |
| Arsenic | 3.35 | 4.48 | 29 | |
| Barium | 24.8 | 24.8 | 0 | |
| Cobalt | 4.19 | 6.16 | 38 | |
| Chromium | 19.1 | 19.7 | 3 | |
| Copper | 13.3 | 17.8 | 29 | |
| Lead | 5.33 | 11.2 | 71 | |
| Molybdenum | 0.13 U | 0.429 | NC | |
| Nickel | 9.80 | 10.1 | 3 | |
| Vanadium | 21.3 | 14.5 | 38 | |
| Zinc | 20.3 | 23.1 | 13 | |

V:\FIELD DUPLICATES\Field Duplicates\FD_inorganic\2017\39191C4a.wpd

# APPENDIX D – INTEGRAL CONSULTING MEMORANDUM

Integral Consulting Inc.
115 Sansome Street
Suite 200
San Francisco, CA 94104

telephone: 415.393.4750
www.integral-corp.com

# MEMORANDUM

| | |
|---|---|
| **To:** | Peter Langtry, Cornerstone Earth Group |
| **From:** | Mala Pattanayek and Bridgette DeShields |
| **Date:** | October 2, 2017 |
| **Subject:** | Site-Specific Approach for Arsenic, 3141 Taylor Road, Placer County, CA |
| **Project No.:** | C1811 |

As discussed in the August 28, 2017 Work Plan for Arsenic Bioavailability (Cornerstone Earth Group, 2017), site-specific data collection and a bioavailability study were conducted to evaluate risk associated with arsenic and to develop a site-specific cleanup goal for arsenic at the 3141 Taylor Rd, Placer County, CA site (the site).

Natural background concentrations of arsenic are often well above California's Department of Toxic Substance Control's (DTSC) health-based unrestricted land use screening level of 0.11 mg/kg. However, cleanup of metals in soil to below background levels is not required by DTSC. A two-step process was used to assess arsenic at the site, consistent with DTSC's Human and Ecological Risk Office (HERO) Note 6 (DTSC, 2017). In the first step, available data were used to develop a site-specific background concentration and in the second step, the site-specific bioavailability was assessed. Both of these steps are described below along with a recommendation for the cleanup approach for the site based on these evaluations.

## Site-Specific Background Level

Background evaluation was conducted using site arsenic data[1] (n=67; see Table 3 in the Preliminary Endangerment Assessment [PEA] report) in accordance with DTSC guidance titled *Selecting Inorganic Constituents as Chemicals of Potential Concern at Risk Assessments at Hazardous Waste Site and Permitted Facilities* (DTSC 1997) which allows the use of all onsite data in calculations of background levels.

[1] Only the July 2017 data were used as they were analyzed on dry weight basis. The December 2016 data were not included in the background analysis.

The methods used included evaluating the data distribution and identification of multiple populations or potential outliers. A cumulative probability plot was generated for identification of an inflection point and a break in the data and identification of population with the lowest arsenic concentrations (i.e., the background dataset).

Summary statistics were generated for the arsenic dataset (Table A). The data followed a lognormal with a coefficient of variation[2] of 0.65 (Figure 1). Summary statistics were generated and a cumulative probability distribution was generated for the lognormally transformed data (Figure 2).

From the cumulative probability distribution, the inflection point of the data was determined visually to be 17.7 mg/kg. According to the 1997 DTSC guidance, if an inflection point is observed in the dataset, the contiguous population closest to the origin on the cumulative probability plot is identified as the background population and the values above the inflection point are considered anomalous (i.e., not within the background distribution). In this case, the majority population closest to the origin—comprising of concentrations equal to or less than 17.7 mg/kg—was considered representative of the background or ambient population[3]. As reported by the San Francisco Regional Water Board (Duvergé 2011) "when sample sizes are larger and when the cumulative probability plot indicates that the distribution is well defined (i.e., little or no scatter), it is acceptable to select a simple estimate of the 95th or even the 99th percentile. The selection of a representative upper quantile should be guided not by a rigid rule but rather by the characteristics of the available data." The 95$^{th}$ and the 99th percentiles of the background arsenic population were calculated as 16.5 mg/kg and 17.5 mg/kg, respectively (Table 1). Because the background dataset is large (n = 65), the data are considered robust, distribution is well defined, the 99$^{th}$ percentile of 17.5 mg/kg is considered representative of the site-specific background threshold. This is within background levels in California, where 95$^{th}$ and 99$^{th}$ percentiles of background can range from 14 to 42 mg/kg (Diamond et al., 2009).

## California Arsenic Bioavailability Assessment Results

Most human health risk assessments assume that arsenic is highly bioavailable (absorbable by the body), likely leading to an overestimate of risk. When arsenic is present in soil, it

[2] The coefficient of variation is the standard deviation divided by the arithmetic mean of the data and is used to assess the magnitude of the variability in the dataset. According to the 1997 CalEPA guidance, if the coefficient of variation is above 1, the data may be representative of more than one population.
[3] Subsequent testing of the background population distribution indicated that the data follow a lognormal distribution (Figure 3.)

associates with other minerals. These associations reduce the solubility of arsenic, thereby reducing the bioavailability of arsenic and resulting toxicity. To address this issue, DTSC developed a method to estimate site-specific relative bioavailability (RBA), the California Arsenic Bioaccessibility (CAB) method (DTSC 2017). The RBA is a ratio that compares the bioavailability of arsenic in soil to that of arsenic in water. A site-specific RBA can replace the default assumption used in risk assessment equations (60%) resulting in a more refined estimate of risk. The site-specific RBA also can be used to develop a health-risk based cleanup goal for arsenic.

Soil samples were collected and analyzed by the CAB method by Prima Environmental, Inc. (Prima) as described in the 2017 Cornerstone Work Plan; the results are provided in Attachment A. The results showed low RBA in the majority of the samples (4.9-7.9%) based on non-detects in the extraction fluid. Only one sample, SS-12D showed higher RBA (70%). The samples with low RBA had relatively low arsenic concentrations in the 250 μm fraction (4.4 to 11 mg/kg), within the range of background. Sample SS-12D had a higher arsenic concentration (71 mg/kg) in the 250 μm fraction (the fraction of the sample analyzed by the CAB). However, the majority of the mass of soil in the bulk samples (see Table 1 of the Attachment A) was in the > 250 μm fraction (80-88%). The lab confirmed (personal communication with Cindy Schreier, Prima) that the bulk samples did not contain many rocks or debris, but had some dirt clods that were not broken up prior to sieving. Cornerstone Earth Group requested that the lab break up the dirt clods and analyze the bulk sample (i.e., non-sieved samples), which resulted in an arsenic concentration of 39 mg/kg, similar to the result from July 2017 of 41.1 mg/kg. It appears that arsenic may be more associated with the finer grained soils at the site.

## Recommendations for Site Cleanup Approach

As show in Table 3 in the PEA report, only samples from the vicinity of location SS-12 (B, C, and D) which are in the former orchard area have arsenic concentrations above the site-specific background level of 17.5 mg/kg. It is recommended that soils associated with these locations be considered for a removal action. Based on the CAB assessment results, samples with arsenic above background levels at the site are more bioavailable, which likely reflects anthropogenic sources. Based on the low bioavailability of lower concentration soils and the limited extent of soils with concentrations above background and low bioavailability, removal of soils from the vicinity of location SS-12 should be health-protective for the proposed land use. Furthermore, the site-wide 95 UCL arsenic concentration (Table 5 in the PEA report) is currently 10.5 mg/kg and will be considerably lower and well within background when soils in the vicinity of SS-12 are removed.

## References

Cornerstone. 2017. Work Plan for Arsenic Bioavailability, 3141 Taylor Road, Placer County, CA. August 28.

DTSC. 1997. Selecting Inorganic Constituents as Chemicals of Potential Concern at Risk Assessments at Hazardous Waste Sites and Permitted Facilities. Final Policy - Human and Ecological Risk Division. California Environmental Protection Agency, Department of Toxic Substances Control, February.

DTSC. 2017. Human Health Risk Assessment (HHRA) Note Number 6, Recommended Methodology for Evaluating Site-Specific Arsenic Bioavailability in California Soils. Released August 22, 2016. Revised September 29, 2017.

Diamond, D., D. Baskin, D. Brown, L. Lund, J. Najita, and I. Javandel. 2009. Analysis of Background Distributions of Metals in Soil at Lawrence Berkeley National Laboratory. Lawrence Berkeley National Laboratory, Environmental Restoration Program. April.

Duvergé, D.J. 2011. Establishing Background Arsenic in Soil of the Urbanized San Francisco Bay Retention, a SFSU thesis. December.

# TABLE

Table A. Arsenic Summary Statistics

| Data Group | Sample Size | Detected Samples | FOD | Minimum Detected value | Maximum Detected value | Arithmetic Mean of Detected Values | Standard Deviation of Detected Values | Coefficient of Variation of Detected Values | 95th Percentile | 99th Percentile |
|---|---|---|---|---|---|---|---|---|---|---|
| All Data | 67 | 66 | 99% | 1.08 | 41.1 | 9.2 | 5.9 | 0.65 | NA | NA |
| Background Data | 65 | 65 | 99% | 1.08 | 17.7 | 8.5 | 4.3 | 0.5 | 16.5 | 17.5 |

Concentrations reported in mg/kg dry weight

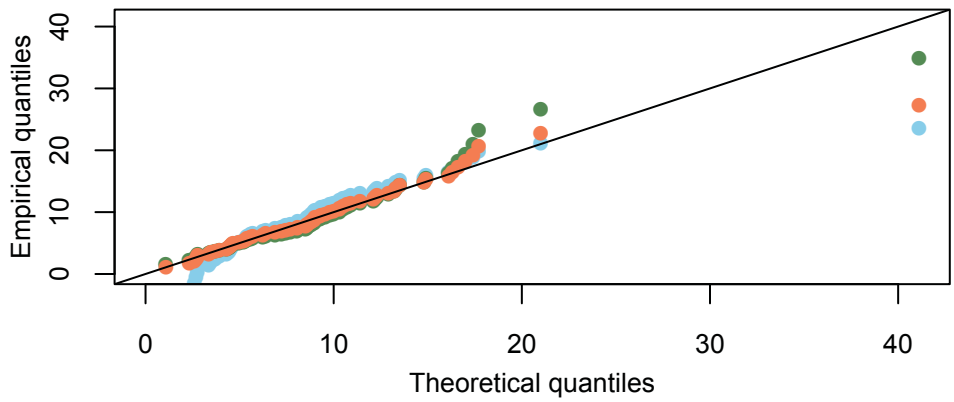
# FIGURES

**Media:**
Soil
**Exposure Unit:**
Background
**Chemical:**
Arsenic

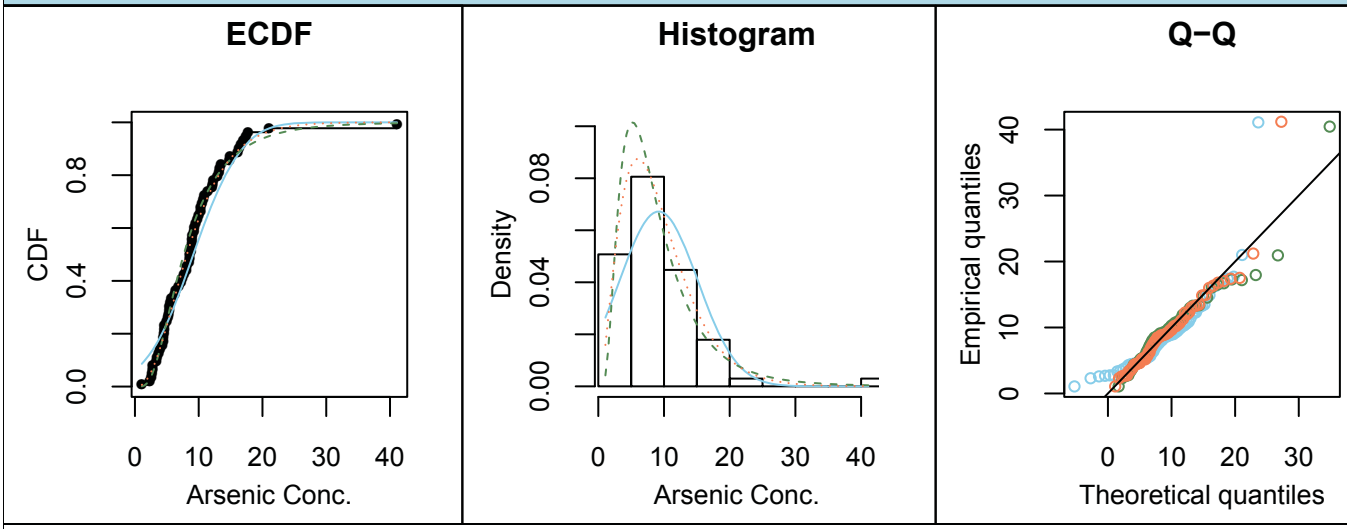
**Legend**

- Normal
- Lognormal
- Gamma
- Detect
- Nondetect (ROS)

## Q−Q Plot (All Data)




## ECDF, Histogram & Q−Q (Detects Only)




| | | | |
|---|---|---|---|
| N = 67 | FOD = 100% | Min (detect) = 1 NA | Arithmetic Mean = 9 |
| N (detect) = 67 | SD (log detect) = 0.63 | Max (detect) = 41 NA | Arithmetic SD = 6 |

## Goodness of Fit (All)

| Distribution | S−W (p−value) | Lilliefors (p−value) | K−S (statistic) | K−S (crit val) | A−D (statistic) | A−D (crit val) | AIC | BIC |
|---|---|---|---|---|---|---|---|---|
| **Normal** | 0 | 0.02 | − | − | − | − | 432.792 | 437.202 |
| **Lognormal** | 0.31 | 0.077 | − | − | − | − | 403.44 | 407.85 |
| **Gamma** | − | − | 0.06336 | 0.1101 | 0.2881 | 0.7602 | 403.235 | 407.644 |

## Goodness of Fit (Detects Only)

**All Detects**

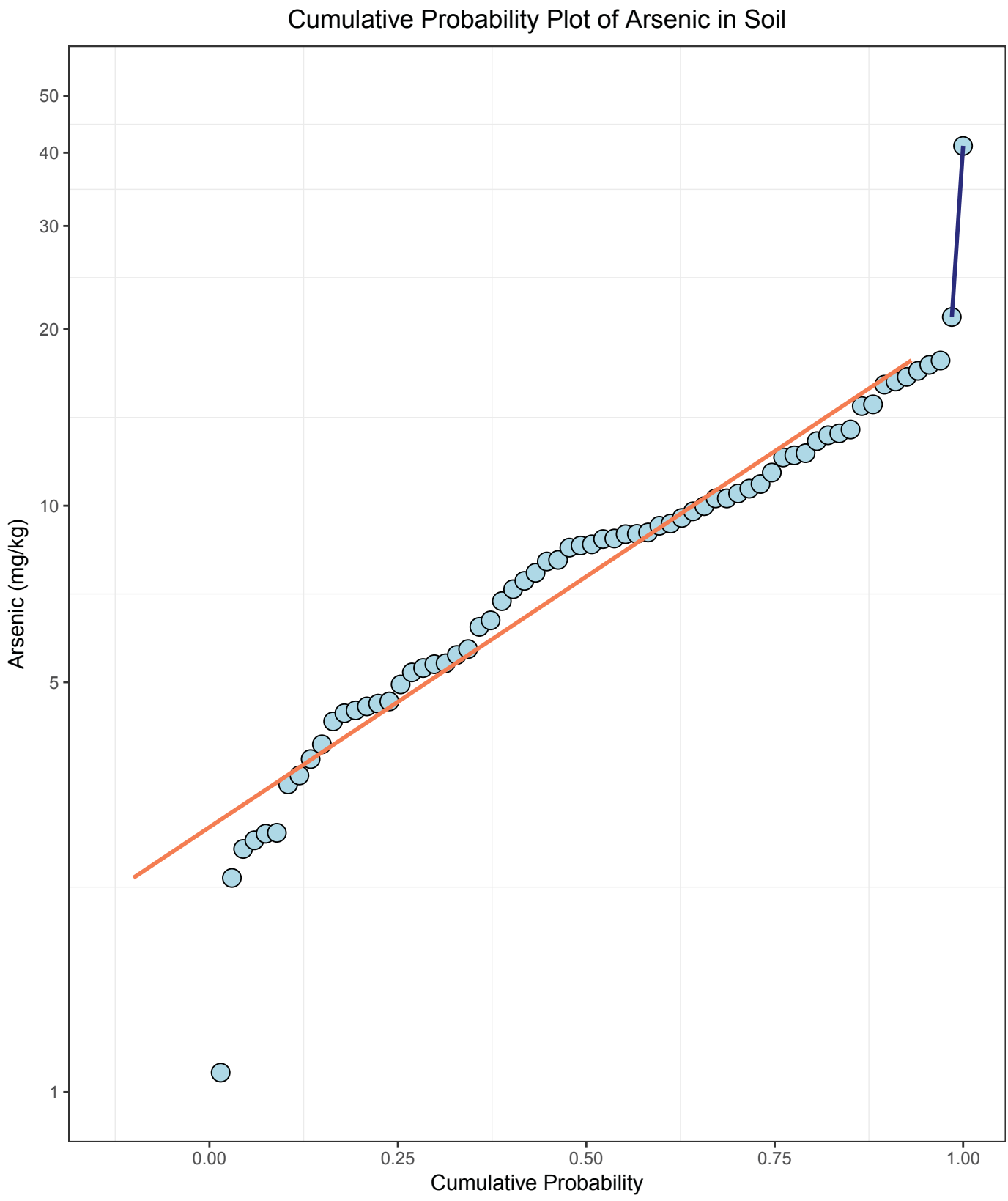
Selected distribution highlighted in green.

Notes:
− = not calculated
A−D = Anderson−Darling
AIC = Akaike information criterion
BIC = Bayesian information criterion
ECDF = empirical cumulative distribution function
FOD = frequency of detection
K−S = Kolmogorov−Smirnov
N = number of samples
Q−Q = quantile−quantile
ROS = Regression on order statistics
S−W = Shapiro−Wilk
SD = standard deviation

**Data Summary for Arsenic in Soil − All Depth Intervals**

Arsenic Background − 3141 Taylor Road, Placer County, CA

Figure **1**




Notes:
All samples and depths included.

**Cumulative Probability Plot of Arsenic in Soil**

Arsenic Background – 3141 Taylor Road, Placer County, CA

Figure
**2**

**FINAL RESULTS**

September 28, 2017

Peter Langtry
Cornerstone Earth
1270 Springbrook Road, Suite 101
Walnut Creek, CA 94597

**RE: IVBA test for Arsenic**
**Project Name: 3141 Taylor Rd., Loomis, CA**
**Client Job No. 411-16-3**

Dear Mr. Langtry:

PRIMA Environmental, Inc. measured arsenic relative bioaccessibility (RBA) for five soil samples using the California Arsenic Bioaccessibility (CAB) method. Total arsenic was measured on one bulk sample. The procedures and results are described in this letter report.

## Sample Receipt and Preparation

The following five samples were received on September 7, 2017:

- SS-3 (0-0.5)
- SS-12D (0-0.5)
- SS-23 (0-0.5)
- SS-43 (0-0.5)
- BG-1 (0.1-1)

Each sample was air-dried, then sieved (hand shaken) to obtain the -250 µm (-60 mesh) fraction. No effort was made to break up dirt clods, if present. **Table 1** (attached) lists the amount of material for each size fraction.

After sieving, Cornerstone requested total arsenic on the bulk SS-12D (0-0.5) sample. Because the entire sample had been sieved, a "bulk sample" was recreated by combining 87 g of +250 µm fraction and 13 g of -250 µm fraction (the ratio of the two size fractions –see **Table 1**).

## Materials

ACS reagent grade sodium chloride (NaCl), reagent grade ascorbic acid, and porcine pepsin obtained from Sigma Aldrich (www.sigmaaldrich.com, catalog number P7000) were used in this study.

## Procedures

**CAB.** Gastric phase IVBA tests were performed using the method recommended by the California Department of Toxic Substance Control (DTSC). Gastric solution was prepared by dissolving reagents (NaCl, ascorbic acid, and pepsin) in deionized water, then adjusting the pH to 1.5±0.01. Each sample was extracted by adding 150 ± 1 mL of gastric solution to 1.00 g soil (-250 μm fraction), then mixing end-over-end in a 37°C water bath for 120 minutes. After 120 minutes, the final pH of each sample was measured then the gastric solution was filtered through 0.45 μm filter and submitted to Enthalpy Analytical (formerly Curtis &Tompkins, Berkeley, California) for analysis of arsenic. QC samples – a reagent blank, a process control, a duplicate and a laboratory control sample (NIST 2711a soil) – were also run. Aliquots of the -250 μm fraction of soil were also submitted to Enthalpy Analytical for analysis of arsenic.

**Total Arsenic.** Total arsenic on re-constituted bulk sample SS-12D (0-0.5) was analyzed by Enthalpy Analytical.

## Results

**CAB.** The final pH of all samples was within 0.1 pH units of the initial pH, as required by the method. The concentration of arsenic in gastric solution and in the unextracted (-250 μm fraction) soil, as well as the corresponding bioaccessibility and RBA values, are given in **Table 2** (attached). The *California Arsenic Bioaccessibility (CAB)* is given in terms of percent (**Eqn. 1**), and as the mass of soluble metal per mass of soil (**Eqn. 2**). RBA was calculated from the CAB value (expressed as a percent) according to Eqn. 3 as specified in DTSC HHRA Note 6 released August 22, 2016. The QC results are given in **Table 3** (attached). PRIMA's blank spike was outside of limits, but all other QC parameters were within limits, therefore data are accepted.

$$\text{CAB (\%)} = 100 \times \frac{\text{(concentration in extract, mg/L)} * \text{(volume extract, L)}}{\text{(concentration in soil, mg/kg)} * \text{(mass of soil, kg)}} \qquad \text{Eqn. 1}$$

$$\text{CAB (mg As/kg soil)} = \frac{\text{(concentration in extract, mg/L)} * \text{(volume extract, L)}}{\text{(mass of soil, kg)}} \qquad \text{Eqn. 2}$$

$$\text{RBA (\%)} = 0.82 * \text{CAB (\%)} + 2.92 \qquad \text{Eqn. 3}$$

**Total Arsenic.** The concentration of total arsenic in-reconstituted bulk sample SS-12D (0-0.) was 39 mg/kg.

If you have any questions, please give me a call at 916-939-7300. Thank you for the opportunity to be of service.

Sincerely,
**PRIMA Environmental, Inc.**

Cindy G. Schreier, Ph.D.
*President & Chief Scientist*

*Attachments*

**Table 1. Size Fraction Results.**

| Sample | Mass, g | | Percent | |
|---|---|---|---|---|
| | Less than 250 µm | Greater than 250 µm | Less than 250 µm | Greater than 250 µm |
| SS-3 (0-0.5) | 150 | 1,120 | 12 | 88 |
| SS-12D (0-0.5) | 104 | 680 | 13 | 87 |
| SS-23 (0-0.5) | 170 | 850 | 17 | 83 |
| SS-43 (0-0.5) | 250 | 1,010 | 20 | 80 |
| BG-1 (0.5-1) | 240 | 1,190 | 17 | 83 |

Note: Data are estimates. Soil was air-dried, then sieved by hand. Dirt clods, if present, were not broken up.

**Table 2. Results of CAB Tests.**

| Sample | Mass Extracted | Concentration | | Bioaccessibility | | RBA^ |
|---|---|---|---|---|---|---|
| | | Soil** | Extraction Fluid | | | |
| | g | mg/kg | mg/L^^ | % | mg As/kg soil | % |
| SS-3 (0-0.5) | 1.0160 | 11 | < 0.0018 | < 2.4 | < 0.027 | < 4.9 |
| SS-12D (0-0.5) | 1.0128 | 71 | 0.39 | 81 | 58 | 70 |
| SS-23 (0-0.5) | 1.0227 | 8.6 | < 0.0018 | < 3.1 | < 0.026 | < 5.4 |
| SS-43 (0-0.5) | 1.0126 | 9.4 | < 0.0018 | < 2.8 | < 0.027 | < 5.2 |
| SS-43 (0-0.5) - Dup* | 1.0102 | 4.4 | < 0.0018 | < 6.1 | < 0.027 | < 7.9 |
| BG-1 (0.5-1) | 1.0209 | 4.4 | < 0.0018 | < 6.0 | < 0.026 | < 7.8 |

* "Dup" indicates a duplicate extraction; the soil was extracted twice, but arsenic in the soil was analyzed once.

** concentration in <60 mesh (250 micron) fraction.

^ Relative bioavailability = 0.82 * Bioaccessibility (in %) + 2.92, per DTSC HHRA Note 6.

^^Results reported to the MDL.

**Table 3. QC Data for IVBA Tests.**

| Sample ID | Conc. mg/L# | Spike | % Recovery | IVBA* % | RPD | Limits |
|---|---|---|---|---|---|---|
| Reagent Blank | < 0.0018 | -- | -- | -- | -- | < 0.02 mg/L |
| Process Control | < 0.0018 | -- | -- | -- | -- | < 0.02 mg/L |
| LCS (NIST 2711a) | 0.58 | -- | -- | 79 | -- | IVBA = 54-80% |
| Blank Spike (PRIMA) | 1.3 | 1.0 | 130** | -- | -- | 80-120% recovery |
| Blank Spike (Enthalpy) | 0.09 | 0.100 | 94 | -- | -- | 76-120% recovery |
| Matrix Spike (Enthalpy) | 0.217^ | 0.2 | 109 | -- | -- | 53-139% recovery |
| SS-43 and SS-43-Dup | see results Table | -- | -- | -- | n.a.^^ | -- |

* Assumes Arsenic concentration in NIST 2711a is 107 mg/kg, per certificate of analysis.

** Recovery high. All other QC within acceptable limits, so data are accepted.

^ Concentration in unspiked sample < 0.001784 mg/L.

^^ Not applicable because analyte not detected.

# Reported to method detection limit.

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San Francisco, CA 94104

telephone: 415.393.4750
www.integral-corp.com

# MEMORANDUM

| | |
|---|---|
| **To:** | Peter Langtry, Cornerstone Earth Group |
| **From:** | Mala Pattanayek and Bridgette DeShields |
| **Date:** | October 31, 2017 |
| **Subject:** | Site-Specific Approach for Arsenic, 3141 Taylor Road, Placer County, CA |
| **Project No.:** | C1811 |

A response to California's Department of Toxic Substance Control's (DTSC) comment received on October 26, 2017 on development of the site-specific background concentration for arsenic at the 3141 Taylor Rd, Placer County, CA site (memo submitted to DTSC on October 6, 2017) is provided below.

DTSC requested the arsenic background analysis be conducted in accordance with the most recent technical guidance titled *Arsenic Strategies – Determination of Arsenic Remediation – Development of Arsenic Cleanup Goals* (DTSC 2009). The guidance states that one of two methods can be used to develop arsenic background screening values 1) graphical evaluation or 2) statistical evaluation. For this site, we used the graphical evaluation method, the approach described in *Selecting Inorganic Constituents as Chemicals of Potential Concern at Hazardous Waste Sites and Permitted Facilities* (DTSC 1997), and evaluated arsenic soil data for normality and log normality using box and whisker plots and two goodness of fit test statistics, the Shapiro-Wilks and Lilliefors statistics.

In the report, a goodness of fit testing was conducted with all data (see Page 1 of the Attachment 1). The data do not follow a normal distribution (both Shapiro-Wilks and Lilliefors p-values are <0.05). The data were then log-transformed and tested again. The data appear to follow a lognormal distribution (both Shapiro-Wilks and Lilliefors p-values are >0.05).

Outliers to the lognormally transformed data were identified using graphical visualization (box-and-whisker plots) as plotted on Page 2 of Attachment 1 (as a comparison, a box-and-whisker plot using normal data is also presented on Page 2). Similar to the 4$^{th}$ spread analysis, an outlier assessment using Tukey's interquartile range (IQR) approach was used

for this dataset. Lower outliers were identified as any value less than the 25th percentile minus 1.5 x IQR, where the IQR is the range between the 75th percentile and the 25th percentile. Upper outliers were identified as values greater than the 75th percentile plus 1.5 x IQR (Tukey 1977, Sim et al. 2005) (25th percentile - 1.5 × IQR to 75th percentile + 1.5 × IQR). Only one low-end outlier was observed (SS-48@0-0.5; 1.08 mg/kg arsenic).

A log-transformed cumulative probability plot was recreated for the updated graphical evaluation by removing the single lower outlier (SS-48@0-0.5; 1.08 mg/kg arsenic) from the dataset and presented on Page 3 of Attachment 1. The plot on Page 3 indicates the inflection point in the data is the same as that in the original plot (Page 1), that is at 17.7 mg/kg. The 95th and the 99th percentiles of the background arsenic population without the single lower outlier were calculated as 16.6 mg/kg and 17.5 mg/kg, respectively (Table 1).

## References

DTSC. 1997. Selecting Inorganic Constituents as Chemicals of Potential Concern at Risk Assessments at Hazardous Waste Sites and Permitted Facilities. Final Policy - Human and Ecological Risk Division. California Environmental Protection Agency, Department of Toxic Substances Control, February.

DTSC. 2009. Arsenic Strategies – Determination of Arsenic Remediation – Development of Arsenic Cleanup Goals. - Human and Ecological Risk Division. California Environmental Protection Agency, Department of Toxic Substances Control, June.

Sim, C.H., F.F. Gan, and T.C. Chang. 2005. Outlier Labeling with Boxplot Procedures. Journal of the American Statistical Association. 100:470 pp. 642-562

Tukey, J. 1977. Exploratory data analysis. Addison-Wesley, Reading, MA. pp. 43-44.

Table 1. Arsenic Summary Statistics All Data and Excluding Single Lower Outlier

| Data Group | Sample Size | Detected Samples | FOD | Minimum Detected value | Maximum Detected value | Arithmetic Mean of Detected Values | Standard Deviation of Detected Values | Coefficient of Variation of Detected Values | 95th Percentile | 99th Percentile |
|---|---|---|---|---|---|---|---|---|---|---|
| All Data | 67 | 66 | 99% | 1.08 | 41.1 | 9.2 | 5.9 | 0.65 | NA | NA |
| Background Data | 64 | 63 | 99% | 2.32 | 17.7 | 8.6 | 4.2 | 0.48 | 16.6 | 17.5 |

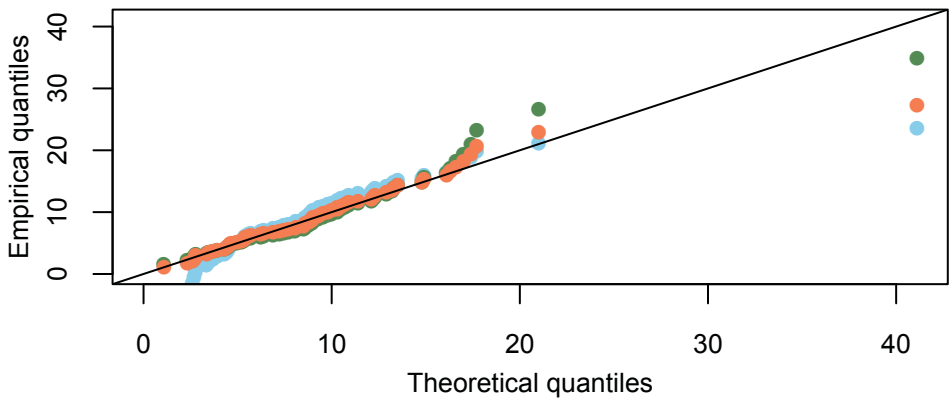
Concentrations reported in mg/kg dry weight

**Media:**
Soil
**Exposure Unit:**
Background
**Chemical:**
Arsenic

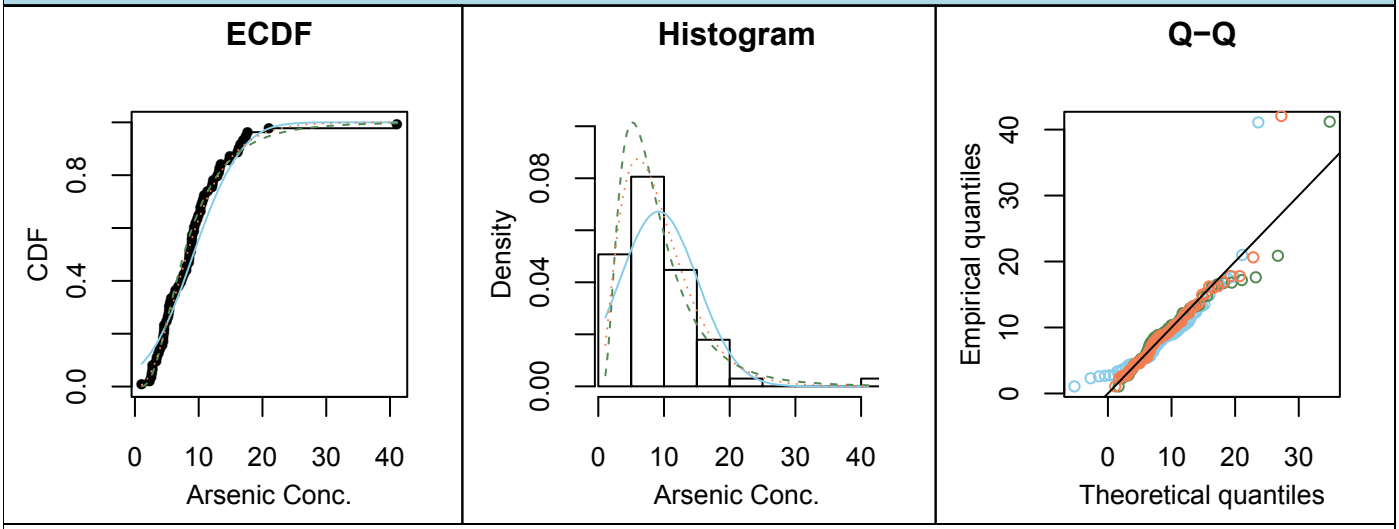
**Legend**

- Normal
- Lognormal
- Gamma
- Detect
- Nondetect (ROS)

## Q−Q Plot (All Data)




## ECDF, Histogram & Q−Q (Detects Only)




| | | | |
|---|---|---|---|
| N = 67 | FOD = 100% | Min (detect) = 1 NA | Arithmetic Mean = 9 |
| N (detect) = 67 | SD (log detect) = 0.63 | Max (detect) = 41 NA | Arithmetic SD = 6 |

## Goodness of Fit (All)

| Distribution | S−W (p−value) | Lilliefors (p−value) | K−S (statistic) | K−S (crit val) | A−D (statistic) | A−D (crit val) | AIC | BIC |
|---|---|---|---|---|---|---|---|---|
| **Normal** | 0 | 0.02 | − | − | − | − | 432.792 | 437.202 |
| **Lognormal** | 0.31 | 0.077 | − | − | − | − | 403.44 | 407.85 |
| **Gamma** | − | − | 0.06336 | 0.1101 | 0.2881 | 0.7602 | 403.235 | 407.644 |

## Goodness of Fit (Detects Only)

**All Detects**

Selected distribution highlighted in green.

Notes:
− = not calculated
A−D = Anderson−Darling
AIC = Akaike information criterion
BIC = Bayesian information criterion
ECDF = empirical cumulative distribution function
FOD = frequency of detection

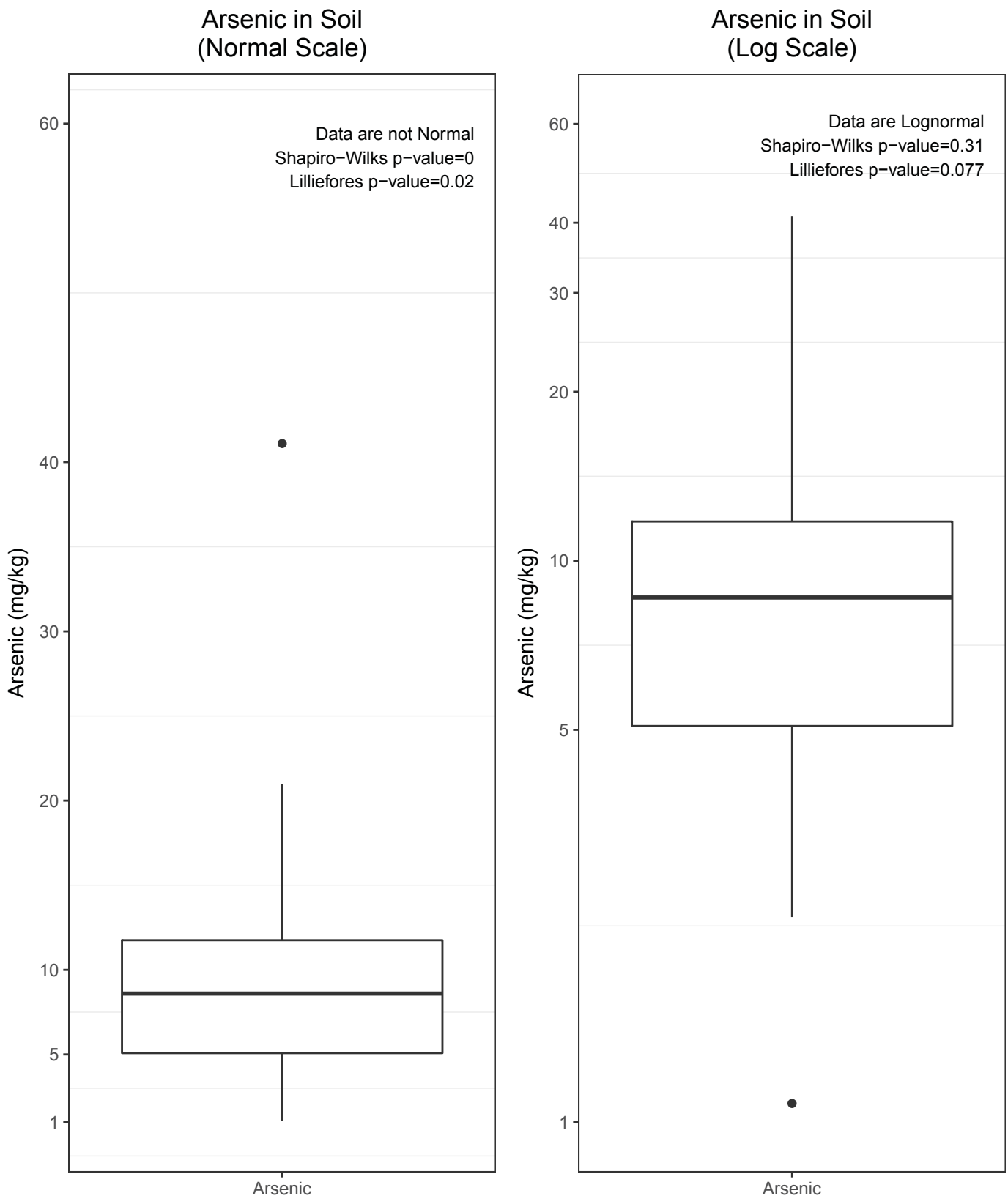
K−S = Kolmogorov−Smirnov
N = number of samples
Q−Q = quantile−quantile
ROS = Regression on order statistics
S−W = Shapiro−Wilk
SD = standard deviation

DRAFT

**Data Summary for Arsenic in Soil − All Depth Intervals**

Arsenic Background − 3141 Taylor Road, Placer County, CA

Figure
**1**

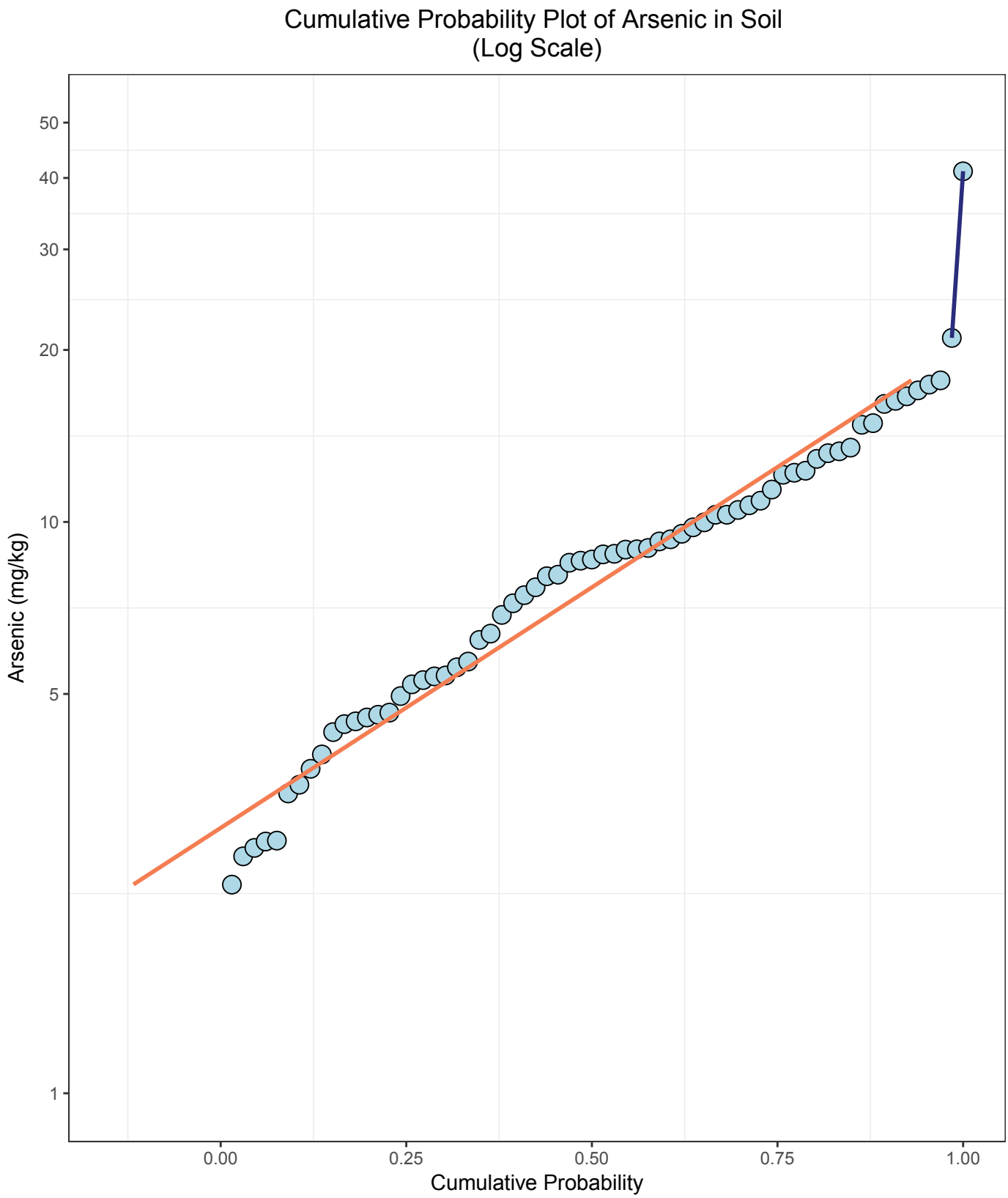



Notes:
Solid points indicate potential outliers.
Outliers are defined as values less than (25th quantile − 1.5 x inner−quartile range [IQR]) or greater than (75th quantile + 1.5 x IQR).

**Boxplot and Outlier Test for Arsenic in Soil**

Arsenic Background − 3141 Taylor Road, Placer County, CA

Figure
**2**




Notes:
Low−end outlier removed at SS−48 (0−0.5); 1.08 mg/kg arsenic.

**Cumulative Probability Plot of Arsenic in Soil**

Arsenic Background − 3141 Taylor Road, Placer County, CA

Figure
**3**

# APPENDIX K

CORNERSTONE EARTH GROUP

| | |
|---|---|
| **Type of Services** | **Draft Removal Action Work Plan** |
| **Location** | **Planned Tribal School**<br>**3141 Taylor Road**<br>**Placer County, California** |
| **Prepared For** | **UNITED AUBURN INDIAN COMMUNITY**<br>**10720 Indian Hills Road**<br>**Auburn, California 95650** |
| **Project Number** | **411-16-3** |
| **Date** | **June 5, 2018** |

# DRAFT

**Peter M. Langtry, P.G., C.E.G.**
Senior Principal Geologist

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# LIST OF ACRONYMS

| | |
|---|---|
| ACBMs | Asbestos-Containing Building Materials |
| AOC | Areas of Concern |
| APN | Assessor's Parcel Number |
| CAM | California Assessment Manual |
| CCR | California Code of Regulations |
| CCP | Community Protection Plan |
| CEQA | California Environmental |
| CERCLA | Comprehensive Environmental Response, Compensation & Liability Act of 1980, SuperFund Act |
| CFR | Code of Federal Regulations |
| COC | Chemical of Concern |
| COPC | Chemical of Potential Concern |
| CSM | Conceptual Site Model |
| DDD | Dichlorodiphenyldichloroethane |
| DDE | Dichlorodiphenyldichloroethylene |
| DDT | Dichlorodiphenyltrichloroethane |
| DHS | Department of Health Services |
| DOT | Department of Transportation |
| DTSC | Department of Toxic Substances Control |
| DTSC-SL | Department of Toxic Substances Control Screening Level |
| USEPA | United States Environmental Protection Agency |
| EE/CA | Engineering Evaluation/Cost Analysis |
| ERC | Emergency Response Contractor |
| ESA | Environmental Site Assessment |
| ESL | Environmental Screening Level |
| HAZWOPER | Hazardous Waste Operations and Emergency Response |
| HEPA | High-Efficiency Particulate Arrestance |
| HERO | Human and Ecological Risk, Office |
| HHRA | Human Health Risk Assessment |
| HSP | Health and Safety Plan |
| mg/Kg | milligram per kilogram or part per million (ppm) |
| mg/m3 | milligram per cubic meter |
| Msl | Mean sea level |
| NCP | National Oil and Hazardous Substances Pollution Contingency Plan |
| NELAC | National Environmental Laboratory Accreditation Conference |
| NESHAP | National Emissions Standards for Hazardous Air Pollutants |
| NOA | Naturally Occurring Asbestos |
| NOE | Notice of Exemption |
| NTCRA | Non-Time-Critical Removal Actions |
| OCPs | Organochlorine Pesticides |
| OSHA | Occupational Safety and Health Administration |
| PEA | Preliminary Endangerment Assessment |
| PCBs | Polychlorinated Biphenyls |
| ppb | Parts per billion |
| PPE | Personal Protective Equipment |
| ppm | Parts per million |
| PSI | Professional Services Industries, Inc. |
| QA/QC | Quality Assurance and Quality Control |
| RA | Removal Action |
| RAW | Removal Action Work Plan |
| RAOs | Remedial Action Objectives |

## LIST OF ACRONYMS CONTINUED

| | |
|---|---|
| REC | Recognized Environmental Condition |
| RCRA | Resource Conservation and Recovery Act |
| RDIP | Remedial Design and Implementation Plan |
| RSL | Regional Screening Level |
| RWQCB | Regional Water Quality Control Board |
| STLC | Soluble Threshold Limit Concentration |
| SSO | Site Safety Officer |
| SWQCB | State Water Quality Control Board |
| TCLP | Toxicity Characteristic Leaching Procedure |
| TTLC | Total Threshold Limit Concentration |
| UAIC | United Auburn Indian Community |
| UCL | Upper Confidence Limit |
| USA | Underground Service Alert |
| USGS | United States Geologic Survey |
| VCA | Voluntary Cleanup Agreement |
| VOC | Volatile Organic Compound |

| | |
|---|---|
| **Type of Services** | **Draft Removal Action Work Plan** |
| **Location** | **3141 Taylor Road**<br>**Placer County, California 95650** |

# SECTION 1: INTRODUCTION

On behalf of United Auburn Indian Community (UAIC), Cornerstone Earth Group (Cornerstone) prepared this Removal Action Work Plan (RAW) that presents an evaluation of removal action alternatives and a plan for implementing the selected alternative at 3141 Taylor Road in Placer County, California (Site) as shown on Figures 1 and 2. This RAW has been prepared in general accordance with the California Health and Safety Code Section 25323.1. UAIC entered into a voluntary cleanup agreement (VCA) (HAS-FY 16/17-112) with the Department of Toxic Substances Control (DTSC) for investigation and remediation of the Site, as summarized in Section 1.3.

## 1.1 SITE DESCRIPTION

The project Site is located at 3141 Taylor Road in Placer County, California. The Site is bounded by Taylor Road from the north, Tumble Lane to the east, and residential developments to the west and south.

The approximately 42.3-acre Site (Assessor's Parcel Number [APN] 043-013-010-000) is currently developed with six structures: two, 2-story buildings formerly used as an Inn and annex, a single-story event space, a caretaker's residence, a detached garage, and a maintenance barn (Figure 2). The remainder of the site is undeveloped; approximately 24-acres of the property were formally occupied by an orchard.

## 1.2 PLANNED DEVELOPMENT

A private school is currently planned for the Site that will include an elementary school, a middle school, a tribal education center, library with pre-kindergarten classrooms, and a science/cultural arts building. A recreation field, garden and cultural center are also planned. The current development plan is shown on Figure 3.

Appurtenant parking, landscaping, and other improvements necessary for Site development are anticipated.

## 1.3 REGULATORY INVOLVEMENT

UAIC entered into a VCA with DTSC on May 25, 2017 for review of prior environmental reports prepared for the Site, oversight of additional Site characterization and review of a Preliminary Endangerment Assessment (PEA) report. On November 29, 2017, the DTSC provided a draft

amendment of the VCA for the preparation and implementation of a Removal Action Workplan (RAW). Key documents prepared to date are listed below:

- Professional Services Industries, Inc. November 23, 2015. Phase I Environmental Site Assessment.
- Cornerstone Earth Group. December 22, 2016. Limited Phase II Soil Quality Evaluation.
- Cornerstone Earth Group. June 28, 2017. Final Preliminary Endangerment Assessment Work Plan.
- DTSC. PEA Work Plan approval letter dated June 29, 2017
- Cornerstone Earth Group. August 28, 2017. Arsenic Bioavailability Work Plan.
- DTSC. September 5, 2017. Arsenic Bioavailability Work Plan approval letter.
- Cornerstone Earth Group. November 16, 2017. Final Preliminary Endangerment Assessment Report.
- DTSC. November 16, 2017. Approval of Final PEA Report.

### 1.4 ELEMENTS OF THE RAW

To implement the recommendations contained in the PEA Report and to satisfy regulatory requirements, this RAW includes the following elements:

- A description of the nature and extent of the chemicals of concern (COC) at the Site;
- The goals to be achieved by the remedial action; and
- The general steps that will be taken to implement the selected remedial alternative: *Soil Excavation and Disposal of COC-Impacted Soil*

This report is organized as follows:

- Section 2 – Prior PEA Investigation
- Section 3 – Areas of Concern Evaluated During PEA
- Section 4 – Environmental Setting
- Section 5 – Cleanup Goals
- Section 6 – Engineering Evaluation for the Removal Action
- Section 7 – Soil Removal Action Implementation

## SECTION 2: PRIOR PEA INVESTIGATION

During the PEA investigation, soil sampling was performed to address the areas requiring further evaluation identified in the DTSC-approved PEA Work Plan. This section presents the soil sampling performed to evaluate these Areas of Concern (AOC). Please refer directly to the Final PEA report for a complete overview of the work performed.

### 2.1 SITE HISTORY

Based on the information presented in the Phase I ESA, the approximately 42.5-acre Site appears to have been occupied by an orchard in 1938, with a residence. The residence appears to be in the same location as the current Inn and caretaker's home. By 1966, the

orchard appeared to be diminishing in extent and density of trees, although remnants of apparent orchard trees are visible on aerial photographs through 2005. The current structures and pond are visible on the 1984 aerial photograph.

## 2.2 2015 PHASE I ESA FINDINGS

During the 2015 Phase I ESA, small quantities of lubricants, oils, gasoline and herbicides were reported stored within the barn. No staining or other evidence of a release from these materials was reportedly observed.

A septic tank was reportedly located on-Site. In addition, a water supply well was reportedly located in the garden on the northwest portion of the Site.

No hazardous materials release incidents were reported in the Site vicinity that appeared likely to significantly affect ground water or soil vapor quality beneath the Site.

The Phase I ESA concluded that no hazardous waste or materials were identified at the Site that would constitute a Recognized Environmental Condition[1] (REC). No significant data gaps were identified during the Phase I ESA, no Historical Recognized Environmental Conditions[2], or Controlled Recognized Environmental Conditions[3] were identified during PSI's Phase I ESA.

## 2.3 DECEMBER 2016 LIMITED PHASE II SOIL QUALITY EVAULATION

On December 16, 2016, Cornerstone's staff geologist collected 24 near-surface soil samples from across the former agricultural area of the Site, with approximately one sample per acre (Figures 4a and 4b). Sample frequency of the former agricultural area was selected in general accordance with the Department of Toxic Substances Control (DTSC) "Interim Guidance for Sampling Agricultural Fields for School Sites (Second Revision)" (August 26, 2002). Samples were collected from the natural ground surface to a depth of approximately ½ foot using hand-sampling equipment.

Following standard protocols, Cornerstone's staff engineer collected soil samples in new and pre-cleaned 2½ inch by 6-inch stainless steel liners and were taped, capped, and labeled with a unique identification number. All samples were labeled with a unique name and were placed in an ice chilled cooler and transported under chain of custody documentation to a State certified analytical testing lab. Analytical results were reported by the laboratory based on a wet-weight basis.

[1] The presence or likely presence of hazardous substances or petroleum products on the Site: 1) due to significant release to the environment; 2) under conditions indicative of a significant release to the environment; or 3) under conditions that pose a material threat of a future significant release to the environment.
[2] A past Recognized Environmental Condition has been addressed to the satisfaction of the applicable regulatory agency or meeting of unrestricted use criteria established by the applicable regulatory agency without subjecting the Site to required controls or restrictions.
[3] A Recognized Environmental Condition that has been addressed to the satisfaction of the applicable regulatory agency with hazardous substances

### 2.3.1 Soil Quality Results

The laboratory analytical results are as follows:

- Dichlorodiphenyltrichloroethane (DDT) was detected in 22 of 24 soil samples at concentrations up to 0.138 mg/kg. The residential RSL for DDT is 1.9 mg/kg. The DDT detected in the Site's topsoil does not appear to pose a significant risk to human health for the planned school Site use.

- Dichlorodiphenyldichloroethane(DDD) was detected in 2 of 24 soil samples at concentrations up to 0.0186 mg/kg. The residential RSL for DDD is 2.2 mg/kg. The DDD detected in the Site's topsoil does not appear to pose a significant risk to human health for the planned school Site use.

- Dichlorodiphenyldichloroethylene (DDE) was detected in 24 of 24 soil samples at concentrations up to 0.522 mg/kg. The residential RSL for DDE is 1.6 mg/kg. The DDE detected in the Site's topsoil does not appear to pose a significant risk to human health for the planned school Site use.

- Total DDT (the sum of DDT, DDD and DDE) was detected at concentrations less than the TTLC value of 1.0 mg/kg in all 24 soil samples analyzed.

- No other organochlorine pesticide (OCP) compounds were detected.

- Lead was detected at concentrations ranging between 3.75 mg/kg and 79.8 mg/kg; all detected lead concentrations were below the residential DTSC-SL of 80 mg/kg.

- Arsenic was detected at concentrations ranging between 4.07 mg/kg and 29.2 mg/kg. Arsenic was detected exceeding the established screening level of 12 mg/kg, set in the DTSC document Interim Guidance for Sampling Agriculture Properties (DTSC, 2008), in six of 24 samples analyzed. A discussion of Site background arsenic concentrations is presented in Section 4.3.2.1.

- Mercury was not detected above the laboratory reporting limits.

## SECTION 3: AREAS OF CONCERN EVALUATED DURING PEA

### 3.1 PEA AOCS AND IMPLEMENTATION

A PEA was performed to determine whether current or past hazardous material management practices or waste management practices had resulted in the release or threatened release of hazardous materials, or whether naturally occurring hazardous materials were present, which posed a threat to public health or the environment. The PEA Work Plan described the following areas of potential concern that required additional investigation. Results of the PEA Work Plan implementation are summarized in Section 3.2.

### 3.1.1 Polychlorinated Biphenyls (PCBs) – Transformers

Two pole-mounted transformers are located on-Site; one near Taylor Road, and one near the event building (Figure 2). There is a potential that PCBs may have been historically used within the transformers. PCBs are man-made chemicals commonly used in the past as coolants and lubricants. PCBs are found as a clear to yellow, heavy oily liquid or waxy solid. PCBs were frequently used as insulation in electrical equipment because of their stability, low water solubility, high boiling point, low flammability, and low electrical conductivity. Prior to 1978, PCBs were often used in the manufacture of transformers and capacitors, and leaks or releases from transformers producing contaminated areas have been documented. The age of the transformer does not necessarily indicate the presence or absence of impacts to soil from PCBs, as releases of PCBs from a previous transformer may have occurred before its replacement. Once released to the environment, PCBs bind to soil particles and are very persistent.

### 3.1.2 Lead Paint, Pest Control, and PCB building Materials

Soil adjacent to former and existing structures that are painted with lead-containing paint and/or caulking around windows containing polychlorinated biphenyls (PCBs) can become impacted with lead and/or PCBs as a result of the weathering and/or peeling of painted and/or caulked surfaces. Soil near wood framed structures also can be impacted by organochlorine pesticides (OCPs) used to control termites. There is a potential that residual concentrations of lead, PCBs, and/or OCPs may be present in shallow soil near older structures such as those located on-Site.

### 3.1.3 Pond Sediment Sampling

The Site topography generally slopes to the northeast towards the pond. During heavy rainfall events, overland flow could transport surface soil to the pond. During our May 3, 2017 scoping meeting, DTSC staff requested sampling of the sediment in the pond to determine if OCPs or pesticide related metals have been transported and deposited in the pond.

### 3.1.4 Arsenic in Soil

As noted above, arsenic was detected in soil samples collected in December 2016 potentially exceeding background levels. The greatest concentration of arsenic was detected in sample SS-12 at 29.2 mg/kg. Additional soil samples were collected to evaluate the lateral and vertical extent of the elevated arsenic detected.

### 3.1.5 Naturally Occurring Asbestos

Asbestos occurs naturally in ultramafic rock. The six regulated asbestos-form minerals include: Chrysotile, Amosite, Crocidolite, Tremolite, Anthophyllite, and Actinolite. When this material or other Asbestos-form minerals are disturbed in connection with construction or grading, asbestos-containing dust can be generated. Exposure to asbestos can result in health ailments. The Department of Toxic Substances Control (DTSC) 2004 interim guidance document titled *Naturally Occurring Asbestos (NOA) at School Sites* recommends soil sampling when a proposed school site is located within a 10-mile radius of an NOA geologic formation.

The Site is located within the Sierra Nevada geomorphic province, a tilted fault block almost 400 miles long that is characterized by intrusions of granitic rocks and block faulting along its eastern boundary. The Site is located on the western slope of the Sierra Nevada mountain range.

Based on our review of readily available geologic maps, the nearest ultramafic geologic formation that may contain NOA is located approximately 4.5 miles east of the Site (Figure 5). Another ultramafic outcrop is mapped approximately 8 miles north-northeast of the Site.

Soil in areas downslope of ultramafic NOA-containing rock may contain NOA because of ultramafic particles transported by gravitational and hydrologic processes. The ultramafic geologic formation outcrops are separated from the Site by the American River, other topographic lows and ridges. Because the intervening elevation lows and ridges between the ultramafic outcrops and the Site, transport of soil/sediment from these outcrops to the Site is not considered likely. Therefore, NOA is not suspected to be present in soil beneath the Site.

### 3.1.6 CAM 17 Metals

Surface soil samples collected in December 2016 were analyzed for arsenic, lead and mercury as an initial soil quality screening. In accordance with our May 3, 2017 meeting with DTSC, analyses for 17 California Assessment Manual (CAM) metals was required.

## 3.2 PEA WORK PLAN IMPLEMENTATION

During this PEA investigation, soil sampling was performed to address the areas requiring further evaluation identified in the DTSC-approved PEA Work Plan. Soil samples were collected near existing and former buildings to evaluate potential impacts from possible pest control spraying near building foundations, and potential impacts from building materials such as lead-based paint and/or PCB caulking compounds. Soil samples were also collected from the former orchard areas to evaluate potential impacts from pesticide application, and from beneath transformers to evaluate the presence of PCBs.

No OCPs were detected in soil samples collected from former orchard areas at concentrations exceeding residential RSLs. In addition, no PCBs were detected in soil samples collected from the transformer locations.

Laboratory analyses of the soil samples collected from the perimeter of the Inn and Annex buildings detected lead and the OCP compound chlordane at concentrations that exceed residential environmental screening levels. The occurrence of these contaminants is likely related to lead-based paint on former building materials and pest control spraying. Soil removal from around the perimeter of the Inn and Annex buildings is recommended.

Arsenic background concentrations from the orchard areas were statistically evaluated, and concentrations were detected in excess of the background levels. To evaluate the health risk, an arsenic bioavailability assessment was conducted. The assessment concluded that samples with arsenic above background levels at the Site appear to be more bioavailable, which likely reflects anthropogenic sources.

The remaining metal concentrations detected were below their respective screening levels or published background levels.

The PEA recommended that soil around the perimeter of the Inn and Annex buildings be removed. In addition, the PEA recommended the removal of soil where detected arsenic concentrations exceeded the Site-specific background level.

### 3.3 APRIL 2018 SUPPLEMENTAL SOIL SAMPLING

Wetland mapping by the project biologist identified wetlands located in close proximity to the southernmost soil removal area (see Section 8.3.1). To evaluate whether the initial soil removal area can be configured to avoid the wetland area, on April 23, 2018, Cornerstone field personnel collected soil samples from five locations within and near the wetlands using hand-sampling equipment (SS-100 through SS-500). The sampling locations are presented on Figure 7C.

Soil samples were collected from the approximate upper six inches of soil in accordance with the sampling protocol presented in the June 28, 2017 PEA Work Plan. The collected samples were placed in an ice chilled cooler and transported to the project laboratory under chain of custody control. The five soil samples collected were analyzed for arsenic (EPA Test Method 6010B). Analytical results are presented on Figure 7C. The laboratory report and chain of custody documentation were presented in the May 10, 2018 Supplemental Soil Quality Evaluation report (Cornerstone) (Appendix C).

## SECTION 4: ENVIRONMENTAL SETTING

### 4.1 PHYSICAL SETTING

A 1978 USGS 7.5 minute topographic map was reviewed to evaluate the physical setting of the Site. The Site's elevation is approximately 450 feet above mean sea level; topography in the vicinity of the Site slopes downward gently to the southwest towards the Central Valley.

### 4.2 GEOLOGY AND HYDROGEOLOGY

#### 4.2.1 Local Geology

The Site is located on the eastern transition of Sacramento Valley to the base of the Sierra Nevada foothills, where sandy loam overlays Mesozoic dioritic to granitic rocks. The Sierra Nevada batholith consisting of metavolcanics, gabbroic, and ultramafic rocks. The 1987 California Division of Mines and Geology *Geologic Map of the Sacramento Quadrangle* shows the subject property to be underlain by Mesozoic dioritic (granite-like) rock.

#### 4.2.2 Hydrogeology

Based on information reviewed from PSI's 2015 Phase I ESA, quarterly groundwater monitoring report for former Penryn Beacon located at 3129 Penryn Road, Penryn, California, approximately ¼ mile east of the Site, shallow groundwater is approximately 15 to 20 feet below

ground surface, and reportedly moves to the southwest. Groundwater flow beneath the Site is likely influenced by surface topography and the on-Site pond.

## 4.3 NATURE AND EXTENT OF CONTAMINATION

This section includes: 1) a discussion of Environmental Screening Criteria selected for the Site; and 2) a summary of the COC and results of the soils samples collected at the Site. Data summary tables presenting the results of the PEA are included in the Tables Section of this RAW.

### 4.3.1 Environmental Screening Criteria

The soil sampling results were compared to the DTSC recommended Screening Levels (SLs) presented in DTSC Office of Human and Ecological Risk guidance document (HERO) *Human Health Risk Assessment (HHRA) Note 3* updated 2017 (HERO, 2017). If a SL has not been established, the soil results were compared to Regional Screening Levels (RSLs) established by the USEPA Region 9 (USEPA, November 2017). Arsenic was compared to the Site background of 17.5 mg/kg, as discussed in Section 5.

### 4.3.2 Chemical of Concern

The soil analytical results of the PEA investigation are presented in Tables 1 and 2 in the tables Section of this report. The analytical results are summarized below. Note that Tables 1 and 2 also includes analytical results for soil samples collected December 16, 2016.

#### 4.3.2.1 Arsenic

Natural background concentrations of arsenic are often well above the health-based DTSC screening level of 0.11 mg/kg; however, DTSC generally does not require cleanup of metals in soil to below background levels. An evaluation of background arsenic concentrations was performed by Integral Consulting, Inc. using Site arsenic data in accordance with DTSC guidance titled *Selecting Inorganic Constituents as Chemicals of Potential Concern at Risk Assessments at Hazardous Waste Sites and Permitted Facilities* (DTSC, 1997) and *Arsenic Strategies – Determination of Arsenic Remediation – Development of Arsenic Cleanup Goals* (DTSC 2009).

As presented in the PEA, the 95$^{th}$ and 99$^{th}$ percentiles of the background population were calculated as 16.5 mg/kg and 17.5 mg/kg, respectively. Because the background dataset is large (n=65), the data are considered robust, and the distribution is well defined, the 99$^{th}$ percentile of 17.5 milligrams per kilogram (mg/kg) is considered representative of the Site-specific background. As noted in Section 5, as an added health protective measure, UAIC elected to use 16.5 mg/kg as the cleanup goal for arsenic.

Based on laboratory analyses of the soil samples collected, arsenic was detected exceeding 16.5 mg/kg in samples SS-12, SS-12B, SS-12C, SS-12D, SS-15,SS-16, SS-100 and SS-200 (Figures 4A and 7C).

#### 4.3.2.2 Lead and OCPs

Lead was detected in 22 of 22 soil samples at concentrations ranging from 3.96 mg/kg to 260 mg/kg, with 4 samples exceeding the residential DTSC-SL of 80 mg/kg. The four samples exceeding 80 mg/kg were collected from the exterior perimeters of the Inn and Annex buildings. Laboratory analyses of soil samples collected from the orchard areas detected lead exceeding the residential RSL in sample SS-16 (121 mg/kg). The Site-wide 95 percent upper confidence limit (UCL) for lead is 58 mg/kg. One sample, collected in the upper ½ foot of soil, near the Inn and Annex, detected chlordane at a concentration exceeding the residential DTSC-SL of 0.44 mg/kg. The source of the OCPs and lead appears associated with pest control activities and lead-based paint near the structures.

### 4.4 EXPOSURE PATHWAYS

Exposure pathways are the mechanisms by which a receptor (e.g. construction worker or future Site user) may contact COCs at the Site. Exposure pathways consist of three parts: (1) a source of contaminants, (2) an exposure point where the receptor may come into contact with contaminants (e.g. contaminated soil, drinking water, and/or indoor air), and (3) an exposure route (e.g. dermal, ingestion, and/or inhalation).

Arsenic was detected exceeding background concentrations in several soil samples. Concentrations of lead and OCPs detected in shallow surface samples were below residential screening criteria. As noted above, additional sampling was performed to evaluate the presence of OCPs and lead at locations of current structures and sediment in the pond. Therefore, the COC in shallow soil consist of arsenic, lead and OCPs.

No PCBs were detected in the soil samples analyzed. Therefore, PCBs are not considered COC for the Site.

The physical characteristics of OCPs, arsenic and lead mainly make them relatively persistent and immobile. These COC typically do not readily dissolve in water and migrate to ground water, as they readily adsorb to soil particles. Additionally, these COC will not readily volatilize or migrate as vapors. These chemicals may migrate if adsorbed to soil particles that become entrained into ambient air as a result of wind erosion of surface soil.

There are no identified COC for soil vapor or ground water on-Site.

### 4.5 CONCEPTUAL SITE MODEL

A conceptual site model (CSM) was developed to assist in understanding Site conditions and potential pathways by which humans may be exposed to contaminants of concern at the Site. An exposure pathway is considered complete if it presents a means of exposure to a receptor. A complete exposure pathway includes all of the following: a source of contamination, release mechanism, transport mechanism, exposure point, and a receptor. Figure 6 presents the CSM for the Site.

## SECTION 5: CLEANUP GOALS

This section presents detailed information regarding the cleanup goals for the COC at the Site. The cleanup goals, based on the screening level evaluation from the PEA, will be used to support decisions with respect to the need for and the extent of remediation.

Except for arsenic, Regional Screening Levels (RSLs) established by the USEPA Region 9 (USEPA, November 2017) were selected as the cleanup goals for COC identified at the Site unless an alternate screening level is recommended in the DTSC Office of Human and Ecological Risk (HERO) guidance document titled *Human Health Risk Assessment* (HHRA) *Note 3, Use of USEPA Regional Screening Levels* (HERO, 2017). Lead was compared to the screening level of 80 milligrams per kilogram recommended by HHRA Note 3.

As noted in Section 4.3.2.1, the 95$^{th}$ and 99$^{th}$ percentiles of the background population were calculated as 16.5 mg/kg and 17.5 mg/kg, respectively. The 99$^{th}$ percentile concentration was determined to be representative of Site background. As a health protective measure, UAIC has elected to use the 95$^{th}$ percentile, 16.5 mg/kg, as the arsenic cleanup goal.

In summary, the cleanup goals for COC identified for the Site are presented in Table 1. If additional constituents are detected during soil removal activities, concentrations will be compared to residential RSLs.

**Table 1. Cleanup Goals**

| Contaminant | Residential/Unrestricted Site Use Cleanup Goal (mg/kg) | Basis for Cleanup Goal |
|---|---|---|
| Arsenic | 16.5 | Site-Specific Background (95$^{th}$ Percentile) (Cornerstone, 2017) |
| Lead | 80 | HHRA Note 3 (DTSC, 2017) |
| Chlordane | 0.44 | HHRA Note 3 (DTSC, 2017) |
| Dieldrin | 0.034 | RSL (USEPA, 2017) |
| Heptachlor | 0.13 | RSL (USEPA, 2017) |
| Heptachlor Epoxide | 0.07 | RSL (USEPA, 2017) |
| 4,4-DDE | 2 | RSL (USEPA, 2017) |
| 4,4-DDD | 2.3 | RSL (USEPA, 2017) |
| 4,4-DDT | 1.9 | RSL (USEPA, 2017) |

## SECTION 6: ENGINEERING EVALUATION FOR THE REMOVAL ACTION

This Engineering Evaluation/Cost Analysis (EE/CA) was conducted for the proposed removal action at the Site in accordance with the USEPA guidance, titled “Guidance on Conducting Non-Time-Critical Removal Actions (NTCRA) under CERCLA (USEPA, 1993)”. It was prepared, as part of the RAW developed for the Site, to aid in the evaluation of remediation alternatives for the mitigation of impacted soils at the Site.

The proposed removal action at the Site has been determined to be a non-time-critical removal, based on the risk evaluation and Site considerations. The proposed removal action will be conducted in accordance with protocols of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) codified in Part 300 of Code of Federal Regulations, Title 40 (40 CFR 300). Under 40 CFR 300.415 of the NCP, an EE/CA is required to address the implementability, effectiveness, and cost of NTCRA.

This EE/CA will be used as the basis for the planned non-time-critical RA. As the lead agency, DTSC has final authority of the selected alternative and of overall public participation activities.

## 6.1 REMEDIAL ACTION OBJECTIVES

Remedial Action Objectives (RAOs) are goals developed for the protection of human health and the environment and are based on chemical concentrations and potential exposure routes. Protection of human health can be achieved by reducing chemical concentrations and/or by eliminating exposure pathways. The RAO for the Site is to mitigate the threat to human health and the environment from the identified COC-impacted soil, soil vapor, and ground water in a manner that will not constrain or limit school development of the property. Site specific RAOs include:

- Minimize or eliminate the potential for COC-impacted media to be encountered during Site development activities;
- Minimize or eliminate potential exposure of future school occupants (receptors) to COC-impacted media through direct contact, ingestion and inhalation;
- Minimize or eliminate the potential for uncontrolled migration of COC-impacted soil during construction activities;
- Reduce the concentration of COC in soil to levels that will allow maximum flexibility for school development and reuse of the Site as intended; and
- Achieve compliance with local, State and Federal regulations.

## 6.2 REMOVAL ACTION ALTERNATIVES

This section provides the analysis of three removal action alternatives for mitigating the threat to human health and the environment posed by the COC-impacted soil and soil vapor at the Site. These removal alternatives include the following:

- Alternative 1 – No action.
- Alternative 2 – Excavation and on-Site Consolidation of Arsenic, Lead, and OCP Impacted Soil; excavation and disposal of arsenic exceeding Site-specific background of 16.5 mg/kg.

- Alternative 3 – Excavation and off-Site disposal of lead and OCP-impacted soil exceeding Environmental Screening Criteria; excavation and disposal of arsenic exceeding Site-specific background of 16.5 mg/kg.

Other potential alternatives or innovative technologies have not been included because they are unlikely to be timely, implementable, and/or cost-effective.

### 6.2.1 Alternative 1 – No Action

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and DTSC require the consideration of no action as a baseline alternative during the feasibility screening process. This remedial alternative would not involve the removal or capping of the impacted soil at the Site.

### 6.2.2 Alternative 2 – Excavation and on-Site Consolidation of Arsenic, Lead, and OCP Impacted Soil

Under this alternative, the arsenic, lead, and OCP -impacted soil will be excavated, consolidated on-Site and capped with hardscape surfaces (e.g. asphalt pavement or concrete).

Institutional controls including a deed restriction and long-term operation and maintenance (O&M) plan will be implemented. The deed restriction will apply to the capped consolidation area where the arsenic, lead and OCP-impacted soil is present. The long-term O&M plan will include an annual and 5-year review, inspection and reporting of the consolidation area;

### 6.2.3 Alternative 3 – Excavation and Off-Site Disposal of Lead and OCP-Impacted Soil Exceeding Environmental Screening Criteria; Excavation and Disposal of Arsenic Exceeding Site-Specific Background of 16.5 mg/kg.

Alternative 3 is similar to Alternative 2 except that the arsenic, lead, and OCP-impacted soil will be excavated and disposed at an off-Site permitted facility, and no O&M will be required. The remedial excavations will be regraded or backfilled with clean on-Site soil that meets the Environmental Screening Criteria

## 6.3 EVALUATION OF REMOVAL ACTION ALTERNATIVES

The evaluation of removal action alternatives should consider the effectiveness, implementability, and cost of each remedial alternative. These evaluation criteria are discussed and compared below for each of the three proposed removal action alternatives.

### 6.3.1 Effectiveness

The evaluation of the effectiveness of each alternative is based on:

- Performance and reliability to eliminate or reduce the risk associated with the identified COC (in terms of toxicity, mobility, or volume) at the Site

- Overall protection of public health and the environment (threshold factor)

- Long- and short-term effectiveness (balancing factor)
- Reduction of toxicity, mobility, or volume through treatment (balancing factor)
- Ability to meet the RAOs presented in Section 6.1 (threshold factor)

Alternative 1 would not be protective of human health and the environment.

For Alternative 2, Site preparation for development will involve excavating and consolidating on-Site the upper approximate 2 feet of soil containing arsenic, lead, and OCP-impacted material. Consolidated material would be capped by hardscape surfaces such as flatwork, a drive aisle or parking areas. Due to the physical characteristics of the COC, this alternative would be protective of the environment. The COC are relatively persistent and immobile. These COC typically do not readily dissolve in water and migrate to ground water, as they readily adsorb to soil particles. The COC will not readily volatilize or migrate as vapors. Since the impacted soil would be capped by asphalt pavement or concrete surfaces, the impacted soil would not become entrained into ambient air as a result of wind erosion of surface soil. Alternative 2 is considered effective.

Alternative 3 is effective. It also is the most conservative of the alternatives because under this alternative the arsenic exceeding a background concentration of 16.5 mg/kg, and lead and OCP-impacted soil exceeding Environmental Screening Criteria would be removed from the Site; thus, the potential for on-going exposure to on-Site lead and OCP-impacted soil would be eliminated. However, there would be added risk of exposure during excavation and subsequent transportation of the impacted soil to a disposal facility. Additionally, this alternative likely has the largest “carbon footprint” due to anticipated natural resource consumption and vehicle emissions associated with hauling the impacted soil from the Site to off-Site landfills potentially more than 150 miles away.

### 6.3.2 Implementability

Implementability of a remedial alternative is based on the technical and institutional feasibility of implementing the alternative. Technical feasibility includes the availability of necessary materials, equipment and skilled workers to implement the alternative. Institutional feasibility includes the ability to obtain the necessary permits and regulatory concurrence.

Each of the three remedial alternatives is technically implementable. Alternatives 2 and 3 are also institutionally feasible. Alternative 1 is not considered to be institutionally feasible.

### 6.3.3 Cost

The cost of implementing an alternative includes capital and continuing costs. Continuing costs are defined as on-going costs associated with implementation and maintenance of the selected remedy. To compare the total cost of implementing each alternative, costs associated with implementing each alternative were estimated. The capital costs and continuing costs associated with implementing the three alternatives described above are summarized in Appendix A.

#### 6.3.3.1 Capital Cost

Capital costs associated with implementing Alternatives 2 and 3 include construction, labor and disposal costs (e.g., constructing an asphalt/concrete cap, and excavation of impacted soil and capping or disposal off-site), engineering costs (e.g., preparing plans and specifications, and performing construction oversight), reporting costs, and regulatory agency oversight costs.

#### 6.3.3.2 Continuing Cost

Since DTSC will require deed restrictions (Alternative 2), and operation and maintenance activities (Alternative 2), continuing costs will be incurred as a result of these institutional controls. Such events will include periodic inspections, repair, and operation and maintenance costs. These events will pertain to the hardscape cap over the lead and OCP-impacted soil (Alternative 2):

- Notifying overseeing regulatory agencies in advance of performing cap repair/maintenance;
- Using contractors with proper health and safety training to perform cap maintenance/repair if the capped soil will be disturbed;
- Conducting cap and vapor mitigation system inspections and maintenance/repair;
- Preparing reports summarizing inspections, maintenance/repair activities;
- Preparation of 5-year assessments.

#### 6.3.3.3 Estimated Costs for Removal Action

Estimated remediation costs for implementing each alternative are calculated based on the sum of capital costs and continuing costs. Appendix A reflects the cost estimates with a 20 percent contingency for implementing the remedial alternatives.

**Alternative 1**: $0

**Alternative 2**: Estimated cost is approximately $ 423,000

**Alternative 3**: Estimated cost is approximately $ 392,000

### 6.4 REMOVAL ACTION ALTERNATIVE SELECTION

Alternative 1 is the least effective of the proposed alternatives in mitigating the threat to human health and the environment and is not considered effective or implementable.

Alternative 2 is considered effective and implementable but would require a deed restriction and may increase the project construction schedule. Alternative 2 is less cost-effective than Alternative 3.

Alternative 3 is effective and implementable, and will not significantly impact the overall project schedule. This alternative, however, has the greatest "carbon footprint". Excavation and off-haul costs of the arsenic, lead and OCP-impacted soil could increase or decrease depending on the percentage of the excavated soil requiring disposal at a Class I hazardous landfill. Our estimate of probable costs for Alternative 3 assumes 20 percent of the excavated soil may require disposal at a Class I landfill.

Based on consideration of the above factors, Alternative 3 is recommended as the removal action alternative for the Site.

## SECTION 7: APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Remedial action objectives should be consistent with Applicable or Relevant and Appropriate Requirements (ARAR) (40 CFR Section 300.415). The underlying definitions are derived from the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR Section 300.5). The ARARs are discussed below and are summarized in Table 2.

*Applicable Requirements:* Cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal or state law that specifically address a hazardous substance, pollutant, remedial action, location, or other circumstance at a site.

*Relevant and Appropriate Requirements:* Cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law that, while not "applicable" to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a site, address problems or situations sufficiently similar to those encountered at the site that their use is well-suited to the particular site.

ARARs typically are separated into three categories as follows.

*Chemical-specific ARARs:* These are health-based or risk-based standards, which define the allowable limits of specific chemical compounds, found in or discharged to the environment. They can provide cleanup and discharge levels, governing the extent of site remediation. Most of the chemical-specific ARARs are for ground water used for drinking water; few are available for ambient air or soil.

*Location-specific ARARs:* These requirements apply to natural site features (e.g., wetlands, flood plains, endangered species) and man-made features (e.g., landfills, city zoning, and places for historical or archaeological significant). Location-specific ARARs restrict the types of remedial actions, which can be implemented based on the characteristics or location of the site.

*Action-specific ARARs:* These ARARs are technology-based or activity-based limitations which set performance and design restrictions. They specify permit requirements and engineering controls which must be instituted during site activities, and restrict particular activities.

Federal and state non-promulgated standards, policies, or guidance documents, and legal requirements, are not ARARs. However, according to the NCP guidance, these criteria also are

to be considered when evaluating and selecting remedial actions necessary to protect human health and the environment.

Potential chemical and action-specific ARARs for on-site soil include the following.

*Regional Screening Levels (RSLs) (USEPA 2017):* RSLs combine current EPA toxicity values with standard exposure factors to estimate media-specific concentrations in soil that are protective of humans over a lifetime of exposure. Concentrations exceeding RSLs do not automatically trigger a response action; however, exceeding a RSL suggests that further evaluation of the potential risk that may be posed by site contaminants is appropriate.

*TTLCs/STLCs:* Title 22 of the California Code of Regulations lists total threshold limit concentrations (TTLCs) and soluble threshold limit concentrations (STLCs) for classification of hazardous wastes. A waste is considered hazardous in California when laboratory results of representative samples collected from the waste indicate that contaminant levels exceed their respective TTLC or STLC.

*Listing and Characteristics:* The EPA uses two procedures to define wastes as hazardous, Listing and Hazardous Characteristics. The listing procedure involves identifying industries or processes that produce waste which pose hazards to human health and the environment.

The second procedure involves identifying properties or characteristics that, if exhibited by any waste, indicate a potential hazard if the waste is not properly controlled. Reactivity, toxicity, ignitability, and corrosivity are the four characteristics that must be considered when identifying a waste as hazardous.

**Table 2. Potentially Applicable or Relevant and Appropriate Requirements**

| Standard, Requirement, Criteria, Limitation | Citation | Description | Type of ARARs (Chemical, Location, Action, or To Be Considered [TBC]) |
|---|---|---|---|
| *Federal* | | | |
| Classification and Regulation of Hazardous Waste | 42 USC* 7401-7642 | Establishes criteria for the determination of hazardous waste and its regulation | Chemical/Action |
| Hazardous Waste Identification | 40 CFR** 261.24 | Establishes criteria to determine whether solid waste exhibits hazard characteristics of toxicity | Chemical |
| Drinking Water Standards | 40 CFR 141.11-141.16<br>40 CFR 141.60-141.63 | Establishes national primary drinking water standards | Chemical |
| Transport of Hazardous Waste | 40 CFR 263 | Standards applicable to transporters of hazardous waste | Action |
| Clean Air Act | 42 USC 7401-7642 | Emission standards from stationary and mobile sources | Chemical |
| Occupational Health and Safety | 29 CFR 1910.120 | Establishes requirements for health and safety training | Action |
| Toxic Substances Control Act | 40 CFR 750 and 761 | Establishes cleanup criteria and protocol for responding to a release of PCBs | Chemical |
| Health Risk Assessment | US EPA, Risk Assessment Guidance for Superfund, 1989 | Guidance and framework to assess health risk | TBCs (Action) |
| *State and Local* | | | |
| Hazardous Waste Generator Requirements | 22 CCR 66262.1 et seq. | Establishes standards applicable to generators of hazardous waste | Action |

| Standard, Requirement, Criteria, Limitation | Citation | Description | Type of ARARs (Chemical, Location, Action, or To Be Considered [TBC]) |
|---|---|---|---|
| Determination of Hazardous Waste | 22 CCR† 66260.1 et seq. | Establishes criteria for determining waste classification for the purposes of transportation and disposal of wastes | Chemical |
| Ambient Air Quality Standards | H&S‡ Sec. 39000-44071 | Establishes standards for emissions of chemical vapors and dust | Chemical |
| Transportation of Hazardous Waste | 22 CCR Chapter 13 | Governs transportation of hazardous materials | Action |
| Drinking Water Standards | 22 CCR Division 4, Chapter 14 Sec. 64401 et seq. | Establishes drinking water standards for public water supply system | Chemical |
| Environmental Impact Review | Public Resources Code Sections 21000-21177 | Mandates environmental impact review of projects approved by governmental agencies | Action |
| Emission Standard | Regulation 6, Rule 40 Regulation 8 | Establishes emission standard for particulate matter; and notification requirement | Chemical |
| Disposal of Lead in Soil | H&S Sec. 25157.8 | Establishes a standard for disposal of lead to a Hazardous Waste Land Disposal Facility | Chemical |
| Grading Permit | Placer County | Permit required for site excavation and grading activities | Action |
| Stockpiling Requirements of Contaminated Soil | H&S Sec. 25123.3(a)(2) | Establishes standards for stockpiling of non-RCRA contaminated soil | Action |
| Occupational Health and Safety | 8 CCR Sec. 1500, 2300, and 3200 et seq. | Establishes standards for working conditions and employees | Action |
| Hazardous Waste Transport | H&S Sec 25160 | Standards applicable to transporters of hazardous waste | Action |

*USC – United States Code
**CFR – Code of Federal Regulation
†CCR – Code of California Regulation
‡H&S – Health and Safety Code

## SECTION 8: SOIL REMOVAL ACTION IMPLEMENTATION

This Section presents the protocols that will be followed for excavation and off-Site disposal of the arsenic, lead and OCP-impacted soil at the Site. The preliminary remedial excavation areas are shown on Figures 7A and 7B.

### 8.1 FIELD PREPARATION FOR REMEDIAL ACTION

#### 8.1.1 Contractor's Licensing and Training

Work activities will be performed by a licensed hazardous materials contractor (hereinafter "Contractor") with a hazardous substance removal and remedial action certificate ("A-haz" contractor) and personnel with training in hazardous waste operations (40-hour OSHA Training). The Contractor will be required to perform several pre-field activities prior to the initiation of soil remediation activities as discussed in this section.

#### 8.1.2 Utility Clearance

To locate public underground utilities, the Contractor will contact Underground Service Alert (USA) at least 48 hours prior to the initiation of excavation activities to clear utilities in the general area of the Site. In addition, a private utility locator also will be used to help locate utilities, if any, in the exploration areas.

### 8.1.3 Health and Safety Plan

All contractors will be responsible for operating in accordance with the most current requirements of Title 8, California Code of Regulations, section 5192 (8 CCR 5192) and Title 29, Code of Federal Regulations, section 1910.120 (29 CFR 1910.120), Standards for Hazardous Waste Operations and Emergency Response (HAZWOPER). On-Site personnel are responsible for operating in accordance with all applicable regulations of the Occupational Safety and Health Administration (OSHA) outlined in 8 CCR General Industry and Construction Safety Orders and 29 CFR 1910 and 29 CFR 1926, Construction Industry Standards, as well as other applicable federal, state and local laws and regulations. All personnel will operate in compliance with all California OSHA requirements. A Site Specific Health and Safety Plan (HSP) is attached as Appendix B. The HSP was prepared to establish health and safety protocols for personnel working at the Site. This HSP meets federal and State of California (OSHA) standards for hazardous waste operations discussed above.

### 8.1.4 Personal Protection Equipment (PPE)

Personal Protection Equipment (PPE) will be used to isolate individuals from COC and physical hazards. The minimum level of protection for workers performing excavation activities on Site will be Level D protection:

- Nitrile gloves (direct contact with impacted soil)
- Washable boots
- Safety glasses (optional)
- Hard hat
- Hearing protection (if noise levels exceed 85 dBA)
- Tyvek coveralls (direct contact with impacted soil)

Daily use of PPE and personnel monitoring will be documented by the Contractor and Cornerstone in a daily written log.

### 8.1.5 Site Security

The Site will be fenced and gated with lock. Access to the Site shall be limited by the Contractor and United Auburn Indian Community to authorized personnel. Site control is intended to control the potential spread of contamination from the Site. Prior to excavation activities, the Contractor will divide the Site into three zones: exclusion zone, decontamination zone, and support zone. The planned areas of excavation are identified as exclusion zones.

#### 8.1.5.1 Exclusion Zones

Ingress to and egress from the exclusion zones (remedial excavation areas) will be controlled by the Contractor until the removal of soil exceeding Environmental Screening Criteria is complete. The exclusion zones and access corridors will be clearly defined in the field by the Contractor with a combination of construction staking, fencing, barricades, and/or caution tape. Unauthorized individuals will not be allowed within the exclusion zone during excavation activities. Temporary access corridors will be used for travel between work zones and to the

decontamination zone. The exclusion zones will remain cordoned off until removal activities are complete.

The Contractor will post signs on the perimeter fence around the Site that state:

| | |
|---|---|
| **WARNING**<br>**CONTAMINATED WORK AREA**<br><br>**AUTHORIZED PERSONNEL ONLY**<br><br>**Questions or Concerns, Please Call:**<br><br>Client's Phone Number | **WARNING**<br>**This Site contains chemicals known to the State of California to cause cancer or other reproductive toxicity.**<br><br>**AUTHORIZED PERSONNEL ONLY**<br><br>**Questions or Concerns, Please Call:**<br><br>Client's Phone Number |

### 8.1.5.2 Decontamination Zones and Procedures

Prior to the initiation of soil excavation activities, the Contractor will establish the decontamination zone(s). Decontamination procedures will be performed before leaving the work areas as part of general protocols for minimizing the physical transfer of impacted materials from the Site. Vehicles leaving the Site will be observed by Contractor and/or Cornerstone to note that appropriate decontamination and safety measures have been followed; a daily written report prepared by the Contractor will be provided to Cornerstone.

Prior to beginning soil excavation activities, decontamination zones will be established on-Site by the Contractor such that dust, debris and soil are removed from equipment, transportation vehicles and personnel leaving the work zones. The decontamination zone will be large enough to accommodate steam cleaning or pressure washing of all equipment including excavators, dozers and loaders, if necessary. However, personnel decontamination will also take place as Site personnel leave the work zones. The location and size of the decontamination zone for personnel may change as Site conditions and operations dictate.

Water used for on-Site decontamination will be collected and stored in on-Site storage containers (drums or closed-top tanks) provided by the Contractor. Wastewater will be analyzed and disposed off-Site at a permitted facility.

### 8.1.5.3 Support Zone/Staging Area

The support zone/staging area will be set up on-Site by the Contractor prior to starting excavation activities. This area will provide for administrative and support functions (command post, first-aid station, rest area, drinking facility, etc.) necessary to keep the field activities operating smoothly. The Contractor will provide potable water and wash facilities for the field personnel in this location.

## 8.2 RISK REDUCTION MEASURES

### 8.2.1 Dust and Erosion Control

The Contractor will utilize effective means of dust and erosion control to minimize the generation of dust and erosion associated with excavation activities, truck and vehicle traffic onto and off the Site, and the effects of ambient wind traversing exposed soil.

Work activities, such as clearing, excavation and grading operations, construction vehicle traffic on unpaved ground, and wind blowing over disturbed soil surfaces may generate dust and particulate matter whenever exposed soil surfaces are dry. The Contractor will eliminate or minimize dust emissions to the maximum extent possible. To accomplish minimal dust emissions, the Contractor will implement dust control measures in accordance with Air District rules and regulations.

An effective means of dust control will be utilized to minimize the generation of dust associated with the earthwork activities, truck traffic onto and off the Site, and the effects of ambient wind traversing exposed soil. The Contractor will be required to prepare and implement a detailed Dust Control Plan for all phases of construction that contact contaminated soil. Dust control measures utilized at the Site will include several or more of the following on an as needed basis:

- Providing equipment and staffing during normal working hours for watering of all exposed or disturbed soil surfaces sufficient to suppress dust plumes.
- Using dust suppressant additives in the water, which can be a small amount of ordinary liquid detergent.
- Covering or wetting of stockpiles of debris, soil, sand or other materials that can be blown by the wind.
- Misting or spraying water while excavating soil and loading transportation vehicles.
- Minimizing drop heights while loading/unloading excavated soil.
- For track-out prevention, a gravel pad near the Site exit will constructed for vehicle decontamination. Decontamination procedures outlined in Section 6.1.5.2 will be followed.

Any track-out on a paved public road at any location where vehicles exit the work Site will be cleaned by using wet sweeping or a HEPA filter equipped vacuum device by the end of each work day. Dry sweeping of paved roadways will be prohibited.

- Wetting inactive portions of the Site that have exposed soil surfaces or treating these areas with an approved dust suppressant.
- Suspending earth moving or other dust producing activities during periods of high winds whenever dust control measures are unable to prevent visible dust plumes.

Watering to control dust will not result in ponded water or runoff. If runoff occurs, it will be contained on-Site.

### 8.2.2 Air and Meteorological Monitoring

Air monitoring for the particulate matter at the Site will be performed to document worker exposures and off-Site migration of dust, during soil removal activities.

### 8.2.3 Perimeter Dust Monitoring

Perimeter air monitoring will be conducted at the Site to document the effectiveness of dust control measures. Prior to the beginning of soil removal activities, a windsock or anemometer will be used to monitor the wind direction at the Site and to help determine the location of monitors along the fence lines. Fence line monitoring will be conducted at three locations: one upwind and two downwind at the Site. Each dust monitor will be positioned within the breathing zone at approximately 5 feet above the ground level. Dust monitoring will be conducted daily during remedial excavation activities, and whenever personal or fence line air monitoring is performed.

- Real time monitoring of total dust (<10 µm diameter) will be conducted daily throughout the duration of the removal action during activities that may significantly disturb COC-impacted soil. The monitoring will be performed using three DataRAM PDR-1000 particulate monitors. These meters log the detected airborne dust concentrations.

- The particulate meters will be monitored by the field engineer or geologist to evaluate if excessive dust is migrating off-Site. Each time the meters are checked, the differences between the average upwind dust concentration and the average downwind concentration will be calculated.

- The DTSC recommended work zone action level is 5 milligrams per cubic meter (mg/m3). This concentration is half the 8-hour threshold limit value of 10 mg/m3 for total particulates established by the American Conference of Governmental Industrial Hygienists for occupational exposure. For perimeter dust monitoring, the calculated difference between the upwind and downwind meter will be compared to the DTSC recommended action level of 0.05 mg/m$^3$. Trigger levels for dust are established at one-half the action level. Exceedance of the trigger levels will require increased dust mitigation measures until the trigger levels can be achieved.

## 8.3 MANAGEMENT OF LEAD AND PESTICIDE-IMPACTED SOIL

### 8.3.1 Construction Sequence

This section presents a remedial construction sequence the Contractor will be required to follow at the Site. The sequence of activities is provided below followed by a discussion of selected tasks. It is assumed that the Inn and Annex buildings will be demolished prior to the start of the soil removal activities.

*Asbestos and Lead-Based Paint Survey →*
*Asbestos Abatement →*
*Demolish Buildings →*
*Perform Remedial Excavation Work →*

### 8.3.2 Excavation of COC Impacted Soil

The remedial action consists of excavating soil with COC concentrations exceeding Site cleanup goals and transportation of the excavated material to permitted off-Site facilities for disposal. The preliminary remedial excavation areas are presented on Figures 7A and 7B. Initial excavation depth of approximately 2 feet is proposed, with approximately 200 cubic yards (CY) of soil removed from the Inn/Annex building area, and approximately 1,100 CY removed from the SS-12, SS-15 and SS-16 areas. The final excavation extent and depths may vary based on confirmation sampling results.

Soil excavated from each removal area will be placed in its own temporary soil stockpile in accordance with protocol presented in Section 7.3.3.1. Each stockpile will be sampled by Cornerstone to profile the material for off-Site disposal. Following excavation, Cornerstone will collect confirmation soil samples from the excavations to evaluate if sufficient impacted soil has been removed; confirmation sampling/laboratory analyses are discussed in Section 7.4. Remedial excavation activities will be considered complete when the confirmation samples collected from the remaining in-place soil do not contain COC concentrations that exceed Site cleanup goals. The Contractor will off-haul the stockpiled material to a permitted waste disposal facility; disposal facilities and transportation routes are discussed in Section 7.6.

#### 8.3.2.1 Stockpiling Protocol

Excavated soil will be placed top of and covered by an “impermeable” liner (6 mil) to reduce infiltration by rainwater and contamination of underlying soil. If a stockpile will remain on-site greater than 48 hours, sandbags will be placed around the stockpile to secure the plastic sheeting. While remaining on-site, stockpiles will be checked daily to verify that they are adequately covered.

## 8.4 CONFIRMATION SOIL SAMPLING

To document removal of soil with COC concentrations that exceed Site cleanup goals, Cornerstone will collect confirmation soil samples from the in-place soil at the base and in the sidewalls of the excavations. The base confirmation samples will be collected at an approximate frequency of one sample for every approximately 500 square feet of excavation base. Sidewall samples will be collected at an approximate frequency of at least one sample for every approximately 50 feet of sidewall, with a minimum of one sample per sidewall.

Soil removal adjacent to the Inn and Annex buildings will be performed before the buildings are demolished. Verification soil samples will be collected from the crawlspaces, where accessible, to document soil quality that will remain after the buildings are demolished.

Sidewall and bottom confirmation soil samples will not be collected from excavation sidewalls and bottoms that extend to a prior sampling location where a soil sample was previously collected and analyzed and did not contain COC concentrations above Environmental Screening Criteria.

### 8.4.1 Confirmation Soil Sample Locations and Depths

The confirmation sample locations will be randomly selected in the base and sidewalls of the excavations in accordance with the above-mentioned frequencies. Sidewall soil samples will be collected at mid-point of the sidewall. For example, if the excavation extends to 2 feet, a sidewall sample will be collected from an approximate depth of 1 foot. Bottom samples will be collected from the upper ½-foot of soil at the base of the excavation.

### 8.4.2 Soil Sampling Procedure

Soil samples will be obtained by manually scraping a 2½- by 6-inch brass sampling tube into freshly exposed soil in the excavation sidewall. Bottom samples will be obtained by manually pressing a sampling tube to a depth of approximately 6 inches. If the soil is too dense to manually press the brass sampling tube into the soil, the tube will be driven into the soil using a slide hammer or equivalent device.

The ends of the liners will be covered in Teflon film, fitted with plastic end caps, and labeled with a unique identification number. The samples will then be placed in an ice-chilled cooler and transported to a state-certified analytical laboratory with chain of custody documentation.

### 8.4.3 Laboratory Analyses

The confirmation soil samples collected from the former orchard area excavations will be analyzed at a state-certified laboratory for arsenic (EPA Test Method 6010B). Confirmation samples collected from near the Inn and Annex will be analyzed for lead (EPA Test Method 6010B) and OCPs (EPA Test Method 8081A). The Contractor should assume that approximately three working days will be needed to obtain the analytical results from the laboratory and for the Cornerstone to review the data.

### 8.4.4 Additional Excavation and Confirmation Sampling

If concentrations of the COC exceeding Site cleanup goals are detected in the confirmation soil samples, additional excavation will be performed. Cornerstone will select an approximate distance to extend the excavation boundary. This process will be repeated until the remaining concentrations detected in the in-place soil do not exceed Environmental Screening Criteria.

### 8.4.5 Excavation Backfilling and Delineation

Construction of the new school facility will not require importing of soil. Earthwork/grading of soil will be performed on the northern portion of the Site in the area of the future structures, parking/drive areas and athletic field. As such, the excavation areas either will be re-graded during construction or will be backfilled with on-Site soil.

Excavation depths are not expected to exceed approximately 2 feet. Prior to the start of earthwork/grading activities, for safety precautions, the excavation areas will be delineated in orange construction fencing.

## 8.5 PROFILING OF EXCAVATED SOIL

To profile stockpiled soil for off-Site disposal, Cornerstone will collect 4-point composite soil samples from each stockpile in random areas and depths. The number of samples and laboratory testing program will be determined based on professional judgement and/or the Contractor's selected waste disposal facility's acceptance criteria. At a minimum, the samples will be submitted to a state-certified laboratory and analyzed for arsenic, lead, and OCPs. Depending on the acceptance criteria of the Contractor's selected disposal facility, selected stockpile samples may also be analyzed for California Assessment Manual (CAM17 metals (EPA Test Methods 6000/7000), total petroleum hydrocarbons (EPA Test Method 8015), VOCs (EPA Test Method 8260), and polyaromatic hydrocarbons (EPA Test Method 8270SIM). Based on these results, selected composite samples may also be analyzed for soluble metals using Soluble Threshold Limit Concentration (STLC) and/or Toxicity Characteristic Leaching Procedure (TCLP) extraction techniques.

Cornerstone will provide the analytical results to the Contractor who will then forward the data to disposal facilities to determine the appropriate destination of the stockpiled material. Prior to off-Site disposal, additional analytical testing may be required in accordance with the requirements of the selected disposal facility. UAIC will be responsible for signing all waste profile forms and manifests.

Based on the analytical results, soil excavated from the Inn/Annex area is anticipated to require disposal as a Class I California hazardous waste; disposal at the Kettleman Hill Landfill (Class I) in Kettleman City, California, is assumed. Remaining soil is expected to be accepted for disposal as a Class II non-hazardous waste; disposal at the Ostrom Road Landfill in Wheatland, California, is assumed.

## 8.6 SOIL DISPOSAL

### 8.6.1 Loading

During loading activities, the Contractor will place heavy plastic sheeting beneath the trucks to collect any spilled soil. To avoid spreading of the contamination, after each truck is loaded and prior to moving off the plastic sheeting, the top rails, fences, tires, and all other surfaces with visible dust or soil spilled during loading will be removed by dry brushing methods at the point of loading. The collected soil on the plastic will be periodically removed to avoid the spreading of impacted soil on the truck tires.

### 8.6.2 Transportation Procedures

This section outlines the requirements and procedures for transportation of impacted soil to an off-Site disposal facility. The Contractor will profile the soil to determine an appropriate disposal facility. The following transportation procedures will be followed. These procedures are based on guidelines contained in the *Transportation Plan – Preparation Guidance for Site Remediation* (Cal/EPA 1994). Approximately 130 truck loads are anticipated.

The soil will be transported by a licensed transporter. The necessary documents, such as the bills of lading and/or waste manifest forms, will be completed and accompany the truck driver to

the landfill. The trucks will be loaded at the Site and appropriately covered (tarped) in accordance with Department of Transportation (DOT) regulations.

#### 8.6.2.1 Transportation Routes

Loaded trucks will exit the Site onto Taylor Road heading north, turn right onto Penryn Road heading south, and turn left onto Boyington Road to merge into westbound Interstate 80.

Highway routes are provided for transportation of the soil to the Kettleman Hill Landfill (Class I) in Kettleman City, California and the Ostrom Road Landfill (Class II) in Wheatland, California, The Contractor shall verify these landfills accept pesticide and/or metal-containing waste. These routes are most direct and will provide the least risk of exposure to surrounding communities. The Contractor shall confirm none of the roadways selected are listed with the California Highway Patrol as prohibited for hauling hazardous waste. The trucks will attempt to avoid the major commute times and will avoid residential areas as much as possible. The following is a description of the transportation routes:

- The route to Kettleman Hills Landfill, California follows Interstate 80 west. The trucks will follow Interstate 80 west to Exit 86 for Interstate 5 South towards Los Angeles. Continue on Interstate 5 South to Exit 309 for California Route (CA-41). Turn right onto CA-41 south and follow to Old State Highway. Turn right on Old State Highway along which the landfill is located.

- The route to Ostrom Road Landfill in Wheatland, California follows Interstate 80 west. The trucks will follow Interstate 80 west to exit 106 for California Route 65 (CA-65) towards Lincoln/Marysville. The trucks will follow CA-65 North and turn right onto Main Street heading east. The trucks will make a slight right onto Spenceville Road and then turn left onto Jasper Lane heading north. Jasper Lane dead-ends into Ostrom Road. The trucks will turn right onto Ostrom Road heading east along which the landfill is located.

#### 8.6.2.2 Emergency Service and Response

Prior to the start of transport operations, the transportation contractor's Project Manager will contact an Emergency Response Contractor (ERC). In the event of a spill, accident, or breakdown, the transport driver will stay with the truck until law enforcement, California Highway Patrol, or other assistance arrives. The driver should contact their dispatcher who will in turn contact the ERC. Also, the driver should place traffic cones around the spill and keep onlookers away from the area. The driver is not to attempt to clean up the spilled material. The ERC is responsible for contacting all appropriate outside agencies based on the knowledge of the existing conditions (e.g., law enforcement, Caltrans, RWQCB, State or County Health Departments, California Office of Emergency Services). Due to the number of variables that could impact any off-Site spillage scenario, specific spill mitigation procedures are not provided.

#### 8.6.2.3 Training of Transportation Personnel

The selected transportation contractor will have an on-going training program for the truck drivers; such a program will be specifically required in the transportation contract. Drivers will

have: DOT required hazardous materials hauler training; and training as required by 29 CFR 1910.120(e), specifically 40 hours of off-site training, and 8-hour refresher training as required. The contractor's Site Safety Officer (SSO) will provide the transportation contractor with a copy of the HSP to allow the contractor to train the drivers regarding the hazardous characteristics of the material being transported. All training will be the responsibility of the transportation contractor.

### 8.6.3 Asbestos and Lead-Based Paint Survey and Building Demolition

Due to the age of the on-Site structure, building materials may contain asbestos. Prior to demolition, United Auburn Indian Community consultant will perform an asbestos and lead-based paint survey as required by local authorities and/or National Emissions Standards for Hazardous Air Pollutants (NESHAP) guidelines. NESHAP guidelines require the removal of potentially friable asbestos-containing building materials (ACBMs) prior to building demolition or renovation that may disturb the ACBM.

Following completion of soil removal from the area of the Inn and Annex buildings, and completion of asbestos and lead-paint abatement, the Contractor will demolish the on-Site buildings in accordance with a demolition permit obtained from Placer County and applicable local, state and federal regulations. Measures will be taken to protect soil in soil removal areas adjacent to structures from paint that may become detached from building components during demolition. Such measures include placing plastic sheeting around the perimeter of the building, and removal of the plastic sheeting and any accumulated debris along with the demolition debris.

## 8.7 QUALITY ASSURANCE PROJECT PLAN

This Quality Assurance Project Plan was presented in the PEA Work Plan that was approved by DTSC. For completeness, the plan is repeated below and will be implemented during RAW soil removal activities.

To check the precision and accuracy of field and laboratory data, we will collect quality assurance and quality control (QA/QC) samples and will review QA/QC data provided by the chemical testing laboratories. This section presents the following QAQC requirements:

- Field Documentation;
- Data Quality:
- Field Duplicates;
- Equipment and Trip Blanks;
- Sample Receipt and Handling;
- Laboratory Quality Control; and
- Data Validation

### 8.7.1 Field Documentation

Cornerstone will be present on a part- to full-time basis during remedial excavation activities. This individual will be responsible for observing excavation and off-haul activities, monitoring health and safety measures, air monitoring, confirmation sampling, and confirming that Contractor activities are being completed in conformance with this document. As part of this

process, daily field reports documenting Site activities will be completed and made available for inspection by authorized oversight personnel for the duration of the project.

Photographs of Site activities will be taken periodically by Cornerstone to further document the remedial action implementation.

### 8.7.2 Data Quality

Cornerstone selected an analytical laboratory on the basis of qualifications, reputation, and appropriate certifications and licensing. Torrent Laboratory, Inc is a California Department of Health Services (DHS) and National Environmental Laboratory Accreditation Conference (NELAC) certified laboratory (Certificate # 01107CA).

### 8.7.3 Field QA/QC

The field QA/QC procedures will consist of field duplicate and equipment blank collection and analysis.

#### 8.7.3.1 Field Duplicates

Field duplicate samples are two co-located samples of the same matrix, collected in the same approximate location and time, and similar overall homogeneity. Analysis of field duplicates provides a quantitative measure of the variability of the overall sampling and laboratory analysis process due to sample heterogeneity, sampling techniques, and/or analytical methods. The field duplicates will be assigned a different sample ID but will be packaged and transported in the same manner as the primary sample. For this investigation, one field duplicate soil sample will be collected from selected sampling locations.

#### 8.7.3.2 Equipment Blank

Equipment blank samples are collected prior to sampling activities by pouring analyte free water (deionized water) over or through decontaminated field sampling equipment. Analysis of equipment blanks evaluate the adequacy of the decontamination process and assess contamination from the total sampling, sample preparation process, when decontaminated sampling equipment is used to collect samples. For this investigation, one equipment blank will be collected from the hand sampling equipment to be used for soil sampling.

### 8.7.4 Sample Receipt and Handling

Sample handling and documentation will be reviewed during the data quality assessment and will include evaluating chain-of-custody documentation, technical sample integrity, preservation, and technical holding times. Samples will be delivered to the analytical laboratory with proper chain-of-custody documentation. Sample cooler temperatures for soil samples submitted to Test America of Pleasanton will be recorded at the time of sample receipt. After transfer of sample custody to the laboratory, the samples will be placed in storage refrigerators, maintaining a temperature of 6° Celsius or below. The analytical testing will be performed within the technical holding times for sample preparation and analyses.

### 8.7.5 Laboratory Quality Control

Samples will be delivered with proper chain-of-custody documentation to a state-certified analytical laboratory. The analytical laboratory QA/QC program will include sample receipt verification, sample hold times, and the preparation and analysis of laboratory QC samples. Laboratory QC samples will include:

- Method Blanks: A method blank is a laboratory-prepared contaminant-free matrix sample that is carried through the entire sample preparation and analytical process with the analytical batch. The method blank is used to assess the existence and magnitude of contamination resulting from laboratory activities.

- Laboratory Control Samples: A laboratory control sample (LCS) is a contaminant-free matrix (i.e., same used for a method blank), spiked with known concentration(s) of target analyte(s), that is carried through the entire sample preparation and analytical process with the analytical batch. The LCS is used to assess the overall accuracy of the method.

- Matrix Spike and Matrix Spike Duplicates: A matrix spike (MS), and matrix spike duplicate (MSD), are aliquots of a sample that have been spiked with target analyte(s) of known concentration(s) during sample preparation. The impact of sample matrix on target analyte recovery (i.e. accuracy) and precision is assessed by the MS and MSD percent recovery (%R) and RPD.

- Surrogate Recoveries: A surrogate is a non-target analyte spiked during sample preparation at known concentration in every sample, including field and laboratory QC samples. Surrogate analyses are used to monitor method performance on a matrix-specific/sample-specific basis.

At a minimum, one laboratory QC sample is required per 14 days or one per 20 samples (including blanks), whichever is greater. One laboratory QC sample will be chosen at random by the laboratory for the matrix spike and matrix spike duplicate (MS/MSD) per 14 days or one per 20 samples (including blanks), whichever is greater.

### 8.7.6 Data Validation

To test the validity of the analytical data, Level II data validation will be performed for the analytical data obtained during the RAW implementation. Data validation is a sample-specific process implemented to determine the quality of a given data set beyond the method specification, determines any causes for non-conformance to the standard method, and verifies that the reported results are within acceptable ranges. The data evaluation will be performed by third-party consultant Laboratory Data Consultants, Inc. (LDC) in Carlsbad, California. A Level II Data Validation package will be presented in the completion report.

## 8.8 SOIL REMOVAL COMPLETION REPORT

After completion of the remedial action, a Soil Removal Completion Report will be prepared. The report will document that the remedial action has been performed in accordance with this document and will include, at a minimum, the following elements:

- Summary of excavation activities (volume, extent, etc.);
- Procedures, location, and results (i.e., analytical reports) of the confirmation soil sampling;
- Documentation of off-Site transport and disposal of excavated soil (bills of lading, waste manifests);
- Health and safety and results of air monitoring.

## SECTION 9: PUBLIC PARTICIPATION

The public participation requirements for the RAW process included: (1) the development of a community profile, (2) publishing a notice of the availability of the Draft RAW for a 30-day public review and comment, (3) making the Draft RAW and other supporting documents available at DTSC's office and in the local information repository, and (4) responding to public comments received on the Draft RAW and CEQA documents.

## SECTION 10: CALIFORNIA ENVIRONMENTAL QUALITY ACT

The California Environmental Quality Act (CEQA) is a statute that requires State and local agencies to identify the significant environmental impacts of their actions and to avoid or mitigate those impacts, if feasible. In response to the passage of the National Environmental Policy Act (NEPA) in 1969, the California Legislature passed the CEQA in 1970 as a system of checks and balances for land use development and management decisions in California.

A CEQA project is a California project that has a potential for resulting in a direct physical change in the environment or a reasonably foreseeable indirect physical change in the environment. CEQA applies to discretionary projects proposed to be carried out or approved by California public agencies, unless an exemption applies. Once an activity is determined as a CEQA project, the lead agency shall conduct a preliminary review to determine whether the project is exempt from CEQA.

Placer County is the CEQA lead agency for the UAIC School Project, given that the County is the public agency having principal responsibility for approving the project. The County has determined that the proposed school project is not exempt from CEQA, and has prepared an environmental impact report (EIR) to evaluate the potential physical environmental effects associated with development of the proposed project. The County has included analysis of the proposed remediation activities within the EIR, with the intent to enable DTSC, as a responsible agency, to rely upon the EIR for approval of the RAW.

## SECTION 11: LIMITATIONS

This report was prepared for the sole use of United Auburn Indian Community and the Department of Toxic Substances Control. Cornerstone makes no warranty, expressed, or implied, except that our services have been performed in accordance with environmental principals generally accepted at this time and location.

## SECTION 12: REFERENCES

Cornerstone Earth Group. December 22, 2016. Limited Phase II Soil Quality Evaluation., 3141 Taylor Road, Loomis, California.

Cornerstone Earth Group. June 28, 2017. Final Preliminary Endangerment Assessment Work Plan, Planned Tribal School, 3141 Taylor Road, Placer County, California.

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DTSC. October 2001. *Information Advisory Clean Imported Fill Material.*

DTSC, 2006. *Interim Guidance Evaluation of School Sites with Potential Soil Contamination as a Result of Lead From Lead-Based Paint, Organochlorine Pesticides from Termiticides, and Polychlorinated Biphenyls from Electrical Transformers, Revised June 2006.*

DTSC, 2015. *Preliminary Endangerment Assessment (PEA) Guidance Manual, Revised October 2015.*

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PSI, November 23, 2015. Report of Phase I Environmental Site Assessment, The Gathering Place, 3141 Taylor Road, Loomis, California 95650.

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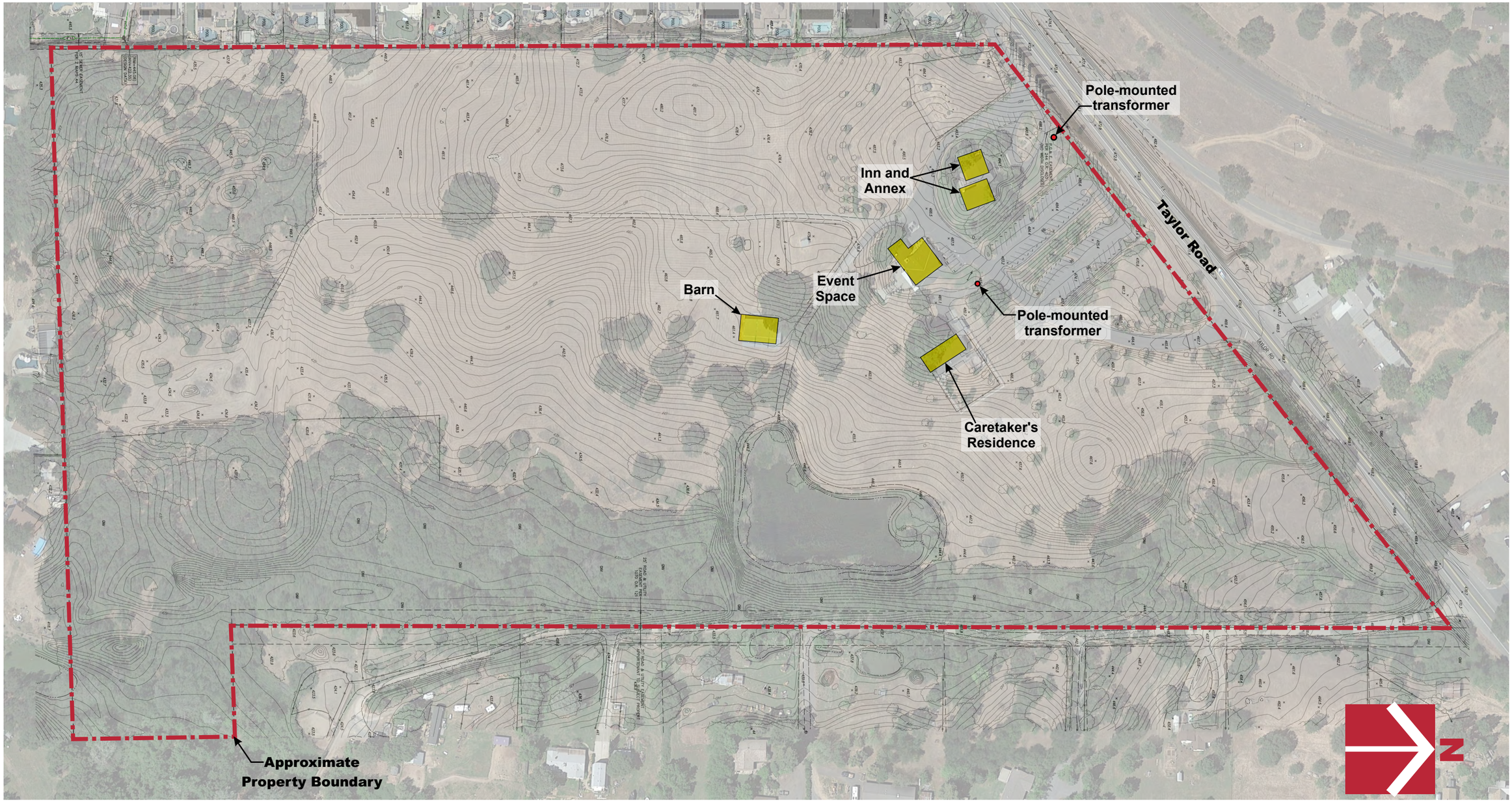
U.S. EPA. December 1993. *Guidance on Conducting Non-Time-Critical Removal Actions Under CERCLA*. https://www.epa.gov/superfund/non-time-critical-removal-actions

CORNERSTONE EARTH GROUP

**Vicinity Map**

**United Auburn Indian Community School**
**3141 Taylor Road**
**Placer County, CA**

| | |
|---|---|
| Project Number | 411-16-4 |
| Figure Number | Figure 1 |
| Date | December 2017 |
| Drawn By | RRN |




Base by Google Earth, dated 7/10/2016
Overlay by RSC Engineering, Topographic Survey, dated October 2016

CORNERSTONE EARTH GROUP

**Site Plan**

**United Auburn Indian Community School**
**3141 Taylor Road**
**Placer County, CA**

| | |
|---|---|
| Project Number | 411-16-4 |
| Figure Number | Figure 2 |
| Date | December 2017 |
| Drawn By | RRN |

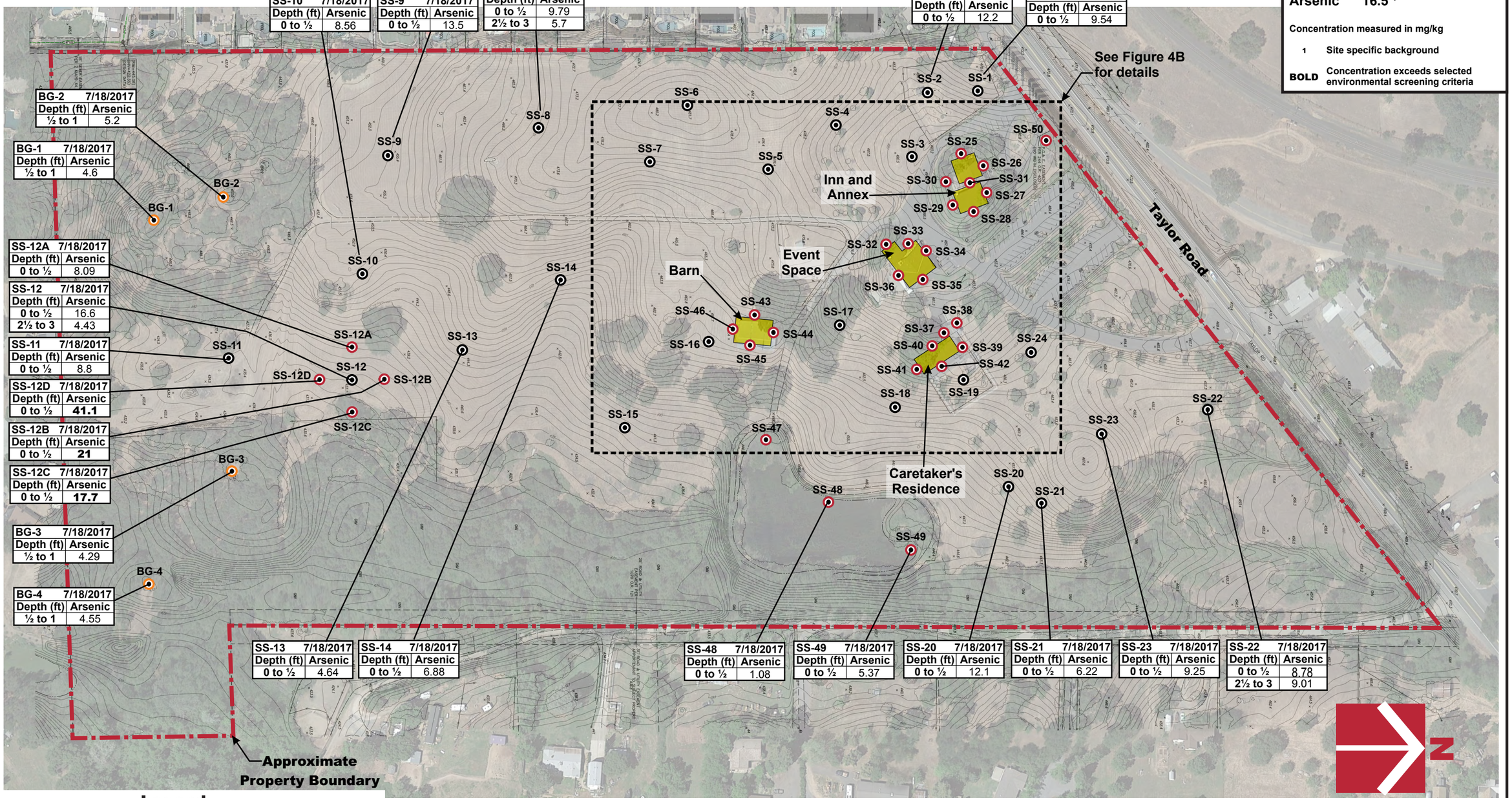
Base by Google Earth, dated 7/10/2016
Overlay: Development Plan, undated

CORNERSTONE EARTH GROUP

**Development Plan**

**United Auburn Indian Community School**
**3141 Taylor Road**
**Placer County, CA**

| | |
|---|---|
| Project Number | 411-16-5 |
| Figure Number | Figure 3 |
| Date | June 2018 |
| Drawn By | RRN |




## Screening Levels

**Arsenic 16.5 [1]**

Concentration measured in mg/kg

1 Site specific background

**BOLD** Concentration exceeds selected environmental screening criteria

## Legend

- Approximate location of background sample (BG)
- Approximate location of soil sample (SS)
- Approximate location of soil sample (SS) (Cornerstone, 2016)

0 160 320

APPROXIMATE SCALE (FEET)

Base by Google Earth, dated 7/10/2016
Overlay by RSC Engineering, Topographic Survey, dated October 2016

CORNERSTONE EARTH GROUP

**Soil Sample Locations and Arsenic Results**

**United Auburn Indian Community School**
**3141 Taylor Road**
**Placer County, CA**

| | |
|---|---|
| Project Number | 411-16-4 |
| Figure Number | Figure 4A |
| Date | December 2017 |
| Drawn By | RRN |

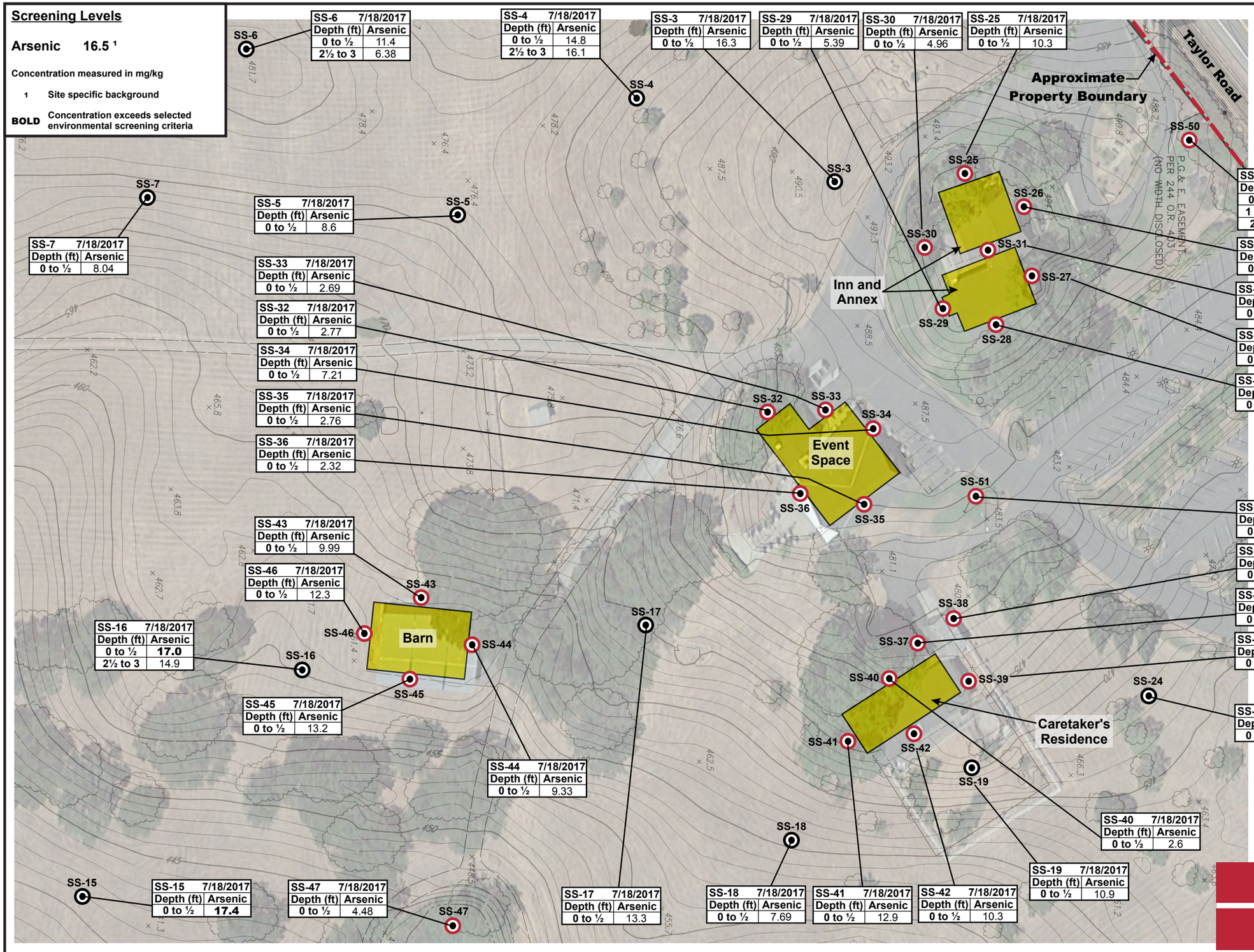
## Screening Levels

**Arsenic 16.5 [1]**

Concentration measured in mg/kg

[1] Site specific background

**BOLD** Concentration exceeds selected environmental screening criteria




| SS-6 7/18/2017 | |
|---|---|
| Depth (ft) | Arsenic |
| 0 to ½ | 11.4 |
| 2½ to 3 | 6.38 |

| SS-4 7/18/2017 | |
|---|---|
| Depth (ft) | Arsenic |
| 0 to ½ | 14.8 |
| 2½ to 3 | 16.1 |

| SS-3 7/18/2017 | |
|---|---|
| Depth (ft) | Arsenic |
| 0 to ½ | 16.3 |

| SS-29 7/18/2017 | |
|---|---|
| Depth (ft) | Arsenic |
| 0 to ½ | 5.39 |

| SS-30 7/18/2017 | |
|---|---|
| Depth (ft) | Arsenic |
| 0 to ½ | 4.96 |

| SS-25 7/18/2017 | |
|---|---|
| Depth (ft) | Arsenic |
| 0 to ½ | 10.3 |

| SS-50 7/18/2017 | |
|---|---|
| Depth (ft) | Arsenic |
| 0 to ½ | --- |
| 1 to 1½ | --- |
| 2 to 3 | --- |

| SS-26 7/18/2017 | |
|---|---|
| Depth (ft) | Arsenic |
| 0 to ½ | 8.95 |

| SS-31 7/18/2017 | |
|---|---|
| Depth (ft) | Arsenic |
| 0 to ½ | 5.57 |

| SS-27 7/18/2017 | |
|---|---|
| Depth (ft) | Arsenic |
| 0 to ½ | 10.7 |

| SS-28 7/18/2017 | |
|---|---|
| Depth (ft) | Arsenic |
| 0 to ½ | 7.45 |

| SS-51 7/18/2017 | |
|---|---|
| Depth (ft) | Arsenic |
| 0 to ½ | --- |

| SS-38 7/18/2017 | |
|---|---|
| Depth (ft) | Arsenic |
| 0 to ½ | 3.92 |

| SS-37 7/18/2017 | |
|---|---|
| Depth (ft) | Arsenic |
| 0 to ½ | 3.7 |

| SS-39 7/18/2017 | |
|---|---|
| Depth (ft) | Arsenic |
| 0 to ½ | 8.96 |

| SS-24 7/18/2017 | |
|---|---|
| Depth (ft) | Arsenic |
| 0 to ½ | 5.29 |

| SS-40 7/18/2017 | |
|---|---|
| Depth (ft) | Arsenic |
| 0 to ½ | 2.6 |

| SS-19 7/18/2017 | |
|---|---|
| Depth (ft) | Arsenic |
| 0 to ½ | 10.9 |

| SS-42 7/18/2017 | |
|---|---|
| Depth (ft) | Arsenic |
| 0 to ½ | 10.3 |

| SS-41 7/18/2017 | |
|---|---|
| Depth (ft) | Arsenic |
| 0 to ½ | 12.9 |

| SS-18 7/18/2017 | |
|---|---|
| Depth (ft) | Arsenic |
| 0 to ½ | 7.69 |

| SS-17 7/18/2017 | |
|---|---|
| Depth (ft) | Arsenic |
| 0 to ½ | 13.3 |

| SS-47 7/18/2017 | |
|---|---|
| Depth (ft) | Arsenic |
| 0 to ½ | 4.48 |

| SS-15 7/18/2017 | |
|---|---|
| Depth (ft) | Arsenic |
| 0 to ½ | **17.4** |

| SS-16 7/18/2017 | |
|---|---|
| Depth (ft) | Arsenic |
| 0 to ½ | **17.0** |
| 2½ to 3 | 14.9 |

| SS-45 7/18/2017 | |
|---|---|
| Depth (ft) | Arsenic |
| 0 to ½ | 13.2 |

| SS-44 7/18/2017 | |
|---|---|
| Depth (ft) | Arsenic |
| 0 to ½ | 9.33 |

| SS-46 7/18/2017 | |
|---|---|
| Depth (ft) | Arsenic |
| 0 to ½ | 12.3 |

| SS-43 7/18/2017 | |
|---|---|
| Depth (ft) | Arsenic |
| 0 to ½ | 9.99 |

| SS-36 7/18/2017 | |
|---|---|
| Depth (ft) | Arsenic |
| 0 to ½ | 2.32 |

| SS-35 7/18/2017 | |
|---|---|
| Depth (ft) | Arsenic |
| 0 to ½ | 2.76 |

| SS-34 7/18/2017 | |
|---|---|
| Depth (ft) | Arsenic |
| 0 to ½ | 7.21 |

| SS-32 7/18/2017 | |
|---|---|
| Depth (ft) | Arsenic |
| 0 to ½ | 2.77 |

| SS-33 7/18/2017 | |
|---|---|
| Depth (ft) | Arsenic |
| 0 to ½ | 2.69 |

| SS-5 7/18/2017 | |
|---|---|
| Depth (ft) | Arsenic |
| 0 to ½ | 8.6 |

| SS-7 7/18/2017 | |
|---|---|
| Depth (ft) | Arsenic |
| 0 to ½ | 8.04 |

## Legend

Approximate location of soil sample (SS) (Cornerstone, 2016)

Approximate location of soil sample (SS)

0 60 120

APPROXIMATE SCALE (FEET)

Base by Google Earth, dated 7/10/2016
Overlay by RSC Engineering, Topographic Survey, dated October 2016

Project Number: 411-16-4

Figure Number: Figure 4B

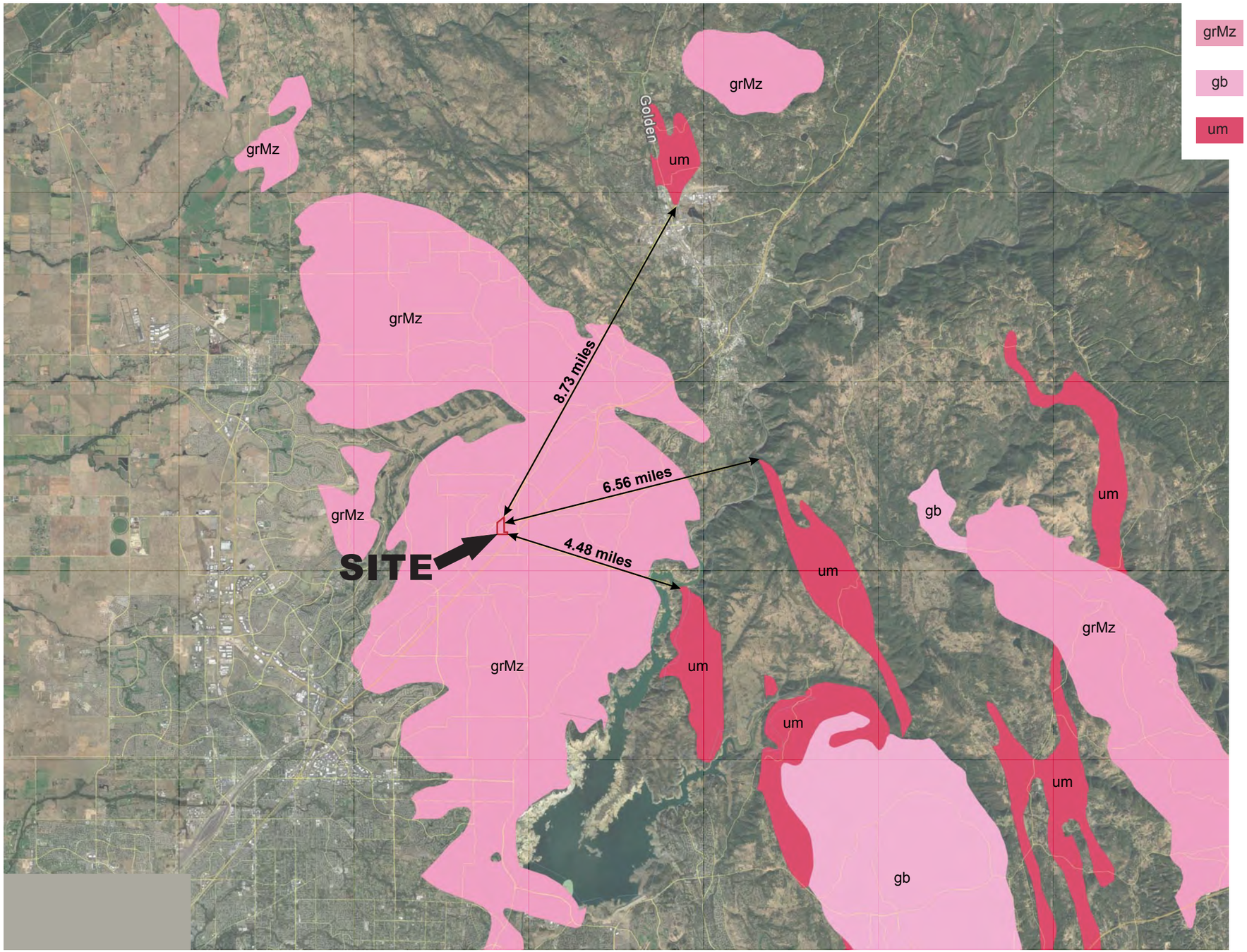
Drawn By: RRN

Date: December 2017

**Soil Sample Locations and Arsenic Results**

**United Auburn Indian Community School**
**3141 Taylor Road**
**Placer County, CA**

CORNERSTONE EARTH GROUP




**Geologic Units**

| | |
|---|---|
| grMz | Mesozoic granite rocks (Permian to Tertiary; most Mesozoic) |
| gb | Ultramafic rocks, chiefly Mesozoic (Late Proterozoic to Early Jurassic) |
| um | Mesozoic gabbroic rocks (Triassic to Cretaceous) |

N

0 14,000 28,000

APPROXIMATE SCALE (FEET)

Base by Google Earth, dated 10/25/2016

Project Number 411-16-4

Figure Number Figure 5

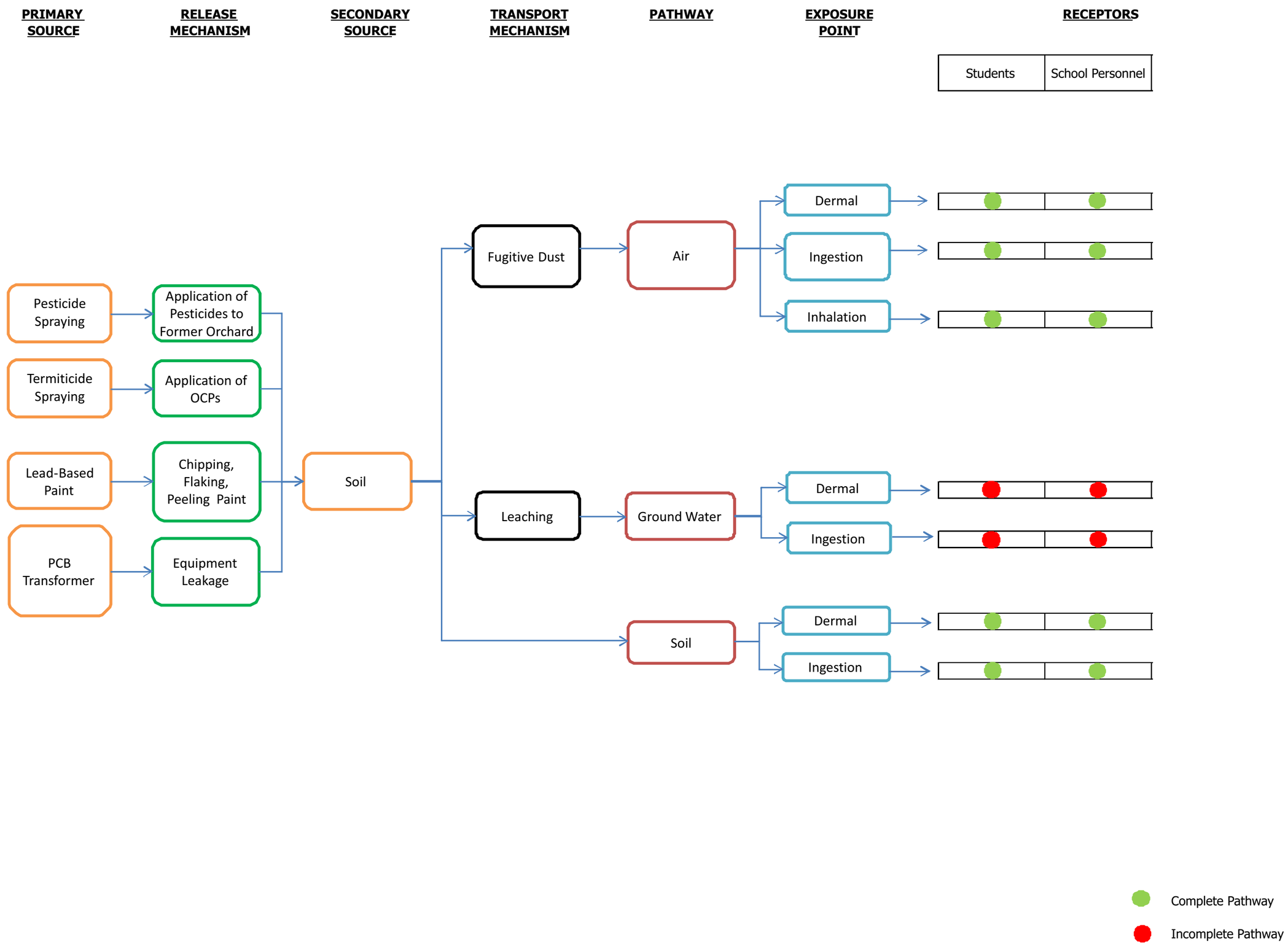
Date December 2017

Drawn By RRN

**Ultramafic Map**

**United Auburn Indian Community School**
**3141 Taylor Road**
**Placer County, CA**

CORNERSTONE EARTH GROUP




Project Number 411-16-4

Figure Number Figure 6

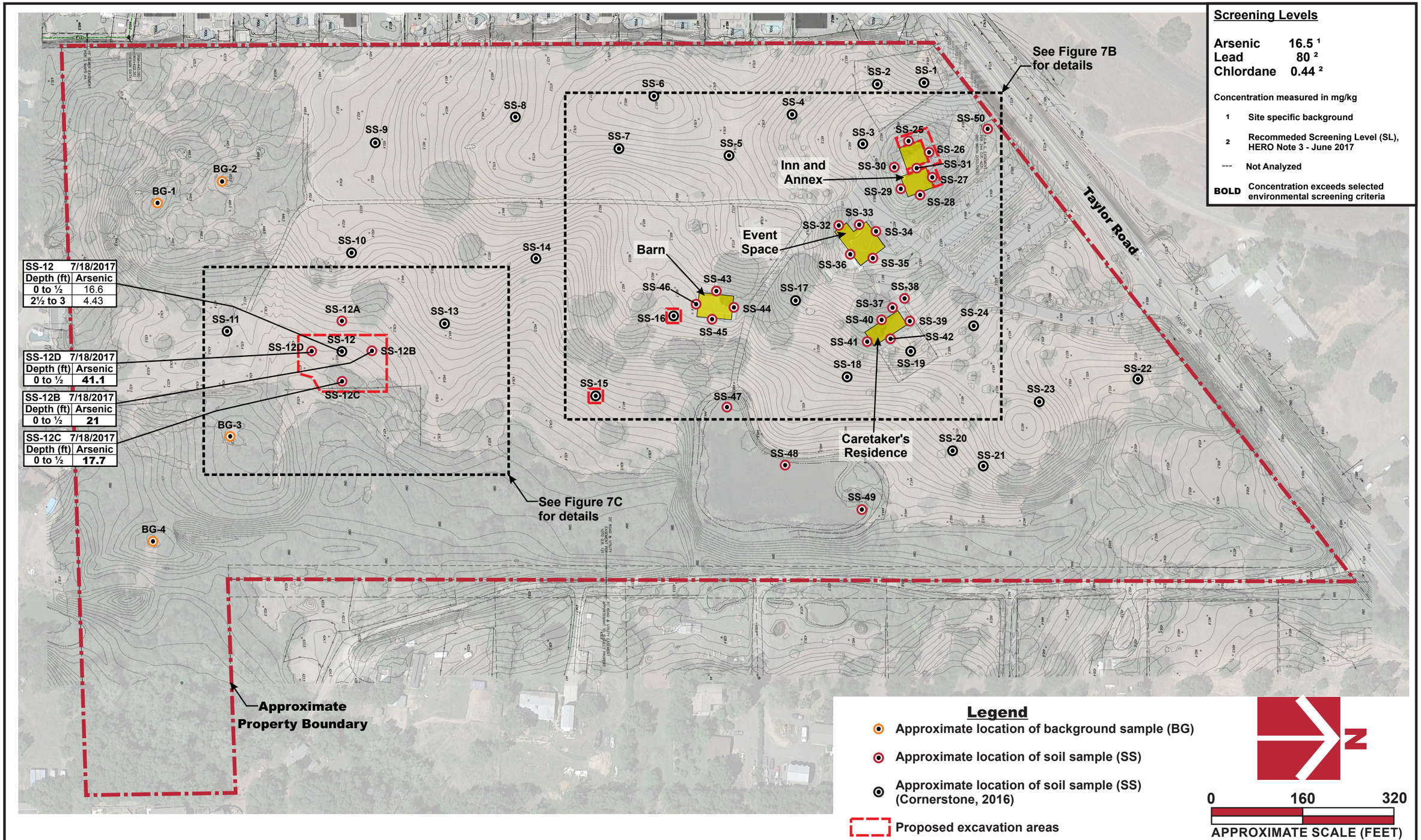
Drawn By RRN

Date December 2017

Conceptual Site Model

United Auburn Indian Community School
3141 Taylor Road
Placer County, CA

CORNERSTONE EARTH GROUP




| SS-12 | 7/18/2017 |
|---|---|
| Depth (ft) | Arsenic |
| 0 to ½ | 16.6 |
| 2½ to 3 | 4.43 |

| SS-12D | 7/18/2017 |
|---|---|
| Depth (ft) | Arsenic |
| 0 to ½ | **41.1** |

| SS-12B | 7/18/2017 |
|---|---|
| Depth (ft) | Arsenic |
| 0 to ½ | **21** |

| SS-12C | 7/18/2017 |
|---|---|
| Depth (ft) | Arsenic |
| 0 to ½ | **17.7** |

## Screening Levels

| | |
|---|---|
| Arsenic | 16.5 [1] |
| Lead | 80 [2] |
| Chlordane | 0.44 [2] |

Concentration measured in mg/kg

1 Site specific background

2 Recommeded Screening Level (SL), HERO Note 3 - June 2017

--- Not Analyzed

**BOLD** Concentration exceeds selected environmental screening criteria

## Legend

- Approximate location of background sample (BG)
- Approximate location of soil sample (SS)
- Approximate location of soil sample (SS) (Cornerstone, 2016)
- Proposed excavation areas

N

0 160 320

APPROXIMATE SCALE (FEET)

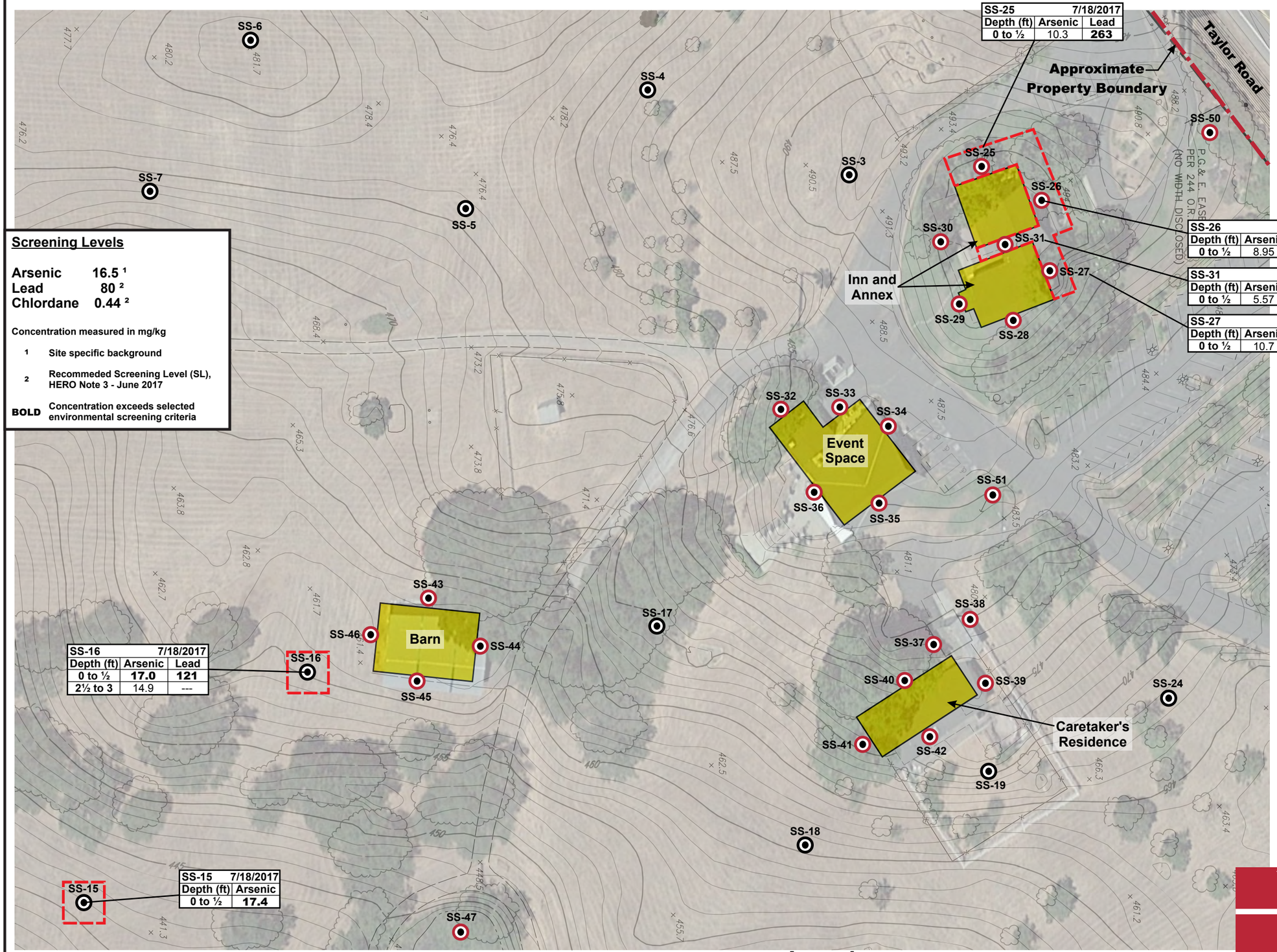
Base by Google Earth, dated 7/10/2016
Overlay by RSC Engineering, Topographic Survey, dated October 2016

CORNERSTONE EARTH GROUP

**Proposed Excavation Areas**

**United Auburn Indian Community School**
**3141 Taylor Road**
**Placer County, CA**

| | |
|---|---|
| Project Number | 411-16-5 |
| Figure Number | Figure 7A |
| Date | June 2018 |
| Drawn By | RRN |




| SS-25 | | 7/18/2017 |
|---|---|---|
| Depth (ft) | Arsenic | Lead |
| 0 to ½ | 10.3 | **263** |

| SS-26 | | | 7/18/2017 |
|---|---|---|---|
| Depth (ft) | Arsenic | Lead | Chlordane |
| 0 to ½ | 8.95 | **260** | **1.49** |

| SS-31 | | 7/18/2017 |
|---|---|---|
| Depth (ft) | Arsenic | Lead |
| 0 to ½ | 5.57 | **263** |

| SS-27 | | 7/18/2017 |
|---|---|---|
| Depth (ft) | Arsenic | Lead |
| 0 to ½ | 10.7 | **87.7** |

| SS-16 | | 7/18/2017 |
|---|---|---|
| Depth (ft) | Arsenic | Lead |
| 0 to ½ | **17.0** | **121** |
| 2½ to 3 | 14.9 | --- |

| SS-15 | 7/18/2017 |
|---|---|
| Depth (ft) | Arsenic |
| 0 to ½ | **17.4** |

**Screening Levels**

| | |
|---|---|
| Arsenic | 16.5 [1] |
| Lead | 80 [2] |
| Chlordane | 0.44 [2] |

Concentration measured in mg/kg

1 Site specific background

2 Recommeded Screening Level (SL), HERO Note 3 - June 2017

**BOLD** Concentration exceeds selected environmental screening criteria

**Legend**

Approximate location of soil sample (SS) (Cornerstone, 2016)

Approximate location of soil sample (SS)

Proposed excavation areas

0 60 120

APPROXIMATE SCALE (FEET)

Base by Google Earth, dated 7/10/2016
Overlay by RSC Engineering, Topographic Survey, dated October 2016

Project Number 411-16-5

Figure Number Figure 7B

Drawn By RRN

Date June 2018

Proposed Excavation Areas

United Auburn Indian Community School
3141 Taylor Road
Placer County, CA

CORNERSTONE EARTH GROUP

## Screening Levels

| | |
|---|---|
| Arsenic | 16.5 [1] |
| Lead | 80 [2] |
| Chlordane | 0.44 [2] |

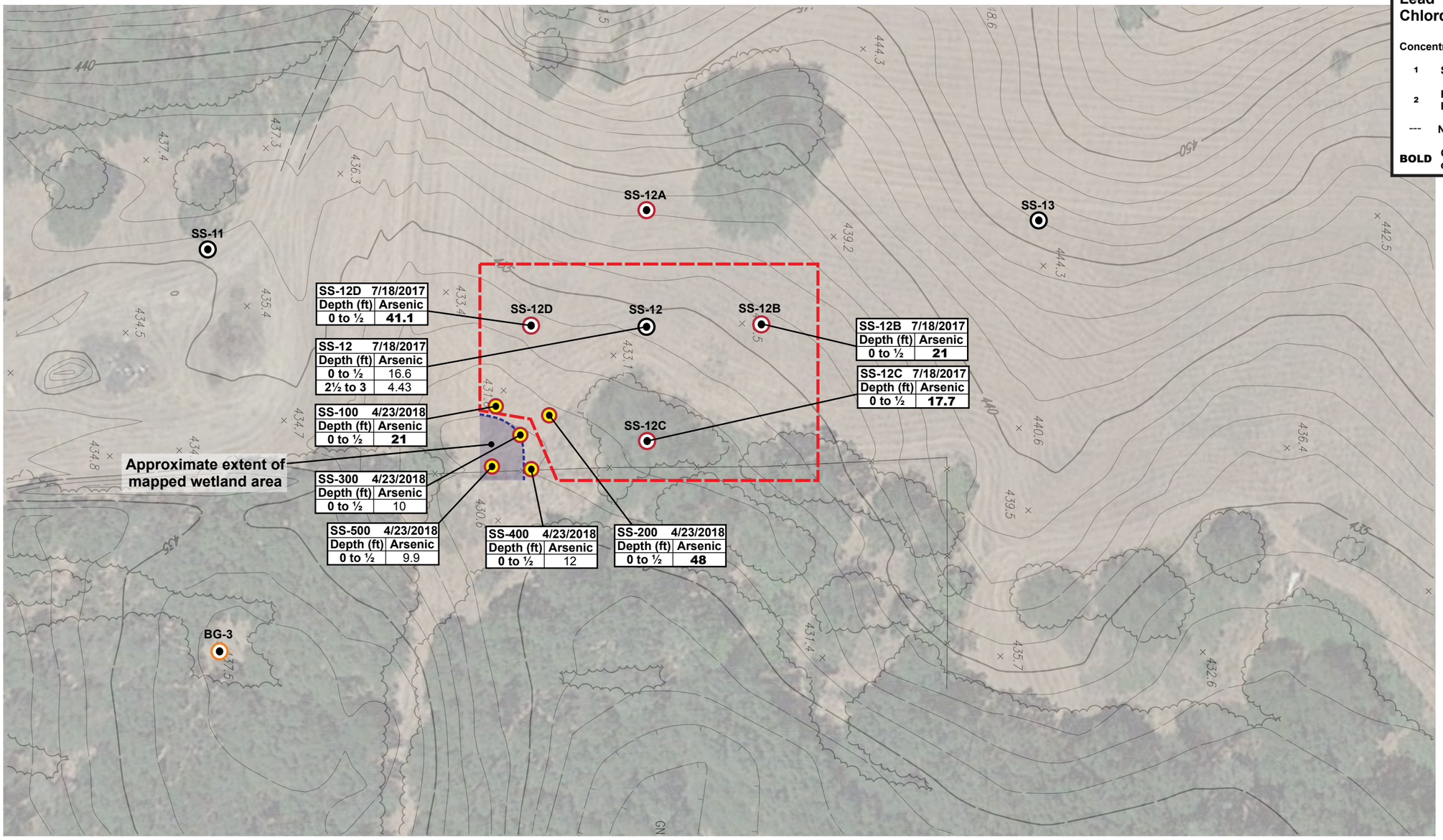
Concentration measured in mg/kg

1 Site specific background

2 Recommeded Screening Level (SL), HERO Note 3 - June 2017

--- Not Analyzed

**BOLD** Concentration exceeds selected environmental screening criteria




## Legend

- Approximate location of proposed soil sample
- Approximate location of background sample (BG)
- Approximate location of soil sample (SS)
- Approximate location of soil sample (SS) (Cornerstone, 2016)
- Proposed excavation area

Base by Google Earth, dated 7/10/2016
Overlay by RSC Engineering, Topographic Survey, dated October 2016

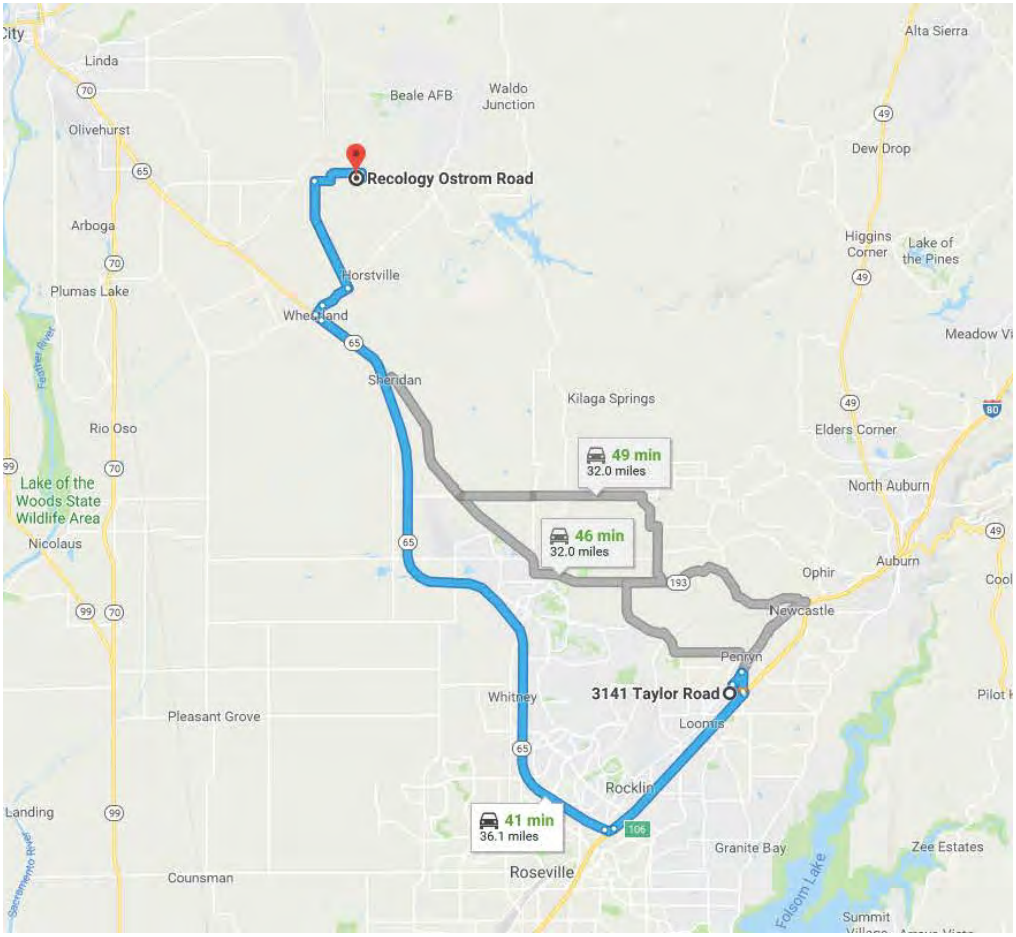
0 50 100
APPROXIMATE SCALE (FEET)

CORNERSTONE EARTH GROUP

**Proposed Excavation Area**

**United Auburn Indian Community School**
**3141 Taylor Road**
**Placer County, CA**

| | |
|---|---|
| Project Number | 411-16-5 |
| Figure Number | Figure 7C |
| Date | June 2018 |
| Drawn By | RRN |




3141 Taylor Rd
Loomis, CA 95650

**Get on I-80 W from Taylor Rd and Penryn Rd**

4 min (1.6 mi)

1. Head north on Tumble Ln toward Taylor Rd — 0.3 mi
2. Turn right onto Taylor Rd — 0.5 mi
3. Turn right onto Penryn Rd — 0.6 mi
4. Turn left to merge onto I-80 W toward Sacramento — 0.1 mi

**Take CA-65 N to State St in Yuba County**

25 min (27.4 mi)

5. Merge onto I-80 W — 6.0 mi
6. Take exit 106 for CA-65 toward Lincoln/Marysville — 0.3 mi
7. Continue onto CA-65 N — 21.0 mi

**Take Jasper Ln and Ostrom Rd to your destination**

12 min (7.2 mi)

8. Turn right onto State St — 0.3 mi
9. Turn right onto Main St — 0.4 mi
10. Slight right onto Spenceville Rd — 1.0 mi
11. Turn left onto Jasper Ln — 3.7 mi
12. Turn right onto Ostrom Rd — 1.7 mi
13. Turn right at S Erle St — 0.2 mi
    Restricted usage road

Recology Ostrom Road
5900 Ostrom Rd, Wheatland, CA 95692

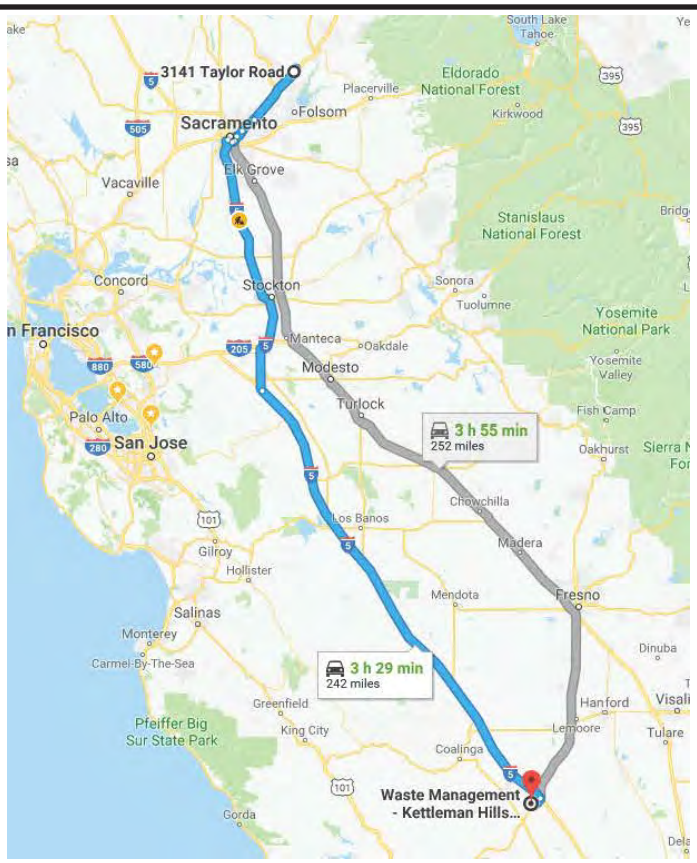
**Base by Google Maps, dated 2018**

CORNERSTONE EARTH GROUP

**Truck Route to Recology Ostrom Road**

**United Auburn Indian Community School**
**3141 Taylor Road**
**Placer County, CA**

| | |
|---|---|
| Project Number | 411-16-4 |
| Figure Number | Figure 8A |
| Date | January 2018 |
| Drawn By | RRN |




3141 Taylor Rd
Loomis, CA 95650

**Get on I-80 W from Taylor Rd and Penryn Rd**

4 min (1.6 mi)

1. Head north on Tumble Ln toward Taylor Rd — 0.3 mi
2. Turn right onto Taylor Rd — 0.5 mi
3. Turn right onto Penryn Rd — 0.6 mi
4. Turn left to merge onto I-80 W toward Sacramento — 0.1 mi

**Take I-5 S to CA-41 S in Kings County. Take exit 309 from I-5 S**

3 h 25 min (237 mi)

5. Merge onto I-80 W — 16.9 mi
6. Use the right 3 lanes to take exit 14B-95 for I-80 BUS toward Watt Ave/Sacramento/CA-99 S/Capital City Freeway — 0.2 mi
7. Continue onto I-80BUS W/Capital City Freeway (signs for Capital City Fwy/Sacramento) — 4.7 mi
8. Keep left at the fork to continue on I-80BUS W — 298 ft
9. Continue onto I-80BL — 0.2 mi
10. Continue onto I-80BUS W — 1.4 mi
11. Take exit 6A for I-80 W toward I-5/San Francisco — 0.8 mi
12. Merge onto I-305 W/I-80BUS W — 1.2 mi
13. Use the 3rd from the right lane to take exit 4A for Interstate 5 N/Interstate 5 S/State Route 99 North toward Redding/Los Angeles — 0.1 mi
14. Keep left at the fork, follow signs for Los Angeles/I-5 S and merge onto I-5 S — 72.8 mi
15. I-5 S turns slightly right and becomes I-5 S — 1.7 mi
16. Take exit 309 for CA-41 toward Kettleman City/Paso Robles — 0.3 mi

**Continue on CA-41 S. Drive to Skyline Rd**

6 min (3.4 mi)

17. Turn right onto CA-41 S — 2.6 mi
18. Turn right onto Old State Hwy — 0.7 mi
19. Continue onto Skyline Rd — 0.3 mi

Waste Management - Kettleman Hills Hazardous Waste Facility
35251 Skyline Rd, Kettleman City, CA 93239

**Base by Google Maps, dated 2018**

CORNERSTONE EARTH GROUP

**Truck Route to Waste Management - Kettleman Hills Hazardous Waste Facility**

**United Auburn Indian Community School**
**3141 Taylor Road**
**Placer County, CA**

| | |
|---|---|
| Project Number | 411-16-4 |
| Figure Number | Figure 8B |
| Date | January 2018 |
| Drawn By | RRN |

# DATA SUMMARY TABLES

CORNERSTONE EARTH GROUP

Data Table 1. Analytical Results of Selected Soil Samples - Metals
(Concentrations in mg/kg)

| Sample ID | Date | Depth (feet) | Sample Location | Antimony | Arsenic | Barium | Beryllium | Cadmium | Chromium | Cobalt | Copper | Lead | Molybdenum | Nickel | Selenium | Silver | Vanadium | Zinc |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BG-1 (0.5-1) | 7/18/2017 | ½-1 | Undeveloped Areas Background Arsenic Concentrations | --- | 4.6 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| BG-2 (0.5-1) | 7/18/2017 | ½-1 | | --- | 5.2 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| BG-3 (0.5-1) | 7/18/2017 | ½-1 | | --- | 4.29 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| BG-4 (0.5-1) | 7/18/2017 | ½-1 | | --- | 4.55 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-1 (0-0.5) | 7/18/2017 | 0-½ | Former Orchard Areas | 0.165[J] | 9.54 | 59.7 | <0.16 | 0.102[J] | 28.3 | 6.78 | 23.1 | 17.6 | 0.252[J] | 13.6 | <0.035 | <0.14 | 30.5 | 39.9 |
| SS-2 (0-0.5) | 7/18/2017 | 0-½ | | 0.322[J] | 12.2 | 81.9 | 0.173[J] | 0.156[J] | 45.9 | 9.2 | 32.1 | 32.8 | 0.706[J] | 19 | <0.035 | <0.13 | 46.4 | 68.4 |
| SS-3 (0-0.5) | 7/18/2017 | 0-½ | | 0.238[J] | 16.3 | 76.9 | <0.25 | <0.13 | 42.3 | 11 | 35.4 | 26.6 | 0.462[J] | 19.9 | <0.054 | <0.15 | 50.4 | 53.4 |
| SS-4 (0-0.5) | 7/18/2017 | 0-½ | | 0.22[J] | 14.8 | 72.3 | 0.164[J] | 0.105[J] | 32.6 | 8.47 | 31.9 | 31 | 0.373[J] | 14.4 | <0.035 | 0.406[J] | 36.4 | 34.7 |
| SS-4 (2.5-3) | 7/18/2017 | 2½-3 | | --- | 16.1 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-5 (0-0.5) | 7/18/2017 | 0-½ | | 0.154[J] | 8.6 | 71.3 | <0.16 | <0.084 | 22.3 | 5.69 | 21.6 | 32.1 | 0.146[J] | 10.4 | <0.035 | <0.099 | 24.3[J] | 25.2 |
| SS-6 (0-0.5) | 7/18/2017 | 0-½ | | 0.233[J] | 11.4 | 79.9 | <0.20 | 0.147[J] | 34.3 | 8.9 | 29.7 | 31.2 | 0.298[J] | 18.4 | <0.043 | <0.12 | 40.8 | 42.2 |
| SS-6 (2.5-3) | 7/18/2017 | 2½-3 | | --- | 6.38 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-7 (0-0.5) | 7/18/2017 | 0-½ | | 0.197[J] | 8.04 | 91.3 | <0.19 | 0.109[J] | 30.7 | 7.79 | 31.1 | 28 | 0.25[J] | 14.5 | <0.041 | <0.12 | 34.3 | 34 |
| SS-8 (0-0.5) | 7/18/2017 | 0-½ | | 0.186[J] | 9.79 | 90.7 | <0.17 | 0.0879[J] | 26.5 | 7.16 | 31.1 | 42.4 | 0.182[J] | 12.7 | <0.036 | <0.10 | 27.9 | 29 |
| SS-8 (2.5-3) | 7/18/2017 | 2½-3 | | --- | 5.7 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-9 (0-0.5) | 7/18/2017 | 0-½ | | 0.167[J] | 13.5 | 115 | <0.22 | 0.124[J] | 34.1 | 8.98 | 44.2 | 56 | 0.265[J] | 17 | <0.047 | <0.13 | 37.9 | 42 |
| SS-10 (0-0.5) | 7/18/2017 | 0-½ | | 0.163[J] | 8.56 | 114 | 0.189[J] | 0.0985[J] | 40.5 | 10.8 | 38.8 | 24.2 | 0.267[J] | 19.4 | <0.035 | <0.099 | 48.5 | 44.1 |
| SS-11 (0-0.5) | 7/18/2017 | 0-½ | | 0.285[J] | 8.8 | 108 | 0.164[J] | 0.166[J] | 24.6 | 7.14 | 18.5 | 21.1 | 0.491[J] | 14.6 | <0.035 | <0.099 | 37 | 55.7 |
| SS-12 (0-0.5) | 7/18/2017 | 0-½ | | 0.16[J] | 16.6 | 53.5 | <0.19 | <0.10 | 20.5 | 5.64 | 12.7 | 53.1 | <0.16 | 9.05 | <0.042 | <0.12 | 21.5[J] | 21.5 |
| SS-12 (2.5-3) | 7/18/2017 | 2½-3 | | --- | 4.43 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-12A (0-0.5) | 7/18/2017 | 0-½ | | --- | 8.09 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-12B (0-0.5) | 7/18/2017 | 0-½ | | --- | 21 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-12C (0-0.5) | 7/18/2017 | 0-½ | | --- | 17.7 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-12D (0-0.5) | 7/18/2017 | 0-½ | | --- | 41.1 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-13 (0-0.5) | 7/18/2017 | 0-½ | | <0.12 | 4.64 | 70 | <0.16 | <0.084 | 20.9 | 5.78 | 18.8 | 13.1 | <0.13 | 10 | <0.035 | <0.098 | 25 | 23.1 |
| SS-14 (0-0.5) | 7/18/2017 | 0-½ | | 0.188[J] | 6.88 | 86.1 | <0.16 | 0.115[J] | 28.6 | 6.99 | 28.3 | 30.2 | 0.212[J] | 12.9 | <0.035 | <0.098 | 29.1 | 33.3 |
| SS-15 (0-0.5) | 7/18/2017 | 0-½ | | 0.462[J] | 17.4 | 128 | 0.326[J] | 0.183[J] | 50.8 | 12.7 | 28.4 | 42.9 | 0.668[J] | 24.1 | <0.050 | <0.14 | 61.7 | 69.7 |
| SS-16 (0-0.5) | 7/18/2017 | 0-½ | | 0.468[J] | 17 | 43.3 | 0.193[J] | 0.15[J] | 92.1 | 19.5 | 60.2 | 121 | 0.416[J] | 55.8 | <0.037 | <0.11 | 144 | 99.2 |
| SS-16 (2.5-3) | 7/18/2017 | 2½-3 | | --- | 14.9 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-17 (0-0.5) | 7/18/2017 | 0-½ | | 0.35[J] | 13.3 | 103 | 0.188[J] | 0.17[J] | 50.1 | 10 | 34.9 | 35.1 | 0.77[J] | 20.7 | <0.038 | <0.11 | 50.5 | 76.8 |
| SS-18 (0-0.5) | 7/18/2017 | 0-½ | | 0.182[J] | 7.69 | 54.9 | 0.161 | <0.084 | 35.3 | 8.46 | 19.5 | 12.2 | 0.314[J] | 13 | <0.035 | <0.099 | 39.9 | 43.3 |
| SS-19 (0-0.5) | 7/18/2017 | 0-½ | | 0.295[J] | 10.9 | 78.2 | 0.24[J] | 0.0975[J] | 34.7 | 8 | 20.5 | 15.4 | 0.418[J] | 18.2 | <0.035 | <0.099 | 43.2 | 89.7 |
| SS-20 (0-0.5) | 7/18/2017 | 0-½ | | 0.257[J] | 12.1 | 78.4 | <0.18 | 0.124J | 34.5 | 7.94 | 38.4 | 58 | 0.223[J] | 13.5 | <0.039 | <0.11 | 32.1 | 45.5 |
| SS-21 (0-0.5) | 7/18/2017 | 0-½ | | 0.131[J] | 6.22 | 40.1 | <0.16 | <0.084 | 26.9 | 6.41 | 26.2 | 19.9 | <0.13 | 10.5 | <0.035 | <0.099 | 26.1 | 25.2 |
| SS-22 (0-0.5) | 7/18/2017 | 0-½ | | 0.166[J] | 8.78 | 51.7 | <0.16 | 0.086 | 26.1 | 8.08 | 15.7 | 28.6 | 0.168[J] | 9.99 | <0.036 | <0.10 | 25.3[J] | 30.6 |
| SS-22 (2.5-3) | 7/18/2017 | 2½-3 | | --- | 9.01 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-23 (0-0.5) | 7/18/2017 | 0-½ | | 0.163[J] | 9.25 | 61.1 | <0.19 | <0.099 | 41.8 | 10.6 | 33.5 | 13.8 | 0.264[J] | 16.2 | <0.041 | <0.12 | 41.5 | 41.6 |
| SS-24 (0-0.5) | 7/18/2017 | 0-½ | | 0.143[J] | 5.29 | 50.1 | <0.16 | <0.084 | 32.6 | 6.36 | 26.7 | 11.8 | 0.132[J] | 12 | <0.035 | <0.098 | 29.2 | 31.7 |
| SS-25 (0-0.5) | 7/18/2017 | 0-½ | Exterior Perimeter of Inn and Annex Buildings | 0.876[J] | 10.3 | 76.9 | <0.19 | 0.26[J] | 34.2 | 7.24 | 55.5 | 263 | 0.228[J] | 13.5 | <0.041 | <0.12 | 30.7 | 143 |
| SS-26 (0-0.5) | 7/18/2017 | 0-½ | | 0.363[J] | 8.95 | 93.5 | <0.18 | 0.331[J] | 40 | 7.23 | 61.7 | 260 | 0.292[J] | 17.1 | <0.040 | <0.11 | 33.2 | 208 |
| SS-27 (0-0.5) | 7/18/2017 | 0-½ | | 0.489[J] | 10.7 | 95.9 | <0.27 | 0.557[J] | 43.7 | 9.2 | 31.4 | 87.7 | 0.341[J] | 20.5 | <0.058 | <0.17 | 38.1[J] | 132 |
| SS-28 (0-0.5) | 7/18/2017 | 0-½ | | <0.20 | 7.45 | 64.1 | <0.27 | <0.14 | 24.5 | 6.19 | 22.1 | 46.2 | 1.99 | 14 | <0.058 | <0.16 | 30.4[J] | 229 |
| SS-29 (0-0.5) | 7/18/2017 | 0-½ | | 0.3[J] | 5.39 | 77 | <0.28 | <0.15 | 34.5 | 8.02 | 18.5 | 29.1 | <0.23 | 31.7 | <0.061 | <0.17 | 28.8[J] | 83 |
| SS-30 (0-0.5) | 7/18/2017 | 0-½ | | 0.31[J] | 4.96 | 45.1 | <0.16 | 0.11[J] | 16.6 | 4.14 | 18.1 | 22.8 | <0.13 | 8.24 | <0.036 | <0.10 | 17.4[J] | 218 |
| SS-31 (0-0.5) | 7/18/2017 | 0-½ | | 0.198[J] | 5.57 | 65.8 | <0.24 | 0.235[J] | 25 | 6.5[J] | 25.1 | 263 | <0.20 | 15.3 | <0.052 | <0.15 | 22.3[J] | 234 |
| SS-32 (0-0.5) | 7/18/2017 | 0-½ | Exterior Perimeter of Event Space | <0.15 | 2.77 | 42.9 | <0.19 | <0.10 | 22.8 | 7.51 | 19.3 | 3.16 | <0.16 | 13.4 | <0.042 | <0.12 | 25.8[J] | 29.7 |
| SS-33 (0-0.5) | 7/18/2017 | 0-½ | | <0.14 | 2.69 | 31.9 | <0.18 | <0.096 | 20.8 | 4.98 | 17.1 | 3.96 | <0.15 | 11.2 | <0.040 | <0.11 | 21.9[J] | 37.4 |
| SS-34 (0-0.5) | 7/18/2017 | 0-½ | | <0.13 | 7.21 | 38.5 | <0.17 | <0.089 | 15.2 | 3.56 | 10.7 | 32.8 | <0.14 | 7.56 | <0.037 | <0.10 | 14.5[J] | 21.7 |
| SS-35 (0-0.5) | 7/18/2017 | 0-½ | | <0.14 | 2.76 | 25.1 | <0.19 | <0.10 | 15.4 | 3.89 | 11.7 | 8.39 | <0.16 | 7.72 | <0.041 | <0.12 | 15.5[J] | 33.8 |
| SS-36 (0-0.5) | 7/18/2017 | 0-½ | | 0.27[J] | 2.32 | 40 | <0.22 | <0.12 | 13.6 | 3.23 | 9.68 | 6.91 | <0.18 | 6.65[J] | <0.048 | <0.14 | 12.6[J] | 32.9 |
| SS-37 (0-0.5) | 7/18/2017 | 0-½ | Exterior Perimeter of Caretakers Residence | 0.237[J] | 3.7 | 35.4 | <0.23 | 0.472[J] | 16.5 | 4.31 | 101 | 12.9 | <0.19 | 8.58 | <0.050 | <0.14 | 22.4[J] | 160 |
| SS-38 (0-0.5) | 7/18/2017 | 0-½ | | <0.13 | 3.92 | 35.4 | <0.17 | 0.622[J] | 20.5 | 4.94 | 21.3 | 22.7 | <0.14 | 9.29 | <0.037 | <0.11 | 22.0[J] | 189 |
| SS-39 (0-0.5) | 7/18/2017 | 0-½ | | 0.405[J] | 8.96 | 42.6 | 0.217[J] | 0.0941[J] | 14.4 | 3.64 | 13.3 | 10.4 | 0.254[J] | 10.3 | 0.131[J] | <0.11 | 20.7[J] | 37 |
| SS-40 (0-0.5) | 7/18/2017 | 0-½ | | <0.13 | 2.6 | 28.1 | <0.17 | <0.091 | 15.3 | 3.56 | 12.8 | 9.29 | <0.14 | 7.9 | <0.038 | <0.11 | 15.3[J] | 49 |
| SS-41 (0-0.5) | 7/18/2017 | 0-½ | | 0.652[J] | 12.9 | 99.5 | 0.231[J] | 0.239[J] | 51.4 | 10.5 | 39.7 | 49.2 | 0.434[J] | 21.8 | <0.041 | 0.12[J] | 51.3 | 122 |
| SS-42 (0-0.5) | 7/18/2017 | 0-½ | | 1.02[J] | 10.3 | 68.7 | <0.22 | <0.12 | 43.4 | 8.06 | 38 | 33.2 | 0.374[J] | 18.9 | <0.048 | <0.14 | 42.1 | 63.6 |
| SS-43 (0-0.5) | 7/18/2017 | 0-½ | Exterior Perimeter of Barn | 0.192[J] | 9.99 | 65.4 | 0.196[J] | 0.14[J] | 46.9 | 8.41 | 23.3 | 8.56 | 0.339[J] | 21.4 | <0.042 | <0.12 | 51.5 | 276 |
| SS-44 (0-0.5) | 7/18/2017 | 0-½ | | 0.445[J] | 9.33 | 63.9 | <0.27 | 0.347[J] | 72.3 | 7.48 | 31.6 | 38.1 | 2.55 | 35.4 | <0.059 | <0.17 | 35.5[J] | 136 |
| SS-45 (0-0.5) | 7/18/2017 | 0-½ | | 0.224[J] | 13.2 | 58.8 | 0.195[J] | 0.154[J] | 39.9 | 12.4 | 20.3 | 19.1 | 0.34[J] | 16.7 | <0.037 | <0.11 | 49.8 | 206 |
| SS-46 (0-0.5) | 7/18/2017 | 0-½ | | 0.379[J] | 12.3 | 71.1 | 0.198[J] | 0.125[J] | 46.4 | 8.76 | 24.5 | 14.9 | 0.456[J] | 18.8 | <0.035 | <0.099 | 53.8 | 75.4 |
| SS-47 (0-0.5) | 7/18/2017 | 0-½ | Pond Sediment | <0.31 | 4.48 | 24.8 | <0.41 | <0.21 | 19.7 | 6.16 | 17.8 | 11.2 | 0.429[J] | 10.1[J] | <0.088 | <0.25 | 14.5J | 23.1 |
| SS-48 (0-0.5) | 7/18/2017 | 0-½ | | <0.16 | 1.08[J] | 7.64 | <0.22 | <0.11 | 6.99 | 0.793[J] | 3.5 | 1.36 | <0.18 | 2.72[J] | <0.047 | <0.13 | 3.69[J] | 4.9 |
| SS-49 (0-0.5) | 7/18/2017 | 0-½ | | <0.18 | 5.37 | 37.6 | <0.24 | <0.13 | 37.4 | 7.49 | 27.2 | 3.45 | <0.20 | 16.5 | <0.052 | <0.15 | 37.8 | 35.2 |
| SS-50 (0-0.5) | 7/18/2017 | 0-½ | On-Site Transformers | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-50 (1-1.5) | 7/18/2017 | 1-1½ | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-50 (2-3) | 7/18/2017 | 2-3 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-51 (0-0.5) | 9/7/2017 | 0-½ | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-51 (1 - 1.5) | 9/7/2017 | 1-1½ | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-101 (0-0.5) | 7/18/2017 | 0-½ | SS-47 Duplicate | <0.12 | 3.35 | 24.8 | <0.16 | <0.084 | 19.1 | 4.19 | 13.3 | 5.33 | <0.13 | 9.8 | <0.035 | <0.14 | 21.3[J] | 20.3 |
| SS-102 (0-0.5) | 7/18/2017 | 0-½ | SS-28 Duplicate | 0.356[J] | 8.49 | 87.5 | 0.172[J] | 0.165[J] | 23.7 | 6.07 | 22.9 | 38.9 | 0.846[J] | 13.8 | <0.035 | 0.25[J] | 40.7 | 112 |
| Screening Level | | | | 31 | 17.5 | 15,000 | 15 | 5.2 | NE | 23 | 3,100 | 80 | 390 | 490 | 390 | 390 | 390 | 23,000 |
| Basis | | | | RSL[1] | BG[2] | RSL[1] | DTSC-SL[3] | DTSC-SL[3] | NE | RSL[1] | RSL[1] | DTSC-SL[3] | RSL[1] | DTSC-SL[3] | RSL[1] | RSL[1] | RSL[1] | RSL[1] |
| Bradford, 1996 [a] | Background Range | | | 0.15 to 1.95 | 0.6 to 11 | 133 to 1,400 | 0.25 to 2.7 | 0.05 to 1.7 | 23 to 1,579 | 2.7 to 46.9 | 9.1 to 96.4 | 12.4 to 97.1 | 0.1 to 9.6 | 9 to 509 | 0.015 to 0.43 | 0.1 to 8.3 | 39 to 288 | 88 to 236 |
| | Upper Quartile | | | 0.73 | 4.7 | 625 | 1.53 | 0.44 | 115 | 18.3 | 36.6 | 26.7 | 1.4 | 56 | 0.05 | 0.53 | 134 | 170 |
| LBNL, 2009 [b] | 99th Percentile | | | <6 | 28 | 410 | 1 | 5.6 | 120 | 25 | 63 | 43 | 4.8 | 272 | 4.9 | 2.9 | 90 | 140 |
| | 95% Upper Tolerance Limit (UTL) | | | 5.5 | 19.1 | 323.6 | 1 | 2.7 | 99.6 | 22.2 | 69.4 | 16.1 | 7.4 | 119.8 | 5.6 | 1.8 | 74.3 | 106.1 |

1 Regional Screening Level (RSL), USEPA Region 9 - June 2017.
2 Site-Specific background (see Section 6.1)
3 Recommended Screening Level (SL), HERO Note 3 - June 2017
a Bradford, et. al. March 1996. Background Concentrations of Trace and Major Elements in California Soils.
b LBNL, 2009. Analysis of Background Distributions of Metals in the Soil at Lawrence Berkeley National Laboratory.
< Not detected at or above laboratory reporting limit
NE Not Established
--- Not Analyzed
BOLD Concentration exceeds selected environmental screening criteria

CORNERSTONE EARTH GROUP

Data Table 2. Analytical Results of Selected Soil Samples - OCPs and PCBs
(Concentrations in mg/kg)

| Sample ID | Date | Depth (feet) | Sample Location | 4,4´-DDD | 4,4´-DDE | 4,4´-DDT | DDT Total | alpha-Chlordane | gamma-Chlordane | Chlordane | Dieldrin | Heptachlor | Heptachlor epoxide | PCBs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BG-1 (0.5-1) | 7/18/2017 | ½-1 | Undeveloped Areas for Background Arsenic Concentrations | --- | --- | --- | --- | --- | | --- | --- | --- | --- | --- |
| BG-2 (0.5-1) | 7/18/2017 | ½-1 | | --- | --- | --- | --- | --- | | --- | --- | --- | --- | --- |
| BG-3 (0.5-1) | 7/18/2017 | ½-1 | | --- | --- | --- | --- | --- | | --- | --- | --- | --- | --- |
| BG-4 (0.5-1) | 7/18/2017 | ½-1 | | --- | --- | --- | --- | --- | | --- | --- | --- | --- | --- |
| SS-1 (0-0.5) | 12/16/2016 | 0-½ | Former Orchard Areas | <0.0023 | 0.14 | 0.0201 | 0.1601 | <0.00069 | <0.00065 | <0.0084 | <0.00059 | <0.00042 | <0.00031 | --- |
| SS-2 (0-0.5) | 12/16/2016 | 0-½ | | <0.0057 | 0.0291 | 0.0117[J] | 0.0291 | <0.0017 | <0.0016 | <0.021 | <0.0015 | <0.0011 | <0.00078 | --- |
| SS-3 (0-0.5) | 12/16/2016 | 0-½ | | <0.0023 | 0.0112 | 0.00458[J] | 0.0112 | <0.00069 | <0.00065 | <0.0084 | <0.00059 | <0.00042 | <0.00031 | --- |
| SS-4 (0-0.5) | 12/16/2016 | 0-½ | | <0.002 | 0.0456 | 0.0106 | 0.0562 | <0.002 | <0.0016 | <0.02 | <0.002 | <0.002 | <0.002 | --- |
| SS-4 (2.5-3) | 7/18/2017 | 2½-3 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-5 (0-0.5) | 12/16/2016 | 0-½ | | <0.0023 | 0.14 | 0.0167 | 0.1567 | <0.00069 | <0.00065 | <0.0084 | <0.00059 | <0.00042 | <0.00031 | --- |
| SS-6 (0-0.5) | 12/16/2016 | 0-½ | | <0.002 | 0.043 | 0.0194 | 0.0624 | <0.002 | <0.0016 | <0.02 | <0.002 | <0.002 | <0.002 | --- |
| SS-6 (2.5-3) | 7/18/2017 | 2½-3 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-7 (0-0.5) | 12/16/2016 | 0-½ | | <0.0023 | 0.426 | 0.0971 | 0.5231 | <0.00069 | <0.00065 | <0.0084 | <0.00059 | <0.00042 | <0.00031 | --- |
| SS-8 (0-0.5) | 12/16/2016 | 0-½ | | <0.0023 | 0.124 | 0.0265 | 0.1505 | <0.00069 | <0.00065 | <0.0084 | <0.00059 | <0.00042 | <0.00031 | --- |
| SS-8 (2.5-3) | 7/18/2017 | 2½-3 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-9 (0-0.5) | 12/16/2016 | 0-½ | | <0.0023 | 0.444 | 0.0623 | 0.5063 | <0.00069 | <0.00065 | <0.0084 | <0.00059 | <0.00042 | <0.00031 | --- |
| SS-10 (0-0.5) | 12/16/2016 | 0-½ | | <0.0023 | 0.0937 | 0.0238 | 0.1175 | <0.00069 | <0.00065 | <0.0084 | <0.00059 | <0.00042 | <0.00031 | --- |
| SS-11 (0-0.5) | 12/16/2016 | 0-½ | | <0.002 | 0.00335 | <0.002 | 0.00335 | <0.002 | <0.0016 | <0.02 | <0.002 | <0.002 | <0.002 | --- |
| SS-12A (0-0.5) | 12/16/2016 | 0-½ | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-12B (0-0.5) | 12/16/2016 | 0-½ | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-12C (0-0.5) | 12/16/2016 | 0-½ | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-12D (0-0.5) | 12/16/2016 | 0-½ | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-12 (0-0.5) | 12/16/2016 | 0-½ | | <0.02 | 0.398 | 0.138 | 0.536 | <0.02 | <0.0016 | <0.2 | <0.02 | <0.02 | <0.02 | --- |
| SS-12 (2.5-3) | 7/18/2017 | 2½-3 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-13 (0-0.5) | 12/16/2016 | 0-½ | | <0.0017 | 0.0643 | 0.0146 | 0.0789 | <0.00052 | <0.00049 | <0.0063 | <0.00044 | <0.00032 | <0.00023 | --- |
| SS-14 (0-0.5) | 12/16/2016 | 0-½ | | 0.0186[J] | 0.522 | 0.106 | 0.628 | <0.0017 | <0.0016 | <0.021 | <0.0015 | <0.0011 | <0.00078 | --- |
| SS-15 (0-0.5) | 12/16/2016 | 0-½ | | 0.00694 | 0.0624[J] | 0.00694[J] | 0.00694 | <0.0017 | <0.0016 | <0.021 | <0.0015 | <0.0011 | <0.00078 | --- |
| SS-16 (0-0.5) | 12/16/2016 | 0-½ | | <0.0023 | 0.315 | 0.0434 | 0.3584 | <0.00069 | <0.00065 | <0.0084 | <0.00059 | <0.00042 | <0.00031 | --- |
| SS-16 (2.5-3) | 7/18/2017 | 2½-3 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-17 (0-0.5) | 12/16/2016 | 0-½ | | <0.0057 | 0.15 | 0.0339 | 0.1839 | <0.0017 | <0.0016 | <0.021 | <0.0015 | <0.0011 | <0.00078 | --- |
| SS-18 (0-0.5) | 12/16/2016 | 0-½ | | <0.0023 | 0.013 | <0.0023 | 0.013 | <0.00069 | <0.00065 | <0.0084 | <0.00059 | <0.00042 | <0.00031 | --- |
| SS-19 (0-0.5) | 12/16/2016 | 0-½ | | <0.002 | 0.0112 | 0.00772 | 0.01892 | <0.00017 | <0.0016 | <0.0021 | <0.00015 | <0.00011 | <0.000078 | --- |
| SS-20 (0-0.5) | 12/16/2016 | 0-½ | | <0.0023 | 0.0997 | 0.0152 | 0.1149 | <0.00069 | <0.00065 | <0.0084 | <0.00059 | <0.00042 | <0.00031 | --- |
| SS-21 (0-0.5) | 12/16/2016 | 0-½ | | <0.0023 | 0.0678 | 0.0114 | 0.0792 | <0.00069 | <0.00065 | <0.0084 | <0.00059 | <0.00042 | <0.00031 | --- |
| SS-22 (0-0.5) | 12/16/2016 | 0-½ | | <0.0023 | 0.259 | 0.0579 | 0.3169 | <0.00069 | <0.00065 | <0.0084 | <0.00059 | <0.00042 | <0.00031 | --- |
| SS-22 (2.5-3) | 7/18/2017 | 2½-3 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SS-23 (0-0.5) | 12/16/2016 | 0-½ | | <0.0023 | 0.0228 | 0.0105 | 0.0333 | <0.00069 | <0.00065 | <0.0084 | <0.00059 | <0.00042 | <0.00031 | --- |
| SS-24 (0-0.5) | 12/16/2016 | 0-½ | | <0.0023 | 0.0368 | 0.0156 | 0.0524 | <0.00069 | <0.00065 | <0.0084 | <0.00059 | <0.00042 | <0.00031 | --- |
| SS-25 (0-0.5) | 7/18/2017 | 0-½ | Exterior Perimeter of Inn and Annex Buildings | <0.002 | 0.122 | 0.0772 | 0.1992 | 0.0194 | 0.0159 | 0.304 | <0.00052 | <0.00037 | 0.00376[J] | ND |
| SS-26 (0-0.5) | 7/18/2017 | 0-½ | | <0.0019 | 0.161 | 0.161 | 0.322 | 0.147 | 0.121 | 1.49 | <0.00051 | 0.003[J] | 0.00621[J] | ND |
| SS-27 (0-0.5) | 7/18/2017 | 0-½ | | <0.0029 | 0.167 | 0.136 | 0.303 | 0.0291 | 0.0218 | 0.373 | <0.00075 | 0.0053[J] | <0.0004 | ND |
| SS-28 (0-0.5) | 7/18/2017 | 0-½ | | 0.00429[J] | 0.0996 | 0.0242 | 0.12809 | <0.00087 | <0.00082 | <0.011 | <0.00075 | <0.00053 | <0.00039 | ND |
| SS-29 (0-0.5) | 7/18/2017 | 0-½ | | <0.003 | 0.0407 | 0.0121 | 0.0528 | <0.00092 | <0.00087 | <0.011 | <0.00079 | <0.00056 | <0.00041 | ND |
| SS-30 (0-0.5) | 7/18/2017 | 0-½ | | 0.009 | 0.0828 | 0.0304 | 0.1222 | <0.00053 | <0.00050 | <0.0065 | <0.00046 | <0.00032 | <0.00024 | ND |
| SS-31 (0-0.5) | 7/18/2017 | 0-½ | | <0.0026 | 0.219 | 0.267 | 0.486 | 0.0612 | 0.0588 | <0.0096 | <0.00067 | 0.00786[J] | <0.00035 | ND |
| SS-32 (0-0.5) | 7/18/2017 | 0-½ | Exterior Perimeter of Event Space | <0.0021 | 0.0116 | 0.0091 | 0.0091 | <0.00063 | <0.0006 | <0.0077 | <0.00054 | <0.00038 | <0.00029 | ND |
| SS-33 (0-0.5) | 7/18/2017 | 0-½ | | <0.0019 | 0.0118 | 0.0134 | 0.0252 | <0.0006 | <0.00056 | <0.0073 | <0.00051 | <0.00036 | <0.00027 | ND |
| SS-34 (0-0.5) | 7/18/2017 | 0-½ | | <0.0018 | 0.121 | 0.0507 | 0.1717 | <0.00055 | <0.00052 | <0.0067 | <0.00047 | <0.00033 | <0.00025 | ND |
| SS-35 (0-0.5) | 7/18/2017 | 0-½ | | <0.002 | 0.041 | 0.0162 | 0.0572 | <0.00062 | <0.00059 | <0.0076 | <0.00053 | <0.00038 | <0.00028 | ND |
| SS-36 (0-0.5) | 7/18/2017 | 0-½ | | <0.0023 | 0.0372 | 0.00968 | 0.04688 | <0.00072 | <0.00067 | <0.0087 | <0.00061 | <0.00043 | <0.00032 | ND |
| SS-37 (0-0.5) | 7/18/2017 | 0-½ | Exterior Perimeter of Caretakers Residence | <0.0025 | 0.0178 | 0.00989 | 0.02769 | 0.0217 | 0.0166 | 0.232 | <0.00065 | <0.00046 | <0.00034 | ND |
| SS-38 (0-0.5) | 7/18/2017 | 0-½ | | <0.0018 | 0.0463 | 0.0398 | 0.0861 | 0.00299[J] | 0.00271[J] | 0.093 | <0.00048 | <0.00034 | <0.00025 | ND |
| SS-39 (0-0.5) | 7/18/2017 | 0-½ | | <0.0019 | 0.0124 | 0.0138 | 0.0262 | 0.00154[J] | 0.00140[J] | 0.115 | 0.00149[J] | <0.00035 | <0.00026 | ND |
| SS-40 (0-0.5) | 7/18/2017 | 0-½ | | <0.0018 | 0.00545[J] | 0.007 | 0.01245 | 0.0182 | 0.0146 | 0.12 | <0.00048 | <0.00034 | <0.00026 | ND |
| SS-41 (0-0.5) | 7/18/2017 | 0-½ | | <0.002 | 0.034 | 0.0252 | 0.0592 | 0.00724 | 0.00773 | 0.157 | <0.00053 | <0.00038 | <0.00028 | ND |
| SS-42 (0-0.5) | 7/18/2017 | 0-½ | | <0.0024 | 0.0453 | 0.0558 | 0.1011 | 0.00151[J] | 0.00207[J] | 0.0507[J] | <0.00062 | <0.00044 | <0.00033 | ND |
| SS-43 (0-0.5) | 7/18/2017 | 0-½ | Exterior Perimeter of Barn | <0.0021 | 0.0218 | 0.0158 | 0.0376 | <0.00063 | <0.0006 | <0.0077 | <0.00054 | <0.00038 | <0.00029 | --- |
| SS-44 (0-0.5) | 7/18/2017 | 0-½ | | <0.0029 | 0.25 | 0.0556 | 0.3056 | <0.00089 | <0.00084 | <0.011 | <0.00076 | <0.00054 | <0.0004 | --- |
| SS-45 (0-0.5) | 7/18/2017 | 0-½ | | <0.0018 | 0.114 | 0.0444 | 0.1584 | <0.00056 | <0.00053 | <0.0068 | <0.00048 | <0.00034 | <0.00025 | --- |
| SS-46 (0-0.5) | 7/18/2017 | 0-½ | | <0.0017 | 0.085 | 0.0162 | 0.1012 | <0.00052 | <0.00049 | <0.0064 | <0.00045 | <0.00032 | <0.00024 | --- |
| SS-47 (0-0.5) | 7/18/2017 | 0-½ | Pond Sediment | <0.0043 | 0.0655 | 0.0148[J] | 0.0803 | <0.0013 | <0.0012 | <0.016 | <0.0011 | <0.0008 | <0.00059 | --- |
| SS-48 (0-0.5) | 7/18/2017 | 0-½ | | <0.00076 | <0.00026 | <0.00017 | <0.00017 | <0.00023 | <0.00022 | <0.0028 | <0.0002 | <0.00014 | <0.00011 | --- |
| SS-49 (0-0.5) | 7/18/2017 | 0-½ | | <0.0025 | 0.0122 | <0.00058 | 0.0122 | <0.00078 | <0.00073 | <0.0095 | <0.00067 | <0.00047 | <0.00035 | --- |
| SS-50 (0-0.5) | 7/18/2017 | 0-½ | On-Site Transformer | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ND |
| SS-50 (1-1.5) | 7/18/2017 | 1-1½ | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ND |
| SS-50 (2-3) | 7/18/2017 | 2-3 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ND |
| SS-51 (0-0.5) | 9/7/2017 | 0-½ | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ND |
| SS-51 (1 - 1.5)) | 9/7/2017 | 1-1½ | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ND |
| SS-101 (0-0.5) | 7/18/2017 | 0-½ | SS-47 Duplicate | <0.0024 | 0.0378 | 0.00301[J] | 0.04081 | <0.00074 | <0.00069 | <0.009 | <0.00063 | <0.00045 | <0.00033 | --- |
| SS-102 (0-0.5) | 7/18/2017 | 0-½ | SS-28 Duplicate | <0.0018 | 0.0452 | 0.0125 | 0.0577 | <0.00057 | <0.00053 | <0.0069 | <0.00048 | <0.00034 | <0.00026 | ND |
| EqB-1 (µg/L) | 7/18/2017 | --- | Equipment Blank | <0.0028 | <0.0088 | <0.0051 | <0.0088 | <0.0035 | | <0.13 | <0.0031 | <0.010 | <0.0031 | ND |
| Screening Level | | | | 2.3 | 2 | 1.9 | 1 | NE | NE | 0.44 | 0.034 | 0.13 | 0.07 | Variable |
| Basis | | | | RSL | RSL | RSL | TTLC | NE | NE | DTSC-SL | RSL | RSL | RSL | Variable |

1 Regional Screening Level (RSL), USEPA Region 9 - June 2017.
2 Recommended Screening Level (SL), HERO Note 3 - June 2017
< Not detected at or above laboratory reporting limit
ND Not detected at or above reporting limit
NE Not Established
--- Not Analyzed
BOLD Concentration exceeds selected environmental screening criteria

CORNERSTONE EARTH GROUP

Data Table 3. Summary Statistics - Arsenic, Lead and Detected Organochlorine Pesticides
(Concentrations in mg/kg)

| Chemical Detected | Number of Samples | Number of Detects | Screening Level (mg/kg) | Frequency of Detection (Percent) | Minimum Detected (mg/kg) | Maximum Detected (mg/kg) | No. of Samples Exceeding Screening Level | Location of Maximum | Mean Concentration (mg/kg) | Site Wide 95% UCL (mg/kg) |
|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 65 | 65 | 17.5 [a] | 100% | 1.08 | 41.11 | 3 | SS-12D | 9.256 | 10.51 |
| Lead | 49 | 49 | 80 | 100% | 1.36 | 263 | 5 | SS-25, SS-31 | 41.25 | 58.04 |
| Chlordane | 49 | 9 | 0.44 | 18% | 0.0507 | 1.49 | 1 | SS-26 | 0.326 | 0.166 |
| Dieldrin | 49 | 1 | 0.034 | 2% | 0.00149 | 0.00149 | 0 | SS-39 | NC | NC |
| Heptachlor | 49 | 3 | 0.13 | 6% | 0.003 | 0.00786 | 0 | SS-26 | NC | NC |
| Heptachlor Epoxide | 49 | 2 | 0.07 | 4% | 0.00376 | 0.00621 | 0 | SS-26 | NC | NC |
| 4,4-DDE | 49 | 48 | 2 | 98% | 0.00335 | 0.522 | 0 | SS-14 | NC | NC |
| 4,4-DDD | 49 | 4 | 2.3 | 8% | 0.00429 | 0.0186 | 0 | SS-14 | NC | NC |
| 4,4-DDT | 49 | 45 | 1.9 | 92% | 0.00458 | 0.267 | 0 | SS-31 | NC | NC |

NC - Not calculated due to small number of detections or maximum concentration below screening level
a - Site-specific backgroud (see Section 6.1)

# APPENDIX A – OPINION OF ESTIMATED REMEDIAL COSTS

Alternative 2: COC Impacted Soil Capping with Institutional Controls

| | | |
|---|---|---|
| Assumed Approximate Area of Consolidation Cell | 50,000 | square feet |
| Depth of Cell | 1 | feet |
| Volume of Cell | 1852 | cubic yards |
| Volume of Impacted Soil | 1293 | cubic yards |

| **Task** | **Unit Cost** | **Unit** | **Quantity** | **Total** |
|---|---|---|---|---|
| Excavate Consildation Cell and Stockpile | $ 12 | per cubic yard | 1852 | $ 22,222 |
| Excavate and Place Impacted Soil | $ 12 | per cubic yard | 1425 | $ 17,100 |
| Excavate and Place "Clean" Soil | $ 12 | per cubic yard | 1852 | $ 22,222 |
| | | | | $ 61,544 |
| | | | with 20 percent contingency | $ 73,853 |

**Other Costs**

| | |
|---|---|
| Professional Services such as Observation, Sampling, Monitoring, and Reporting | $ 75,000 |
| Geotextile Fabric | $ 10,000 |
| DTSC Oversight (30 year timeframe) | $ 105,000 |
| O/M, 5-year review, 30 year timeframe | $ 75,000 |
| Deed Restriction | $ 10,000 |
| **Sub-Total** | $ 348,853 |

**TOTAL ESTIMATE** $ 422,707

Note: Unit costs are approximate and may differ from estimates provided by contractors.

Alternative 3: Soil Off-Haul

| | Approximate Area | | | Depth | | | In-place Volume | |
|---|---|---|---|---|---|---|---|---|
| SS-12 Vicinity | 13,750 | square feet | x | 2.0 | feet | = | 27,500 | cubic feet |
| Inn and Annex | 2,450 | square feet | x | 2.0 | feet | = | 4,900 | cubic feet |
| SS-15 | 625 | square feet | x | 2.0 | feet | = | 1,250 | cubic feet |
| SS-16 | 625 | square feet | x | 2.0 | feet | = | 1,250 | cubic feet |
| | | | | | | | 34,900 | cubic feet |
| | | | | | | | 1,293 | cubic yards |

| | | |
|---|---|---|
| Approximate In-Place Volume of Impacted Soil | 1,293 | cubic yards |
| Assumed Soil bulk density | 1.8 | tons per cubic yard |
| Approximate Total Tonnage | 2,327 | tons |
| Assumed Percent Class I | 0.20 | --- |
| Assumed Percent Class II | 0.80 | --- |
| Approximate Class I tonnage | 465 | tons |
| Approximate Class II tonnage | 1,861 | tons |

| **Task** | **Unit Cost** | **Unit** | **Quantity** | **Total** |
|---|---|---|---|---|
| Class I (excavate, haul, and dispose) | $ 150 | per ton | 465 | $ 69,800 |
| Class II (excavate, haul, and dispose) | $ 65 | per ton | 1,861 | $ 120,987 |
| Clean Fill (import, place, compact) | $ 15 | per ton | 2327 | $ 34,900 |
| | | | | $ 225,687 |
| | | | with 20 percent Contingency | $ 270,824 |

| **Other Costs** | |
|---|---|
| Professional Services such as Observation, Sampling, Monitoring, and Reporting | $ 75,000 |
| BOE Hazardous Waste Generator Fee (2018) | $46,040 |
| **Sub-Total** | $ 121,040 |
| **TOTAL ESTIMATE** | $ 391,864 |

Note: Unit costs are approximate and may differ from estimates provided by contractors.

# APPENDIX B – HEALTH AND SAFETY PLAN

CORNERSTONE EARTH GROUP

| | |
|---|---|
| **Type of Services** | **Draft Site Specific Health and Safety Plan** |
| **Location** | **Planned Tribal School**<br>**3141 Taylor Road**<br>**Placer County, California** |
| **Client** | **United Auburn Indian Community** |
| **Client Address** | **10720 Indian Hills Road**<br>**Auburn, California 95650** |
| **Project Number** | **411-16-3** |
| **Date** | **December 6, 2017** |


**Prepared by**

DRAFT

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CORNERSTONE EARTH GROUP

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**ATTACHMENT 1** – HOSPITAL ROUTE

| | |
|---|---|
| **Type of Services** | **Site Specific Health and Safety Plan** |
| **Location** | **3141 Taylor Road**<br>**Placer County, California** |

## SECTION 1.0: INTRODUCTION

Cornerstone Earth Group (Cornerstone) has prepared this Health and Safety Plan (HSP) to inform its personnel of potential hazards associated with soil excavation and removal activities at the approximately 42.3-acre property located at 3141 Taylor Road (Site), as shown on Figures 1 and 2 of the Remedial Action Workplan (RAW) of which this document is an Appendix.

This HSP is intended to supplement the Remedial Action Workplan prepared by Cornerstone for the Site and was developed to provide general health and safety guidance such that field activities can be conducted in a safe manner. Cornerstone will be responsible for the health and safety of their employees while on-Site for observation of excavation activities. Note that contractors performing work at the Site who may encounter Contaminants of Potential Concern (COPC), as summarized below, are required to prepare their own HSPs specific to their activities. The contractors may use this HSP as a basis for the preparation of the own HSP. Note that contractors are responsible for the health and safety of their own employees. Cornerstone is not responsible for job-site safety or compliance with this HSP other than for Cornerstone's own employees.

Contractors shall determine the level of training required for their Site employees, based on their activities, possibly including completion of a 40-hour HAZWOPER training course (29 CFR 1910.120 (e)), including respirator and personal protective equipment training, as needed.

As stated within the RAW, the Contractor will utilize effective means of dust and erosion control to minimize the generation of dust and erosion associated with excavation activities, truck and vehicle traffic onto and off the Site, and the effects of ambient wind traversing exposed soil.

Table 1 below identifies the COPC and their greatest concentrations previously reported in soil at the Site.

**Table 1. Primary Chemicals of Concern (COC) Detected in soil**

| Chemical | Maximum Soil Concentration (mg/kg) | Area |
|---|---|---|
| **Metals:** | | |
| Arsenic | 41.1 | SS-12D to 0.5 feet (former orchard areas) |
| Lead | 263 | SS-31 to 0.5 feet (exterior perimeter of inn and annex buildings) |
| **Organochlorine Pesticides:** | | |
| Chlordane | 1.49 | SS-26 to 0.5 feet (exterior perimeter of inn and annex buildings) |
| Dieldrin | 0.00149 | SS-39 to 0.5 feet (exterior perimeter of caretakers residence) |
| Heptachlor | 0.00786 | SS-31 to 0.5 feet (exterior perimeter of inn and annex buildings) |
| Heptachlor Epoxide | 0.00621 | SS-26 to 0.5 feet (exterior perimeter of inn and annex buildings) |
| 4,4-DDE | 0.522 | SS-14 to 0.5 feet (former orchard areas) |
| 4,4-DDD | 0.0186 | SS-14 to 0.5 feet (former orchard areas) |
| 4,4-DDT | 0.267 | SS-31 to 0.5 feet (exterior perimeter of inn and annex buildings) |

This HSP addresses the potential hazards posed by the proposed excavation activities and identifies the controls to be implemented for these activities.

## SECTION 2.0: PROJECT SAFETY AUTHORITY

### 2.1 HEALTH AND SAFETY PERSONNEL

#### 2.1.1 Cornerstone Earth Group And Site Safety Officer (SSO)

United Auburn Indian Community will provide this HSP to on-Site contractors. Each contractor will appoint an on-Site Site Safety Officer (SSO) for their on-Site personnel. Each contractor also will develop their own Site-specific Health and Safety Plan unique to their assigned tasks. The SSO is an individual who is responsible to the employer and has the authority, training, experience, and knowledge necessary to implement the HSP and verify compliance with applicable safety and health requirements. Each subcontractor will be solely responsible for the health and safety of their employees as well as for compliance with all applicable federal, state, and local laws and guidelines.

The SSO must verify that all on-Site personnel are qualified, trained, and prepared to implement the HSP and safely perform the planned Site work. Field personnel should be required to indicate in writing that they have read and understand the provisions of the HSP.

Safe work practices should be emphasized during safety meetings to be conducted by the SSO and implemented throughout the project.

### 2.2 ENFORCEMENT OF THE HSP

Enforcement of the policies and practices of the HSP will be the responsibility of the SSO(s). The SSO has the authority to suspend work in the area of the Site where the provisions of the HSP are not being met.

### 2.3 EVALUATION OF EFFECTIVENESS

The SSO shall evaluate the effectiveness of the HSP. As applicable, deficiencies and associated corrective actions must be documented and a written summary evaluation prepared and maintained on-Site.

## SECTION 3.0: CHEMICAL HAZARD ASSESSMENT AND CONTROL MEASURES

This HSP provides standard operating procedures for personnel involved in activities that may expose them to COCs during additional Site investigation activities that disturb impacted soil and soil vapor. Physical hazards also exist. For example, excavating equipment presents a high potential for physical hazards.

Field personnel are required to control chemical exposure primarily through the use of safe work practices and engineering controls (Sections 4.0, 5.0, 6.0, and 7.0). The working conditions will be assessed using air monitoring instruments and/or visual observations. A DataRam PDR-1000 dust meter will be used to monitor total dust concentrations during excavation activities. If dust concentrations exceed 50 micrograms per cubic meter ($\mu g/m^3$) in the immediate work zone, the excavation activities will stop until dust levels decrease.

## 3.1 EXPOSURE PATHWAYS

The primary exposure pathways for the COC in soil include incidental ingestion, dermal contact, and inhalation of windblown dust or vapors during the field activities. The windblown dust potential exposure pathway must be mitigated by appropriate dust removal measures (Section 7.0) implemented during Site remediation and Site investigation activities. The inhalation, ingestion and dermal exposure pathways will be mitigated by personal protective gear and safe work practices.

## 3.2 ACTIVITIES THAT COULD GENERATE CHEMICAL DUSTS

The following activities that will be performed during the course of activities at the Site could locally release COC-bearing dusts if control measures described in this plan are not stringently implemented:

- Excavation and stockpiling of impacted soils
- Loading of impacted soils into dump trucks

Mitigation measures to address the potential release of airborne COC during these activities are described in the following sections of this plan.

## 3.3 HAZARDOUS SUBSTANCE INFORMATION

Table 3 summarizes the hazardous substance information for the designated COCs.

**TABLE 3. HAZARDOUS SUBSTANCE INFORMATION**

| COC | Max Conc. | TLV or PEL ($mg/m^3$) | IDLH ($mg/m^3$) | Routes of Exposure | Potential Effects of Overexposure |
|---|---|---|---|---|---|
| Arsenic | 41.1 mg/kg | 0.010 | 100 | Inhalation, ingestion, skin and/or eye contact | In Animals: irritation skin, possible dermatitis; resp distress; diarrhea; kidney damage; muscle tremor, convulsions; possible gastrointestinal tract, reproductive effects; possible liver damage |

| COC | Max Conc. | TLV or PEL ($mg/m^3$) | IDLH ($mg/m^3$) | Routes of Exposure | Potential Effects of Overexposure |
|---|---|---|---|---|---|
| Lead | 263 mg/kg | 0.050 | 100 | Inhalation, ingestion, skin and/or eye contact | Lassitude (weakness, exhaustion), insomnia; facial pallor; anorexia, weight loss, malnutrition; constipation, abdominal pain, colic; anemia; gingival lead line; tremor; paralysis wrist, ankles; encephalopathy ; kidney disease; irritation eyes; hypertension |
| Chlordane | 1.49 | 0.5 | 100 | Inhalation, skin absorption, ingestion, skin and/or eye contact | Blurred vision; confusion; ataxia, delirium; cough; abdominal pain, nausea, vomiting, diarrhea; irritability, tremor, convulsions; anuria; In Animals: lung, liver, kidney damage; [potential occupational carcinogen] |

| COC | Max Conc. | TLV or PEL ($mg/m^3$) | IDLH ($mg/m^3$) | Routes of Exposure | Potential Effects of Overexposure |
|---|---|---|---|---|---|
| Dieldrin | 0.00149 | 0.25 | 50 | Inhalation, skin absorption, ingestion, skin and/or eye contact | headache, dizziness; nausea, vomiting, malaise (vague feeling of discomfort), sweating; myoclonic limb jerks; clonic, tonic convulsions; coma; ; In Animals: liver, kidney damage [potential occupational carcinogen] |
| Heptachlor<br><br>Heptachlor Epoxide | 0.00786<br><br>0.00621 | 0.5 | 35 | Inhalation, skin absorption, ingestion, skin and/or eye contact | In Animals: tremor, convulsions; liver damage; [potential occupational carcinogen] |
| 4,4-DDE<br><br>4,4-DDD<br><br>4,4-DDT | 0.522<br><br>0.0186<br><br>0.267 | 0.5 / 1 for skin (for DDT) | 500 (for DDT) | Inhalation, skin absorption, ingestion, skin and/or eye contact | irritation eyes, skin; paresthesia tongue, lips, face; tremor; anxiety, dizziness, confusion, malaise (vague feeling of discomfort), headache, lassitude (weakness, exhaustion); convulsions; paresis hands; vomiting; [potential occupational carcinogen] |

PEL = Permissible Exposure Limit given in Title 8, CCR, Section 5155, or Threshold Limit Value from ACGIH 2011.

NE= not established.
$mg/m^3$ = milligrams per cubic meter.
IDLH = Immediately Dangerous to Life and Health.
* = Conversion for PCE is 1 ppm = 6.78 mg/m3 as stated by NIOSH *Pocket Guide to Chemical Hazards* (U.S. Department of Health and Human Services, September 2007)
Routes of entry and acute exposure to symptoms given in NIOSH *Pocket Guide to Chemical Hazards* (U.S. Department of Health and Human Services, September 2007)

## 3.4 HAZARD EVALUATION

### 3.4.1 Inhalation

Potential inhalation exposures were conservatively evaluated by assuming that the maximum concentration of COCs in site soil is proportional in a total dust concentration of 5 $mg/m^3$. This assumption is conservative since total dust at a concentration of 5 $mg/m^3$ is visible in air and is the threshold limit value (ACGIH TLV) for nuisance dust and the OSHA PEL for the respirable fraction of nuisance dust particulates not otherwise regulated (OSHA, 1989).

If the fraction of lead concentration in soil (263 ppm or 0.02%) is assumed to be the same as that in the air, then 0.0002 x 5 $mg/m^3$ = 0.001 $mg/m^3$, which is below the PEL.

For all COC reviewed, excavation activities will not likely generate occupationally significant airborne chemical exposures.

If respiratory protection is used voluntarily, personnel must have completed respiratory protection training, be certified by a medical doctor to use a respirator, and have a recent fit test.

### 3.4.2 Ingestion and Dermal Exposure Pathway Risks

Ingestion and dermal exposure pathways shall be controlled using hygienic measures and protective clothing (Section 5.1).

# SECTION 4.0: PHYSICAL HAZARDS

Physical hazards associated with excavation activities, such as occupational noise, heavy equipment, heat-related disorders, slips, trips, falls, and falling objects, flying debris, electrical shock, buried utilities, overhead power lines, and excavation cave ins (if applicable), may be present on-Site and can present a greater risk of injury than the COC in soil at the Site. Each contractor's Injury and Illness Prevention Plan (IIPP) must address these hazards. All activities within the scope of this project must comply with all applicable regulations, including Cal/OSHA standards.

## 4.1 NOISE HAZARDS

Noise-generating equipment will be used during field activities. The noise levels near this type of equipment may exceed 85 dBA. Elevated noise levels could constitute a hearing hazard and interfere with communication. Employers must protect their field personnel from noise levels exceeding 85 dBA and provide appropriate PPE.

## 4.2 HEAVY EQUIPMENT HAZARDS

Heavy equipment can pose significant hazards to on-Site employees. Contractors working on-Site must ensure that their motor vehicles and material handling equipment meet the requirements specified in the Department of Industrial Relations, General Industry Safety Orders and Construction Safety Orders (8 CCR Division 1, Chapter 4, Subchapters 4 and 7). The following safe work practices are to be followed during work around heavy equipment:

- Never walk directly behind or to the side of heavy equipment without the operator's knowledge. Be aware of the location and operation of heavy equipment; do not assume that the operator is aware of keeping track of your presence.
- While working on-Site, wear reflective/visible safety vests, maintain visual contact with the operator at all times, and remain alert.
- All heavy equipment must be fitted with audible reversing signals as mandated by OSHA.
- Unless a spotter is present to guide the operator, equipment with an obstructed rear view will have an audible alarm that sounds when moving in the reverse direction.
- Establish hand signals with the operator when verbal communication is not possible.
- Whenever excavation is conducted in tight quarters, the equipment contractor should make provisions for another person to help guide the operator's movements.
- Hydraulic systems will be fully lowered and parking brakes engaged whenever equipment is not in use.
- All non-essential personnel will be kept out of work areas.
- Deep excavation (not anticipated during this project) may require shoring to prevent cave-ins or ground failures.
- All heavy equipment used at COC-impacted portions of the Site will remain there until construction activities are completed. Each contractor will be responsible for completely decontaminating equipment in designated decontamination areas.

## 4.3 HEAT OR COLD-RELATED DISORDERS

Heat (or cold) related disorders could be a significant issue depending upon the temperatures encountered during excavation activities. Cornerstone will be responsible for monitoring their workers for signs and symptoms of heat stress or cold stress. Water

must be provided on-Site and the Site supervisor should have first aid/CPR training and be familiar with the early signs of heat related disorders, and appropriate treatment procedures per Cal/OSHA Title 8 CCR 1524 and Title 8 CCR 1512. Accommodations for reduction of cold stress should additionally be provided, as necessary.

### 4.4 SLIPS, TRIPS, AND FALLS

Slipping, tripping, and falling are the most common sources of injuries at these types of sites. These injuries can be prevented by proper Site control measures, safe work practices, and by keeping the work area free from obstructions. Tailgate safety briefings should be held prior to each day's field activities to identify specific Site locations of concern (slippery surfaces or uneven terrain), and to specify work practices and controls necessary to avoid or eliminate the hazards in those areas.

### 4.5 BURIED UTILITIES

The buried utilities at the Site (if any) must be identified through Underground Service Alert (USA). If buried utilities, such as natural gas piping, are damaged during construction-related activities, the area should be immediately evacuated and Emergency 911 should be immediately notified. The Contractors' SSOs should notify all on-Site employees of the rupture and the area of the release should be evacuated.

### 4.6 MUSCULAR-SKELETON INJURY HAZARDS

Field activities may require some lifting of heavy objects. No one should attempt to lift large, heavy (greater than 50 pounds), or cumbersome objects without assistance. All on-Site employees who are generally called upon to do frequent lifting are to be instructed in proper lifting procedures.

### 4.7 BIOLOGICAL HAZARDS

The biological hazards that may be encountered include spiders and bees. A first aid kit to treat minor skin irritations, stings, and bites must be maintained at the Site.

### 4.8 OTHER HAZARDS

Although not supported by site investigations to date, other unforeseen hazards may be of potential concern. If unusual odors, smoke, and/or unusual signs and symptoms of exposure (upper respiratory tract, eye irritation, behavioral/mood changes) are noticed, work should be stopped at the particular location and workers be directed away from the potential sources of exposure. Cornerstone Earth Group's project manager and the Contractors' SSO(s) will make a determination of hazard and/or determine if outside emergency services are required, prior to allowing work to proceed. Cornerstone Earth Group will determine if additional investigation and other notifications are required.

## SECTION 5.0: SAFETY EQUIPMENT, PERSONAL HYGIENE

### 5.1 PERSONAL PROTECTIVE EQUIPMENT (PPE)

PPE and clothing are used to isolate individuals from COC and physical hazards. The minimum level of protection for workers is Level D.

1. Nitrile gloves
2. Chemical-resistant steel-toe boots
3. Safety glasses (optional)
4. Hard hat
5. Hearing protection (if noise levels exceed 85 dBA)

### 5.2 SANITATION

The Contractor, in accordance with Title 8 CCR 5192, must provide potable water, toilet, and washing facilities at the Site in the support area.

## SECTION 6.0: SITE CONTROL

### 6.1 VISITORS

Visitors will not be allowed access to the excavation area. Visitors failing to adhere to this provision of this HSP will be escorted from the Site.

## SECTION 7.0: DUST REMOVAL PROCEDURES

### 7.1 EQUIPMENT DUST REMOVAL

Dust removal in chemically impacted areas of the Site must be performed to reduce the physical transfer of chemical residues from the project area work zone. Before being removed from the Site and between soil removal locations, all equipment (including truck tires) and tools in contact with COC impacted soil must be thoroughly washed to remove residual soil and prevent the transfer of impacted soil to other areas of the Site.

### 7.2 PERSONNEL DUST REMOVAL

Personnel dust removal includes boot cleansing and removal of soil residues from clothing, hard hat, gloves and brushing off coveralls (if used), removing work gloves and washing hands and face prior to eating, drinking, smoking, or leaving the Site. Workers should minimize the amount of dirt or dust on their hands, face, clothing, and shoes. If any of these are visibly soiled, they should be brushed off and left at the Site. Prior to leaving the Work Area, workers must thoroughly wash hands and face.

## SECTION 8.0: TRAINING AND MEDICAL SURVEILLANCE

Health and safety training and hazard communication must be implemented as addressed below. All on-Site personnel must be familiar with the provisions of this HSP and verify in writing that they have read it and understand it.

Employees conducting excavation activities at the site shall complete a 40-hour HAZWOPER training course (29 CFR 1910.120 (e)), including respirator and personal protective equipment training. The 8 hour refresher training is required where applicable. The SSO will verify that each and every applicable worker possesses this training.

### 8.1 SITE-SPECIFIC TRAINING PROGRAM

A Site-specific training program must be instituted prior to Site work. Attendees at all meetings should be documented by signature. The Site-specific training should include a discussion of the following.

1. The health effects (acute and chronic) of the chemical and physical hazards that may be encountered at the Site
2. Proper control measures for the chemical and physical hazards that may be encountered
3. The importance of dust control at the Site
4. Proper personal hygiene procedures
5. Dust removal on equipment and personnel
6. Emergency procedures
7. Proper management of impacted soil
8. Potential physical hazards at the Site

### 8.2 MEDICAL MONITORING

Periodic medical monitoring is not required for this project. Employees conducting excavation should be medically cleared to perform their duties for this project, including wearing air purifying respirators, if respirator use is needed.

## SECTION 9.0: EMERGENCY AND CONTINGENCY PLANNING

### 9.1 RELEVANT FIRST AID PROCEDURES

Minor injuries, including minor cuts, scrapes, and abrasions should be treated on-Site. If an injured individual requires further attention, the individual should be immediately transported to the nearest hospital. Attachment 1 illustrates the route to the nearest emergency medical facility. All accidents, without regard to severity, must be reported in writing to the SSO and, for Cornerstone Earth Group's employees, Cornerstone Earth Group within 24 hours.

### 9.2 EVACUATION PROCEDURES

Various emergencies may warrant a Site evacuation. Although these conditions are not anticipated, they may include fire, explosion, chemical release, or other event that could cause personal injury. Emergency evacuation procedures must be discussed in advance of site activities.

### 9.3 EMERGENCY SERVICES AND CONTACT TELEPHONE NUMBERS

The emergency medical facility designated for this project is Sutter Roseville Medical Center at 1 Medical Plaza Drive in Roseville, approximately 10 miles south-southwest of the Site (Attachment A). If an injury is serious enough to require ambulance medical transport or the fire department, immediately call 911.

**Sutter Roseville Medical Center**
**(Emergency Department)**
**1 Medical Plaza Drive**
**Roseville, California**

**Phone: (916) 781-1800**

## SECTION 10.0: INJURY AND ILLNESS PREVENTION PROGRAM

All contractors are required to have an Injury and Illness Prevention Program (IIPP) in accordance with Cal OSHA regulations in Title 8 of the California Code of Regulations. Each IIPP must include a discussion of safety measures that are implemented, including the measures presented in this HSP, to help prevent illness and injury to their employees. Investigation and reporting procedures in case of an accident or injury also should be discussed in the IIPP. Cornerstone's IIPP is available for review upon request.

## SECTION 11.0: INTERNAL AND EXTERNAL COMMUNICATIONS

All personnel will have a cell phone and/or radio for communication between personnel. Due to the relatively small Site size, verbal commands, radios, and cellular telephones should be adequate means of communication.

### 11.1 EMERGENCY CONTACT LIST

The list below provides names and telephone numbers for emergency contact personnel. The SSO or designee will notify the appropriate outside emergency organization.

**TABLE 3. EMERGENCY CONTACT LIST**

| ORGANIZATION | **TELEPHONE** |
|---|---|
| Ambulance | (911) |
| Police | (911) |
| Fire | (911) |
| Hospital<br>Sutter Roseville Medical Center – Emergency Department | 916-781-1800 |
| Sacramento Metropolitan Air Quality Management District | 916-874-4800 |
| Central Valley Regional Water Quality Control Board | 916-464-3291 |
| EPA National Response Center | 800-424-8802 |
| Cornerstone Earth Group, Project Manager<br>Peter Langtry, PG, CEG | 925-988-9500 (office)<br>925-817-8814 (cell)<br>plangtry@cornerstoneearth.com |

## SECTION 12.0: DAILY SIGN-IN SHEETS

A daily sign-in sheet shall be maintained at the Site for all workers and visitors. The worker sign-in sheet and visitor sign-in sheets follow.

| Print Name | Signature and Date |
|---|---|
| Print Name | Signature and Date |
| Print Name | Signature and Date |
| Print Name | Signature and Date |
| Print Name | Signature and Date |
| Print Name | Signature and Date |
| Print Name | Signature and Date |
| Print Name | Signature and Date |
| Print Name | Signature and Date |
| Print Name | Signature and Date |
| Print Name | Signature and Date |
| Print Name | Signature and Date |
| Print Name | Signature and Date |
| Print Name | Signature and Date |
| Print Name | Signature and Date |
| Print Name | Signature and Date |

## SECTION 13.0: REFERENCES

California Department of Industrial Relations. *Hazardous Waste Operations and Emergency Response, Section 5192*.

California Department of Industrial Relations. Table AC-1. *Permissible Exposure Levels for Chemical Contaminants*.

California Department of Industrial Relations. *Hazard Communication, Section 5194*.

Cornerstone Earth Group. *Final Preliminary Endangerment Assessment Report, Planned Tribal School 3141 Taylor Road, Placer County, California*. November 16, 2017.

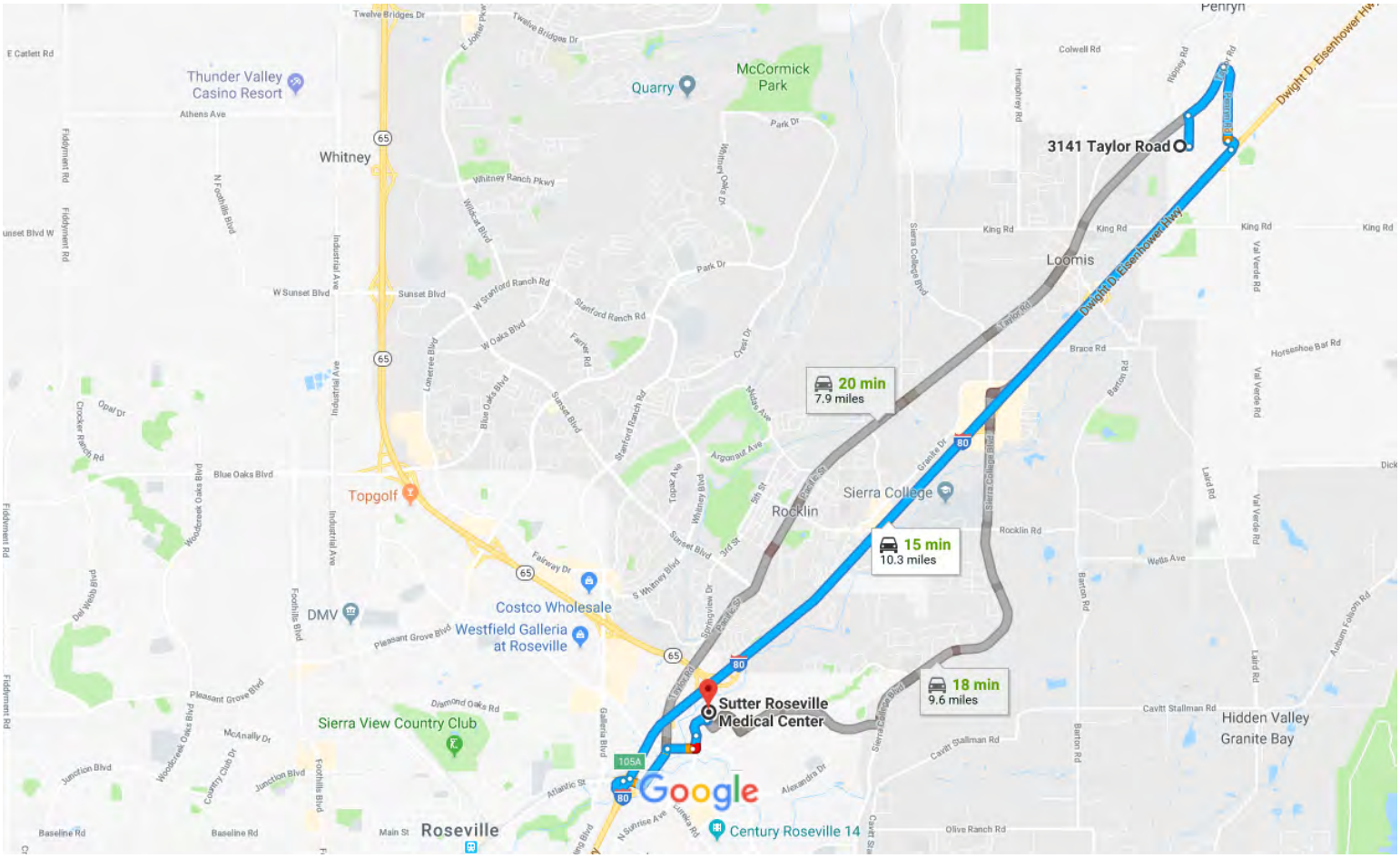
National Institute of Occupational Safety and Health (NIOSH). September 2007. *NIOSH Pocket Guide to Chemical Hazards*.

# ATTACHMENT A – HOSPITAL ROUTE

Google Maps

# 3141 Taylor Rd, Loomis, CA 95650 to Sutter Roseville Medical Center

Drive 10.3 miles, 15 min




Map data ©2017 Google 1 mi

## 3141 Taylor Rd

Loomis, CA 95650

### Get on I-80 W from Taylor Rd and Penryn Rd

4 min (1.6 mi)

1. Head north on Tumble Ln toward Taylor Rd

0.3 mi

2. Turn right onto Taylor Rd

0.5 mi

3. Turn right onto Penryn Rd

0.6 mi

4. Turn left to merge onto I-80 W toward Sacramento

0.1 mi

### Follow I-80 W to Atlantic St in Roseville. Take exit 105A from I-80 W

7 min (7.6 mi)

5. Merge onto I-80 W

7.3 mi

6. Take exit 105A for Eureka Road toward Taylor Road

0.3 mi

**Take Taylor Rd, E Roseville Pkwy and Medical Pz to your destination**

4 min (1.1 mi)

7. Merge onto Atlantic St

0.2 mi

8. Use the left 2 lanes to turn left onto Taylor Rd

0.4 mi

9. Turn right onto E Roseville Pkwy

0.2 mi

10. Use the left 2 lanes to turn left onto N Sunrise Ave

0.1 mi

11. Continue onto Medical Pz

0.2 mi

12. Turn left

Destination will be on the right

118 ft

## Sutter Roseville Medical Center

1 Medical Plaza Dr, Roseville, CA 95661

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

CORNERSTONE EARTH GROUP

# APPENDIX C – MAY 10, 2018 SUPPLEMENTAL SOIL QUALITY EVALUATION REPORT

CORNERSTONE EARTH GROUP

| | |
|---|---|
| Date: | May 10, 2018 |
| Project No.: | 411-16-5 |
| Prepared For: | Mr. Dean Wright<br>**DEPARTMENT OF TOXIC SUBSTANCES CONTROL**<br>8800 Cal Center Drive<br>Sacramento, California 95826 |
| Re: | Supplemental Soil Quality Evaluation<br>3141 Taylor Road<br>Loomis, California |

Dear Mr. Wright:

On behalf of United Auburn Indian Community (UAIC) we are pleased to submit this letter summarizing the results of supplemental soil samples collected at 3141 Taylor Road in Loomis, California (Site, Figures 1 and 2). This work was performed for RSC Engineering (RSC) and UAIC in accordance with the April 17, 2018 Work Plan for Supplemental Soil Quality Evaluation (Work Plan). The Work Plan was conditionally approved on April 19, 2018.

## The Project

The approximately 42.3-acre site is currently undeveloped with the exception of five structures consisting of a two-story building formerly used as an inn, a single-story event space, a caretaker's residence, a detached garage, and a maintenance barn. A small pond is located near the eastern property boundary (Figure 2).

UAIC entered into a Voluntary Cleanup Agreement (VCA) with Department of Toxic Substances Control (DTSC) to provide oversight of Site investigation and review of a Preliminary Endangerment Assessment (PEA). The PEA, dated October 6, 2017, presented laboratory analytical results of soil samples collected from former orchard areas, evaluated background concentrations of arsenic and arsenic relative bioavailability. Soil samples also were collected near existing and former buildings to evaluate potential impacts from possible pest control spraying near building foundations, and potential impacts from building materials such as lead-based paint and/or PCB caulking compounds.

As presented in the PEA, the 95$^{th}$ and 99$^{th}$ percentiles of the background concentrations were calculated as 16.5 milligrams per kilogram (mg/kg) and 17.5 mg/kg, respectively. Because the background dataset is large (n=65), the data are considered robust, and the distribution is well defined, the 99$^{th}$ percentile of 17.5 milligrams per kilogram (mg/kg) is considered representative of the Site-specific background. As an added health protective measure, UAIC elected to use 16.5 mg/kg as the cleanup goal for arsenic, as presented in the January 9, 2018 Draft Removal Action Work Plan.

The RAW presented initial excavation areas for removal of soil with arsenic detected exceeding the Site-specific background level/cleanup goal. Final excavation extent will be determined based on laboratory analyses of verification soil samples collected from the excavation sidewalls and bottoms. One of the proposed excavation areas (Figure 3) extended into a wetland area that has been mapped on-Site.

## Purpose

As described in the Work Plan, the purpose of this Supplemental Soil Quality Investigation was to determine whether the initial boundary of the excavation area shown on Figure 3 can be revised to avoid the wetland.

## Soil Sampling and Laboratory Analyses

Prior to our sampling, the perimeter of the mapped wetland within the planned excavation area had been flagged in the field by a biologist from Environmental Science Associates (ESA). On April 23, 2018, Cornerstone field personnel collected soil samples from five locations within and near the wetlands using hand-sampling equipment (SS-100 through SS-500). The sampling locations are presented on Figure 3.

Soil samples were collected from the approximate upper six inches of soil. Samples were collected in clean stainless-steel liners, ends covered in Teflon tape, capped, and labeled with a unique identification number in accordance with the sampling protocol presented in the June 28, 2017 PEA Work Plan (Cornerstone). The collected samples were placed in an ice chilled cooler and transported to the project laboratory under chain of custody control. The five soil samples collected were analyzed for arsenic (EPA Test Method 6010B).

A data summary table, analytical data sheets, and chain of custody documentation are attached to this letter.

## Conclusion

Arsenic was detected above the cleanup goal of 16.5 mg/kg in 2 of 5 samples (SS-100 [ 21 mg/kg] and SS-200 [48 mg/kg]). Concentrations detected decreased significantly within the wetland area. Based on analytical data collected to date, we propose modifying the initial excavation extent to avoid the wetland, as shown on Figure 3. In accordance with the RAW, the final excavation extent will be based on laboratory analyses of verification soil samples.

## Limitation

Cornerstone makes no warranty, expressed or implied, except that our services have been performed in accordance with the environmental principles generally accepted at this time and location.

## Closing

Should you have any questions regarding this letter, please contact us at your convenience.

Sincerely,

**Cornerstone Earth Group, Inc.**

Peter Langtry, P.G., C.E.G.
Principal Geologist

PROFESSIONAL GEOLOGIST
PETER M. LANGTRY
PG-5920
EXP 1-31-2020
STATE OF CALIFORNIA

Attachments: Figures
Data Summary Table
Attachment A - Laboratory Data Report

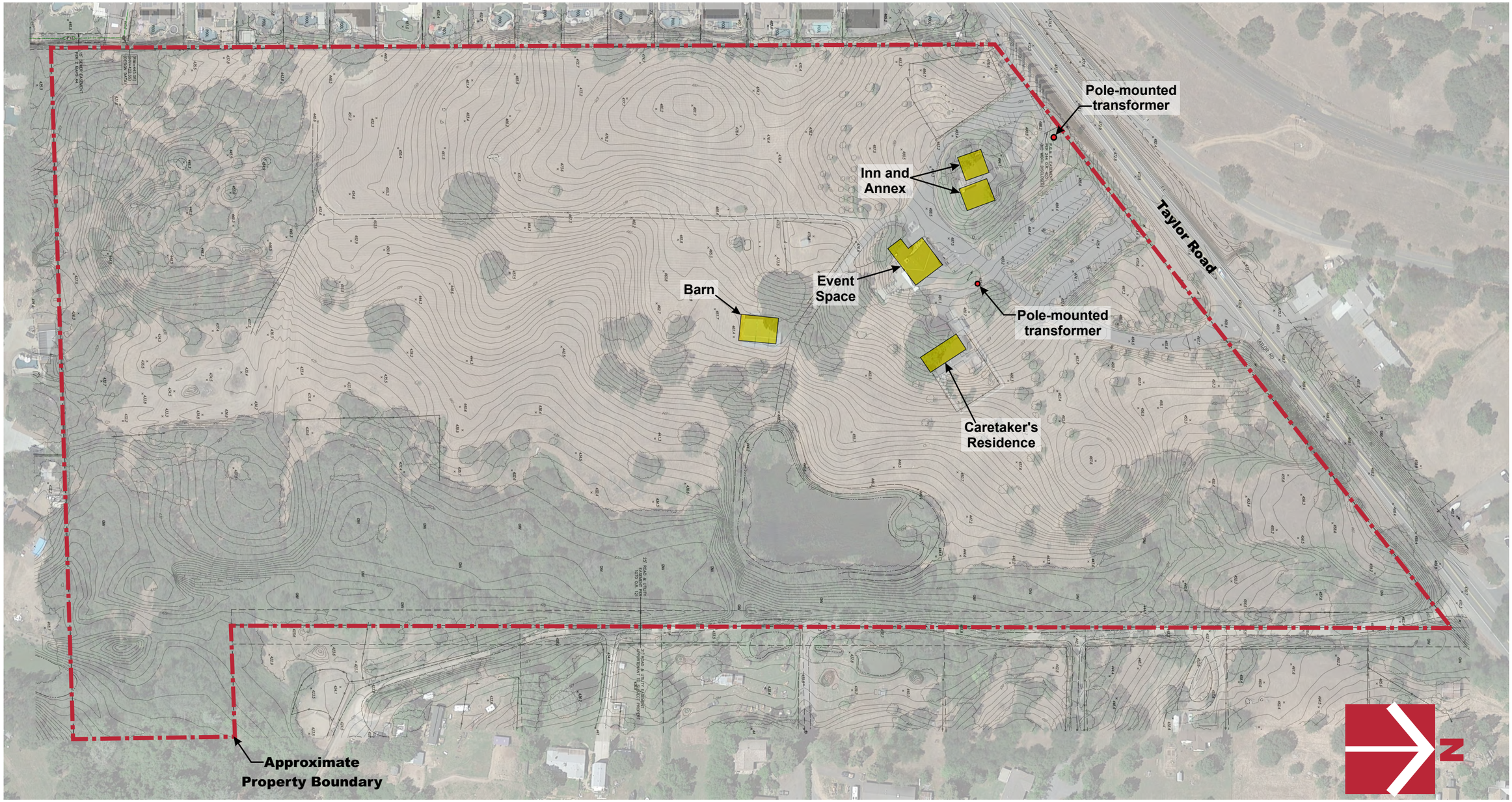
Copies: Addressee (by email)
RSC Engineering (by email)
Attn: Tiffany Wilson

CORNERSTONE EARTH GROUP

**Vicinity Map**

**United Auburn Indian Community School**
**3141 Taylor Road**
**Placer County, CA**

| | |
|---|---|
| Project Number | 411-16-4 |
| Figure Number | Figure 1 |
| Date | December 2017 |
| Drawn By | RRN |




Base by Google Earth, dated 7/10/2016
Overlay by RSC Engineering, Topographic Survey, dated October 2016

CORNERSTONE EARTH GROUP

**Site Plan**

**United Auburn Indian Community School**
**3141 Taylor Road**
**Placer County, CA**

| | |
|---|---|
| Project Number | 411-16-4 |
| Figure Number | Figure 2 |
| Date | December 2017 |
| Drawn By | RRN |

## Screening Levels

| | |
|---|---|
| Arsenic | 16.5 [1] |
| Lead | 80 [2] |
| Chlordane | 0.44 [2] |

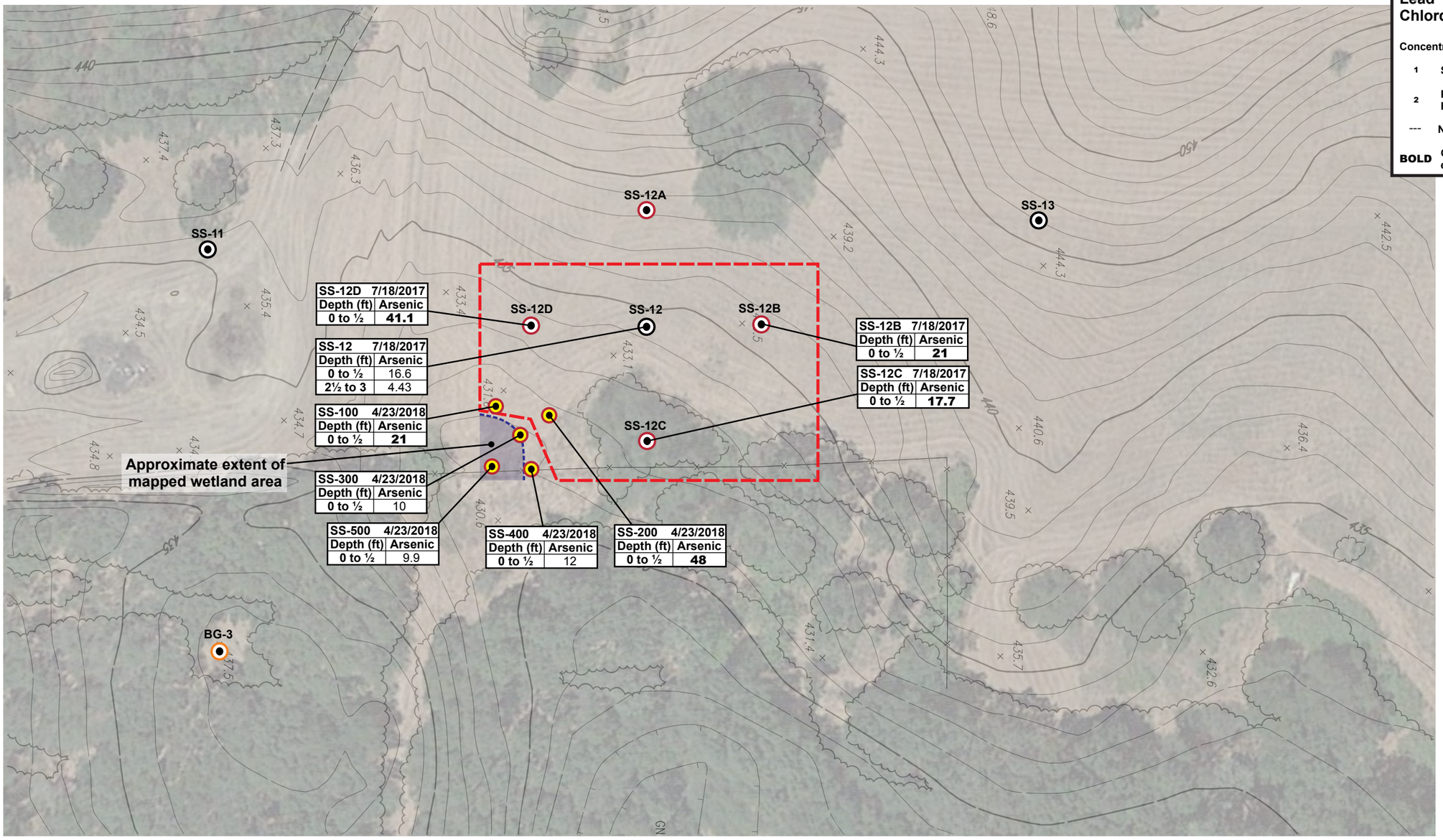
Concentration measured in mg/kg

1 Site specific background

2 Recommeded Screening Level (SL), HERO Note 3 - June 2017

--- Not Analyzed

**BOLD** Concentration exceeds selected environmental screening criteria




## Legend

- Approximate location of proposed soil sample
- Approximate location of background sample (BG)
- Approximate location of soil sample (SS)
- Approximate location of soil sample (SS) (Cornerstone, 2016)
- Proposed excavation area

Base by Google Earth, dated 7/10/2016
Overlay by RSC Engineering, Topographic Survey, dated October 2016

0 50 100
APPROXIMATE SCALE (FEET)

CORNERSTONE EARTH GROUP

**Proposed Excavation Area**

**United Auburn Indian Community School**
**3141 Taylor Road**
**Placer County, CA**

| | |
|---|---|
| Project Number | 411-16-5 |
| Figure Number | Figure 3 |
| Date | March 2018 |
| Drawn By | RRN |

Table 1. Analytical Results of Selected Soil Samples
(Concentrations in mg/kg)

| Sample ID | Date | Depth (feet) | Arsenic |
|---|---|---|---|
| SS-100 (0-0.5) | 4/23/2018 | 0-½ | 21 |
| SS-200 (0-0.5) | 4/23/2018 | 0-½ | 48 |
| SS-300 (0-0.5) | 4/23/2018 | 0-½ | 10 |
| SS-400 (0-0.5) | 4/23/2018 | 0-½ | 12 |
| SS-500 (0-0.5) | 4/23/2018 | 0-½ | 9.9 |
| Site Cleanup Goal [1] | | | 16.5 |

1 Site-specific background from RAW

BOLD Concentration exceeds Site cleanup goal

CORNERSTONE EARTH GROUP

## ATTACHMENT A – LABORATORY REPORT

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

# ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Pleasanton
1220 Quarry Lane
Pleasanton, CA 94566
Tel: (925)484-1919

TestAmerica Job ID: 720-86055-1
Client Project/Site: Taylor Rd.

For:
Cornerstone Earth Group
1270 Springbrook Road, Suite 101
Walnut Creek, California 94597

Attn: Peter Langtry

*Authorized for release by:*
*4/26/2018 3:31:29 PM*

Afsaneh Salimpour, Senior Project Manager
(925)484-1919
afsaneh.salimpour@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at:
www.testamericainc.com

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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## Glossary

| Abbreviation | These commonly used abbreviations may or may not be present in this report. |
|---|---|
| ¤ | Listed under the "D" column to designate that the result is reported on a dry weight basis |
| %R | Percent Recovery |
| CFL | Contains Free Liquid |
| CNF | Contains No Free Liquid |
| DER | Duplicate Error Ratio (normalized absolute difference) |
| Dil Fac | Dilution Factor |
| DL | Detection Limit (DoD/DOE) |
| DL, RA, RE, IN | Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample |
| DLC | Decision Level Concentration (Radiochemistry) |
| EDL | Estimated Detection Limit (Dioxin) |
| LOD | Limit of Detection (DoD/DOE) |
| LOQ | Limit of Quantitation (DoD/DOE) |
| MDA | Minimum Detectable Activity (Radiochemistry) |
| MDC | Minimum Detectable Concentration (Radiochemistry) |
| MDL | Method Detection Limit |
| ML | Minimum Level (Dioxin) |
| NC | Not Calculated |
| ND | Not Detected at the reporting limit (or MDL or EDL if shown) |
| PQL | Practical Quantitation Limit |
| QC | Quality Control |
| RER | Relative Error Ratio (Radiochemistry) |
| RL | Reporting Limit or Requested Limit (Radiochemistry) |
| RPD | Relative Percent Difference, a measure of the relative difference between two points |
| TEF | Toxicity Equivalent Factor (Dioxin) |
| TEQ | Toxicity Equivalent Quotient (Dioxin) |

# Case Narrative

Client: Cornerstone Earth Group
Project/Site: Taylor Rd.

TestAmerica Job ID: 720-86055-1

## Job ID: 720-86055-1

### Laboratory: TestAmerica Pleasanton

**Narrative**

**Job Narrative**
**720-86055-1**

**Comments**
No additional comments.

**Receipt**
The samples were received on 4/24/2018 5:20 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 0.1° C and 0.6° C.

**Metals**
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

# Detection Summary

Client: Cornerstone Earth Group
Project/Site: Taylor Rd.

TestAmerica Job ID: 720-86055-1

## Client Sample ID: SS-100 (0-0.5) — Lab Sample ID: 720-86055-1

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 21 | | 2.2 | | mg/Kg | 4 | | 6010B | Total/NA |

## Client Sample ID: SS-200 (0-0.5) — Lab Sample ID: 720-86055-2

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 48 | | 2.9 | | mg/Kg | 4 | | 6010B | Total/NA |

## Client Sample ID: SS-300 (0-0.5) — Lab Sample ID: 720-86055-3

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 10 | | 2.6 | | mg/Kg | 4 | | 6010B | Total/NA |

## Client Sample ID: SS-400 (0-0.5) — Lab Sample ID: 720-86055-4

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 12 | | 3.6 | | mg/Kg | 4 | | 6010B | Total/NA |

## Client Sample ID: SS-500 (0-0.5) — Lab Sample ID: 720-86055-5

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 9.9 | | 2.8 | | mg/Kg | 4 | | 6010B | Total/NA |

This Detection Summary does not include radiochemical test results.

# Client Sample Results

Client: Cornerstone Earth Group
Project/Site: Taylor Rd.

TestAmerica Job ID: 720-86055-1

## Client Sample ID: SS-100 (0-0.5)

**Lab Sample ID: 720-86055-1**

**Date Collected: 04/23/18 12:30**

**Matrix: Solid**

**Date Received: 04/24/18 17:20**

### Method: 6010B - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 21 | | 2.2 | | mg/Kg | | 04/25/18 13:44 | 04/26/18 11:20 | 4 |

# Client Sample Results

Client: Cornerstone Earth Group
Project/Site: Taylor Rd.

TestAmerica Job ID: 720-86055-1

## Client Sample ID: SS-200 (0-0.5)

**Lab Sample ID: 720-86055-2**

**Date Collected: 04/23/18 12:40**

**Matrix: Solid**

**Date Received: 04/24/18 17:20**

### Method: 6010B - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 48 | | 2.9 | | mg/Kg | | 04/25/18 13:44 | 04/26/18 11:25 | 4 |

# Client Sample Results

Client: Cornerstone Earth Group
Project/Site: Taylor Rd.

TestAmerica Job ID: 720-86055-1

## Client Sample ID: SS-300 (0-0.5)

**Lab Sample ID: 720-86055-3**

**Date Collected: 04/23/18 12:54**

**Matrix: Solid**

**Date Received: 04/24/18 17:20**

### Method: 6010B - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 10 | | 2.6 | | mg/Kg | | 04/25/18 13:44 | 04/26/18 11:30 | 4 |

# Client Sample Results

Client: Cornerstone Earth Group
Project/Site: Taylor Rd.

TestAmerica Job ID: 720-86055-1

## Client Sample ID: SS-400 (0-0.5)

**Lab Sample ID: 720-86055-4**

**Date Collected: 04/23/18 13:06**

**Matrix: Solid**

**Date Received: 04/24/18 17:20**

### Method: 6010B - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 12 | | 3.6 | | mg/Kg | | 04/25/18 13:44 | 04/26/18 11:34 | 4 |

# Client Sample Results

Client: Cornerstone Earth Group
Project/Site: Taylor Rd.

TestAmerica Job ID: 720-86055-1

## Client Sample ID: SS-500 (0-0.5)

**Lab Sample ID: 720-86055-5**

**Date Collected: 04/23/18 13:16**

**Matrix: Solid**

**Date Received: 04/24/18 17:20**

### Method: 6010B - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 9.9 | | 2.8 | | mg/Kg | | 04/25/18 13:44 | 04/26/18 11:39 | 4 |

# QC Sample Results

Client: Cornerstone Earth Group
Project/Site: Taylor Rd.

TestAmerica Job ID: 720-86055-1

## Method: 6010B - Metals (ICP)

**Lab Sample ID: MB 720-242932/1-A** — **Client Sample ID: Method Blank**
**Matrix: Solid** — **Prep Type: Total/NA**
**Analysis Batch: 243045** — **Prep Batch: 242932**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | ND | | 1.0 | | mg/Kg | | 04/25/18 13:44 | 04/26/18 10:10 | 1 |

**Lab Sample ID: LCS 720-242932/2-A** — **Client Sample ID: Lab Control Sample**
**Matrix: Solid** — **Prep Type: Total/NA**
**Analysis Batch: 243045** — **Prep Batch: 242932**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | | | 50.0 | 46.1 | | mg/Kg | | 92 | 80 - 120 | | |

**Lab Sample ID: 720-86040-A-1-E MS** — **Client Sample ID: Matrix Spike**
**Matrix: Solid** — **Prep Type: Total/NA**
**Analysis Batch: 243045** — **Prep Batch: 242932**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec. Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | ND | | 45.0 | 40.2 | | mg/Kg | | 83 | 75 - 125 | | |

**Lab Sample ID: 720-86040-A-1-F MSD** — **Client Sample ID: Matrix Spike Duplicate**
**Matrix: Solid** — **Prep Type: Total/NA**
**Analysis Batch: 243045** — **Prep Batch: 242932**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | ND | | 46.3 | 40.2 | | mg/Kg | | 81 | 75 - 125 | 0 | 20 |

# QC Association Summary

Client: Cornerstone Earth Group
Project/Site: Taylor Rd.

TestAmerica Job ID: 720-86055-1

## Metals

### Prep Batch: 242932

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 720-86055-1 | SS-100 (0-0.5) | Total/NA | Solid | 3050B | |
| 720-86055-2 | SS-200 (0-0.5) | Total/NA | Solid | 3050B | |
| 720-86055-3 | SS-300 (0-0.5) | Total/NA | Solid | 3050B | |
| 720-86055-4 | SS-400 (0-0.5) | Total/NA | Solid | 3050B | |
| 720-86055-5 | SS-500 (0-0.5) | Total/NA | Solid | 3050B | |
| MB 720-242932/1-A | Method Blank | Total/NA | Solid | 3050B | |
| LCS 720-242932/2-A | Lab Control Sample | Total/NA | Solid | 3050B | |
| 720-86040-A-1-E MS | Matrix Spike | Total/NA | Solid | 3050B | |
| 720-86040-A-1-F MSD | Matrix Spike Duplicate | Total/NA | Solid | 3050B | |

### Analysis Batch: 243045

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 720-86055-1 | SS-100 (0-0.5) | Total/NA | Solid | 6010B | 242932 |
| 720-86055-2 | SS-200 (0-0.5) | Total/NA | Solid | 6010B | 242932 |
| 720-86055-3 | SS-300 (0-0.5) | Total/NA | Solid | 6010B | 242932 |
| 720-86055-4 | SS-400 (0-0.5) | Total/NA | Solid | 6010B | 242932 |
| 720-86055-5 | SS-500 (0-0.5) | Total/NA | Solid | 6010B | 242932 |
| MB 720-242932/1-A | Method Blank | Total/NA | Solid | 6010B | 242932 |
| LCS 720-242932/2-A | Lab Control Sample | Total/NA | Solid | 6010B | 242932 |
| 720-86040-A-1-E MS | Matrix Spike | Total/NA | Solid | 6010B | 242932 |
| 720-86040-A-1-F MSD | Matrix Spike Duplicate | Total/NA | Solid | 6010B | 242932 |

# Lab Chronicle

Client: Cornerstone Earth Group
Project/Site: Taylor Rd.

TestAmerica Job ID: 720-86055-1

## Client Sample ID: SS-100 (0-0.5)

**Lab Sample ID: 720-86055-1**
**Date Collected: 04/23/18 12:30**
**Matrix: Solid**
**Date Received: 04/24/18 17:20**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3050B | | | 242932 | 04/25/18 13:44 | MAG | TAL PLS |
| Total/NA | Analysis | 6010B | | 4 | 243045 | 04/26/18 11:20 | BKR | TAL PLS |

## Client Sample ID: SS-200 (0-0.5)

**Lab Sample ID: 720-86055-2**
**Date Collected: 04/23/18 12:40**
**Matrix: Solid**
**Date Received: 04/24/18 17:20**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3050B | | | 242932 | 04/25/18 13:44 | MAG | TAL PLS |
| Total/NA | Analysis | 6010B | | 4 | 243045 | 04/26/18 11:25 | BKR | TAL PLS |

## Client Sample ID: SS-300 (0-0.5)

**Lab Sample ID: 720-86055-3**
**Date Collected: 04/23/18 12:54**
**Matrix: Solid**
**Date Received: 04/24/18 17:20**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3050B | | | 242932 | 04/25/18 13:44 | MAG | TAL PLS |
| Total/NA | Analysis | 6010B | | 4 | 243045 | 04/26/18 11:30 | BKR | TAL PLS |

## Client Sample ID: SS-400 (0-0.5)

**Lab Sample ID: 720-86055-4**
**Date Collected: 04/23/18 13:06**
**Matrix: Solid**
**Date Received: 04/24/18 17:20**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3050B | | | 242932 | 04/25/18 13:44 | MAG | TAL PLS |
| Total/NA | Analysis | 6010B | | 4 | 243045 | 04/26/18 11:34 | BKR | TAL PLS |

## Client Sample ID: SS-500 (0-0.5)

**Lab Sample ID: 720-86055-5**
**Date Collected: 04/23/18 13:16**
**Matrix: Solid**
**Date Received: 04/24/18 17:20**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3050B | | | 242932 | 04/25/18 13:44 | MAG | TAL PLS |
| Total/NA | Analysis | 6010B | | 4 | 243045 | 04/26/18 11:39 | BKR | TAL PLS |

**Laboratory References:**

TAL PLS = TestAmerica Pleasanton, 1220 Quarry Lane, Pleasanton, CA 94566, TEL (925)484-1919

# Accreditation/Certification Summary

Client: Cornerstone Earth Group
Project/Site: Taylor Rd.

TestAmerica Job ID: 720-86055-1

## Laboratory: TestAmerica Pleasanton

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

| Authority | Program | EPA Region | Identification Number | Expiration Date |
|---|---|---|---|---|
| California | State Program | 9 | 2496 | 01-31-20 |

| Analysis Method | Prep Method | Matrix | Analyte |
|---|---|---|---|

# Method Summary

Client: Cornerstone Earth Group
Project/Site: Taylor Rd.

TestAmerica Job ID: 720-86055-1

| Method | Method Description | Protocol | Laboratory |
|---|---|---|---|
| 6010B | Metals (ICP) | SW846 | TAL PLS |
| 3050B | Preparation, Metals | SW846 | TAL PLS |

**Protocol References:**

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL PLS = TestAmerica Pleasanton, 1220 Quarry Lane, Pleasanton, CA 94566, TEL (925)484-1919

# Sample Summary

Client: Cornerstone Earth Group
Project/Site: Taylor Rd.

TestAmerica Job ID: 720-86055-1

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received |
|---|---|---|---|---|
| 720-86055-1 | SS-100 (0-0.5) | Solid | 04/23/18 12:30 | 04/24/18 17:20 |
| 720-86055-2 | SS-200 (0-0.5) | Solid | 04/23/18 12:40 | 04/24/18 17:20 |
| 720-86055-3 | SS-300 (0-0.5) | Solid | 04/23/18 12:54 | 04/24/18 17:20 |
| 720-86055-4 | SS-400 (0-0.5) | Solid | 04/23/18 13:06 | 04/24/18 17:20 |
| 720-86055-5 | SS-500 (0-0.5) | Solid | 04/23/18 13:16 | 04/24/18 17:20 |

CORNERSTONE EARTH GROUP

# Chain of Custody Record 720-86055

#152906

4/26/2018

| | | | | |
|---|---|---|---|---|
| Cornerstone Earth Group, Inc. | Project Manager: Peter Langtry | Site Sampler: KAK | Date: | COC No: |
| 1270 Springbrook Rd | Tel/Fax: 925-988-9500 ext. 217 | Lab Contact: Afsaneh Salimpour | Lab: Test America | ____ of ____ COCs |
| Walnut Creek, CA 94597 | Analysis Turnaround Time | | | Laboratory's Job No. |
| (925)-988-9500 Phone | TAT if different from Below | | | |
| (925)-988-9501 FAX | ☐ 1 week | | | |
| Project Name: Taylor Rd. | ☐ 3 days | | | |
| Site 3141 Taylor Rd, Loomis, CA | ■ 2 days | | | |
| Project Number: 411-16-5 | ☐ 1 day | | | |

RUSH!

| Sample Identification | Sample Date | Sample Time | Sample Type | Matrix | # of Cont. | Filtered Sample | Arsenic (EPA Test Method 6010B) | Laboratory's Sample Specific Notes. |
|---|---|---|---|---|---|---|---|---|
| GG-100 (0-0.5) | 4/23/18 | 12:30 | Liner | Soil | 1 | | X | |
| GG-200 (0-0.5) | | 12:40 | | | | | X | |
| GG-300 (0-0.5) | | 12:54 | | | | | X | |
| GG-400 (0-0.5) | | 13:06 | | | | | X | |
| GG-500 (0-0.5) | | 13:16 | | | | | X | |

720-86055 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

*Possible Hazard Identification*
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

*Sample Disposal*
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Special Instructions/QC Requirements & Comments: If additional sample is needed, please use the liner. Please email results to: plangtry@cornerstoneearth.com; kknoll@cornerstoneearth.com

0.6°C 0.1°C

| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
|---|---|---|---|---|---|
| K. Knoll | Cornerstone Earth Group | 4/24/18 10:34 | [signature] | TA 720 | 4-24-18 10:34 |
| [signature] | TA 720 | 4-24-18 720 | [signature] | | 4-24-18 12:20 |
| Relinquished by: | Company: | Date/Time | Received by | Company: | Date/Time: |

4/24/18

CORNERSTONE EARTH GROUP

# Chain of Custody Record 720-86055

#182906

4/26/2018

| | | | | |
|---|---|---|---|---|
| Cornerstone Earth Group, Inc. | Project Manager: Peter Langtry | Site Sampler: KAK | Date: | COC No |
| 1270 Springbrook Rd | Tel/Fax: 925-988-9500 ext. 217 | Lab Contact: Afsaneh Salimpour | Lab: Test America | ____ of ____ COCs |
| Walnut Creek, CA 94597 | Analysis Turnaround Time | | | Laboratory's Job No |
| (925)-988-9500 Phone | TAT if different from Below ____ | | | |
| (925)-988-9501 FAX | ☐ 1 week | | | |
| Project Name. Taylor Rd. | ☐ 3 days | | | |
| Site: 3141 Taylor Rd, Loomis, CA | ■ 2 days | | | |
| Project Number 411-16-5 | ☐ 1 day | | | |

RUSH!

| Sample Identification | Sample Date | Sample Time | Sample Type | Matrix | # of Cont. | Filtered Sample | Arsenic (EPA Test Method 6010B) | Laboratory's Sample Specific Notes: |
|---|---|---|---|---|---|---|---|---|
| SS-100 (0-0.5) | 4/23/18 | 12:30 | Liner | soil | 1 | | X | |
| SS-200 (0-0.5) | | 12:40 | | | | | X | |
| SS-300 (0-0.5) | | 12:54 | | | | | X | |
| SS-400 (0-0.5) | | 13:06 | | | | | X | |
| SS-500 (0-0.5) | | 13:16 | | | | | X | |

720-86055 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other ____

*Possible Hazard Identification*
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown*

*Sample Disposal*
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* ____ *Months*

**Special Instructions/QC Requirements & Comments: If additional sample is needed, please use the liner.** Please email results to: plangtry@cornerstoneearth.com; kknoll@cornerstoneearth.com

0.6°C 0.1°C

| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
|---|---|---|---|---|---|
| K. Knoll | Cornerstone Earth Group | 4/24/18 10:34 | [illegible] | TA 720 | 4-24-18 10:34 |
| Relinquished by: | Company: | Date/Time: | Received by: | Company | Date/Time |
| [illegible] | TA 720 | 4-24-18 1720 | [illegible] | | 4-24-18 19:20 |
| Relinquished by: | Company | Date/Time: | Received by: | Company: | Date/Time: |
| | | | | | |

4/24/18

# Login Sample Receipt Checklist

Client: Cornerstone Earth Group

Job Number: 720-86055-1

**Login Number: 86055**

**List Source: TestAmerica Pleasanton**

**List Number: 1**

**Creator: Perry, Janae R**

| Question | Answer | Comment |
|---|---|---|
| Radioactivity wasn't checked or is </= background as measured by a survey meter. | N/A | |
| The cooler's custody seal, if present, is intact. | N/A | |
| Sample custody seals, if present, are intact. | N/A | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| Is the Field Sampler's name present on COC? | True | |
| There are no discrepancies between the containers received and the COC. | True | |
| Samples are received within Holding Time (excluding tests with immediate HTs) | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| Sample Preservation Verified. | N/A | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| Containers requiring zero headspace have no headspace or bubble is <6mm (1/4"). | True | |
| Multiphasic samples are not present. | True | |
| Samples do not require splitting or compositing. | True | |
| Residual Chlorine Checked. | N/A | |

# APPENDIX L

# UAIC TRIBAL SCHOOL

## Revised Noise Study Report

Prepared for
United Auburn Indian Community (UAIC)

April 2018

# UAIC TRIBAL SCHOOL

## Revised Noise Study Report

Prepared for
United Auburn Indian Community (UAIC)

April 2018

2600 Capitol Avenue
Suite 200
Sacramento, CA 95816
916.564.4500
www.esassoc.com

| | |
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# CHAPTER 1
# Introduction

## 1.1 Purpose

This Noise Technical Report (report) was prepared for the approximately 45-acre United Auburn Indian Community School (UAIC) project (proposed project), located in an unincorporated portion of Placer County (County), California. The purpose of this report is to evaluate the potential for the construction and operation of the proposed project to result in significant impacts associated with noise and vibration.

The UAIC Tribal School would be a pre-K through 8th grade school designed to serve approximately 100 UAIC students with 35 staff members. The campus would also include a Tribal Education Center as well as a Tribal Cultural Center. The Tribal Education Center would provide recreational and continuing education classes for adult tribal members during the week as well as tutoring services and supplemental classes to home schooled and high school age tribal members. Approximately four staff members would be dedicated to the operation of the facility. The Tribal Cultural Center would include gallery and exhibit spaces, artifact archives, storage, and administrative spaces. Access to the Cultural Center would initially be limited to UAIC members, but the tribe may invite researchers, community groups, tribal groups, and school groups by appointment. Site improvements would include a small (non-regulation) lighted ballfield, two dedicated play areas for the students, a nature trail, improvements to the existing pond, vehicular access, and parking areas.

## 1.2 Environmental Setting

Noise can be generally defined as unwanted sound. Sound is defined as any pressure variation in air that the human ear can detect. Sound, traveling in the form of waves from a source, exerts a sound pressure level (referred to as sound level) which is measured in decibels (dB), with zero dB corresponding roughly to the threshold of human hearing and 120 to 140 dB corresponding to the threshold of pain. Sound pressure fluctuations can be measured in units of hertz (Hz), which correspond to the frequency of a particular sound. Typically, sound does not consist of a single frequency, but rather a broad band of frequencies varying in levels of magnitude (sound power). The sound pressure level, therefore, constitutes the additive force exerted by a sound corresponding to the frequency/sound power level spectrum.

The typical human ear is not equally sensitive to all frequencies of the audible sound spectrum. As a consequence, when assessing potential noise impacts, sound is measured using an electronic filter that de-emphasizes the frequencies below 1,000 Hz and above 5,000 Hz in a manner corresponding to the human ear's decreased sensitivity to low and extremely high frequencies instead of the frequency mid-range. This method of frequency weighting is referred to as "A" weighting and is expressed in units of A-weighted decibels (dBA). Frequency A-weighting follows an international standard methodology of frequency de-emphasis and is typically applied to community noise measurements. For this reason, the A-

weighted sound level has become the standard tool of environmental noise assessment. Some representative noise sources and their corresponding A weighted noise levels are shown in **Figure 1**.

## Noise Exposure and Community Noise

Noise exposure is a measure of noise over a period of time. Noise level is a measure of noise at a given instant in time. Community noise varies continuously over a period of time with respect to the contributing sound sources of the community noise environment. Community noise is primarily the product of many distant noise sources, which constitute a relatively stable background noise exposure, with the individual contributors unidentifiable. The background noise level changes throughout a typical day, but does so gradually, corresponding with the addition and subtraction of distant noise sources such as traffic and atmospheric conditions. What makes community noise constantly variable throughout a day, besides the slowly changing background noise, is the addition of short duration single event noise sources (e.g., aircraft flyovers, motor vehicles, sirens), which are readily identifiable to the individual receptor. These successive additions of sound to the community noise environment vary the community noise level from instant to instant, requiring the measurement of noise exposure over a period of time to legitimately characterize a community noise environment and evaluate cumulative noise impacts.

This time-varying characteristic of environmental noise is described using statistical noise descriptors. The most frequently used noise descriptors are summarized below:

$L_{eq}$: the energy-equivalent sound level is used to describe noise over a specified period of time, typically one hour, in terms of a single numerical value. The $L_{eq}$ is the constant sound level which would contain the same acoustic energy as the varying sound level, during the same time period (i.e., the average noise exposure level for the given time period).

$L_{max}$: the instantaneous maximum noise level for a specified period of time.

$L_{50}$: the noise level that is equaled or exceeded 50 percent of the specified time period. The $L_{50}$ represents the median sound level.

$L_{90}$: the noise level that is equaled or exceeded 90 percent of the specific time period. This is considered the background noise level during a given time period.

$L_{dn}$: is a 24-hour day and night A-weighted noise exposure level which accounts for the greater sensitivity of most people to nighttime noise by weighting noise levels at night ("penalizing" nighttime noises). Noise between 10:00 p.m. and 7:00 a.m. is weighted (penalized) by adding 10 dB to take into account the greater annoyance of nighttime noises.

The $L_{eq}$ is the foundation of the $L_{dn}$ and shows very good correlation with community response to noise. Because $L_{dn}$ represents a 24-hour average, it tends to disguise short-term variations in the noise environment. $L_{dn}$-based noise standards are commonly used to assess noise impacts associated with traffic, railroad and aircraft noise sources. As a general rule, in areas where the noise environment is dominated by traffic, the $L_{eq}$ during the peak-hour is generally within one to two decibels of the $L_{dn}$ at that location.

| COMMON OUTDOOR ACTIVITIES | NOISE LEVEL (dBA) | COMMON INDOOR ACTIVITIES |
|---|---|---|
| | 110 | Rock band |
| Jet flyover at 1,000 feet | | |
| | 100 | |
| Gas lawnmower at 3 feet | | |
| | 90 | |
| Diesel truck at 50 feet at 50 mph | | Food blender at 3 feet |
| | 80 | |
| Noisy urban area, daytime | | |
| Gas lawnmower at 100 feet | 70 | Garbage disposal at 3 feet |
| Commercial area | | Normal speech at 3 feet |
| Heavy traffic at 300 feet | 60 | |
| | | Large business office |
| Quiet urban daytime | 50 | Dishwasher in next room |
| Quiet urban nighttime | 40 | Theater, large conference room (background) |
| Quiet suburban nighttime | | |
| | 30 | Library |
| Quiet rural nighttime | | Bedroom at night, concert hall (background) |
| | 20 | |
| | | Broadcast/recording studio |
| | 10 | |
| | 0 | |

SOURCE: Caltrans, 1998

UAIC Tribal School . 150225

**Figure 1**
Typical Noise Levels

## Effects of Noise on People

When a new noise is introduced to an environment, human reaction can be predicted by comparing the new noise to the ambient noise level, which is the existing noise level comprised of all sources of noise in a given location. In general, the more a new noise exceeds the ambient noise level, the less acceptable the new noise will be judged by those hearing it. With regard to increases in A-weighted noise level, the following relationships occur:

- except in carefully controlled laboratory experiments, a change of 1-dB cannot be perceived;
- outside of the laboratory, a 3-dB change is considered a just-perceivable difference;
- a change in level of at least 5-dB is required before any noticeable change in human response would be expected; and
- a 10-dB change is subjectively heard as approximately a doubling in loudness, and can cause adverse response.

The perceived increases in noise levels shown above are applicable to both mobile and stationary noise sources. These relationships occur in part because of the logarithmic nature of sound and the decibel system. The human ear perceives sound in a non-linear fashion, hence the decibel scale was developed. Because the decibel scale is based on logarithms, two noise sources do not combine in a simple additive fashion, rather logarithmically. For example, if two identical noise sources produce noise levels of 50 dB, the combined sound level would be 53 dBA, not 100 dBA. This methodology also applies to the traffic noise such that when traffic volume is doubled, the resulting noise level increase would be 3 dB.

## Noise Attenuation

Stationary point sources of noise, including stationary mobile sources such as idling vehicles, attenuate (lessen) at a rate between 6 dB for hard sites and 7.5 dB for soft sites for each doubling of distance from the reference measurement. Hard sites are those with a reflective surface between the source and the receiver such as parking lots or smooth bodies of water. No excess ground attenuation is assumed for hard sites and the changes in noise levels with distance (drop-off rate) is simply the geometric spreading of the noise from the source. Soft sites have an absorptive ground surface such as soft dirt, grass or scattered bushes and trees. In addition to geometric spreading, an excess ground attenuation value of 1.5 dB (per doubling distance) is normally assumed for soft sites. Line sources (such as traffic noise from vehicles) attenuate at a rate between 3 dB for hard sites and 4.5 dB for soft sites for each doubling of distance from the reference measurement (Caltrans, 2013).

## Fundamentals of Vibration

Ground-borne vibration can be a concern for nearby neighbors, causing buildings to shake and rumbling sounds to be heard known as groundborne noise. In contrast to airborne noise, ground-borne vibration and noise is not a common environmental problem. Some common sources of ground-borne vibration are trains, buses on rough roads, and construction activities such as blasting, sheet pile-driving and operating heavy earth-moving equipment.

The effects of ground-borne vibration include movement of the building floors, rattling of windows, shaking of items on shelves or hanging on walls, and rumbling sounds. In extreme cases, the vibration can cause damage to buildings. Building damage is not a factor for most projects, with the occasional exception of blasting and sheet pile-driving during construction. Annoyance from vibration often occurs when the vibration exceeds the threshold of perception by only a small margin. A vibration level that causes annoyance can be well below the damage threshold for normal buildings.

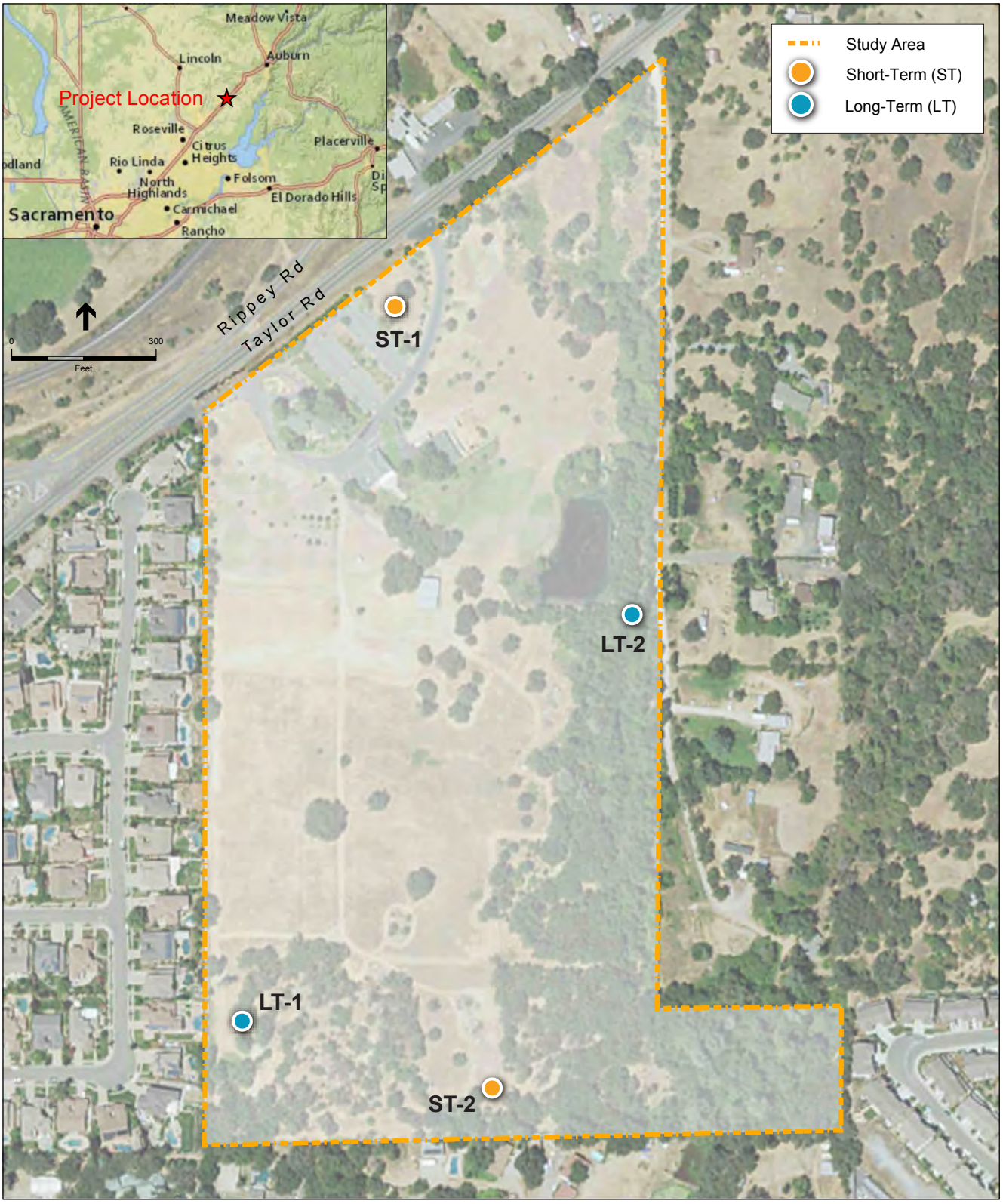
## Sensitive Receptors

Noise sensitive land uses are typically defined as residences, schools, institutions, places of worship, hospitals, care centers, and hotels. Land uses surrounding the project site consist of high density single-family residences abutting the project site's western boundary and scattered single-family residences on larger lots located as close as approximately 35 feet to the south and 205 feet to the east of the project site boundary.

## Existing Noise Environment

The ambient noise environment surrounding the project site is primarily the result of traffic noise from Taylor Road and Interstate 80 (I-80). Other noise sources in the area include wildlife sounds such as birds chirping and distant dogs barking.

Ambient noise measurements were conducted at the project site from January 5, 2017 to January 6, 2017. To quantify the existing ambient noise environment in the vicinity of the project site, two 24-hour long-term and two 15-minute short-term noise measurements were conducted on the project site adjacent to offsite sensitive land uses. The locations of all long-term and short-term noise measurements are illustrated in **Figure 2**. Larson-Davis (LD) Model 831 and LxT2 precision integrating sound level meters were used to conduct the noise measurements. The meters were calibrated before use with an LD Model CAL200 acoustical calibrator to ensure the accuracy of the measurements. The equipment used meets all pertinent specifications of the American National Standards Institute for Type 1 and Type 2 sound level meters (ANSI S1.4). Results of the noise measurements are presented in **Table 1** (short-term measurements) and **Table 2** (long-term measurements).




SOURCE: ESA, 2016

UAIC Tribal School . 150225

**Figure 2**

Noise Measurement Locations

**TABLE 1**
**15-MINUTE SHORT-TERM NOISE MEASUREMENT RESULTS**
**JANUARY 5, 2017**

| Measurement Location | Start time | $L_{eq}$ (dBA) | $L_{max}$ (dBA) | $L_{min}$ (dBA) | Primary Noise Source(s) |
|---|---|---|---|---|---|
| ST-1 | 12:14 p.m. | 49 | 68 | 32 | Traffic Noise along Taylor Road |
| ST-2 | 11:49 a.m. | 39 | 49 | 36 | Natural Sounds (e.g., crickets, birds) |

Source: ESA, 2017

**TABLE 2**
**24-HOUR LONG-TERM NOISE MEASUREMENT RESULTS**
**JANUARY 5 – 6, 2017**

| Measurement Location | School-Hour $L_{eq}$ (dBA) | $L_{dn}$ (dBA) | $L_{max}$ (dBA) | $L_{min}$ (dBA) |
|---|---|---|---|---|
| LT-1 | 57 | 57 | 85 | 35 |
| LT-2 | 54 | 55 | 85 | 32 |

Note: School-Hour $L_{eq}$ is the highest hourly noise level of hours between 7 AM and 5 PM.
Source: ESA, 2017

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# CHAPTER 2
# Regulatory Setting

## 2.1 Federal Regulations

The Federal Transit Administration (FTA) has adopted vibration standards that are used to evaluate potential building damage impacts related to construction activities. The vibration damage criteria adopted by the FTA are shown in **Table 3**.

**TABLE 3**
**CONSTRUCTION VIBRATION DAMAGE CRITERIA**

| Building Category | PPV (in/sec) |
|---|---|
| I. Reinforced-concrete, steel, or timber (no plaster) | 0.5 |
| II. Engineered concrete and masonry (no plaster) | 0.3 |
| III. Non-engineered timber and masonry buildings | 0.2 |
| IV. Buildings extremely susceptible to vibration damage | 0.12 |

SOURCE: FTA, 2006

In addition, the FTA has also adopted standards associated with human annoyance for ground-borne vibration impacts for the following three land-use categories: Vibration Category 1 – High Sensitivity, Vibration Category 2 – Residential, and Vibration Category 3 – Institutional. The FTA defines Category 1 as buildings where vibration would interfere with operations within the building, including vibration-sensitive research and manufacturing facilities, hospitals with vibration-sensitive equipment, and university research operations. Vibration-sensitive equipment includes, but is not limited to, electron microscopes, high-resolution lithographic equipment, and normal optical microscopes. Category 2 refers to all residential land uses and any buildings where people sleep, such as hotels and hospitals. Category 3 refers to institutional land uses such as schools, churches, other institutions, and quiet offices that do not have vibration-sensitive equipment but still have the potential for activity interference. The vibration thresholds associated with human annoyance for these three land-use categories are shown in **Table 4**. No thresholds have been adopted or recommended for commercial and office uses. Because the project-induced vibration would be from construction activities, the impact thresholds for this project would be based on Infrequent Events as stated in Table 4.

**TABLE 4**
**GROUND-BORNE VIBRATION IMPACT CRITERIA FOR GENERAL ASSESSMENT**

| Land Use Category | Frequent Events[a] | Occasional Events[b] | Infrequent Events[c] |
|---|---|---|---|
| **Category 1:** Buildings where vibration would interfere with interior operations | 65 VdB[d] | 65 VdB[d] | 65 VdB[d] |
| **Category 2:** Residences and buildings where people normally sleep | 72 VdB | 75 VdB | 80 VdB |
| **Category 3**: Institutional land uses with primarily daytime use | 75 VdB | 78 VdB | 83 VdB |

[a] "Frequent Events" is defined as more than 70 vibration events of the same source per day.
[b] "Occasional Events" is defined as between 30 and 70 vibration events of the same source per day.
[c] "Infrequent Events" is defined as fewer than 30 vibration events of the same kind per day.
[d] This criterion is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes.

SOURCE: FTA, 2006.

## 2.2 State Regulations

The State of California does not have statewide standards for environmental noise, but the California Department of Health Services (DHS) has established guidelines for evaluating the compatibility of various land uses as a function of community noise exposure. The purpose of these guidelines is to maintain acceptable noise levels in a community setting for different land use types. Noise compatibility by different land uses types is categorized into four general levels: "normally acceptable," "conditionally acceptable," "normally unacceptable," and "clearly unacceptable." For instance, a noise environment ranging from 50 dBA $L_{dn}$ to 65 dBA $L_{dn}$ is considered to be "normally acceptable" for multi-family residential uses, while a noise environment of 75 dBA $L_{dn}$ or above for multi-family residential uses is considered to be "clearly unacceptable." In addition, Section 65302(f) of the California Government Code requires each county and city in the state to prepare and adopt a comprehensive long-range General Plan for its physical development, with Section 65302(g) requiring a Noise Element to be included in the General Plan. The Noise Element must: (1) identify and appraise noise problems in the community; (2) recognize Office of Noise Control guidelines; and (3) analyze and quantify current and projected noise levels.

The California Noise Act of 1973 (Health and Safety Code Sections 46000–46002) sets forth a resource network to assist local agencies with legal and technical expertise regarding noise issues. The objective of the act is to encourage the establishment and enforcement of local noise ordinances.

## 2.3 Local Regulations

### Placer County General Plan

The Placer County General Plan (Placer County, 2013) outlines goals and policies related to noise in the vicinity of the project site. The following goals and policies are relevant to the proposed project.

**Goal 9.A:** To protect County residents from the harmful and annoying effects of exposure to excessive noise.

**Policy 9.A.1:** New development of noise-sensitive uses shall not be permitted where the noise level due to non-transportation noise sources will exceed the noise level standards of **Table 5** as measured immediately within the property line of the new development, unless effective noise mitigation measures have been incorporated into the development design to achieve the standards specified in Table 5.

**TABLE 5**
**ALLOWABLE LDN NOISE LEVELS WITHIN SPECIFIED ZONE DISTRICTS[1]**
**Applicable to New Projects Affected by or Including Non-Transportation Noise Sources**

| Zone Distance of Receptor | Property Line of Receiving Use | Interior Spaces[2] |
|---|---|---|
| Residential Adjacent to Industrial[3] | 60 | 45 |
| Other Residential[4] | 50 | 45 |
| Office/Professional | 70 | 45 |
| Transient Lodging | 65 | 45 |
| Neighborhood Commercial | 70 | 45 |
| General Commercial | 70 | 45 |
| Heavy Commercial | 75 | 45 |
| Limited Industrial | 75 | 45 |
| Highway Service | 75 | 45 |
| Shopping Center | 70 | 45 |
| Industrial | - | 45 |
| Industrial Park | 75 | 45 |
| Industrial Reserve | --- | - |
| Airport | --- | 45 |
| Unclassified | --- | --- |
| Farm | (see footnote 6) | --- |
| Agriculture Exclusive | (see footnote 6) | --- |
| Forestry | --- | --- |
| Timberland Preserve | --- | --- |
| Recreation & Forestry | 70 | --- |
| Open Space | --- | --- |
| Mineral Reserve | --- | --- |

NOTES:

- Except where noted otherwise, noise exposures will be those which occur at the property line of the receiving use.
- Where existing transportation noise levels exceed the standards of this table, the allowable $L_{dn}$ shall be raised to the same level as that of the ambient level.
- If the noise source generated by, or affecting, the uses shown above consists primarily of speech or music, of if the noise source is impulsive in nature, the noise standards shown above shall be decreased by 5 dB.
- Where a use permit has established noise level standards for an existing use, those standards shall supersede the levels specified in Table 3.6-4 and Table 3.6-5. Similarly, where an existing use which is not subject to a use permit causes noise in excess of the allowable levels in Tables 3.6-4 and 3.6-5 said excess noise shall be considered the allowable level. If a new development is proposed which will be affected by noise from such an existing use, it will ordinarily be assumed that the noise levels already existing or those levels allowed by the existing use permit, whichever are greater, are those levels actually produced by the existing use.
- Existing industry located in industrial zones will be given the benefit of the doubt in being allowed to emit increased noise consistent with the state of the art[5] at the time of expansion. In no case will expansion of an existing industrial operation because to decrease allowable noise emission limits. Increased emissions above those normally allowable should be limited to a one-time 5 dB increase at the discretion of the decision making body.
- The noise level standards applicable to land uses containing incidental residential uses, such as caretaker dwellings at industrial facilities and homes on agriculturally zoned land, shall be the standards applicable to the zone district, not those applicable to residential uses.
- Where no noise level standards have been provided for a specific zone district, it is assumed that the interior and/or exterior spaces of these uses are effectively insensitive to noise.

[1] Overriding policy on interpretation of allowable noise levels: Industrial-zoned properties are confined to unique areas of the County, and are irreplaceable. Industries which provide primary wage-earner jobs in the County, if forced to relocate, will likely be forced to leave the County. For this reason, industries operating upon industrial zoned properties must be afforded reasonable opportunity to exercise the rights/privileges conferred upon them be their zoning. Whenever the allowable noise levels herein fall subject to interpretation relative to industrial activities, the benefit of the doubt shall be afforded to the industrial use.

Where an industrial use is subject to infrequent and unplanned upset or breakdown of operations resulting in increased noise emissions, where such upsets and breakdowns are reasonable considering the type of industry, and where the industrial use exercises due diligence in preventing as well as correcting such upsets and breakdowns, noise generated during such upsets and breakdowns shall not be included in calculations to determine conformance with allowable noise levels.

[2] Interior spaces are defined as any locations where some degree of noise-sensitivity exists. Examples include all habitable rooms of residences, and areas where communication and speech intelligibility are essential, such as classrooms and offices.

[3] Noise from industrial operations may be difficult to mitigate in a cost-effective manner. In recognition of this fact, the exterior noise standards for residential zone districts immediately adjacent to industrial, limited industrial, industrial park, and industrial reserve zone districts have been increased by 10 dB as compared to residential districts adjacent to other land uses.

For purposes of the Noise Element, residential zone districts are defined to include the following zoning classifications: AR, R-1, R-2, R-3, FR, RP, TR-1, TR-2, TR-3, and TR-4.

[4] Where a residential zone district is located within an -SP combining district, the exterior noise level standards are applied at the outer boundary of the -SP district. If an existing industrial operation within an -SP district is expanded or modified, the noise level standards at the outer boundary of the -SP district may be increased as described above in these standards.

Where a new residential use is proposed in an -SP zone, an Administrative Review Permit is required, which may require mitigation measures at the residence for noise levels existing and/or allowed by use permit as described under "NOTES," above, in these standards.

[5] State of the art should include the use of modern equipment with lower noise emissions, site design, and plant orientation to mitigate offsite noise impacts, and similar methodology.

[6] Normally, agricultural uses are noise insensitive and will be treated in this way. However, conflicts with agricultural noise emissions can occur where single-family residences exist within agricultural zone districts. Therefore, where effects of agricultural noise upon residences located in these agricultural zones is a concern, an $L_{dn}$ of 70 dBA will be considered acceptable outdoor exposure at a residence.

SOURCE: Placer County. *Placer County General Plan Noise Element.* Table 9-1. May 21, 2013.

**Policy 9.A.2:** Noise created by new proposed non-transportation noise sources shall be mitigated so as not to exceed the noise level standards of Table 5 as measured immediately within the property line of lands designated for noise-sensitive uses: provided, however, the noise created by occasional events occurring within a stadium on land zoned for university purposes may temporarily exceed these standards as provided in an approved Specific Plan.

**Policy 9.A.6:** The feasibility of proposed projects with respect to existing and future transportation noise levels shall be evaluated by comparison to **Table 6**.

**TABLE 6**
**MAXIMUM ALLOWABLE NOISE EXPOSURE TRANSPORTATION NOISE SOURCES**

| Land Use | Outdoor Activity Area[1] $L_{dn}$/CNEL, dB | Interior Spaces | |
|---|---|---|---|
| | | $L_{dn}$/CNEL, dB | $L_{eq}$ dB[2] |
| Residential | 60[3] | 45 | - |
| Transient Lodging | 60[3] | 45 | - |
| Hospitals, Nursing Homes | 60[3] | 45 | - |
| Theaters, Auditoriums, Music Halls | - | - | 35 |
| Churches, Meeting Halls | 60[3] | - | 40 |
| Office Buildings | - | - | 45 |
| Schools, Libraries, Museums | - | - | 45 |
| Playgrounds, Neighborhood parks | 70 | - | - |

1 Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use.
2 As determined for a typical worst-case hour during period of use.
3 Where it is not possible to reduce noise in outdoor activity area to 60 dB $L_{dn}$/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB $L_{dn}$/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.

SOURCE: Placer County. *Placer County General Plan Noise Element*. Table 9-3. May 21, 2013.

## Placer County Municipal Code

Chapter 9 of the Placer County Code provides non-transportation (stationary) sound level standards. Specifically, Article 9.36.060 is reproduced below:

### 9.36.060 Sounds Limits for Sensitive Receptors

A. It is unlawful for any person at any location to create any sound, or to allow the creation of any sound, on property owned, leased, occupied or otherwise controlled by such person that:

1. Causes the exterior sound level when measured at the property line of any affected sensitive receptor to exceed the ambient sound level by five dBA; or

2. Exceeds the sound level standards set forth in **Table 7**, whichever is the greater.

**TABLE 7**
**SOUND LEVEL STANDARDS – PLACER COUNTY CODE**

| Sound Level Descriptor | Daytime (7:00 AM – 10:00 PM) | Nighttime (10:00 PM – 7:00 AM) |
|---|---|---|
| Hourly $L_{eq}$, dB | 55 | 45 |
| Maximum Level, ($L_{max}$) dB | 70 | 65 |

SOURCE: Placer County Code, Article 9.36.060.

B. Each of the sound level standards specified in Table 7 above shall be reduced by five dBA for simple tone noises, consisting of speech and music. However, in no case shall the sound level standard be lower than the ambient sound level plus five dBA.

C. If the intruding sound source is continuous and cannot reasonably be discontinued or stopped for a time period whereby the ambient sound level can be measured, the sound level measured while the source is in operation shall be compared directly to the sound level standards of Table 7.

In addition, the following exemptions specified in the Placer County Code, Article 9.36.030, would apply to the project:

- Sound sources associated with property maintenance (e.g., lawn mowers, edgers, snow blowers, blowers, pool pumps, power tools, etc.) provided such activities take place between the hours of 7:00 a.m. and 9:00 p.m.; and

- Construction (e.g., construction, alteration or repair activities) between the hours of 6:00 a.m. and 8:00 p.m. Monday through Friday and between the hours of 8:00 AM and 8:00 PM Saturday and Sunday provided, however, that all construction equipment shall be fitted with factory installed muffling devices and that all construction equipment shall be maintained in good working order.

- The normal operation of public and private schools typically consisting of classes and other school-sponsored activities.

# CHAPTER 3
# Noise Standards

The proposed project's noise impacts were evaluated using the checklist items in Appendix G of the California Environmental Quality Act (CEQA) Guidelines. Under CEQA, a project may be deemed to have a significant effect on the environment with respect to noise and/or groundborne vibration if it would result in:

a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;

b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels;

c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;

d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels;

f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels.

This report discusses the first four criteria; the fifth and sixth are not discussed because the site lies outside a two-mile radius of a public airport or private airstrip (approximately 9 miles from Auburn Municipal Airport, the nearest airport).

## Methodology and Assumptions

### Construction Noise

Construction noise is exempted by the Placer County Code, Article 9.36.030 as long as the construction activities would occur between the hours of 6:00 a.m. and 8:00 p.m. Monday through Friday and between the hours of 8:00 a.m. and 8:00 p.m. Saturday and Sunday provided, however, that all construction equipment shall be fitted with factory installed muffling devices and that all construction equipment shall

be maintained in good working order. It is assumed that the construction hours would be within the specified hours.

In terms of determining the temporary noise increase due to the construction activities, it is assumed that the impact would be considered a significant if the construction noise would increase 5 dB over an ambient noise level. As discussed under Section 1.2 (Environmental Setting), a 5 dB increase in noise is considered a noticeable change in human response to the average person. Construction noise levels for the proposed project were estimated using the Federal Highway Administration's (FHWA) *Roadway Construction Noise Model (RCNM)* (FHWA, 2006). FHWA's RCNM provides reference noise levels for construction equipment that are typically used during building construction. These reference noise levels are represented of what would be heard during project construction and are used to estimate the project-related construction noise impacts.

## Operational Noise

The County exempts noise generated from the normal operation of public and private schools (Placer County Municipal Code, Chapter 9.36.030(A)(4)), which would include noise sources such as the use of heating, ventilation and air conditioning (HVAC) units, bells to signal the beginning and end of class periods, onsite maintenance activities and the use of public address (PA) systems. Discussion of potential noise from school activities is included in this report.

Project related traffic noise was evaluated by using FHWA's Traffic Noise Model (TNM) version 2.5. Traffic volumes were derived from the project's traffic impact study (KD Anderson and Associates, 2017 and 2018). Table 6 presents the maximum allowable noise levels from transportation sources as 60 dBA $L_{dn}$ at residential exterior use area. Thus, in regards to traffic noise specifically, it would be considered substantial if the noise level exceeds 60 dBA $L_{dn}$. If the traffic noise level from the existing condition exceeds 60 dBA $L_{dn}$, an increase of 5 dB would be considered substantial. TNM was used to estimate the vehicular related noise from Taylor Road. For the existing condition with no project, the traffic noise level would be 69 dBA $L_{dn}$ at 50 feet from Taylor Road; thus the 5 dB standard is used.

Project related stationary noise sources such as general school and recreational activities, emergency generators, HVAC units and onsite special events were evaluated using noise data on human voices found in the Environmental Protection Agency's (EPA) *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety* (EPA, 1974) and other published documents. For this analysis, new proposed project-related noise sources that expose offsite sensitive receptors to greater than 55 dBA hourly $L_{eq}$ as specified in Table 7 or increase the existing ambient noise level by 5 dB or greater would be considered substantial for permanent uses. With regards to the special events, which is considered a temporary use, it would be considered substantial if the noise level increase over the ambient noise levels is 5 dB or greater.

## Construction Vibration

For the purposes of this assessment, the methodology described in the FTA's *Transit Noise and Vibration Impact Assessment* (FTA, 2006) was used to evaluate project-related vibration effects to nearby sensitive land uses. No impact pile driving is anticipated to occur during construction of the proposed project.

Other than construction, there are no appreciable sources of vibration proposed for the final development of the proposed project. As a result, only construction-related vibration impacts were assessed. The proposed project would result in a significant vibration impact if buildings would be exposed to the FTA vibration threshold level of 0.2 PPV for building damage or if sensitive receptors would be exposed to a vibration level of 80 VdB for residential land uses. These criteria are for “infrequent” events. Although more stringent criteria are recommended for “frequent” or “occasional” events, these are not used since construction activities would occur during the daytime and would not be intermittent.

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# CHAPTER 4
# Noise Evaluation

**Impact 1: Would the project result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?**

**Construction**

It is assumed that the construction activities would follow the hours specified in the Placer County Code. Therefore, the noise from construction activities would not result in a violation of the County's noise standard. The potential for construction activities to result in temporary effects on noise levels is discussed under Impact 4.

**Operation**

The County's General Plan noise standards are summarized in Table 5. As shown in the table, the maximum allowable noise levels within residential zoning (not adjacent to industrial uses) applicable to new projects affected by or including non-transportation noise sources is 50 dBA $L_{dn}$ outside and 45 dBA $L_{dn}$ inside. The table notes indicate that where existing transportation noise levels exceed the standards of this table, the allowable $L_{dn}$ shall be raised to the same level as that of the ambient level. The project site is affected by transportation noise above the standard and thus the existing ambient noise level of 57 dBA $L_{dn}$ is considered allowable and thus, the project siting is consistent with the General Plan standards. As indicated in Table 6 there is no maximum allowable noise exposure from transportation noise sources for schools.

As described in Chapter 2.3, the Placer County Code, Article 9.36.030 exempts noise from the normal operation of public and private schools typically consisting of classes and other school-sponsored activities. These noise sources would include the use of HVAC units, bells to signal the beginning and end of class periods, onsite maintenance activities and the use of PA systems. Although the proposed project would consist of a school and would be exempt from the County's noise standards, a discussion of the project's consistency with the County's exterior noise standard is provided below. The potential for school operations to result in permanent effects on noise levels is discussed further in Impact 3.

**Impact 2: Would the project result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?**

Construction activities would include excavation, site preparation work, foundation work, and new building, framing, and finishing. Construction activities may generate perceptible vibration when heavy equipment or impact tools such as jackhammers or hoe rams are used. Pile driving can cause excessive

vibration. Because specific construction details are unknown at this point, this analysis presumes that no pile driving would be required during project construction.

The potential use of bulldozers during fine-site grading would be expected to generate the highest vibration levels during construction. Vibration levels would vary depending on soil conditions, construction methods, and equipment used. A large bulldozer typically generates vibration levels of 87 VdB and 0.089 in/sec PPV at a distance of 25 feet.

In order to exceed the 80 VdB threshold for human annoyance, a large bulldozer needs to be within 45 feet of a structure. In order to exceed the 0.2 in/sec PPV threshold for building damage, a large bulldozer needs to be within 15 feet of a structure. The nearest structure could be located 25 feet from construction equipment, causing potential annoyance to offsite uses. However, the 0.2 PPV threshold for building damage would not be exceeded. The implementation of **Noise Reduction Measure 1** would reduce potential annoyance.

**Impact 3: Would the project result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?**

For this analysis, new proposed project-related noise sources that expose offsite sensitive receptors to noise levels that exceed the noise standards specific in the County's code or elevate the existing ambient by 5 dB, would be considered a substantial permanent increase in ambient noise levels. An impact discussion for proposed project-related noise sources during normal operation of the project is provided below.

**Vehicular Traffic**

The primary source of noise from operation of the proposed project would be associated with increased traffic on Taylor Road. The project would utilize passenger vans rather than buses for student drop-off and pick-up. Considering vehicles on-site would be driving no more than 10 miles per hour, the noise from these on-site vehicles would be minimal. TNM was used to estimate the vehicular related noise from Taylor Road. For the existing condition with no project, the traffic noise level would be 69 dBA $L_{dn}$ at 50 feet from Taylor Road. Therefore, Table 8 compares 1) traffic volumes of Existing and Existing plus Project and 2) traffic volumes of Cumulative with and without Project. It should be noted that the traffic impact study generated traffic volumes during three peak periods. Because the AM peak hour traffic volumes are the largest, this assessment uses the AM peak hour. As it is described in Chapter 3 of this report, it would be considered a significant impact when the traffic noise levels increase 5 dB over the no project condition because the existing condition traffic noise level exceeded 60 dBA $L_{dn}$. It is also noted in Chapter 1 of this report, in order to increase 3 dB, the traffic volume needs to be doubled.

As it is presented in Table 8, the traffic noise along Taylor Road would not increase by 5 dB; therefore, it is considered less than significant. The projected noise level increases are below 1 dB which is below perceptible levels. This would result in a less than significant impact.

**TABLE 8**
**AM PEAK HOUR TRAFFIC VOLUMES AND NOISE INCREASE**

| Roadway Segment | AM Peak Hour Traffic Volumes | | Noise Level Increase (dB) |
|---|---|---|---|
| | **Existing No Project** | **Existing Plus Project** | |
| North of Taylor Road | 832 | 883 | +0.3 |
| South of Taylor Road | 832 | 859 | +0.1 |
| | **Cumulative No Project** | **Cumulative With Project** | |
| North of Taylor Road | 1,063 | 1,106 | +0.2 |
| South of Taylor Road | 1,063 | 1,082 | +0.1 |

Notes: Noise Increase is based on 10*LOG (Traffic with project / Traffic without project)
Source: KD Anderson and Associates, 2017 and 2018.

## Stationary Noise Sources

A summary of the noise levels for each of the new stationary noise sources under the proposed project is described below and presented in **Table 9**.

*General School Activities*

The noise from general school activities would include school bells, PA systems, HVAC, and recess and recreational activities. EPA's published document *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety* (EPA, 1974) includes a study on typical noise exposure patterns on school children. According to the EPA study, students in a class room setting are typically exposed to noise levels of approximately 60 dBA and noise levels as high as 65 dBA during lunch and outdoor play time. These noise levels are presented in the study as average hourly $L_{eq}$. Therefore, the highest hourly $L_{eq}$ noise level a student could generate during a typical school day is assumed to be 65 dBA from a reference distance of 25 feet, which is an assumed typical distance between a source and a receiver. Assuming a propagation rate of 7.5 dB per doubling of distance, the nearest residential property line located approximately 150 feet west of the proposed school buildings and field areas could be exposed to normal school-related noise levels of approximately 46 dBA $L_{eq}$, which is below the County's exterior noise standard.

As shown in Table 9, noise generated during normal school activities would elevate the existing ambient to 57 dBA $L_{eq}$ or 0 dB above the existing ambient. Since the nearest offsite sensitive receptor property line to the project area would be exposed to noise levels from general school activities that would not exceed the applied 5 dB substantial noise increase threshold, this would result in a less than significant impact.

**TABLE 9**
**PROJECT-RELATED STATIONARY NOISE SOURCES**
**NOISE EXPOSURE AT NEAREST RESIDENTIAL PROPERTY LINE LOCATED WEST OF THE PROJECT SITE**

| Noise Source | Distance to Nearest Residential Property Line (feet) | Highest School Hour Existing Ambient (dBA $L_{eq}$)[1] | Project Only (dBA $L_{eq}$) | Project plus Existing Ambient (dBA $L_{eq}$) | Project Increase Over Existing Ambient (dB) | Project Only Noise Exceed 55 dBA Hourly $L_{eq}$? (yes or no)[6] | Increase Existing Ambient by 5 dB or greater? (yes or no)[6] |
|---|---|---|---|---|---|---|---|
| General School Activities[2] | 150 | 57 | 46 | 57 | 0 | No | No |
| Recreational Activities[3] | 250 | 57 | 40 | 57 | 0 | No | No |
| Emergency Generators[4] | 200 | 57 | 55 | 59 | 2 | No | No |
| HVAC Units[5] | 160 | 57 | 22 | 57 | 0 | No | No |

Notes:
1. The school hour is assumed to be between 7 AM and 5 PM. The measured hourly $L_{eq}$ was obtained from a 24-hour long-term noise survey conducted from January 5 – 6, 2017 at LT1 was used because the closest sensitive receptor is to the west of the project site.
2. Noise generated during a typical school day was assumed to be 65 dBA $L_{eq}$ from a reference distance of 3.3 feet (EPA, 1974).
3. Noise generated by raised voices was assumed to be 72 dBA $L_{eq}$ from a reference distance of 3.3 feet (EPA, 1974).
4. The sound pressure level from the proposed generator would be 75 dBA at 25 feet with a Cummings Level II sound enclosure, muffler and silencer installed.
5. The HVAC units would consist of a Carrier's 50DJ cooling/heating unit, which has a sound power level of 74 dBA.
6. Noise standards specified in the Placer County Municipal Code 9.36.060.

Source: ESA, 2018

*Recreational Activities*

Students could be participating in recreational sports at the outdoor playground between Buildings A and C as well as at the playing field south of Building B after school or on weekends. It was assumed for this analysis that the playing field would not be used after 10:00 p.m. as after-school sports, particularly for elementary and middle school students typically end before 10:00 p.m. EPA's published document *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety* (EPA, 1974) estimates the noise level of raised voices at 72 dBA $L_{eq}$ from a reference distance of 3.3 feet. Assuming 30 students scattered within the playing field, the total noise level would be 87 dBA $L_{eq}$ from a distance of 3.3 feet. The distance between the center of the playing field and the nearest residential property line to the west is approximately 250 feet. Based on the propagation rate of 7.5 dB per doubling of distance, the noise level at the closest residence would be 40 dBA $L_{eq}$, which is below the County's exterior noise standard.

As shown in Table 9, noise generated during onsite recreational activities would elevate the existing ambient to 57 dBA $L_{eq}$ or 0 dB above the existing ambient. Since the nearest offsite sensitive receptor property line to the project area would be exposed to noise levels from onsite recreational activities that would not exceed the applied 5 dB substantial noise increase threshold, this would result in a less than significant impact.

*Emergency Generators*

A transformer and two emergency generators would be located at the northwest corner of Building E. Both emergency generators will be installed in a Cummings Level II sound enclosure and surround by a perf metal or CMU depending on the location. The proposed generators would be used for emergency purposes only and tested at most once a month. The emergency generators would be located approximately 200 feet from the closest residential property line to the west of the project area. According to the specification of the generator, the sound pressure level from one of the proposed generators in a

Cummings Level II sound enclosure and with a muffler and silencer installed would be 75 dBA at 25 feet. Assuming both generators are tested at the same time, the combined sound pressure level would be 78 dBA from a distance of 25 feet. Based on the propagation rate of 7.5 dB per doubling the distance, the noise level at the closest residence would be 55 dBA $L_{eq}$, which is meets the County's exterior noise standard.

As shown in Table 9, the noise generated when both generators are operational would elevate the existing ambient to 59 dBA $L_{eq}$ or 2 dB above the existing ambient. Since the nearest offsite sensitive receptor property line to the proposed project area would be exposed to noise levels from the onsite emergency generator that would not exceed the applied 5 dB substantial noise increase threshold, this would result in a less than significant impact.

*Heating, Ventilation, and Air-Conditioning Systems*

HVAC units could be installed at each of the proposed school and office buildings. The closest proposed building (i.e., Building E) would be located approximately 160 feet west from the nearest offsite residence property line. The HVAC units would consist of a Carrier's 50DJ cooling/heating unit, which has a sound power level of 74 dBA. Assuming a distance of 160 feet and a sound power level of 74 dBA, the nearest residence to the HVAC units at Building E would be exposed to a sound pressure level of 22 dBA $L_{eq}$, which is below the County's exterior noise standard. It should be noted that the HVAC unit usage would be intermittent.

As shown in Table 9, noise generated during the operation of the onsite HVAC units would elevate the existing ambient to 57 dBA $L_{eq}$ or 0 dB above the existing ambient. Since the nearest offsite sensitive receptor property line to the project area would be exposed to noise levels during the operation of the onsite HVAC units would not exceed the applied 5 dB substantial noise increase threshold, this would result in a less than significant impact.

**Impact 4: Would the project result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?**

**Construction**

Construction activity noise levels at the proposed project site would fluctuate depending on the particular type, number and duration of use of various pieces of construction equipment and would periodically increase noise levels in the vicinity of the project site. Construction activities associated with the proposed project would involve excavation, grading and earth movement, as well as construction of the classrooms and faculty buildings. **Table 10** shows typical reference noise levels of off-road construction equipment likely to be used during project construction.

**TABLE 10**
**REFERENCE CONSTRUCTION EQUIPMENT NOISE LEVELS**
**(50 feet from source)**

| Type of Equipment | $L_{max}$, dBA | Hourly $L_{eq}$, dBA Percent Use[1] |
|---|---|---|
| Backhoe | 80 | 76/40 |
| Grader | 85 | 81/40 |
| Concrete Mixer Truck | 85 | 81/40 |
| Loader | 80 | 76/40 |
| Pneumatic Tools | 85 | 76/40 |
| Air Compressor | 80 | 81/40 |
| Excavator | 85 | 81/40 |

SOURCE: FHWA, 2006.

Land uses surrounding the proposed project site consist of single-family residences. The loudest source of noise during project construction would occur during the grading phase. Based on grading plans prepared for the proposed project, grading activities on the northwestern portion of the site could occur from a distance of 20 feet of the nearest residential property line. The loudest piece of construction equipment that would be operating during the grading phase is a grader. Using the reference noise levels provided in Table 10, a grader would generate a maximum noise level of 85 dBA and hourly $L_{eq}$ of 81 dBA at a distance of 50 feet. Assuming a 7.5 dB per doubling of distance attenuation rate, the nearest residential property line could be exposed to a maximum noise level of 95 dBA and hourly $L_{eq}$ of 91 dBA.

The highest measured daytime hourly $L_{eq}$ levels at the western proposed project boundary is 57 dBA. Noise generate during the grading phase of the proposed project could expose the nearest residential property line to noise levels that would temporarily elevate the existing ambient by up to 34 dB, which would exceed the applied 5 dB noise increase threshold and thus is considered potentially significant. It should be noted that the presented noise levels would be the worst case condition at a short period of time because construction equipment generally would not stay in one place for a long time. The implementation of **Noise Reduction Measures 1** and **2** would reduce impacts associated with this noise increase by providing up to 30 dB or more of noise reduction.

## Operation

### Outdoor Special Events

During project operation, special events would be held on school grounds. The events are expected to be held three times a year and could take place during the weekdays from 10:00 a.m. to 2:00 p.m. or 5:00 p.m. to 8:00 p.m. Up to 200 people could attend any one event. Typical noise sources associated with these types of special events would consist of amplified sound for speeches or music and crowd noise (i.e., people talking and laughing).

Since the exact specifications of the speakers are unknown at this time, it is assumed that the two speakers would generate a noise level as high as 85 dBA from a distance of 25 feet, which assumes that speakers would be orientated away from offsite sensitive receptors. The speakers were also assumed to be located

at 270 feet from the nearest residential property line. Noise generated by raised normal speaking raised voices are assumed to be 72 dBA $L_{eq}$ from a reference distance of 3.3 feet (EPA, 1974). As shown in **Table 11**, offsite residences could be expose to a combined noise level of 59 dBA $L_{eq}$ during special events within the proposed project area.

**TABLE 11**
**NOISE EXPOSURE LEVELS AT THE NEAREST OFFSITE RESIDENTIAL PROPERTY LINE**

| Noise Source | Noise Level (dBA $L_{eq}$) |
|---|---|
| Speakers[1] | 59 |
| Raised Voices[2, 3] | 48 |
| Combined Noise Level | 59 |
| Highest Measured Existing Ambient during the a Special Event[4] | 57 |
| Project plus Existing Ambient | 61 |
| Project Increase Over Existing Ambient (dB) | 4 |
| Increase Existing Ambient by 5 dB or Greater? (yes or no)[5] | No |

Notes:
1. Assumed the two outdoor speakers would generate a noise level of 85 dBA $L_{eq}$ from a distance of 25 feet. Assumed speakers are facing away from residential properties at a distance of 270 feet.
2. Noise generated by raised normal speaking raised voices are assumed to be 60 dBA $L_{eq}$ from a reference distance of 3.3 feet (EPA, 1974).
3. Assumed 200 attendees any one special event.
4. The measured hourly $L_{eq}$ was obtained from a 24-hour long-term noise survey conducted from January 5 – 6, 2017 at LT-1 was used because the closest sensitive receptor is to the west of the project site between the hours of 5:00 p.m. and 8:00 p.m.
5. Noise standards specified in the Placer County Municipal Code 9.36.060.

Source: ESA, 2018

As shown in Table 2, the highest existing $L_{eq}$ noise level at the residences located west of the proposed project area is 57 dBA. Assuming that the special event would occur for three hours during the daytime hours, the nearest residential property line to the special event area would be exposed to event noise that would elevate the existing ambient to 61 dBA $L_{eq}$ or a 4 dB increase over the existing ambient. Since the nearest offsite sensitive receptor to the project area would be exposed noise levels during an onsite special event that would not exceed the applied 5 dB temporary substantial noise increase threshold, the project would result in a less than significant impact. Although it is anticipated that the speakers during onsite special events would not be orientated directly at the offsite residential area to the west, the exact layout of equipment is unknown. If speakers in the special event area are facing the residential property line or closer than 270 feet to the nearest residential property line, noise generated during onsite special events would result in a 5 dB or greater increase and could be potentially significant depending on the number of attendees.

To ensure that this impact remains less than significant, **Noise Reduction Measure 3** recommends that all speakers used during special events be orientated away from the nearest offsite residential property and located at least 270 feet from the nearest residential property line.

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# CHAPTER 5
# Recommended Noise Reduction Measures

**Noise Reduction Measure 1.** To reduce human annoyance from vibration due to construction near sensitive receptors, the project applicant should require construction contractors to implement the following measure:

- Large construction equipment, such as large bulldozer and loaded trucks, should be replaced with smaller equipment when the construction equipment is within 45 feet of an occupied residence.

**Noise Reduction Measure 2.** To reduce daytime construction noise levels due to construction at the nearby off-site sensitive receptors, the project applicant should require construction contractors to implement the following measures:

- Equipment and trucks used for project construction should utilize the best available noise control techniques, such as improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures and acoustically-attenuating shields or shrouds. The implementation of best control techniques could result in a noise reduction of 10-dB

- Impact tools (i.e., jack hammers, pavement breakers, and rock drills) used for project construction should be hydraulically or electrically powered wherever possible to avoid noise associated with compressed air exhaust from pneumatically powered tools. However, where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust should be used; this muffler can lower noise levels from the exhaust by up to about 10-dB. External jackets on the tools themselves should be used, to achieve a reduction of 5-dB. Quieter procedures will be used, such as drills rather than impact equipment.

- Stationary noise sources should be located as far from adjacent receptors as possible, and they will be muffled and enclosed within temporary sheds, incorporate insulation barriers, or other measures. The use of temporary enclosures or barriers around stationary noise sources (e.g., generators, compressors, pumps, etc.) would result in a noise reduction of up to 10-dB.

**Noise Reduction Measure 3.** To reduce the noise exposure on nearby sensitive receptors adjacent to the project site, all speakers used during special events shall be located at least 270 feet from the nearest residential property. The speakers shall be oriented away from the nearest residential property. The distance between the speakers and nearby residence and the orientation of the speakers shall be inspected by a designated operations manager for the Tribe prior to any onsite special events.

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# CHAPTER 6
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# APPENDIX M

# TRAFFIC IMPACT STUDY

# FOR THE

# UNITED AUBURN INDIAN COMMUNITY SCHOOL PROJECT

Placer County, CA

Prepared For:

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June 25, 2018

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*UAIC School 6 25 2018.rpt*

KD Anderson & Associates, Inc.

Transportation Engineers

**TRAFFIC IMPACT STUDY FOR**
**UNITED AUBURN INDIAN COMMUNITY SCHOOL PROJECT**
Placer County, CA

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June 25, 2018

KDA

**TRAFFIC IMPACT STUDY FOR**
**UNITED AUBURN INDIAN COMMUNITY SCHOOL PROJECT**
Placer County, CA

# INTRODUCTION

## Study Purpose and Project Description

This traffic impact study presents an analysis of the traffic / transportation related impacts of the proposed **United Auburn Indian Community (UAIC) School Project.** The proposed project is a private school that would be located on a 16-acre portion of a 43-acre site in Placer County along Taylor Road just east of the limits of the Town of Loomis. Figure 1 presents the regional location of the project site. Figure 2 presents the project site plan.

The project involves relocation and expansion of school activities that currently occur at a location on Indian Hill Road to a site that was previously used as an events center. Regular school activities and occasional special events are anticipated. A small tribal cultural center is also planned. The previous uses improved site access on Taylor Road to Placer County standards, and this access will continue to be used.

## Overall Analysis Approach

This traffic impact study presents an analysis of traffic operations under the following four (4) scenarios:

- Existing Conditions (February, June and December 2017 data)
- Existing Conditions Plus proposed UAIC School Project
- Cumulative Conditions Without the Project
- Cumulative Conditions Plus proposed UAIC School

Cumulative conditions are a long-term background condition which includes future year forecasts of traffic volumes based on the Town of Loomis' version of the Placer County regional travel demand forecasting model and assumes future development of surrounding land uses expected by the Year 2030. An Alternative Cumulative scenario was investigated which address conditions without the proposed Village at Loomis development and its associated roadway improvements.

## Study Area / Time Periods

The choice of study time periods and analysis locations are unique to the UAIC project. In addition to evaluating impacts during the p.m. peak hour required under Placer County guidelines, the traffic impact analysis addresses locations along routes that may be used by

project traffic during the periods before and after the school day (i.e., a.m. peak hour and afternoon peak hour

The physical study area was identified in consultation with Placer County Department of Public Works and Facilities (DPWF) and Town of Loomis Department of Public Works staff based on their understanding of the project and knowledge of the circulation system. In this unique case, while private driveways are not typically included for analysis under Placer County guidelines, the existing Del Oro High School driveways were included in the analysis because their operation is a major factor in traffic conditions occurring during the a.m. and afternoon peak periods.

Study area intersections include the following locations:

1. Taylor Road / Rock Springs Road / English Colony Way (Placer County)
2. Taylor Road / Penryn Road (Placer County)
3. Taylor Road / Project Access (Placer County)
4. Taylor Road / Rippey Road –North (Town of Loomis)
5. Taylor Road / East Del Oro driveway (Private - Town of Loomis)
6. Taylor Road / Central Del Oro driveway (Private - Town of Loomis)
7. Taylor Road / West Del Oro driveway (Private - Town of Loomis)
8. Taylor Road / King Road (Town of Loomis)
9. Taylor Road / Webb Street (Town of Loomis)
10. Taylor Road / Horseshoe Bar Road (Town of Loomis)

The analysis addresses weekday conditions and potential impacts during three time periods:

1. A.M. peak hour (7:00 to 9:00 a.m.)
2. Afternoon peak hour of school activity (2:00 to 3:30 p.m.)
3. P.M. peak hour (4:00 to 6:00 p.m.)

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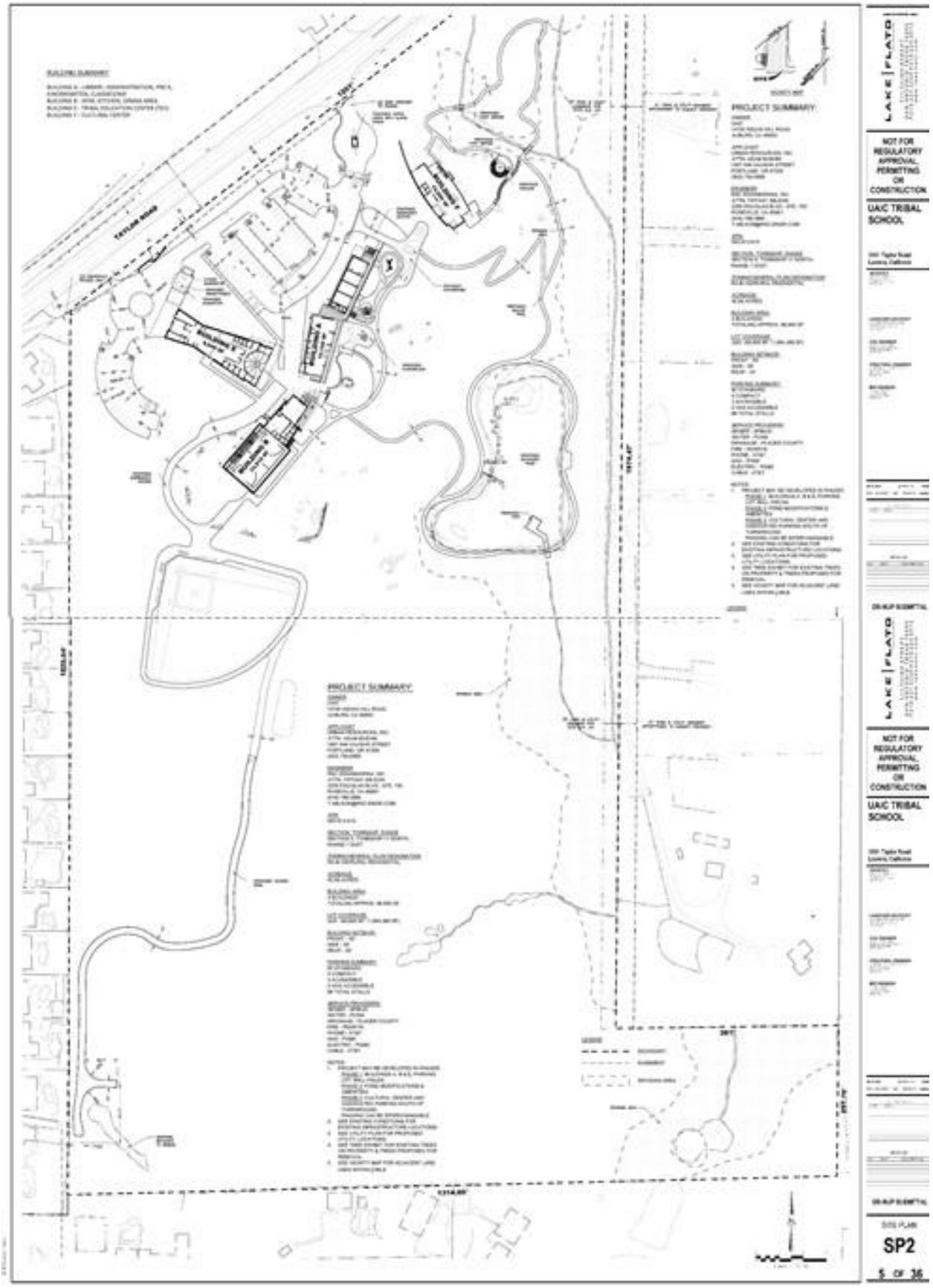
VICINITY MAP

figure 1




SITE PLAN

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figure 2

## EXISTING SETTING

### Study Area

The limits of the study area were identified through discussions with Placer County and Town of Loomis' response to the Notice of Preparation based on their understanding of the project, knowledge of the study area and the results of other recent traffic studies.

**Roadways.** The following is a description of the physical characteristics of roadways that provide access to the proposed project site as well as available daily traffic volume information that helps describe the character of each road.

***Interstate 80 (I-80)*** is a principal arterial that is the primary east-west route through Placer County. I-80 will link the project site with the Auburn area to the east and with the Sacramento metropolitan area with the west via interchanges with Penryn Road and Horseshoe Bar Road. In the area of the project I-80 is a 6-lane controlled access freeway. The posted speed limit is 65 mph in the area of the project.

The California Department of Transportation (Caltrans) monitors the volume of traffic on its facilities on an annual basis. The most recent traffic counts published by Caltrans indicate that in 2015 I-80 carried an *Annual Average Daily Traffic (AADT)* volume of 96,600 vehicles per day west of Horseshoe Bar Road, 89,300 ADT between Horseshoe Bar Road and 84,700 ADT east of the Penryn Road interchange. Caltrans data indicates that trucks comprise 6% of the daily traffic on this portion of Interstate 80.

The project's access is on Taylor Road.

***Taylor Road.*** Taylor Road is a major arterial street that runs parallel to Interstate 80 and links Loomis with the City of Rocklin to the west and with the communities of Penryn and Newcastle to the east. The Placer County General Plan designates Taylor Road as a Rural Arterial in the area east of the Town limits, while the Loomis Circulation Element identifies Taylor Road as an Arterial street.

Taylor Road is generally a two-lane road, but incremental half section widening has occurred in Loomis as development has proceeded. In the area of this project Taylor Road has one travel lane in each direction, and separate turn lanes exist at most intersections. Parking is permitted along Taylor Road through downtown Loomis but is prohibited in the general area of the project in Placer County. The posted speed limit on Taylor Road is 50 mph in the area of the project east of the Town limits. The speed limits drops to 40 mph in the Town of Loomis and a 25 mph school zone is posted near Del Oro HS. Traffic counts conducted in 2014 for the Town of Loomis' Circulation Element Update indicated that Taylor Road carried an *Average Daily Traffic (ADT)* volume of 16,354 vehicles per day between Horseshoe Bar Road and King Road, with volume dropping to 7,380 ADT between King Road and the northern Town limits in the area of the proposed project.

Taylor Road links the project area to other streets of regional importance via the intersections addressed in the analysis.

***Penryn Road.*** Penryn Road is a north south road than links Taylor Road with Interstate 80 and King Road to the south. Penryn Road is designated a Rural Collector in the Placer County General Plan Circulation Element (Table 1-7). Penryn Road is a two-lane road with separate left turn lanes or Two-Way Left-Turn (TWLT) lane at key intersections.

***English Colony Way– Rock Springs Road.*** English Colony Way is a two lane east-west roadway that links Sierra College Blvd with Taylor Road in the unincorporated community of Penryn. The General Plan identifies English Colony Way as a Rural Collector street. Rock Springs Road extends southeasterly from the Taylor Road / English Colony Way intersection to Auburn Folsom Road. This two-lane road is designated a Rural Collector in the General Plan.

***King Road.*** King Road is an east-west arterial road that provides access to Loomis and the rural areas of Placer County surrounding the Town. King Road originates at an intersection on Sierra College Blvd in western Loomis and continues easterly across Taylor Road, over Interstate 80 and ultimately to an intersection on Auburn Folsom Road. King Road is designated an Arterial street in the Loomis Circulation Element, and a Rural Arterial in the Placer County General Plan. King Road is a two lane road with auxiliary turn lanes at major intersections. Traffic counts made for the Town of Loomis Circulation Element Update in 2014 indicated that King Road carried 5,493 ADT west of Taylor Road and 4,866 ADT east of Taylor Road.

***Rippey Road.*** Rippey Road is a two-lane local street that runs parallel to and north of Taylor Road in between that street and the UPRR. Rippey Road originates at an intersection on Taylor Road just east of King Road and continues northeasterly to another connection to Taylor Road just west of the Town limits. From that point Rippey Road extends into Placer County to an intersection on Penryn Road. The posted speed limit on Rippey Road is 25 mph in Loomis. Traffic counts conducted for the Town of Loomis Circulation Element update in 2014 indicated that Rippey Road carried 798 ADT.

The quality of traffic flow in urban areas is often governed by the capacity of major intersections. Seven existing intersections are addressed in this analysis:

The **Taylor Road / English Colony Way / Rock Springs Road intersection** is controlled by an all-way stop. Taylor Road has separate left turn lanes at this location and separated westbound and southbound right turn lanes are provided. The intersection has an overhead flashing beacon.

The **Taylor Road / Penryn Road intersection** is controlled by stop signs on the northbound Penryn Road and private southbound approaches. A separate westbound left turn lane is provided on Taylor Road.

The **Taylor Road / Rippey Road intersection** involves a short connection that links the two parallel roads. Rippey Road is only 65 feet from Taylor Road (centerline to centerline) in this area. The intersection on Taylor Road is controlled by stop signs on the connection. The

connection has a separated left turn lane right turn lanes that are very short. The Rippey Road connection is controlled by stop signs on the westbound approach to Taylor Road. There are no auxiliary lanes at this location. Traffic at an adjoining connection to Rippey Road is shown in the analysis but Level of Service was not addressed at this minor location.

Del Oro High School has three private connections to Taylor Road that have an effect on travel along the arterial street.

The **Taylor Road / East Del Oro HS access intersection** is the private link to the school's northern parking lot. This intersection is controlled by a stop sign on the school exit. A separate westbound left turn lane is available. Review of traffic counts conducted at the school indicates that 28% and 25% of the total inbound and outbound school traffic at the three connections uses this intersection in the a.m. and p.m. peak hour, respectively.

The **Taylor Road / Central Del Oro HS access intersection** is the private connection to the school's drop-off area adjoining the performing arts center and to the northern portion of the campus. A traffic circle for school drop-off begins only 70 feet from Taylor Road. This intersection also provides access to the Loomis Baptist Church parking lot, and a crosswalk is marked across Taylor Road on the east side of the intersection. The intersection is controlled by stop signs on the school and church exits. A separate westbound left turn lane is striped on Taylor Road, and the eastbound approach is striped with a TWLT lane that continues westerly beyond the school. 24% and 7% of the total school traffic on Taylor Road uses this intersection during the a.m. and p.m. peak hours, respectively.

The **Taylor Road / West Del Oro HS access intersection** is the private route to the school's primary parking and drop-off areas. This "tee" intersection is controlled by stop signs on the school exit. The TWLT lane on Taylor Road continues through this intersection. The school exit has separate left turn and right turn lanes. Another on-site intersection is located 120 feet from Taylor Road (centerline to centerline) and southbound traffic from Taylor Road is not controlled at this intersection. A crosswalk is striped across the school access. 48% and 70% of the total school traffic on Taylor Road uses this intersection during the a.m. and p.m. peak hours, respectively.

The **Taylor Road / King Road intersection** is a signalized intersection with auxiliary turn lanes on each approach. Crosswalks are marked on each leg of the intersection. Loomis Grammar School is located on the southeast corner of the intersection.

The **Taylor Road / Webb Street intersection** is controlled by stop signs on the northbound and southbound Webb Street approaches. Separate left turn lanes exist on Taylor Road at the intersection, and the westbound Taylor Road approach has a separate right turn lane. Other approaches are single lanes. Current traffic controls limit the southbound Webb Street approach to right-turns-only. Crosswalks are striped across both Webb Street approaches as well as the eastern Taylor Road leg. The southbound Webb Street approach is marked "right turn only", although some traffic does make illegal turns.

The **Taylor Road / Horseshoe Bar Road intersection** is controlled by a traffic signal. The Taylor Road approaches have separate left turn lanes, and right turn lane is provided on the eastbound approach. The two-lane northbound Horseshoe Bar Road approach is configured with a combined thru+left turn lane and a separate right turn lane with overlap phasing. Crosswalks are striped across all four legs of the intersection.

## Traffic Operational Analysis Methodology

The following is a description of the methods used in the analysis presented in this traffic impact study:

**Intersection Level of Service Analysis Procedures.** Level of Service (LOS) analysis provides a basis for describing existing traffic conditions and for evaluating the significance of project-related traffic impacts. Level of Service measures the quality of traffic flow and is represented by letter designations from A to F, with a grade of A referring to the best conditions, and F representing the worst conditions.

Consistent with procedures described in the Caltrans' *Guide for the Preparation of Traffic Impact Studies* (CA DOT, 2002) and direction from the Town of Loomis and Placer County, signalized intersections and un-signalized intersections were analyzed using methods presented in the *Highway Capacity Manual 2010* (HCM 2010).

The characteristics associated with the various LOS for intersections are presented in Table 1. At signalized intersections, the overall LOS is based on the average length of delays for all motorists at the intersection. At two-way stop-sign-controlled un-signalized intersections, a LOS is calculated for all motorists yielding the right of way and the weighted average of those delays is the evaluation criteria under Placer County methodology.

It is important to note that HCM procedures evaluate traffic flow by comparing traffic volumes to the capacity of intersections but other factors can have a bearing on the traffic conditions that may be observed at any location. For example, traffic can be delayed by causes beyond an intersection and that congestion can create queues that extend back from the cause to an intersection. Under such a condition, the intersection may be reported to operate well based on volume and capacity while the delays observed in the field may be indicative of a poor Level of Service. These conditions typically occur during the peak periods near schools.

**TABLE 1**
**LEVEL OF SERVICE DEFINITIONS**

| Level of Service | Signalized Intersections | Unsignalized Intersection |
|---|---|---|
| "A" | Uncongested operations, all queues clear in a single-signal cycle. Delay ≤ 10.0 sec or v/c <0.60 | Little or no delay.<br>Delay ≤ 10 sec/veh |
| "B" | Uncongested operations, all queues clear in a single cycle. Delay > 10.0 sec and ≤ 20.0 sec<br>or v/c >0.60 and <0.70 | Short traffic delays.<br>Delay > 10 sec/veh and ≤ 15 sec/veh |
| "C" | Light congestion, occasional backups on critical approaches. Delay > 20.0 sec and ≤ 35.0 sec<br>or v/c >0.70 and <0.80 | Average traffic delays.<br>Delay > 15 sec/veh and ≤ 25 sec/veh |
| "D" | Significant congestions of critical approaches but intersection functional. Cars required to wait through more than one cycle during short peaks. No long queues formed. Delay > 35.0 sec and ≤ 55.0 sec<br>or v/c >0.80 and <0.90 | Long traffic delays.<br>Delay > 25 sec/veh and ≤ 35 sec/veh |
| "E" | Severe congestion with some long standing queues on critical approaches. Blockage of intersection may occur if traffic signal does not provide for protected turning movements. Traffic queue may block nearby intersection(s) upstream of critical approach(es).<br>Delay > 55.0 sec and ≤ 80.0 sec<br>or v/c/ >0.90 and <1.00 | Very long traffic delays, failure, extreme congestion.<br>Delay > 35 sec/veh and ≤ 50 sec/veh |
| "F" | Total breakdown, stop-and-go operation.<br>Delay > 80.0 sec or v/c >1.00 | Intersection blocked by external causes.<br>Delay > 50 sec/veh |
| Source: *Highway Capacity Manual, 2010 and TRB Circular No. 212* | | |

## Daily Traffic Volumes / Roadway Segment Level of Service

The quality of traffic flow on County roads can also be determined based on the daily traffic volumes and generalized Level of Service thresholds. The Placer County General Plan EIR includes daily traffic volume thresholds that can be used to identify general operating Levels of Service on County streets and highways. Table 2 identifies these thresholds.

**TABLE 2**
**EVALUATION CRITERIA FOR ROADWAY SEGMENT LEVEL OF SERVICE**

| Roadway Capacity Class | Maximum Daily Traffic Volume Per Lane Level of Service | | | | |
|---|---|---|---|---|---|
| | A | B | C | D | E |
| 1. Freeway – Level Terrain | 6,300 | 10,620 | 13,680 | 17,740 | 18,000 |
| 2. Freeway – Rolling terrain | 5,290 | 8,920 | 11,650 | 14,070 | 15,120 |
| 3. Freeway – Mountainous Terrain | 3,400 | 5,740 | 7,490 | 9,040 | 9,720 |
| 4. Arterial – High Access Control | 6,000 | 7,000 | 8,000 | 9,000 | 10,000 |
| 5. Arterial – Moderate Access Control | 5,400 | 6,300 | 7,200 | 8,100 | 9,000 |
| 6. Arterial – Low Access Control | 4,500 | 5,250 | 6,000 | 6,870 | 7,500 |
| 7. Rural 2-lane Highway – Level terrain | 1,500 | 2,950 | 4,800 | 7,750 | 12,500 |
| 8. Rural 2-lane highway – Rolling terrain | 800 | 2,100 | 3,800 | 5,700 | 10,500 |
| 9. Rural 2-lane road – Mountainous Terrain | 400 | 1,200 | 2,100 | 3,400 | 7,000 |

Taylor Road is designated a Rural Arterial in the General Plan Circulation Element. This roadway has relatively occasional access points, and for this analysis is assumed to have "moderate" access controls. This data suggests that Taylor Road in the vicinity of the project can carry 7,200 ADT per lane at the minimum LOS C standard.

**Minimum Level of Service Thresholds and Significance Criteria**

In this traffic impact study, the significance of the proposed project's impact on traffic operating conditions is based on a determination of whether project generated traffic results in roadway or intersection operating conditions below acceptable standards as defined by Placer County and the Town of Loomis. A project's impact on traffic conditions is considered significant if implementation of the project would result in LOS changing from levels considered acceptable to levels considered unacceptable, or if the project would significantly worsen an already unacceptable LOS without the project.

**Placer County Level of Service Criteria.** Level of Service policies for this area of the County are as defined in the Placer County General Plan and have been used for this traffic impact study to identify acceptable LOS and evaluate impacts outside of the limits of the Town of Loomis. General Plan Policy 3.A.7 prescribes minimum Level of Service standards:

*The County shall develop and manage its roadway system to maintain the following minimum levels of service (LOS), or as otherwise specified in a community or specific plan.*

*a. LOS "C" on rural roadways, except within one-half mile of state highways where the standard shall be LOS "D".*

**Loomis Level of Service Criteria.** The Town of Loomis Circulation Element Update identified the Town's policies on Level of Service.

***Level of Service Policy:*** *In order to minimize congestion, maintain Level of Service C on all roads and intersections within the Town of Loomis. Level of Service D may be allowed in conjunction with development approved within the Town as an exception to this standard, at the intersections of King and Taylor, Horseshoe Bar Road and Taylor, Horseshoe Bar Road and I-80, Sierra College and Brace Road, and Webb and Taylor, when:*

*1. The deficiency is substantially caused by "through" traffic, which neither begins nor ends in Loomis, and is primarily generated by non-residents; or*

*2. The deficiency will be temporary (less than three years), and a fully-funded plan is in place to provide the improvements needed to remedy the substandard condition.*

The Town's LOS policy permits acceptance of LOS D conditions under certain circumstances. For this analysis it has been assumed that the Town will not elect to accept conditions in excess of LOS C.

**Placer County Standards of Significance.** Placer County has adopted a methodology for determining the significance of traffic impacts within the context of the Level of Service goals established by the General Plan and local community plans. This methodology is noted below.

*Roadway Segment Assessment Methodology:*

*A project may be considered to exceed the minimum LOS policies if;*

1) *A roadway segment operating at or above the established Placer County policy without the project will decrease to an unacceptable LOS with the project; or*
2) *A roadway segment currently operating below the applicable established policy will experience an increase in V/C (volume to capacity) ratio of 0.05 or greater; or*
3) *A roadway segment currently operating below the established acceptable LOS Policy experiences an increase in ADT of 100 or more project generated trips, per lane.*

*Signalized Intersections Assessment Methodology:*

*A project may be considered to exceed the minimum LOS policies if;*

1) *An intersection operating at or above the established Placer County policies without the project will decrease to an unacceptable LOS with the project; or*
2) *An intersection currently operating below the acceptable LOS established policy will experience an increase in V/C (volume to capacity) ratio of 0.05 (5%) or greater; or*
3) *An intersection currently operating below the established acceptable LOS policy will experience an increase in overall average intersection delay of 4 seconds or greater.*

*Un-signalized Intersection Assessment Methodology:*

*A project may be considered to exceed the minimum LOS policies if;*

1) *An all-way stop or side street controlled intersection which currently operates at or above the established Placer County policies without the project will deteriorate to an unacceptable LOS with the project and cause the intersection to meet MUTCD traffic signal warrant(s) ; or*
2) *An all-way stop or side street controlled intersection which currently operates below the established acceptable LOS policy and meets MUTCD signal warrant(s) will experience an overall increase of 2.5 seconds or more with the project.*

*Further consideration will be given in situations where the existing level of service is just above or at the approved minimum level of service and any increase in vehicle trips, or even daily fluctuations in traffic, will deteriorate the level of service to an unacceptable level. In such cases, it may be determined by the County that part (2) or (3) of the above exceptions is more applicable and should be used to analyze a proposed project's impacts.*

It is important to note that Placer County traffic operational analysis requirements and methodologies of assessment apply to the intersections of public roads. The Levels of Service occurring at private driveways are not considered to be an impact significance criteria. Thus, information regarding the operation of Del Oro HS's access on Taylor Road has not normally been included in traffic studies prepared for projects in Placer County or in the Town of Loomis but is offered herein due to the unique circumstances of a new school operating in the area adjoining an existing school.

**Town of Loomis Standards of Significance.** The significance of traffic impacts in Loomis is identified in the General Plan Circulation Element and GPU EIR.

***Significance Criteria.*** The Loomis General Plan also contains thresholds based on the volume of traffic on individual roadway segments. Measured in terms of the Volume / Capacity ratio (V/C), unsatisfactory conditions occur when the v/c ratio exceeds 0.80 (Exceeds LOS C). The Town of Loomis assumes that a significant traffic impact occurs when the minimum segment Level of Service is exceeded and the project increases the volume by more than 5%. The criteria applied at intersections were reviewed. The most recent document prepared for a Loomis project is the Draft Environmental Impact Report prepared for the Village at Loomis project. Review of the Transportation Element of that document indicates that while the Town has not adopted a measure for determining the significance of project impacts at intersections when background conditions exceed the minimums standard, any increase in delay where un-satisfactory Level of Service is the background condition was deemed significant.

The Town of Loomis General Plan does not speak to private driveways as a significance criteria. Review of recent Town documents, including the Circulation Element Update and the Village at Loomis EIR, indicates that private driveway connections have not been included in the analysis. As such, information regarding the Del Oro HS connections to Taylor Road has been included but is not considered to be impact significance criteria.

## Planned Improvements / Funding Sources

**Placer County Traffic Impact Fee Program and CIP.** In April 1996, the Placer County Board of Supervisors adopted the Countywide Traffic Impact Fee Program, requiring new development within the County to mitigate impacts to the roadway system by paying traffic impact fees. The fees collected through this program, in addition to other funding sources, make it possible for the County to construct roads and other transportation facilities and improvements needed to accommodate new development. The County's fee program and Capital Improvement program is divided into eleven districts. The UAIC School project is included in the Newcastle / Horseshoe Bar / Penryn Benefit District. The Horseshoe Bar / Penryn CIP includes the following projects in the area of the project:

- English Colony Way / Taylor Road: Signalize ($505,300 in fee program)
- English Colony Way – Sierra College Blvd to Taylor Road: Realign / Widen for Shoulders and Bike Lanes ($3,072,000 in fee program)
- Penryn Road / Taylor Road: Signalize/ Intersection Improvements ($505,300 in fee program)
- Taylor Road – Town of Loomis Boundary to Plan Boundary: Construct Bike Lanes / Shoulders ($254,500 in other funding sources)

**Town of Loomis Traffic Impact Fee and CIP.** The existing Town of Loomis Traffic Impact Mitigation Fee Program addresses some study area roads, however some of these improvements will need to be reconsidered based on the Town's recent Circulation Element Update. For example, the fee program identifies a portion of the cost of a traffic signal at the Barton Road / Rocklin Road intersection. The Circulation Element now suggests a roundabout be installed instead. The Town's current General Plan Circulation Element identifies Rocklin Road as an ultimate four lane facility, while the draft element suggests a three lane facility will be adequate.

The Town of Loomis 2016 – 2021 CIP includes the following improvements in the general area of the proposed project:

*(2016-2017)*

- Taylor Road from Horseshoe Bar Road to Oak Street: Town Center Implementation Plan Phase 1: $1,810,444
- Webb Street from Taylor Road to UPPR: Reconstruction: ($220,000)

*(2017-2018)*

- Taylor Road – Oak Street to Circle Drive: Overlay ($290,000)

*(2018-2019)*

- Taylor Road – Horseshoe Bar Road to King Road: Town Center Implementation Plan Phase II ($860,000)

*(2019-2020)*

- None

*(2020-2021)*

- None

(Future improvements funding not identified)

- Taylor Road / Sierra College Blvd: Overlay ($280,000)
- Sidewalk from Sunrise Loomis Subdivision to Del Oro HS ($65,000)
- Taylor Road / Horseshoe Bar Road: Modifications ($180,000)
- Taylor Road – Alice Fruitshed to Feedstore: Bike lanes ($85,000)
- Taylor Road / Del Oro HS: Signalization ($375,000)
- Library Drive, Laird Street, Webb Street, Horseshoe Bar Road, Angelo Ct and Rippey Road: Asphalt Treatments ($360,000)
- Taylor Road – Horseshoe Bar Road to Taylor Road: Town Center Implementation plan Phase III ($1,500,000)
- Bikeway Master Plan: various ($2,250,000)
- Circulation Element: Various Improvements ($82,000,000)

## Existing Traffic Conditions and Levels of Service

The following is a description of existing traffic operating conditions.

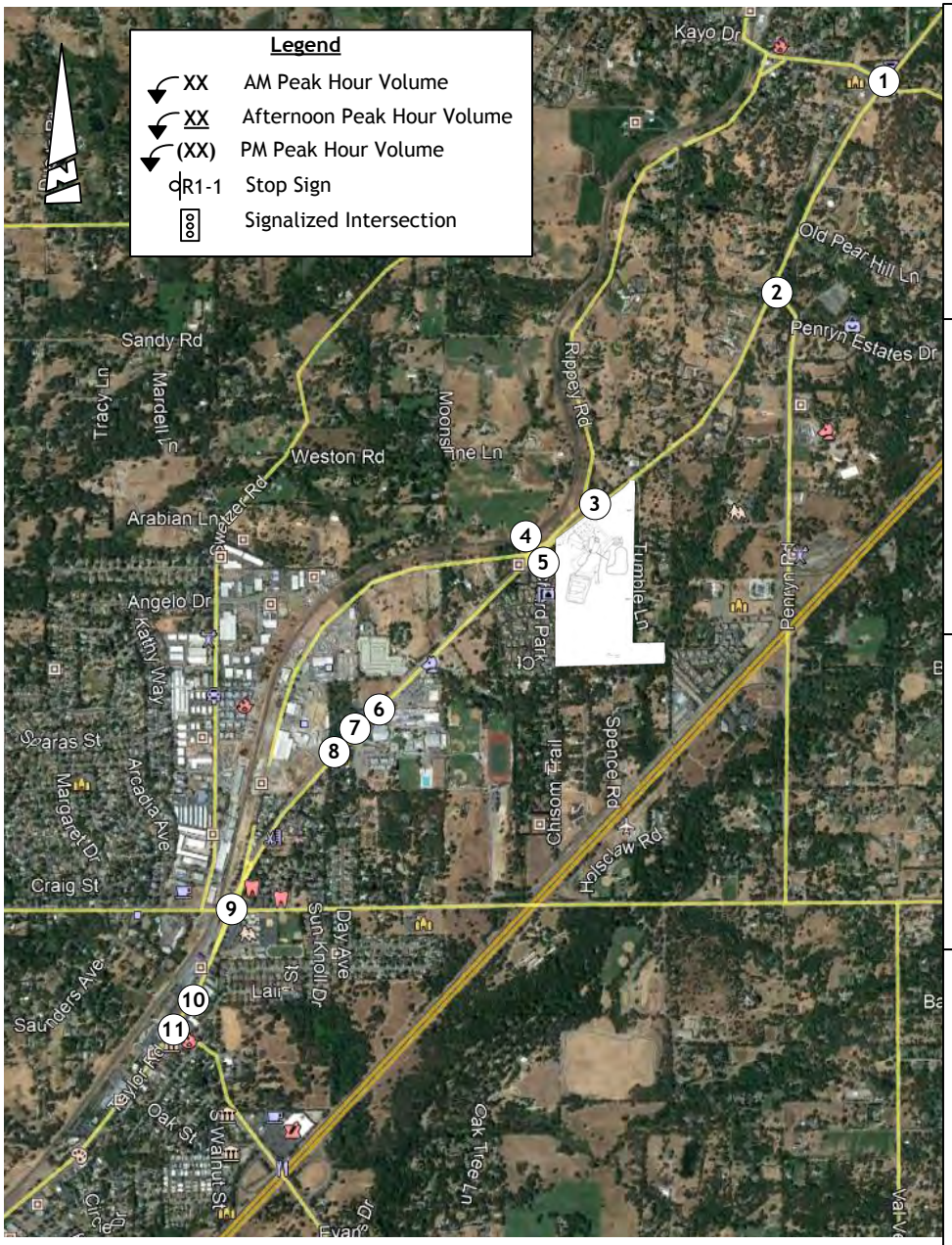
**Existing Peak Hour Traffic Volumes.** This analysis addresses existing traffic conditions occurring during the time periods when employees and students would be traveling to and from the project. The analysis included the typical a.m. peak commute hours (i.e., 7:00 to 9:00 a.m.) and the afternoon periods of school traffic (i.e., 2:00 to 3:30 p.m.). These time periods capture typical travel to and from schools in Loomis. New traffic counts were conducted for this study during a.m. and afternoon peak hours on January 31, 2017 and March 8, 2017 (refer to appendix for traffic count worksheets). Weekday p.m. peak hour data was later collected in June 2017 with the exception of data at the Taylor Road / King Road intersection which was taken from the Town's Village at Loomis DEIR. To address Town of Loomis comments on the NOP new traffic counts were conducted at the Taylor Road intersections with Horseshoe Bar Road and Webb Street on December 12, 2017. Traffic count data was collected in 15-minute increments within each time period, and the contiguous one-hour periods with the highest volumes within the two-hour data collection period were used in this traffic impact study as the peak hours. With the exception of June p.m. peak hour data, area schools were in session when traffic counts were conducted, and that data was consistent with information from other locations on Taylor Road.

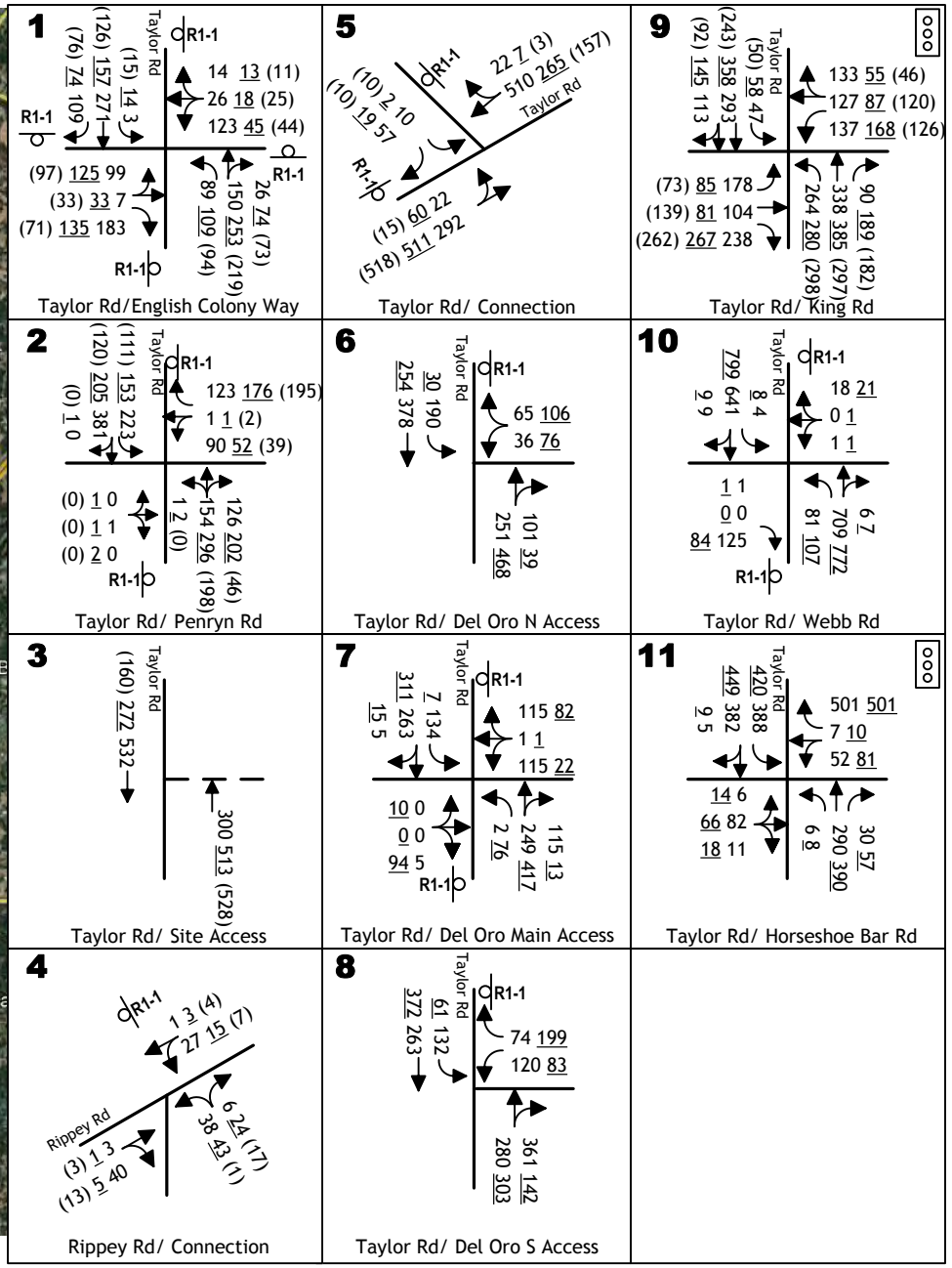
Figure 3 presents the existing lane configurations at intersections and the peak hour traffic volumes at the study intersections.

It is important to note that the volume of traffic in the study area varies greatly during time periods outside of the actual 60 minute peak hour. Table 3 identifies the volume of traffic at three locations during 15 minute periods in the morning and in the afternoon. In the morning the highest volume occurred at 7:15 to 8:15 a.m., and the traffic volumes at these locations after 8:00 a.m. were appreciably lower. Thus as will be noted later in this report, while some students will arrive early and be served breakfast, the 8:45 a.m. start of the school day at UAIC School falls well beyond the peak 60 minute period. Alternatively, the highest afternoon volumes occurred from 2:30 to 3:30 p.m. The UAIC School's 2:45 end of day falls within the afternoon peak hour on Taylor Road.

**TABLE 3**
**PEAK PERIOD TRAFFIC VOLUMES**

| | **Location** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | **Taylor Rd / Penryn Rd Intersection** | | | **Taylor Rd East of Del Oro HS's east access** | | | **Taylor Rd / King Rd Intersection** | | |
| Time period | **15 min Vol** | **Highest hour** | **Volume during UAIC School start / end** | **15 min vol** | **Highest hour** | **Volume during UAIC School start / end** | **15 min Vol** | **Highest hour** | **Volume during UAIC School start / end** |
| 7:00 to 7:15 a.m. | 131 | | | 90 | | | 369 | | |
| 7:15 to 7:30 a.m. | 251 | | | 208 | | | 558 | | |
| 7:30 to 7:45 a.m. | 445 | 1,100 | | 408 | 884 | | 568 | 2,062 | |
| 7:45 to 8:00 a.m. | 243 | | | 178 | | | 503 | | |
| 8:00 to 8:15 a.m. | 161 | | | 62 | | | 433 | | |
| 8:15 to 8:30 a.m. | 169 | | | 79 | | | 440 | | |
| 8:30 to 8:45 a.m. | 129 | | 129 | 68 | | 68 | 311 | | 311 |
| 8:45 to 9:00 a.m. | 120 | | | 68 | | | 255 | | |
| | | | | | | | | | |
| 2:00 to 2:15 p.m. | 153 | | | 98 | | | 313 | | |
| 2:15 to 2:30 p.m. | 189 | | | 106 | | | 400 | | |
| 2:30 to 2:45 p.m. | 211 | | | 133 | | | 547 | | |
| 2:45 to 3:00 p.m. | 312 | 1,092 | 312 | 263 | 858 | 263 | 526 | 2,158 | 526 |
| 3:00 to 3:15 a.m. | 339 | | | 319 | | | 588 | | |
| 3:15 to 3:30 p.m. | 230 | | | 143 | | | 497 | | |
| | | | | | | | | | |
| | | Observed time period of "traffic peak hour" | | | | | | | |
| | | Time period when proposed project will be generating greatest share of its traffic | | | | | | | |

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# EXISTING TRAFFIC VOLUMES AND LANE CONFIGURATIONS

figure 3

**Existing Intersection Levels of Service.** Table 4 presents a summary of existing a.m. and afternoon peak hour LOS at the study intersections. Level of Service calculation worksheets are included in the Appendix.

The signalized study intersection at **King Road / Taylor Road** operates at LOS D in the morning peak hour. These conditions exceed the general LOS C standard but may be permitted under Town Circulation Element policy. Observation of conditions in the field reveals that motorists may experience delays that are longer at various times within the peak hour due to factors that are not related to the capacity of this intersection. In the morning the capacity of the Del Oro HS driveways constrains arriving traffic, while in the afternoon the capacity of the Horseshoe Bar Road / Taylor Road intersection is the constraint.

The signalized **Taylor Road / Horseshoe Bar Road intersection** operates at LOS D in the afternoon. These conditions exceed the Town's general LOS C standard but may be permitted under Town Circulation Element policy.

Current Levels of Service are below the minimum threshold at many un-signalized intersections. In Placer County, the **Taylor Road / Penryn Road intersection** operates with an overall Level of Service of LOS F in the morning peak hour. In Loomis, all of the un-signalized intersections providing access to Del Oro High School operate with delays in the morning that are indicative of LOS F. Conditions are somewhat better in the afternoon peak hour, but the study intersections at Del Oro HS in Loomis operate at LOS D to LOS F at that time.

The northbound approach at the **Taylor Road / Webb Street intersection** operates at LOS D in the p.m. peak hour. While LOS D exceeds the LOS C minimum, the current Level of Service is the result of a limited number of left turns (1 in the p.m. peak hour) which disproportionately affect the length of average delay. LOS D may be accepted at this intersection under Circulation Element policy.

**TABLE 4**
**EXISTING CONDITIONS**
**INTERSECTION LEVELS OF SERVICE**

| No. | Intersection | Control | Minimum LOS | AM Peak Hour (7:15 to 8:30 a.m.) | | Afternoon Peak Hour (2:30 to 3:30 p.m.) | | PM Peak Hour (4:30 to 5:30 p.m.) | | Peak Hour Traffic Signal Warrants Met? |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Average Delay (sec/veh) | LOS | Average Delay (sec/veh) | LOS | Average Delay (sec/veh) | LOS | |
| 1 | Taylor Rd / English Colony Way | All-Way Stop | C | 22.2 | C | 20.7 | C | 15.4 | C | Yes |
| 2 | Taylor Rd / Penryn Rd (overall) | NB/SB Stop | C | **(203.2)** | **(F)** | (17.0) | (C) | (11.4) | (B) | Yes |
| | Westbound left turn | | | 9.8 | A | 9.6 | A | 8.2 | A | |
| | Northbound approach | | | 406.3 | F | 21.9 | C | 12.9 | B | |
| 3 | Taylor Rd / Rippey Rd Southbound approach | SB Stop | C | 21.3 | C | 13.8 | B | 13.2 | B | No |
| 5 | Taylor Rd / East Del Oro Northbound approach | NB Stop | C | 245.9 | F | 73.9 | F | n.a. | | No |
| 6 | Taylor Rd / Central Del Oro | NB / SB Stop | C | | | | | | | No |
| | Northbound approach | | | 375.4 | F | 45.1 | E | | | |
| | Southbound approach | | | 10.6 | B | 21.4 | C | | | |
| 7 | Taylor Rd / West Del Oro Northbound approach | NB Stop | C | 106.3 | F | 29.3 | D | | | Yes |
| 8 | Taylor Rd / King Rd | Signal | C | **41.3** | **D*** | 25.2 | C | 20.7 | C | n.a. |
| 9 | Taylor Road / Webb Street | NB/SB Stop | C | | | | | | | No |
| | Northbound approach | | | 18.8 | C | 23.5 | C | **30.1** | **D*** | |
| | Southbound approach | | | 18.1 | C | 20.7 | C | 18.4 | C | |
| 10 | Taylor Road / HBR | Signal | C | 28.8 | C | **37.6** | **D*** | 33.3 | C | n.a. |

**Bold** values are conditions at public road intersections in excess of applicable minimum Levels of Service. Conditions at Del Oro HS driveways are for information only and are not significance criteria. (*) Town of Loomis Circulation Element allows the Town to accept LOS D at this intersection
The overall average intersection control delay is reported in seconds per vehicle for signalized and all-way stop controlled locations. For side street stop controlled intersections, Placer County uses the overall weighted average control delay for movements yielding the right-of-way. For side-street stop controlled intersections in the Town of Loomis, the average control delay for the movement with the greatest delay is reported.

**Traffic Signal Warrants.** The volume of traffic occurring at the un-signalized study area intersections under existing conditions was compared to MUTCD Warrant 3 (Peak Hour Volume) to determine whether a traffic signal might already be justified. The choice of rural or urban warrants are predicated on travel speed (i.e., <40 mph or > 40 mph). Based on the speed limit, intersections within Loomis town limits are "urban", and the locations in the unincorporated area of the County are "rural".

Today the volume of traffic occurring at the two Placer County intersections on Taylor Road satisfies peak hour warrants for signalization during all the peak periods. Traffic signals at both locations are included in the Newcastle / Horseshoe Bar / Penryn fee program.

The volume of traffic at Del Oro's main western access also satisfies peak hour warrants for signalization. The Town of Loomis CIP identifies a traffic signal at Del Oro HS, but lists this location as "future improvement – funding not identified".

**Roadway Segment Level of Service.** Current daily traffic volumes on Taylor Road in the area of the project are reported to 7,380 ADT based on Loomis counts. This volume is indicative of LOS A conditions based on Placer County General Plan thresholds.

**Traffic Safety Issues.** Observation of traffic conditions in the study area identified two potential concerns, both of which relate to peak period traffic at Del Oro HS.

First, ***the flow of traffic into Del Oro HS*** has a major effect on travel along Taylor Road. While the off-site circulation system theoretically has the capacity to deliver current traffic volumes, on-site constraints delay incoming traffic. As a result, the queue of arriving inbound traffic extends westerly along Taylor Road to and sometimes through the King Road intersection. To an appreciable degree the on-site constraints relate to the capacity of the main western exit. Thus, changes to Taylor Road itself or to more distance intersections such as King Road / Taylor Road would have minimal effect on the flow of traffic to the school. As noted earlier the Town of Loomis CIP identifies an unfunded traffic signal at is location. This traffic control would increase exiting capacity, which in turn could allow more vehicles to enter the site and reduce congestion.

Secondly, peak period traffic conditions at the Taylor Road / Rippey Road intersection are an issue due to the ***short distance between Taylor Road and Rippey Road*** in this area. The alignment of the intersection invites eastbound traffic to turn left from Taylor Road and make a broad right turn directly onto eastbound Rippey Road across painted median areas with relatively little slowing. During peak periods an appreciable number of motorists make left turns from eastbound Taylor Road to westbound Rippey Road, and no left turn lane is available. This is a bypass route for students leaving Del Oro HS due to the existing conditions on Taylor Road (i.e., right turns from school exit, left turn onto Rippey Road and return to westbound Taylor Road just east of King Road). Occasionally eastbound left turns are stopped to wait for westbound traffic, and at that time an appreciable queue of eastbound through traffic can be created. According to Town staff, the combination of short spacing and absence of a left turn lane has led to collisions between westbound traffic and turning vehicles. However, Placer County staff have

reviewed the recent collision history for the intersection, and that review indicates that the collision frequency at this location is not appreciably higher than that occurring at other locations on similar roads. Consistent with the Placer County Traffic Accident Analysis System (TAAS) methodologies the most recent 3 years of available collision data at the intersection was reviewed (i.e., January 2014 thru December 2016). Town of Loomis staff provided one (1) collision report that met the study criteria. While the County does not typically maintain records outside of its own jurisdiction, the close proximity of this intersection to the Town / County border meant that there were two (2) additional collision reports available. Upon closer review of the collision data it has been concluded that only two of the three collisions were attributable to the intersection. This resulted in a collision rate of 0.22 crashes per million entering vehicles. The comparable Caltrans Collision rate based on statewide data (i.e., *2014 Collision Data: Tee intersection, Stop and Yield control, rural*) for this type of intersection is 0.16 collisions per million entering vehicles.

The collisions both occurred during daylight hours and involved vehicles traveling eastbound on Taylor Road. One collision involved a distracted driver who was traveling at an unsafe speed who rear ended a slowed car waiting on a vehicle turning left onto Rippey Road. The other collision was a sideswipe where the driver began a left turn onto the incorrect YIELD leg of the Rippey Road connection, turned back onto Taylor Road and collided with another vehicle. As both collisions involved, either directly or indirectly, a vehicle turning left from Taylor Road onto Rippey Road, the Town could consider installing a left turn restriction which would alleviate the Town's safety concern.

The need for a left turn lane can be considered by review of AASHTO guidelines for left turn channelization, as noted in Table 5. This table identifies the volume of traffic in the direction opposing the left turn. For example, in the afternoon there are 272 westbound vehicles on Taylor Road, and this value falls between 200 and 400 vph in table's left hand column. The advancing volume, including left turns, is then identified and entered in the column that best represents the percentage of traffic turning left at that time. In this case left turns are 11% of the advancing volume, and the value is placed in the 10% column. At this point it can be determined if the advancing volume exceeds the table's requirement. In this case 571 vph exceeds the 390 to 470 vph range needed to justify a lane for 200 to 400 opposing vehicles. Thus the combination of advancing and opposing traffic occurring in the afternoon peak period following the end of the school day reaches the level that satisfies these guidelines. However, the volumes occurring in the a.m. peak hour and p.m. peak hour do not satisfy this requirement.

**TABLE 5**
**TRAFFIC VOLUMES JUSTIFYING LEFT TURN LANES**
**AT TAYLOR ROAD / RIPPEY ROAD CONNECTION**

| Opposing Volume (veh/hr) | Advancing Volume (veh/hr) | | | |
|---|---|---|---|---|
| | 5% Left Turns | 10% Left Turns | 20% Left Turns | 30% Left Turns |
| 40-mph operating speed | | | | |
| 800 | 330 | 240 | 180 | 160 |
| 600 | 410 | 305 | 225 | 200 |
| *532* | *314 (4%)* | - | - | - |
| 400 | 510 | 380 | 275 | 245 |
| **272** | - | **571 (11%)** | - | - |
| 200 | 640 | 470 | 350 | 305 |
| 160 | *533 (3%)* | | - | - |
| 100 | 720 | 515 | 390 | 340 |

Source: *A Policy on Geometric Design of Highway and Streets, AASHTO, 2012.*
*Existing AM Peak Hour at Taylor Road / Rippey Road Connection – Not Satisfied*
Existing Afternoon Peak Hour at Taylor Road / Rippey Road Connection - *Satisfied*
*Existing PM Peak Hour at Taylor Road / Rippey Road Connection – Not Satisfied*

Potential safety improvements were considered at the request of the Town of Loomis during the study scoping process. The Town of Loomis CIP does not address this location, and the traffic impact analysis accompanying the Circulation Element Update did not identify this location as a problem.

A left turn restriction could be installed through signage (if only limited during high school peak(s)), or other full time measures could be installed.

Theoretically a separate left turn lane could be installed on Taylor Road, and this treatment would generally be consistent with the Town's plan for Taylor Road improvements. However a 10-12 foot high cut-bank exists on the south side of Taylor Road at this location. Thus, widening Taylor Road to the south away from the existing structures to create a left turn lane could require extensive earthwork and retaining walls, as well as relocation of utility poles. In addition, Rippey Road is used by large trucks, and any intersection changes would need to continue to accommodate truck turning requirements. This requirement and the existing structure in this area would make it difficult to shift westbound travel lanes to the north to create a separate left turn lane.

The town has not included this intersection in any of their recent documents or their CIP. Installing a left-turn restriction would mitigate Town's concerns.

## Alternative Transportation Modes

**Public Transit.** Public transit service in the unincorporated areas of Placer County is provided by two agencies.

- Placer County Transit (PCT) provides both fixed route and demand-responsive transit service to the study area. PCT's *Taylor Road Shuttle* links Loomis, Penryn, Auburn and Sierra College in Rocklin. This route stops within Loomis at the downtown multi-modal center, and other stops are signed along Taylor Road. Service is provided between 6:30 a.m. and 4:15 p.m. Monday –Friday with four stops per day. Detailed information regarding the route, bus-stops and schedules is available at http://www.placer.ca.gov/works/pct/hwy49.htm.

Other transit opportunities include:

- Placer Commuter Express is a ticket based bus service traveling from convenient stops (including Auburn Station) along the Interstate 80 corridor from Colfax into Downtown Sacramento.

- Dial-A-Ride is a demand-response transportation system providing curb-to-curb service to the general public six days a week (excluding Sunday) in the communities of Auburn (Highway 49) and Rocklin/Loomis. The project site lies within the Dial-A-Ride service area.

- Auburn Light Rail Express Route is a fixed route transit service which connects Auburn Station to Sacramento Light Rail. The route operates Monday through Friday with one-hour headways and two-hour headways on Saturdays. This route passes the site on Taylor Road and stop at the Penryn Park & Ride and at the Loomis Multi-Modal Center at the train station.

**Pedestrian Facilities.** Pedestrian facilities are limited in the rural areas of Placer County. While sidewalks have been created along Taylor Road within the limits of the Town of Loomis, in the unincorporated area of the County pedestrians make use of the paved shoulder area along Taylor Road in the immediate area of the project.

**Bicycle Facilities.** The *Placer County Regional Bikeway Plan* provides information regarding the regional system of bikeways for transportation and recreation purposes. The regional bikeway plan was accepted by the Placer County Transportation Planning Agency (PCTPA) Board in August of 2001, and adopted by the Placer County Board of Supervisors in September of 2002. The *Placer County Regional Bikeway Plan* establishes a system of ultimate bikeways within the Auburn area and includes the following system classifications:

*"Class I Bike Path – Provides a completely separated facility designed for the exclusive use of bicycles and pedestrians with minimal crossflows by motorists. Caltrans standards call for Class I bikeways to have 8 feet (2.4 meters) of pavements with 2 foot (0.6 meters) graded shoulders on either side, for a total right-of-way of 12 feet (3.6 meters). These bikeways must also be at least 5 feet (1.5 meters) from the edge of a paved roadway."*

*"Class II Bike Lane – Provides a restricted right-of-way designated for the exclusive or semi-exclusive use of bicycles with through travel by motor vehicles or pedestrians prohibited, but with vehicular parking and cross flows by pedestrians permitted. Caltrans standards generally require a 4 foot (1.2 meters) bike lane with a 6-inch (150 mm) white stripe separating the roadway from the bike lane."*

*"Class III Bike Lane – Provides a right-of-way designated by signs or permanent markings and shared with pedestrians and motorists. Roadways designated as Class III bike routes should have sufficient width to accommodate motorists, bicyclists, and pedestrians. Other than a street sign, there are not special markings required for a Class III bike route."*

The 2011 Placer County Bike Map notes the presence of the following facilities in this general area. Today the portion of Taylor Road east of the Loomis Town limits is designated a Class II bike lane. The 2010 Loomis Bike Transportation Plan indicates that Taylor Road is a Class II bikeway from the downtown core to the Town limits. The plan suggests that a separated Class I path will also be developed along Taylor Road.

## PROJECT CHARACTERISTICS

The development and operation of the UAIC School Project will attract automobile traffic to the project site. This report section describes the characteristics of project-related traffic.

UAIC currently operates a school on Indian Hill Road near Auburn Folsom Road. Information regarding the new school has been developed in consultation with the project proponents based on their current operation and planned operational strategies.

The proposed project includes buildings associated with the educational process, as well as a small cultural center. The cultural center occupies roughly 14,000 sf but a large portion of the facility will not be open to the public and will be reserved for Tribal member use. Only 3,000 square feet of the current design is publicly accessible space (reception area, gift shop, gallery/theater, and exhibit space). It is anticipated that 4-6 staff members will be on site during normal business hours and that 30 tribal members may visit per week. Some of those 30 will be persons coming to the property for the adult education activities".

The site may host special events, which would be generally consistent with activity at the prior use on the site. The project site was last occupied by a bed & breakfast / events center. Events at the school site could occur after hours and on weekends but no earlier than 7:00 a.m. or later than 10:00 p.m. These events could hold up to approximately 200 people, although some students and staff may already be on school property.

### Project Characteristics

**Site Access.** The project will take access via an existing access to Taylor Road at an existing driveway roughly 900 feet east of the Rippey Road intersection and 3,200 feet west of the Penryn Road intersection. This intersection is opposite and roughly 50 feet offset from an existing driveway serving a small motel. The intersection already satisfies Plate 116 requirements for acceleration and deceleration tapers.

**Project Operational Characteristics**. The proposed school project will involve the following activities that relate to regular vehicular travel:

**TABLE 6**
**PROJECT CHARACTERISTICS**

| Activity | Existing School in Auburn | Proposed Project |
|---|---|---|
| ***Staff and Students*** | | |
| Pre K-8 enrollment | 57 | 100 |
| Adult Education Average Daily Attendance | 5-10 per event | 10-15 per event |
| Adult Classes | 2-3 per month | 4 per week |
| Education and Support Staff | 38 | 35 |
| Cultural Staff | 0 | 6 |
| ***Transportation*** | | |
| Students bussed | 51 (90%) | 90 (90%) |
| Number of bus routes | 8 | 9 |
| ***Schedules*** | | |
| Students arriving in morning peak hour | 57 | 100 |
| Students leaving at traditional end of day | 37 | 65 |
| Students leaving after extended day | 20 | 35 |

The travel associated with these activities has been isolated by time period in order to establish trip generation forecasts for the two school travel periods and for daily and p.m. peak hour conditions. The trip generation summary is presented in Table 7. As shown, the proposed project is projected to regularly generate 254 daily trips with 78 trips in the a.m. peak hour, 41 trips in the hour at the end of the school day and 63 trips in the p.m. peak hour on those days when adult education classes ended at a time that may generate p.m. peak hour traffic.

For comparison, standard trip generation rates for private schools published by the Institute of Transportation Engineers (ITE) were used to identify trip generation for a typical school of this size. These rates and the accompanying forecast for a regular 100 student private school are also included in Table 7. As shown the forecasts would be 248 daily trips, with 90 trips in the a.m. peak hour, 60 trips in the afternoon hour and 17 trips in the p.m. peak hour traffic.

## Special Events

The project site may occasionally be used to host special events. Up to 200 persons may be in attendance. Assuming standard automobile occupancy rates for public events (i.e., 2.5 attendees per vehicle), roughly 80 inbound trips could occur before an event and 80 trips could occur in the period thereafter. The extent to which these trips are focused into a specific hour would depend on the event schedule and the nature of activities. "Open house" type activities would spread trips across a broad time period, and some inbound and outbound trips might occur concurrently. An event with a designated starting time would tend to attract nearly all inbound trips into a single hour, but exiting trips would fall into subsequent hours. For this analysis a "worse case" p.m. peak hour analysis was conducted that assumes that a 200 person event begins at a time within the typical weekday p.m. peak hour (i.e., 4:00 to 6:00 p.m.)

**TABLE 7**
**TRIP GENERATION FORECASTS**

| Description | Quantity | Mode | Occ Rate | Vehicles | Vehicle Trips | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | daily | AM Peak Hour (7:00 to 9:00 a.m.) | | | Afternoon Peak Hour (2:30 to 3:30) | | | PM Peak Hour (4:00 to 6:00 p.m.) | | |
| | | | | | | In | Out | Total | In | Out | Total | In | Out | Total |
| ***Proposed Project*** | | | | | | | | | | | | | | |
| PreK – 8 students | 5 | auto | 1.25 | 4 | 16 | 4 | 4 | 8 | 2 | 2 | 4 | 2 | 2 | 4 |
| | 90 | van | 12.0 | 9 | 72 | 9 | 9 | 18 | 9 | 9 | 18 | 9 | 9 | 18 |
| Pre K < 2 yrs | 5 | auto | 1.25 | 4 | 16 | 4 | 4 | 8 | 0 | 0 | 0 | 0 | 0 | 0 |
| Adult Education | 15 | auto | 1.25 | 12 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 12 |
| Ed Staff | 35 | auto | 1.00 | 35 | 70 | 35 | 0 | 35 | 0 | 15 | 15 | 0 | 20 | 20 |
| Misc. trips | 10 | auto | | 10 | 20 | 1 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 2 |
| Cultural Center staff | 6 | auto | 1.00 | 6 | 12 | 6 | 0 | 6 | 0 | 0 | 0 | 0 | 6 | 6 |
| Cultural Center visitor | 12 | auto | 1.00 | 12 | 24 | 1 | 0 | 1 | 1 | 1 | 2 | 0 | 1 | 1 |
| ***Total*** | | | | | ***254*** | ***60*** | ***18*** | ***78*** | ***13*** | ***28*** | ***41*** | ***12*** | ***51*** | ***63*** |
| ***Comparison to Typical Private School*** | | | | | | | | | | | | | | |
| Private School (K-8) | student | n.a. | n.a. | n.a. | 2.48 | 55% | 45% | 0.90 | 47% | 53% | 0.60 | 43% | 57% | 0.17 |
| | 100 students | | | | 248 | | | 90 | | | 60 | | | 17 |
| ***Special Event Traffic*** | | | | | | | | | | | | | | |
| Attendees | 200 | auto | 2.5 | 80 | 160 | 0 | 0 | 0 | 0 | 0 | 0 | 80 | 0 | 80 |

**Trip Distribution.** Having determined the number of trips that may be generated by the proposed project, it is necessary to identify the directional distribution of project traffic in order to assign these trips to the study area street system. This was accomplished by considering the location of student and staff residences relative to the proposed project's location.

Automobile traffic generated by employees and visitors could originate throughout Placer County, and most of this traffic would be expected to be from the west via Interstate 80 using the Penryn Road interchange. The overall allocation of project trips to the study area circulation system is identified in Table 8.

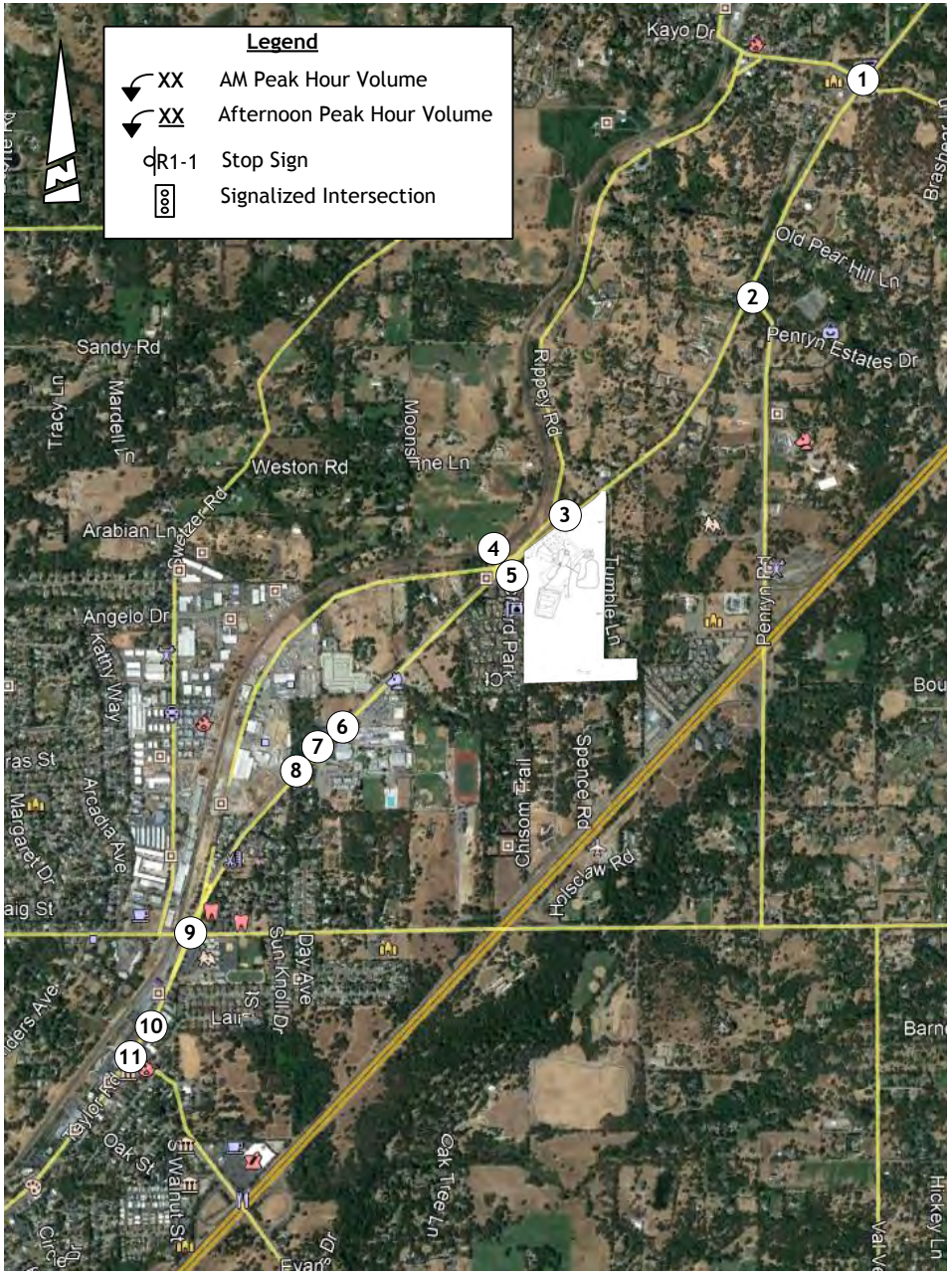
**TABLE 8**
**DIRECTIONAL TRIP DISTRIBUTION**

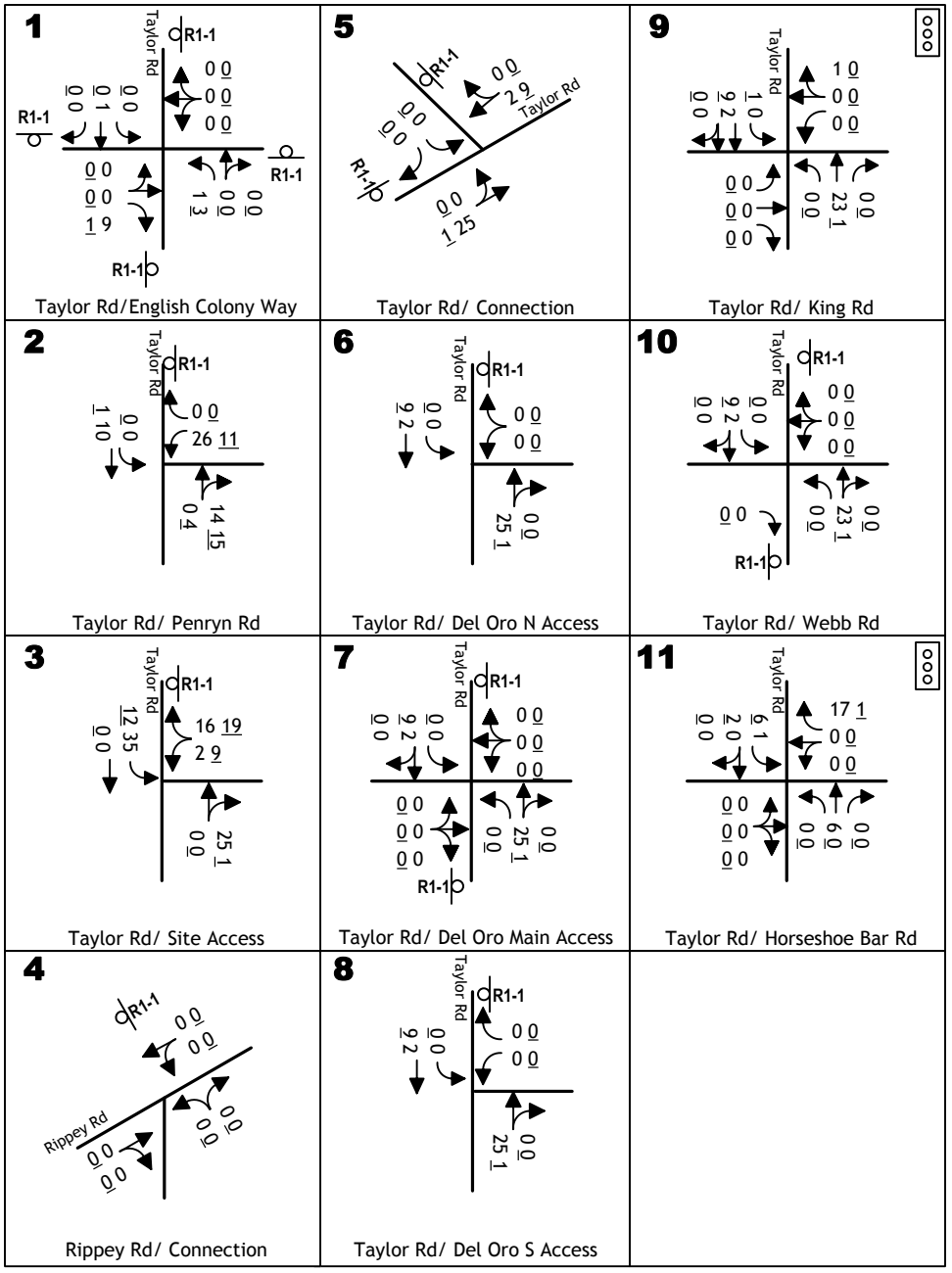
| Direction | Route | Percentage of Total Trips | | | | |
|---|---|---|---|---|---|---|
| | | Staff | Bussed Students | Non-bussed Students Adult Students | Special Event | Misc |
| East | Interstate 80 | 26% | 100%* | 60% | 40% | 50% |
| | Taylor Road beyond English Colony | 2% | 0% | 0% | 5% | 0% |
| West | Interstate 80 | 38% | 0% | 15% | 40% | 50% |
| | Taylor Road beyond King Road | 14% | 0% | 5% | 5% | 0% |
| North | English Colony Way | 18% | 0% | 15% | 5% | 0% |
| South | King Road to Auburn Folsom Road | 2% | 0% | 5% | 5% | 0% |
| | Total | 100% | 100% | 100% | 100% | 100% |
| (*) all vans will use the I-80 / Penryn Road interchange | | | | | | |

## Trip Assignment

Trips that would be generated by the proposed project were assigned to the study area street system at the project access according to the regional distribution assumptions noted above. It is important to note that UAIC can direct its vans to use specific routes. In this case, vans would be directed to use the Penryn Road interchange for all travel involving Interstate 80. However, while UAIC can direct staff to avoid using specific routes, parents and staff driving their own vehicles will still have choices among competing routes, as would persons attending special events.

Figure 4 presents the resulting project trip assignment under regular operation during the a.m. and afternoon peak hours. Figure 5 presents the project trip assignment in the p.m. peak hour under regular and "worst case" conditions with a special event.

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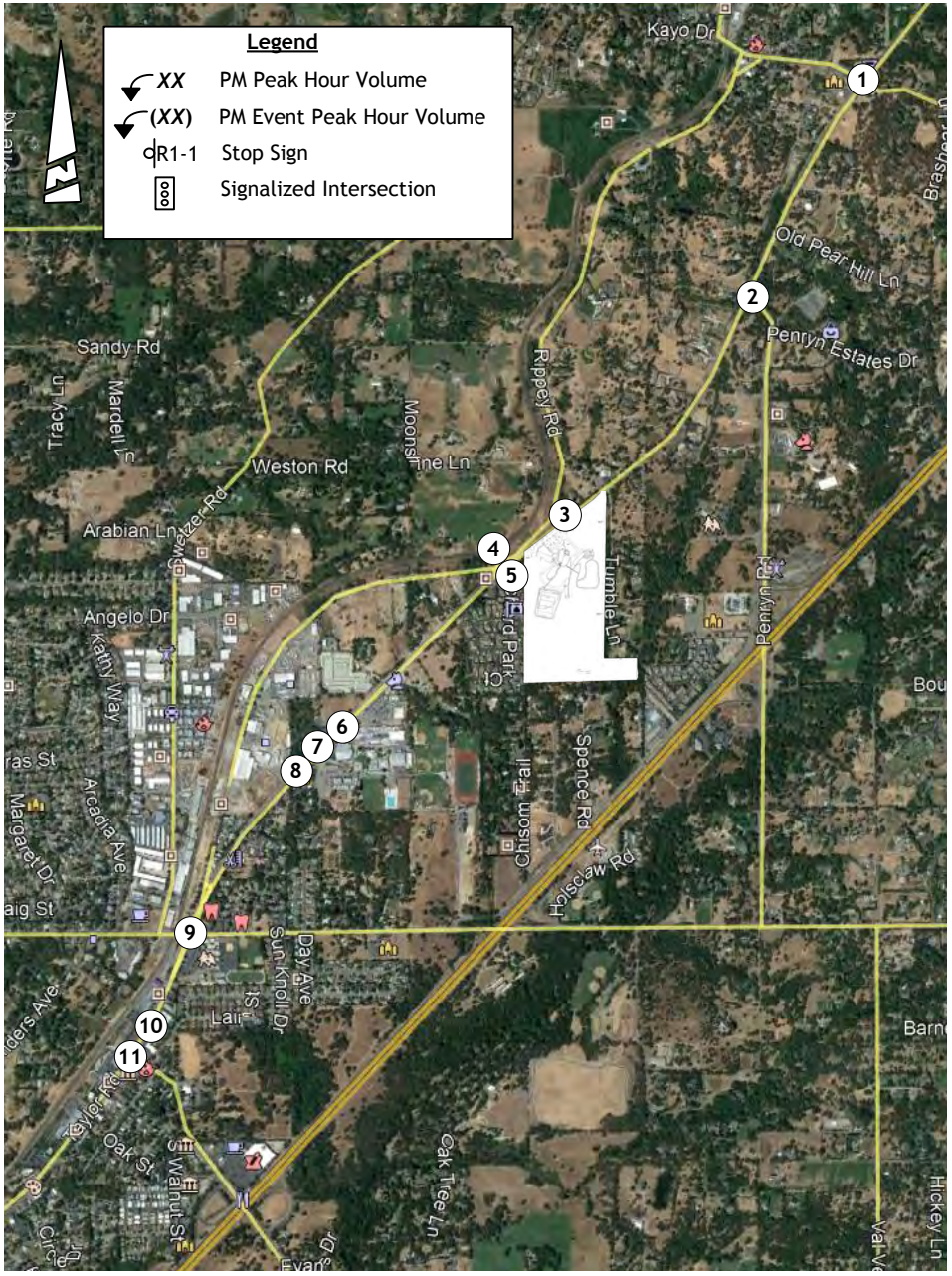
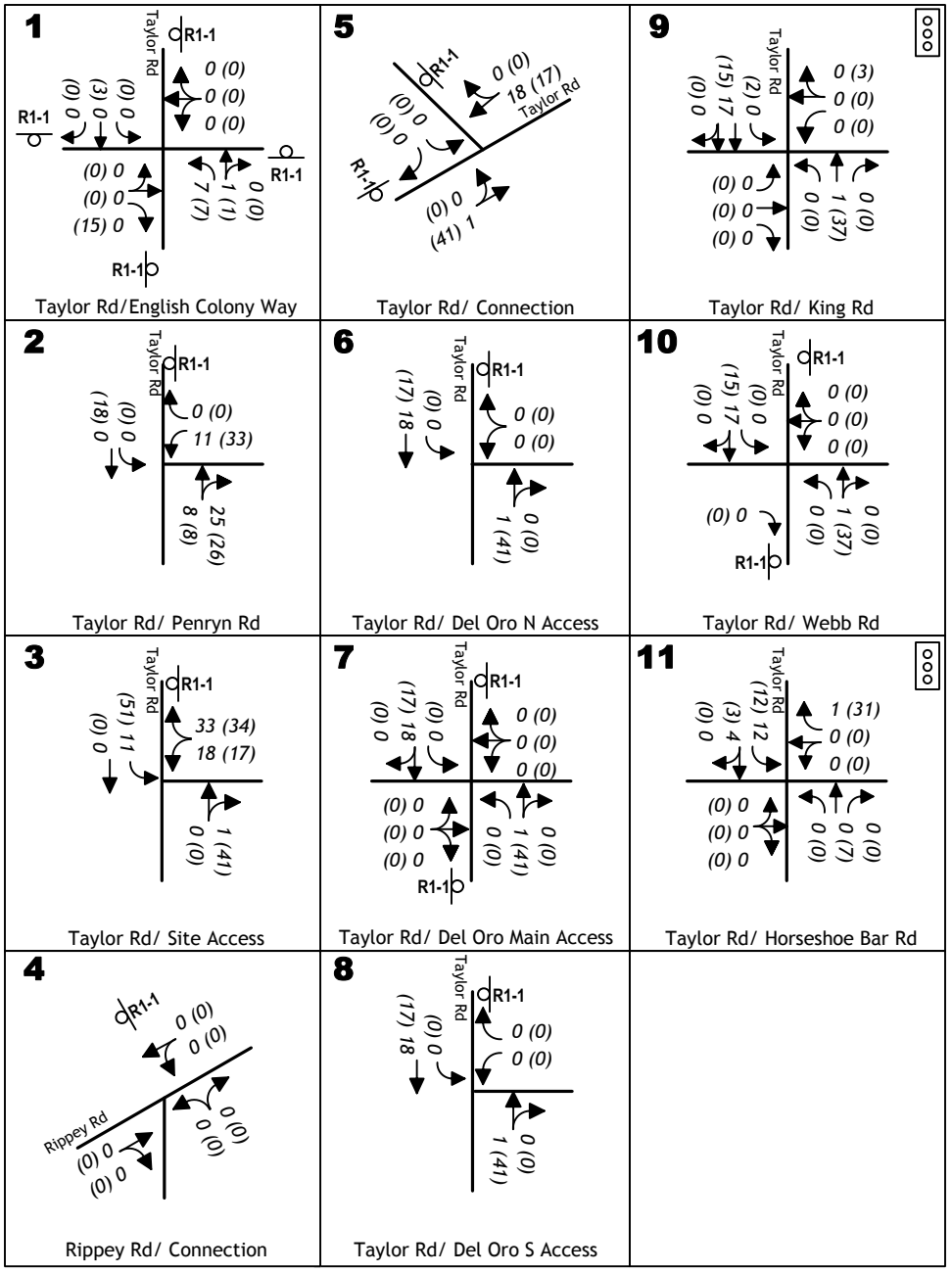
# PROJECT ONLY TRAFFIC VOLUMES AND LANE CONFIGURATIONS – AM AND AFTERNOON

6260-21 RA 6/7/2018

figure 4

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# PROJECT ONLY TRAFFIC VOLUMES AND LANE CONFIGURATIONS – PM PEAK HOUR

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figure 5

## EXISTING PLUS PROJECT TRAFFIC CONDITIONS

This report section identifies traffic conditions that are expected with development of the project alone. While it is likely that project traffic will not coincide with the peak period morning travel to and from Del Oro HS, this assessment conservatively assumes project trips will occur during the peak 15 minute of the background peak hour, as is the standard practice for traffic impact analysis under Caltrans guidelines.

### Existing Plus Project Traffic Conditions

The trips accompanying development of the project were superimposed onto the current background traffic volumes to create the "Existing plus Project" traffic volumes presented in Figures 6 and 7. These volumes were then used to calculate the intersection Levels of Service presented in the tables which follow.

**Existing Plus Project Impacts to Traffic Operations.** Table 9 identifies the a.m., afternoon and p.m. peak hour Level of Service occurring at study area intersections with the addition of project traffic.

The project will perpetuate the existing LOS F conditions and lengthen delays in the a.m. peak hour at **the Taylor Road / Penryn Road intersection.** Because the Level of Service at these locations is already deficient, the significance of the project's impact is based on the County's Methodology of Assessment. In this case traffic signal warrants are satisfied, and the addition of project trips will increase the length of average delay by more than the allowable 2.5 second increment. ***The project's impact to this intersection is significant.***

***Mitigation.*** The project proponents shall cause a traffic signal to be installed at the Taylor Road / Penryn Road intersection. A traffic signal will deliver LOS C. As noted earlier, Placer County's adopted fee program and CIP include a traffic signal at this location. Thus, the project would receive fee credits and reimbursement towards the cost of this improvement.

Installing a traffic signal at this intersection would also involve addressing the adjoining North Penryn Road connection and the access to a residence that occurs in the intersection. North Penryn Road links Taylor Road with English Colony Way, and while there are some residences along the route its apparent function during peak traffic hours is as a bypass to the all-way stop at Taylor Road / English Colony Way. Preliminary operational analysis indicates that it should be possible to perpetuate eastbound left turns onto North Penryn Road. If it was found to be necessary to prohibit left turns on to North Penryn Road and limit this intersection to right-turns-only, traffic would be diverted to the Taylor Road / English Colony Way intersection. That location would, however, continue to operate at LOS C (delay 23.6 seconds), which satisfies the County's minimum standard. Today the affected residence has access via two driveways, and it is likely that this will need to be consolidated into a single driveway that is wide enough to accommodate inbound and outbound flow.

In Loomis, as shown, the Levels of Service at the signalized **Taylor Road / King Road** intersection will remain at LOS D in the a.m. peak hour. LOS D exceeds the Town's LOS C goal but LOS D can be accepted under Town Circulation element policy. The project's trips do not increase the average delay at the intersection, and as a result the project's impact is not significant.

The Levels of Service at the signalized **Taylor Road / Horseshoe Bar Road intersection** will remain at LOS C in the a.m. peak hour with and without the project, and project trips will cause the intersection to operate at LOS D in the p.m. peak hour. LOS D exceeds the Town's LOS C goal but LOS D can be accepted under Town Circulation Element policy. Because the project adds traffic to an intersection that exceeds LOS C and causes the intersection to operate at LOS D in the p.m. peak hour, the project's impact is significant. Measures to improve the Level of Service at this location include completion of other portions of the circulation system that are included in the Town Circulation Element Update. For example, the construction of the Doc Barnes Extension from Horseshoe Bar Road to King Road and the Webb Street extension from Taylor Road to Horseshoe Bar Road would reduce traffic on Taylor Road and improve the Level of Service at Taylor Road intersections. These street improvements are included in the Village at Loomis project and partially funded by the Town's Fee program. However, there is no guarantee that the Village at Loomis project will be approved and install these improvements, and Placer County has no control over the Town's fee program. ***Thus, this impact is significant and unavoidable.***

The addition of project peak hour trips would theoretically exacerbate the long delays at the **Taylor Road / Del Oro HS access intersections** that occur in the morning and afternoon. As a practical matter, because most of the UAIC school's morning travel falls outside of the beginning of Del Oro's school day, it is unlikely that UAIC staff or UAIC student travel will coincide with peak conditions near Del Oro HS. While conditions at the intersections near Del Oro HS exceed the Town of Loomis LOS C standard with and without the project, the Town of Loomis GP does not include LOS criteria for private driveway connections. A review of recent Town documents indicates that the Town has not included the private Del Oro HS driveway connections as part of their traffic impact analysis documents. As such, operations at the private Del Oro HS driveway connections with Taylor Road are not considered to be a significant impact.

The addition of project trips will increase the volume of traffic through the **Taylor Road / Webb Street intersection,** and the northbound approach will continue to operate at LOS D in the p.m. peak hour. Because LOS D exceeds the LOS C goal and the project's trips increase delay, the project's impact is significant.

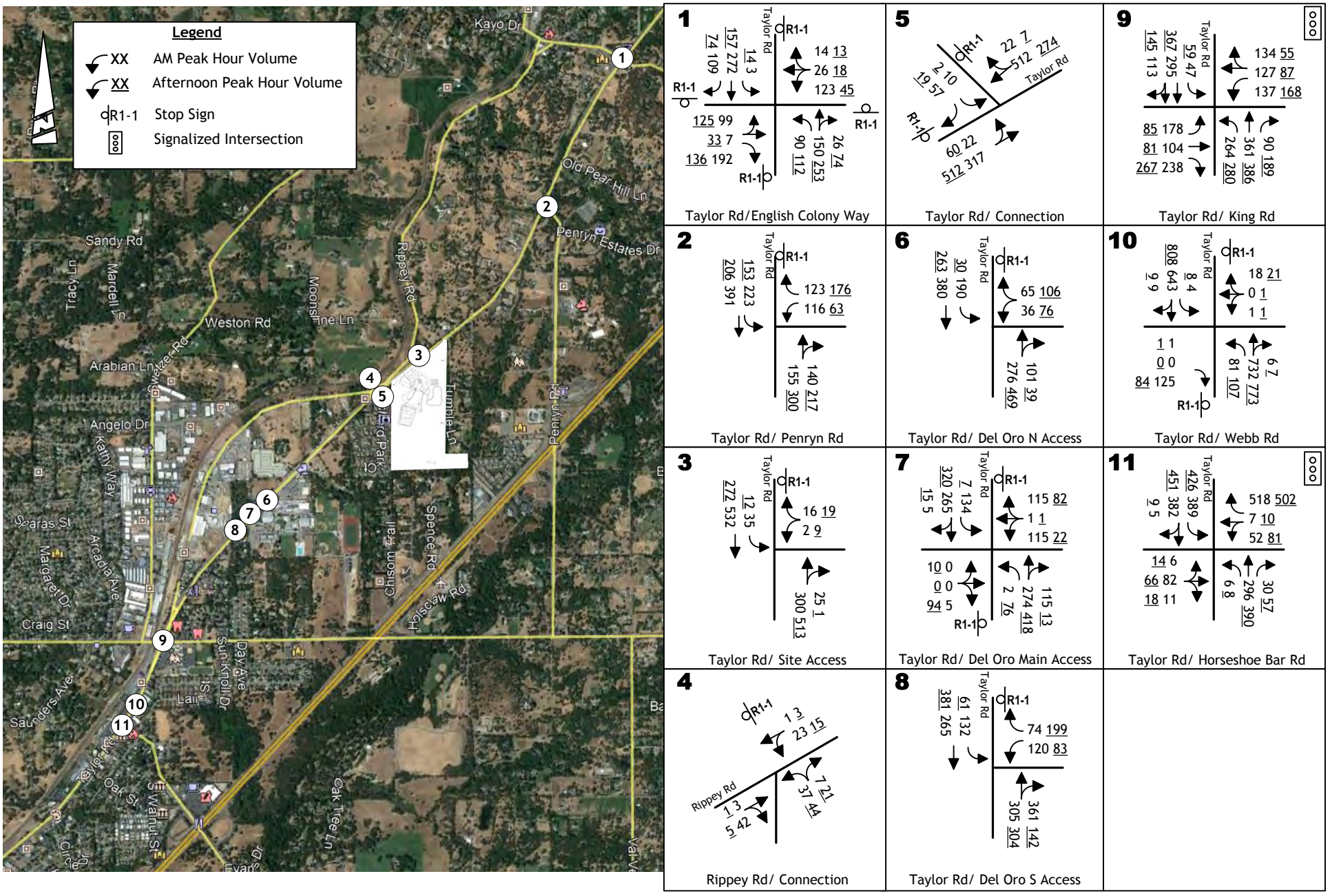
Measures to improve the operation of the intersection include construction of new streets to reduce the volume of traffic on Taylor Road and installation of a traffic signal at this location. For example, the construction of the Doc Barnes Extension from Horseshoe Bar Road to King Road and the Webb Street extension from Taylor Road to Horseshoe Bar Road would reduce traffic on Taylor Road and improve the Level of Service at Taylor Road intersections. These streets and a traffic signal at the Webb Street intersection are included in the Village at Loomis project and partially funded by the Town's Fee program. However, there is no guarantee that the Village at Loomis project will be approved and install these improvements, and Placer County

has no control over the Town's fee program. ***Thus, this impact is significant and unavoidable.***

**Traffic Signal Warrants.** As noted earlier, the volumes at three existing intersections already satisfy traffic signal warrants. The addition of project traffic doesn't result in any additional un-signalized intersections carrying volumes that satisfy peak hour warrants.

**Roadway Segment LOS.** Table 10 identifies the Roadway Segment Level of Service occurring on the segments of Taylor Road east and west of the site with the addition of project daily trips. As shown, the Levels of Service at each location will remain within the adopted minimum standard. Thus, the project's impact to the overall traffic flow on Taylor Road is not significant.

**Safety.** The project will add a small amount of traffic through the Taylor Road / Rippey Road intersection, although no project traffic is anticipated on Rippey Road itself. Project traffic represents an increase of 3% of the current traffic in the a.m. peak hour (27/913=3%), 2% of the current traffic in the afternoon peak hour (12/864=2%) and 3% of the p.m. peak hour traffic (21/713 = 3%). The addition of project trips is not anticipated to have a noticeable effect on the frequency or severity of collisions at the Taylor Road/Rippey Road intersection, and the project's impact is not significant. As noted earlier, the Town could elect to limit left turns to address this issue.

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# EXISTING PLUS PROJECT TRAFFIC VOLUMES AND LANE CONFIGURATIONS – AM AND AFTERNOON

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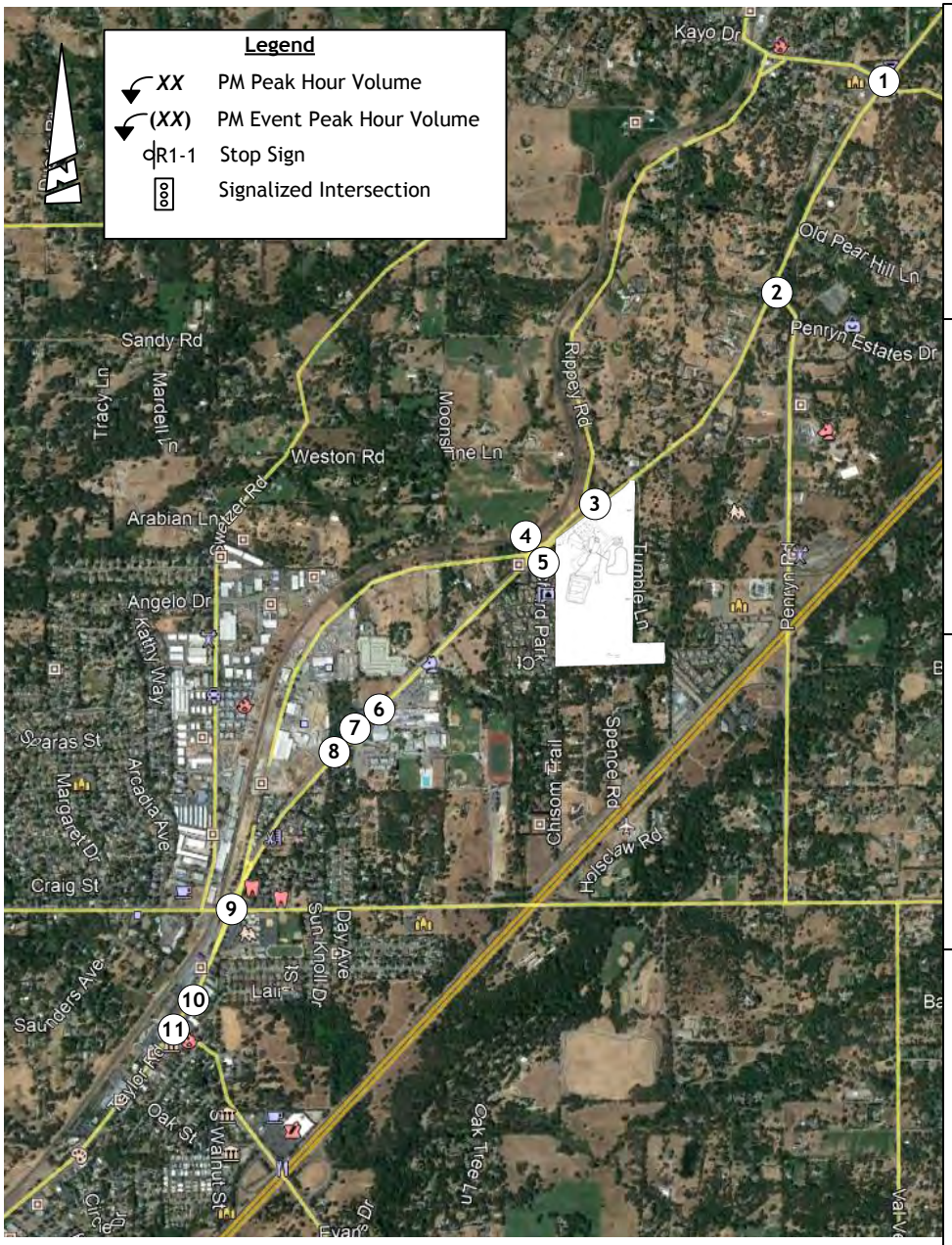
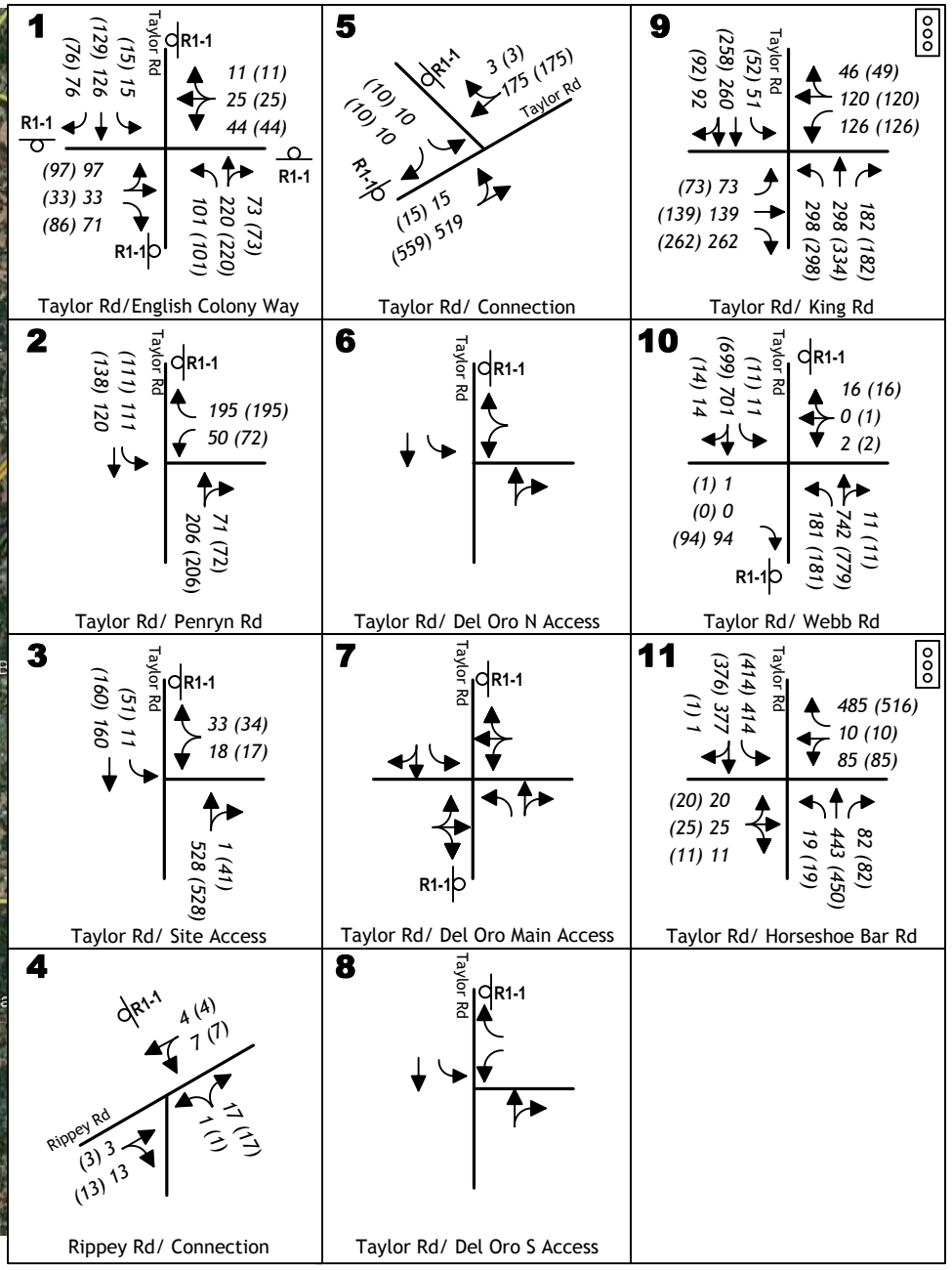
figure 6

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# EXISTING PLUS PROJECT TRAFFIC VOLUMES AND LANE CONFIGURATIONS – PM PEAK HOUR

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figure 7

## TABLE 9
## EXISTING PLUS PROJECT CONDITIONS
## PEAK HOUR INTERSECTION LEVELS OF SERVICE

| No. | Intersection | Control | AM Peak Hour (7:15 to 8:30 a.m.) | | | | Afternoon Peak Hour (2:30 to 3:30 p.m.) | | | | PM Peak Hour (4:30 to 5:30 p.m.) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Existing | | Plus Project | | Existing | | Plus Project | | Existing | | Plus Project | | | |
| | | | | | | | | | | | | | Regular | | Worst Case | |
| | | | Ave Delay (sec/veh) | LOS | Ave Delay (sec/veh) | LOS | Ave Delay (sec/veh) | LOS | Ave Delay (sec/veh) | LOS | Ave Delay (sec/veh) | LOS | Ave Delay (sec/veh) | LOS | Ave Delay (sec/veh) | LOS |
| 1 | Taylor Rd / English Colony Way | All-Way Stop | 22.2 | C | 22.8 | C | 20.7 | C | 20.8 | C | 15.4 | C | 15.5 | C | 15.6 | C |
| 2 | Taylor Rd / Penryn Rd | NB/SB Stop | | | | | | | | | | | | | | |
| | (overall) | | **(203.2)** | **(F)** | **(356.4)** | **(F)** | (17.0) | (C) | (19.4) | (C) | (11.4) | (A) | (12.0) | (B) | (13.0) | B |
| | Westbound left turn | | 9.8 | A | 9.9 | A | 9.6 | A | 9.8 | A | 8.2 | A | 8.3 | A | 8.3 | A |
| | Northbound approach | | 406.3 | F | 679.4 | F | 21.9 | C | 25.6 | D | 12.9 | B | 13.7 | B | 14.9 | B |
| 3 | Taylor Rd / Access | NB Stop | | | | | | | | | | | | | | |
| | (overall) | | - | - | (9.2) | (A) | - | - | (13.5) | (B) | - | - | (14.5) | (A) | (13.3) | (B) |
| | Northbound approach | | | | 11.3 | B | | | 15.4 | C | | | 15.7 | C | 17.3 | C |
| | Westbound left turn | | | | 8.1 | A | | | 8.9 | A | | | 8.9 | A | 9.3 | A |
| 4 | Taylor Rd / Rippey Rd | SB Stop | | | | | | | | | | | | | | |
| | Southbound approach | | 21.3 | C | 21.8 | C | 13.9 | B | 14.0 | B | 13.2 | B | 13.4 | B | 13.9 | B |
| 5 | Taylor Rd / East Del Oro | NB Stop | | | | | | | | | | | | | | |
| | Northbound approach | | 245.9 | F | 298.6 | F | 73.9 | F | 77.4 | F | - | | | | | |
| 6 | Taylor Rd / Central Del Oro | NB/SB Stop | | | | | | | | | | | | | | |
| | Northbound approach | | 375.4 | F | 428.7 | F | 45.1 | E | 47.2 | E | | | | | | |
| | Southbound approach | | 10.6 | B | 10.6 | B | 21.4 | C | 22.0 | C | | | | | | |
| 7 | Taylor Rd / West Del Oro | NB Stop | | | | | | | | | | | | | | |
| | Northbound approach | | 106.3 | F | 120.3 | F | 29.3 | D | 29.9 | D | | | | | | |
| 8 | Taylor Rd / King Rd | Signal | 41.3 | D* | 41.3 | D* | 25.2 | C | 25.4 | C | 20.7 | C | 24.3 | C | 24.1 | C |
| 9 | Taylor Road / Webb Street | NB / SB Stop | | | | | | | | | | | | | | |
| | Northbound approach | | 18.8 | C | 19.4 | C | 23.5 | C | 23.6 | C | **30.1** | **D*** | **31.4** | **D*** | **32.9** | **D*** |
| | Southbound approach | | 18.1 | C | 18.3 | C | 20.7 | C | 21.1 | C | 18.4 | C | 18.8 | C | 18.9 | C |
| 10 | Taylor Road / HBR | Signal | 28.8 | C | 29.4 | C | **37.6** | **D*** | **38.5** | **D*** | 33.3 | C | **36.0** | **D*** | **37.0** | **D*** |

**Bold** values are conditions in excess of applicable minimum Levels of Service **Highlighted** Values area a significant impact. Conditions at Del Oro HS driveways are for information only and are not significance criteria.

(*) Town of Loomis Circulation Element allows the Town to accept LOS D at this intersection. The overall average intersection control delay is reported in seconds per vehicle for signalized and all-way stop controlled locations. For side street stop controlled intersections, Placer County uses the overall weighted average control delay for movements yielding the right-of-way. For side-street stop controlled intersections in the Town of Loomis, the average control delay for the movement with the greatest delay is reported.

**TABLE 10**
**EXISTING PLUS PROJECT ROADWAY SEGMENT**
**LEVEL OF SERVICE ON TAYLOR ROAD**

| Location | Lanes | Minimum LOS | Volume Threshold | Existing | | Existing Plus Project | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Daily Volume | Level of Service | Daily Volume | | Level of Service |
| | | | | | | Project Only | Total | |
| West of Access | 2 | C | 14,400 | 7,380 | A | 70 | 7,450 | A |
| East of Access | 2 | C | 14,400 | 7,380 | A | 184 | 7,564 | A |

## Access Design

**Sight Distance.** The proposed access has already been improved to Plate 116 standards which include provisions for sight distance that is commensurate with the design speed of the road. In this case, the design speed of 55 mph on Taylor Road which requires corner sight distance of 605 feet. This sight distance is available.

**Need for Left Turn Lane Channelization.** The methodology employed by Caltrans and local agencies was used to quantitatively determine whether a left turn lane may be justified in this case. The American Association of State Transportation and Highway Officials (AASHTO) have identified guidelines for the installation of left turn lanes in their publication *A Policy on Geometric Design of Highways and Streets*. These guidelines, which are presented in their Exhibit 9-75 and Table 11, base the need for a left turn lane on the volume of traffic on the mainline road and the relative percentage of that traffic that turns. These criteria are applicable to intersections where the major street traffic proceeds freely and side street traffic is controlled by stop signs and would indicate whether the interference caused by vehicles waiting to turn justifies a separate turn lane.

The need for a left turn lane would be based on the volume occurring in the a.m. peak hour because background traffic is the greatest at that time and the highest number of left turns will occur. At that time the project could generate 35 left turns per hour into the site. These left turns represent 6% of the advancing westbound volume (567 vehicles). As noted in Table 11, the total opposing eastbound traffic volume (i.e., 325 vehicles per hour) would require 430 to 550 advancing vehicles with left turns in the range of 5% to justify a left turn lane at 50 mph. Therefore, because the advancing volume of 567 vehicles exceeds this volume range a left turn lane could be justified under these criteria.

A similar evaluation was conducted for conditions during the afternoon peak and p.m. peak hour. In the afternoon peak hour the project could generate 12 left turns per hour into the site. These left turns represent 4% of the total advancing westbound volume (284 vehicles). As noted in Table 11, justifying a left turn lane with the expected total opposing eastbound traffic volume (i.e., 514 vehicles per hour) would require 350 to 430 advancing vehicles with left turns in the

range of 5% to justify a left turn lane at 50 mph, or 290 to 365 opposing vehicles at 60 mph. The advancing volume forecast (284) falls below that range for speeds of 50 and 60 mph. Therefore, a left turn lane is not justified under these criteria.

The project could generate 11 left turns per hour into the site in the regular p.m. peak hour. These left turns represent 6% of the advancing westbound volume (171 vehicles). As noted in Table 11, the total opposing eastbound traffic volume (i.e., 529 vehicles per hour) would require 350 to 430 advancing vehicles with left turns in the range of 5% to justify a left turn lane at 50 mph, or 290 to 365 opposing vehicles at 60 mph. The forecast advancing volume of 171 falls below either of those ranges. Therefore, a left turn lane is not justified under these criteria during that time period.

When an event occurs the project could generate 51 left turns per hour into the site in the p.m. peak hour. These left turns represent 24% of the advancing westbound volume (211 vehicles). As noted in Table 11, the total opposing eastbound traffic volume (i.e., 569 vehicles per hour) would require 195 to 240 advancing vehicles with left turns in the range of 20% to justify a left turn lane at 50 mph, or 160 to 200 opposing vehicles at 60 mph. The forecast advancing volume of 211 exceeds either of those ranges. Therefore, a left turn lane could be justified under these criteria during that time period.

Satisfying AASHTO guidelines is just one factor considered by Placer County in determining whether to install a separate left turn lane. Other factors may include available sight distance, available shoulder area and the duration of peak traffic. Today the sight distance for approaching vehicles traveling on Taylor Road is good, and following motorists have a clear view of traffic slowing to use the site access. Taylor Road is also equipped with paved shoulders that would provide maneuvering room for following vehicles as well. In this case, the project's regular traffic would be concentrated into relatively short time periods, and as a result the turn lane would not be needed for most of the day. The absence of a left turn lane is not a significant safety impact, and a left turn lane is therefore not recommended.

It is possible that special events occurring during peak traffic periods may create more unusual circumstances that justify action since other motorists may not be expecting these conditions. This is a ***significant safety impact*** that can be mitigated.

While widening the roadway to create left turn lane is not needed, other safety related measures such as temporary advance warning signs that inform background traffic of the events would be applicable. These measures should be a part of a *Traffic Management Plan (TMP)* to be submitted for Placer County approval and implemented when identified events of a specific size and schedule occur. With this mitigation the impact is not significant.

**TABLE 11**
**TRAFFIC VOLUMES JUSTIFYING LEFT TURN LANES**
**AT TAYLOR ROAD ACCESS**

| Opposing Volume (veh/hr) | Advancing Volume (veh/hr) | | | |
|---|---|---|---|---|
| | 5% Left Turns | 10% Left Turns | 20% Left Turns | 30% Left Turns |
| 50-mph operating speed | | | | |
| 800 | 280 | 210 | 165 | 135 |
| 600 | 350 | 260 | 195 | 170 |
| *569* | - | - | *211 (24%)* | - |
| *529* | *171 (6%)* | - | - | - |
| 514 | 284 (4%) | - | - | - |
| 400 | 430 | 320 | 240 | 210 |
| 325 | 567 (6%) | - | - | - |
| 200 | 550 | 400 | 300 | 270 |
| 100 | 615 | 445 | 335 | 295 |
| 60-mph operating speed | | | | |
| 800 | 230 | 170 | 125 | 115 |
| 600 | 290 | 210 | 160 | 140 |
| *569* | - | - | 211 (24%) | - |
| *529* | 171 (6%) | - | - | - |
| 514 | 284 (4%) | | - | - |
| 400 | 365 | 270 | 200 | 175 |
| 325 | 567 (6%) | 330 | 250 | 215 |
| 200 | 450 | | - | - |
| 100 | 505 | 370 | 275 | 240 |

Source: *A Policy on Geometric Design of Highway and Streets, AASHTO, 2004.*

AM Peak Hour Existing Plus Project volume at Taylor Road Access *Satisfied*

Afternoon Peak hour Existing Plus Project volume at Taylor Road Access – *Not Satisfied*

PM Peak hour Existing Plus Project volume at Taylor Road Access- *Not Satisfied*

PM Peak Hour – Existing Plus Event volume at Taylor Road Access - *Satisfied*

## Impacts to Alternative Transportation Modes

**Pedestrian Facilities.** Due to its rural location and the distances involved from the project to student and employee residences which are closer to Auburn, this project is unlikely to attract pedestrians as part of the day to day travel associated with the school. As discussed under trip distribution, nearly all students originate at locations beyond the Loomis area and are bussed to the site. As part of its frontage improvements the project will perpetuate paved shoulders that can be used by pedestrians. Thus, the project's impact on pedestrians is not significant.

**Bicycle Facilities.** Similarly, the distances involved between the site employee and student residences make appreciable bicycle use unlikely. As noted earlier, as part of previous frontage improvements the project access satisfies Plate 116 improvement standards in a manner that accommodates bicyclists, and the volume of project traffic accessing Taylor Road at the access is

too small to result in appreciable conflicts between automobiles and bicyclists. The project does not result in any unsafe condition for bicyclists and does not conflict with planned bicycle facilities identified in adopted plans. Thus, the project's impact on bicycles is not significant.

**Transit.** Because the bus route runs by the site the project could theoretically result in result in employees who elect to use of Placer Transit's Taylor Road shuttle. While no current employees reside in areas that are readily served by Placer Transit, this could change in the future. However, it is unlikely that the resulting transit demand would be large to be judged to be significant nor enough to justify a designated transit stop or improvements that would accompany a stop, like a covered shelter.

## LONG TERM CUMULATIVE CONDITIONS

This section of this traffic study describes operating conditions under long-term background scenarios that are representative of conditions occurring twenty years in the future. The Long Term Cumulative conditions reflect development of future land uses and implementation of transportation improvement projects in the area as forecast by the Town of Loomis' regional travel demand forecasting model.

The Cumulative No Project scenario establishes a baseline condition for identifying long-term project-related impacts. While the project site was last used as a Bed & Breakfast / Events Center, the No Project condition assumes that the proposed project is not constructed and that the site remains vacant. The Cumulative plus Project condition assumes that site is developed as proposed.

One development proposal, the Village at Loomis, is under consideration by the Town of Loomis while this report is being prepared. Its land use characteristics differ from those identified under the Town's General Plan. The Village at Loomis would construct elements of the Town's Circulation Element for which funding has not been identified nor guaranteed. For these reasons, the cumulative alternative addresses an Alternative Cumulative Scenario without the Village at Loomis and its associated roadway improvements.

### Background Traffic Volume Forecasts

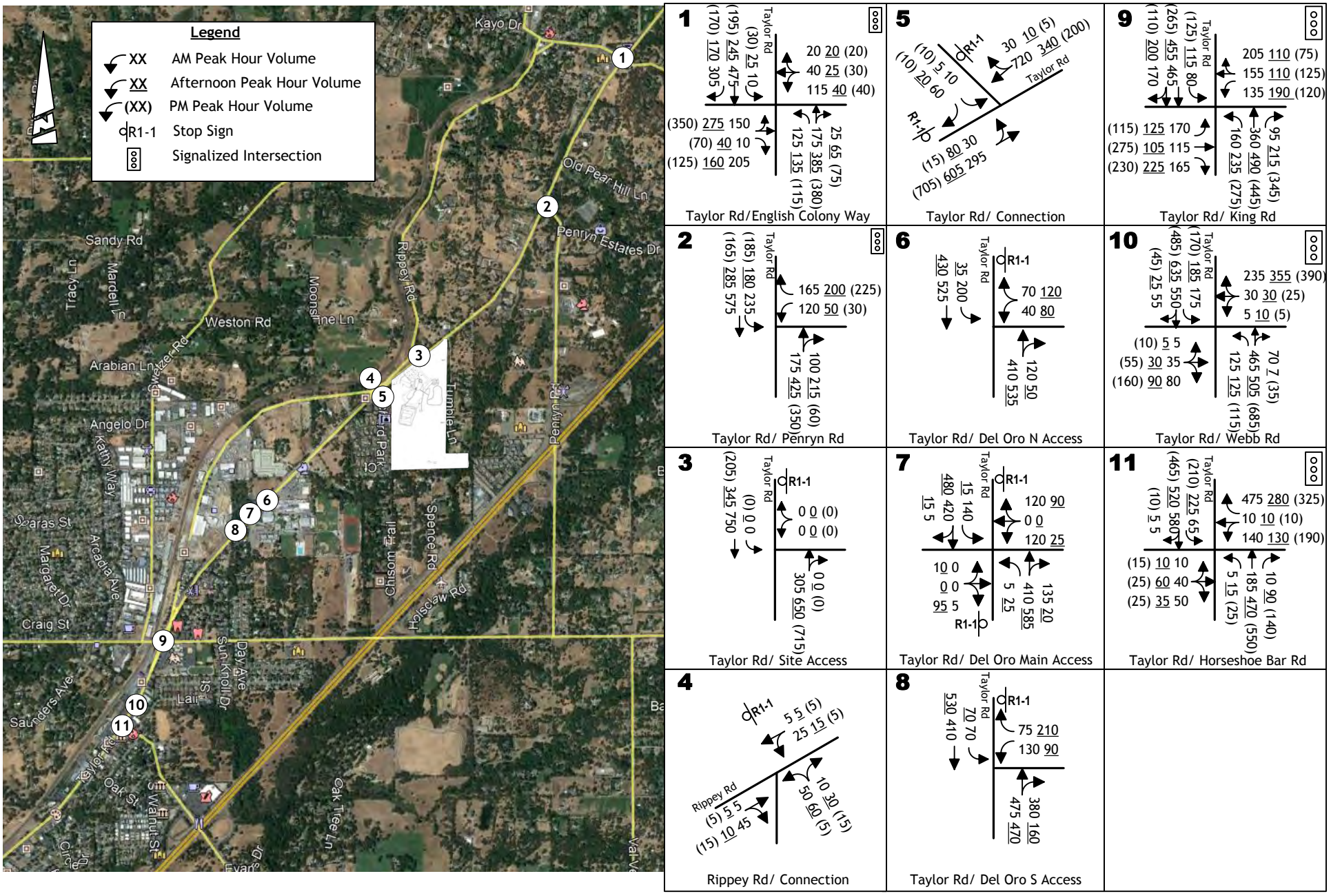
**Land Use.** Cumulative traffic volumes were created using the version of the Loomis regional travel demand forecasting model created for *The Village at Loomis Draft Environmental Impact Report.* As requested by Town staff, the model version selected includes build out of The Village at Loomis project.

The Town of Loomis' traffic model was originally created by DKS Associates as one of two models derived from the original Placer County regional traffic model. The model encompasses the multi-county SACOG area and reflects development inside and outside of the Town of Loomis. Recent and planned development in the communities adjoining Loomis is reflected in the model's long term land use assumptions.

An Alternative Cumulative Scenario was analyzed assuming that the Village at Loomis is not approved and developed. For that alternative, Placer County staff considered development permitted under the Town of Loomis General Plan as well as the land use assumed for the Village at Loomis site in the Town's traffic model. The traffic model's year 2030 land use set includes 433 single family residences and 211.6 ksf of retail on The Village at Loomis. Review of the maximum buildout potential for the site derived from residential density and non-residential intensity indicates that development under these assumptions could be allowed based on General Plan land use designations. Based on this review the alternative cumulative background condition assumes future traffic model land uses.

Development of this site without The Village at Loomis but with land uses permitted under the General Plan would not necessarily be accompanied by the streets contemplated in The Village proposal, and Placer County staff considered how access may be achieved given the status of the Town's CIP and traffic fee program. Without The Village at Loomis completion of the Doc Barnes Extension from Horseshoe Bar Road to King Road the Webb Street Extension is not certain. Thus, while it is likely that the individual parcels within The Village site that are developed may be linked by local streets, there is no guarantee that these connecting streets would provide through routes for other public traffic. Thus, this analysis assumes development under the General Plan will be able to access King Road, Horseshoe Bar Road and Webb Street, but that no through traffic will occur across The Village at Loomis site.

**Methodology.** The modified model was run with and without The Village at Loomis development and its streets to create a.m. and p.m. peak hour segment volume forecasts for study area roadways under the Cumulative No Project and Alternative Cumulative No Project condition. These forecasts were compared to the base model (Year 2008) forecasts, and the incremental change in daily and peak hour traffic was identified. These increments were added to baseline volumes to create adjusted future forecasts as well as growth rates for individual roadway segments based on this comparison. These growth rates were then applied to the current a.m., afternoon and p.m. peak hour turning movement counts at each study intersection, and the results were balanced using the techniques contained in *Transportation Research Board's (TRB's) NCHRP report 255, Highway Data for Urbanized Area Project Planning and Design*. Figure 8 identifies the resulting long term peak hour traffic volume projections for Cumulative No Project conditions that included The Village at Loomis, while Figures 9 and 10 illustrate Cumulative plus Project volumes created by adding the UAIC School Project's trips.

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# CUMULATIVE WITHOUT PROJECT TRAFFIC VOLUMES AND LANE CONFIGURATIONS

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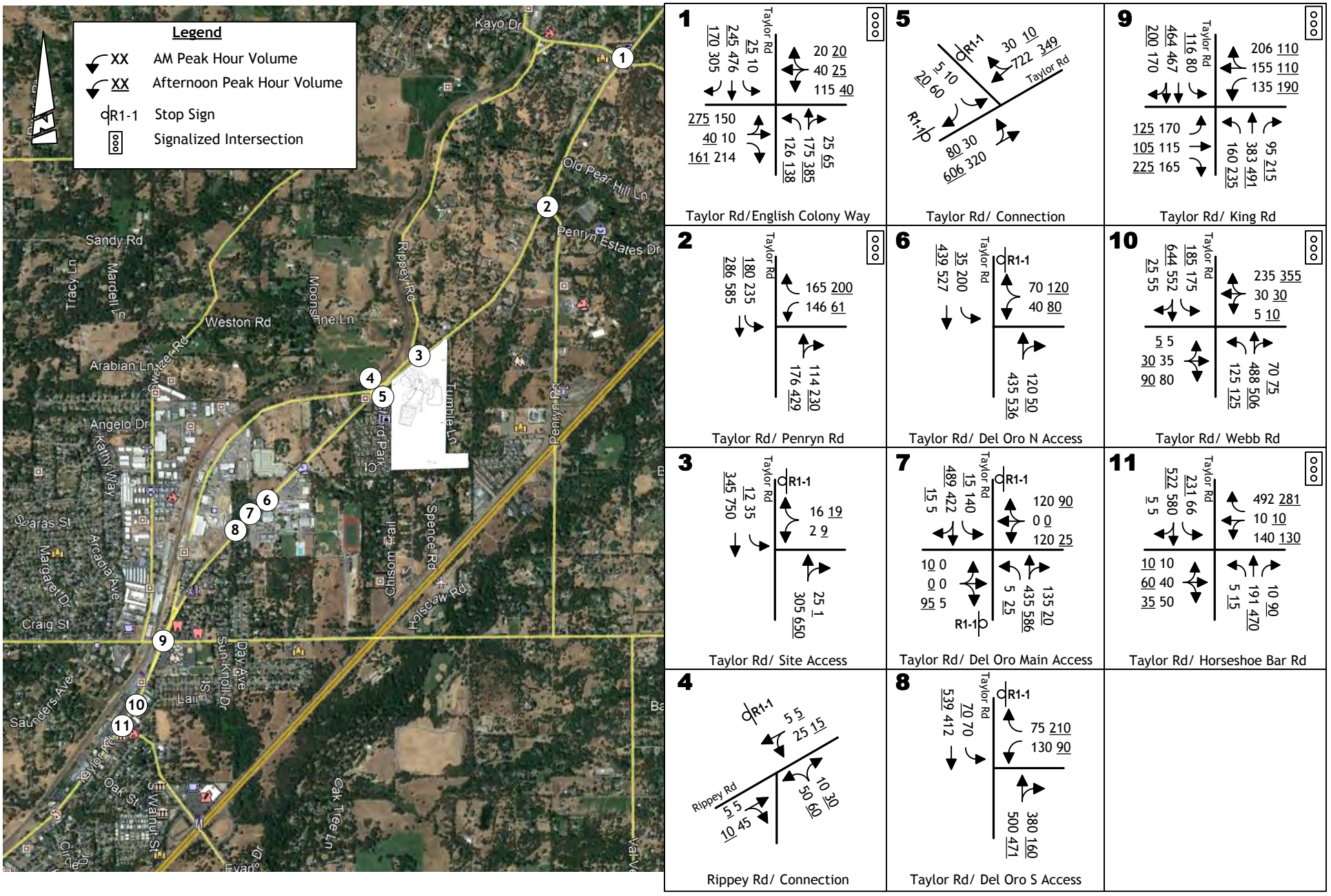
figure 8

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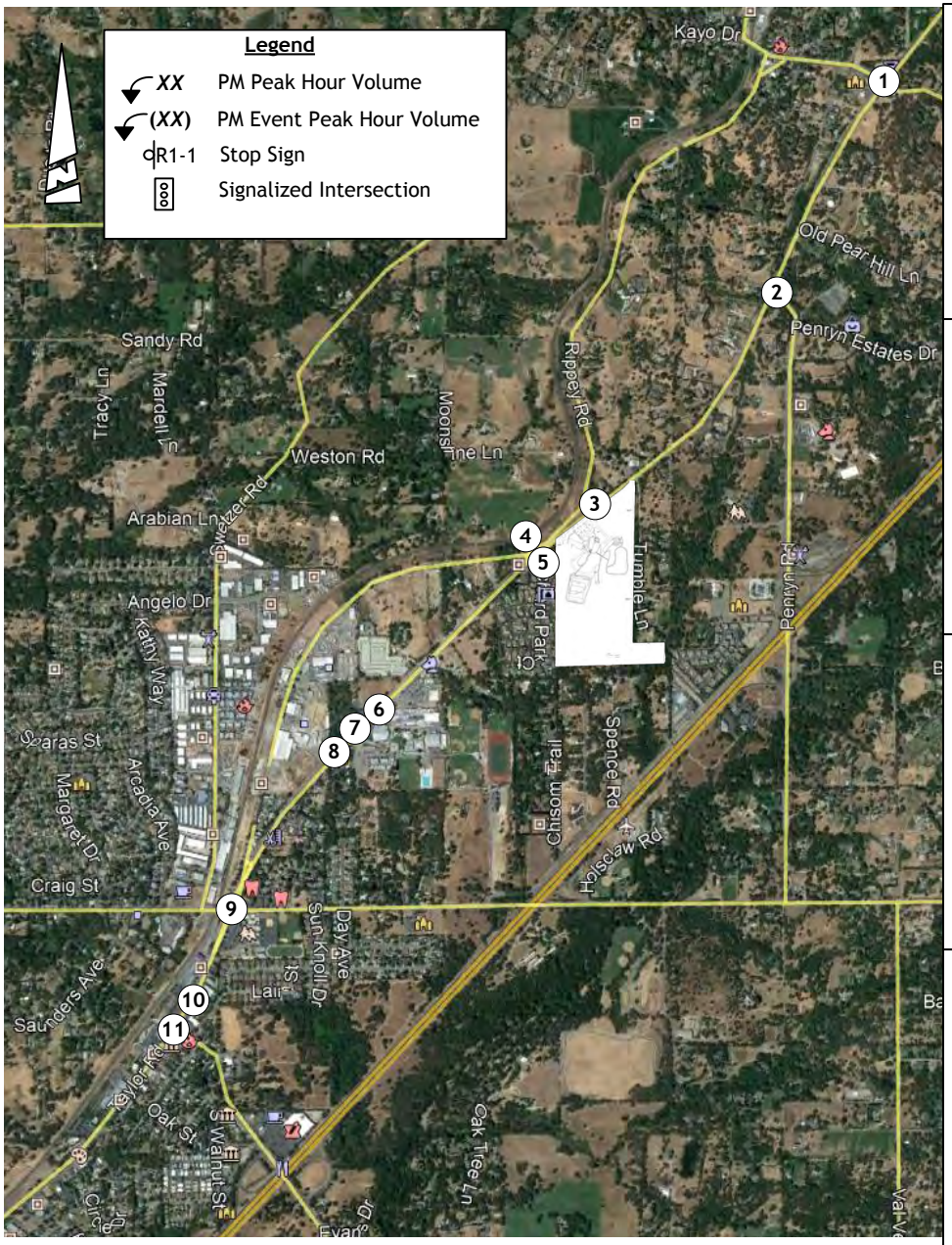
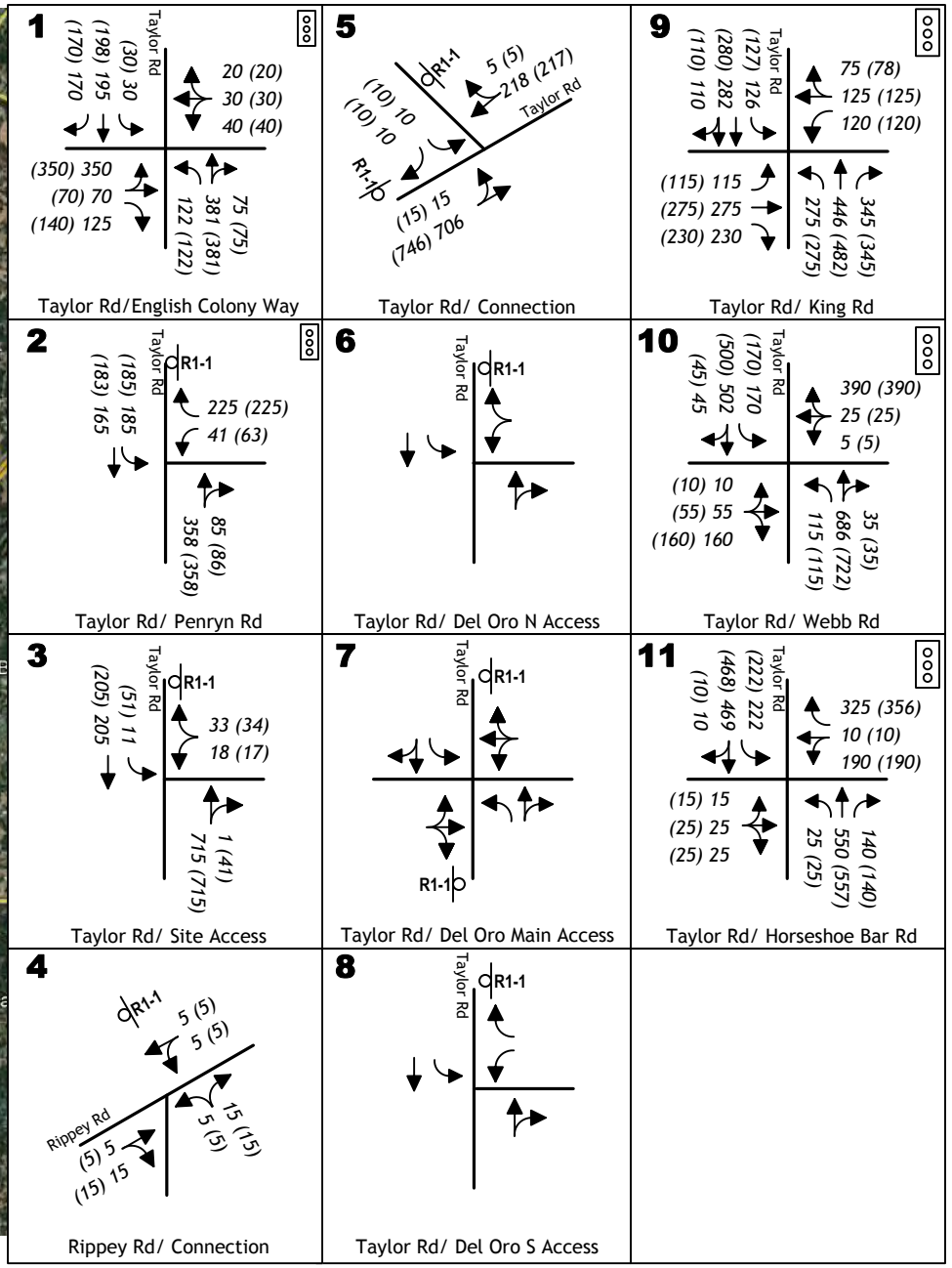
# CUMULATIVE PLUS PROJECT
# TRAFFIC VOLUMES AND LANE CONFIGURATIONS – AM AND AFTERNOON

figure 9

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# CUMULATIVE PLUS PROJECT TRAFFIC VOLUMES AND LANE CONFIGURATIONS – PM PEAK HOUR

6260-21 RA 6/7/2018

figure 10

## Background Roadway Improvements

**Placer County Improvements.** Regional roadway improvements are anticipated under the Newcastle / Horseshoe Bar / Penryn Area Benefit District within the Placer County Traffic Impact Fee Program, as noted in Table 12. These improvements have been assumed to be installed.

**TABLE 12**
**COUNTYWIDE CAPITAL IMPROVEMENT PROGRAMS**

| Street / Intersection | Segment | Description of Improvements |
|---|---|---|
| ***NEWCASTLE / HORSESHOE BAR / PENRYN AREA BENEFIT DISTRICT*** | | |
| English Colony Way | Taylor Road intersection | Signalize |
| English Colony Way | Sierra College Blvd to Taylor Road | Widen for shoulders and bike lanes |
| Penryn Road | Taylor Road intersection | Signalize / Intersection Improvements |
| Taylor Road | Loomis Town limits to Plan Boundary | Bike Lanes and Shoulders |

**Improvements within the Town of Loomis.** This analysis makes alternative assumptions for improvements within the Town of Loomis depending on the presence of The Village at Loomis.

The cumulative background with The Village at Loomis assumes improvements in Loomis that are reasonably certain based on funding through the Town's fee program or their inclusion in the proposed Village at Loomis DEIR project description. These include:

- Doc Barnes Extension from Horseshoe Bar Road to King Road
- Webb Street extension from Taylor Road to Library Drive
- Traffic signal at Taylor Road / Webb Street intersection
- Roundabout at Horseshoe Bar Road / Webb Street / Library Drive intersection

Under the Alternative Cumulative background condition without The Village at Loomis, these improvements are not assumed.

As noted earlier, the Town of Loomis CIP identifies a traffic signal at Del Oro High School access, but no funding has been identified for the signal. Because funding is uncertain, this improvement has not been assumed to be completed in this analysis under either scenario.

## Cumulative No Project Levels of Service With the Village at Loomis

**Cumulative No Project Intersection Levels of Service.** Table 13 displays a.m. afternoon and p.m. peak hour LOS at each study intersection under Cumulative No Project conditions. As shown, under Cumulative No Project conditions, the study intersections in Placer County will operate at LOS C, which satisfies the County's minimum LOS standard.

In Loomis, the signalized **King Road / Taylor Road intersection** will operate at LOS D in the a.m. and p.m. peak hours, which exceeds the LOS C minimum but can be accepted by the Town's Circulation Element. No additional intersection improvements are planned at this location by the Town.

The signalized **Taylor Road / Webb Street intersection** is projected to operate at LOS D in the p.m. peak hour, which exceeds the Town's LOS C minimum. To improve the Level of Service it would be necessary to widen the Webb Street approaches to provide separate right turn lanes. This improvement is identified as a mitigation in the Village at Loomis DEIR.

The un-signalized study intersections in the Town of Loomis would operate with Levels of Service which do not satisfy the minimum LOS C threshold identified for these locations. The deficient locations are described in the text which follows:

At the **Taylor Road / Rippey Road connection intersection** the southbound approach is projected to operate at E in the a.m. peak hour and LOS D in the afternoon. These conditions would not satisfy the Town's minimum LOS C standard.

The projected traffic volumes at this intersection do not satisfy peak hour traffic signal warrants, and no improvements to this intersection are included in the Town of Loomis CIP or fee program. To improve the Level of Service at this intersection it would be necessary to eliminate left turn access from the connection onto Taylor Road, or install a traffic signal or roundabout intersection. While the feasibility of either improvement has not been established, with these improvements the intersection would operate at LOS C or better during the a.m., afternoon and p.m. peak hours. Alternatively, relocating the connection from Rippey Road onto Taylor Road to a different location might improve safety but would not necessarily reduce the average length of delays.

The **Taylor Road intersections with Del Oro HS access** are projected to operate at LOS F during the morning and afternoon peak periods under Cumulative conditions. The Town of Loomis CIP notes that the main western access could be signalized, and a traffic signal with a separate eastbound right turn lane could yield conditions that satisfy the LOS C minimum. It is possible that internal circulation system changes may be made at the school when the intersection is signalized and these changes may improve access at the two remaining locations.

**Cumulative No Project Traffic Signal Warrants.** If the volume of traffic on Taylor Road increases as suggested by the Town of Loomis traffic model, then both the western and central Del Oro HS access intersections would satisfy peak hour warrants in the a.m. peak hour.

**Cumulative No Project Roadway Segment Levels of Service**. Table 14 displays daily traffic volumes on Taylor Road east and west of the project access under long term Cumulative conditions. Current traffic volumes which were reported to be 7,380 ADT are projected to increase to 11,055. However, based on the Placer County GP LOS thresholds, these volumes remain indicative of LOS B conditions without improvements.

## TABLE 13
## CUMULATIVE PLUS PROJECT CONDITIONS WITH THE VILLAGE AT LOOMIS
## PEAK HOUR INTERSECTION LEVELS OF SERVICE

| No. | Intersection | Control | AM Peak Hour (7:15 to 8:30 a.m.) | | | | Afternoon Peak Hour (2:30 to 3:30 p.m.) | | | | PM Peak Hour (4:30 to 5:30 p.m.) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | No Project | | Plus Project | | No Project | | Plus Project | | No Project | | Plus Project | | | |
| | | | | | | | | | | | | | Regular | | Event | |
| | | | Ave Delay (sec/veh) | LOS | Ave Delay (sec/veh) | LOS | Ave Delay (sec/veh) | LOS | Ave Delay (sec/veh) | LOS | Ave Delay (sec/veh) | LOS | Ave Delay (sec/veh) | LOS | Ave Delay (sec/veh) | LOS |
| 1 | Taylor Rd / English Colony Way | Signal | 22.5 | C | 23.3 | C | 24.1 | C | 24.2 | C | 28.5 | C | 28.8 | C | 28.8 | C |
| 2 | Taylor Rd / Penryn Rd* | Signal | 18.1 | B | 31.6 | C | 15.5 | C | 29.2 | C | 20.2 | C | 20.8 | C | 21.3 | C |
| 3 | Taylor Rd / Access | NB Stop | - | - | | | - | - | | | - | - | | | | |
| | (overall) | | | | (9.4) | (A) | | | (16.5) | (C) | | | (19.4) | (B) | (17.5) | (C) |
| | NB approach | | | | 12.0 | B | | | 19.5 | C | | | 21.5 | C | 24.5 | C |
| 4 | Taylor Rd / Rippey Rd SB approach | SB Stop | **39.3** | **E** | **40.3** | **E** | **25.7** | **D** | **26.4** | **D** | 16.4 | C | 16.8 | C | 17.6 | C |
| 5 | Taylor Rd / East Del Oro NB approach | NB Stop | >999 | F | >999 | F | 287.6 | F | 301.4 | F | - | | | | | |
| 6 | Taylor Rd / Central Del Oro | NB/SB Stop | | | | | | | | | | | | | | |
| | NB approach | | >999 | F | >999 | F | 231.8 | F | 253.5 | F | | | | | | |
| | SB approach | | 12.6 | B | 12.6 | B | 54.3 | F | 57.3 | F | | | | | | |
| 7 | Taylor Rd / West Del Oro NB approach | NB Stop | 250.2 | F | 285.4 | F | 130.6 | F | 135.8 | F | | | | | | |
| 8 | Taylor Rd / King Rd | Signal | **53.9** | **D**** | **54.4** | **D**** | 34.8 | C | **35.2** | **D**** | **39.9** | **D**** | **40.3** | **D**** | **40.2** | **D**** |
| 9 | Taylor Road / Webb Street | Signal | 29.3 | C | 29.3 | C | 34.8 | C | **35.0** | **D**** | **40.8** | **D**** | **40.7** | **D**** | **44.7** | **D**** |
| 10 | Taylor Road / HBR | Signal | 27.0 | C | 27.8 | C | 28.3 | C | 28.5 | C | 29.2 | C | 29.9 | C | 30.5 | C |

**Bold** values are conditions at public road intersections in excess of applicable minimum Levels of Service. **Highlighted** Values are a significant impact. (*) based on Simtraffic simulation analysis. Conditions at Del Oro HS driveways are for information only and are not significance criteria. (**) Town of Loomis Circulation Element allows the Town to accept LOS D at this intersection.

The overall average intersection control delay is reported in seconds per vehicle for signalized and all-way stop controlled locations. For side street stop controlled intersections, Placer County uses the overall weighted average control delay for movements yielding the right-of-way. For side-street stop controlled intersections in the Town of Loomis, the average control delay for the movement with the greatest delay is reported.

**TABLE 14**
**CUMULATIVE PLUS PROJECT**
**ROADWAY SEGMENT LEVEL OF SERVICE**
**ON TAYLOR ROAD**

| Location | Lanes | Minimum LOS | Volume Threshold | Existing | | Cumulative | | Cumulative Plus Project | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Daily Volume | Level of Service | Daily Volume | Level of Service | Daily Volume | | Level of Service |
| | | | | | | | | Project Only | Total | |
| ***With The Village at Loomis*** | | | | | | | | | | |
| West of Access | 2 | C | 14,400 | 7,380 | A | 11,055 | B | 70 | 11,125 | B |
| East of Access | 2 | C | 14,400 | 7,380 | A | 11,055 | B | 184 | 11,239 | B |
| ***Alternative Cumulative Without The Village at Loomis*** | | | | | | | | | | |
| West of Access | 2 | C | 14,400 | 7,380 | A | 10,955 | B | 70 | 11,025 | B |
| East of Access | 2 | C | 14,400 | 7,380 | A | 10,955 | B | 184 | 11,139 | B |

## Cumulative Plus Project Levels of Service With The Village at Loomis

**Cumulative Plus Project Intersection Levels of Service.** The UAIC School project will add a small amount of traffic to study area intersections under long term cumulative conditions. As shown in Table 13, the addition of project trips will not change the Level of Service at the two signalized study area intersections in Placer County, and anticipated conditions remain within the minimum LOS C standard at both locations. Thus, the project's cumulative impact at these locations is not significant.

In Loomis, the signalized **King Road / Taylor Road intersection** will continue to operate at LOS D in the a.m. and p.m. peak hours with and without the project, and the project will cause the intersection to operate at LOS D in the afternoon. While the minimum LOS C standard is exceeded, LOS D can be accepted under the policies contained in the Loomis Circulation Element. However, because the Town of Loomis may not elect to accept LOS D, the project's impact at this location is significant.

Measures to improve the Level of Service at this intersection would include installation of additional community-wide improvements that are described in the Town of Loomis Circulation Element but not funded. For example, the Swetzer Road extension from Sierra College Blvd across Webb Street to King Road would alter local travel patterns, and with that improvement the Village at Loomis DEIR indicates that long term conditions at the King Road / Taylor Road intersection would meet the Town's LOS C standard in the p.m. peak hour but LOS D would remain in the a.m. peak hour. However, because these improvements are not funded and Placer County has no control over the construction or funding for this improvement, there is no guarantee that improvements will be installed and ***the project's impact is significant and unavoidable.***

The project will add traffic to the signalized **Taylor Road / Webb Street intersection** which is projected to operate at LOS D in the p.m. peak hour with and without the project, and project trips will cause the intersection to operate at LOS D in the afternoon. LOS D exceeds the Town's minimum LOS C standard but can be accepted under the Circulation Element. Measures to improve the Level of Service at this location include widening the Webb Street approaches to provide separate right turn lanes. This improvement is a mitigation measure in the Village at Loomis DEIR. However, because the Town of Loomis may not choose to accept LOS D, because there is no guarantee that The Village at Loomis will be approved and install the improvement and because Placer County does not control funding for this improvement, there is no guarantee that mitigation will be installed, and ***the project's impact is significant and unavoidable.***

The project will add traffic to the other un-signalized Taylor Road intersections in the Town of Loomis, and while Levels of Service will not change, delays for motorists waiting to turn onto Taylor Road may increase. The un-signalized Taylor Road / Del Oro HS access intersections will operate at LOS F with and without the project. However, impacts to private driveways are not significance criteria under Town of Loomis policy, nor have the intersections been addressed in other studies prepared for the Town.

The project will add traffic to the un-signalized **Taylor Road / Rippey Road intersection** which will operate at LOS E in the a.m. peak hour and LOS D in the afternoon with and without the project. The Town of Loomis has not adopted significance criteria for situations at intersections where background traffic conditions already exceed their minimum standard, but any change in delay has been judged a significant impact in other Loomis traffic studies. Based on Town of Loomis precedent, the impact is judged to be significant.

Improvement options would remain as discussed under No project conditions. However, improvements are not funded and are not in the Town's impact fee program. It also appears that no development project in Loomis has been required to participate in the costs of improvements at this location. Because there is no guarantee that mitigation will be installed, ***the UAIC project's cumulative impact to the Taylor Road / Rippey Road intersection is significant and unavoidable.***

**Cumulative Plus Project Roadway Segment Levels of Service**. Table 14 also displays daily traffic volumes and Levels of Service on Taylor Road under long term Cumulative conditions. As shown, Taylor Road is projected to operate at LOS B with the project. As LOS B satisfies the County's minimum LOS C standard, the project's impact is not significant and no mitigation is required.

**Alternative Cumulative No Project Levels of Service Without the Village at Loomis**

Figure 11 presents cumulative background traffic volumes assuming that The Village at Loomis project does not proceed and associated roadways are not constructed.

**Alternative Cumulative No Project Intersection Levels of Service.** Table 15 displays a.m., afternoon and p.m. peak hour LOS at each study intersection under the Alternative Cumulative No Project conditions. As shown, under Alternative Cumulative No Project conditions, the study intersections in Placer County will operate at LOS C, which satisfies the County's minimum LOS standard.

In Loomis, the signalized **King Road / Taylor Road intersection** will operate at LOS E in the a.m. peak hour and LOS D in the afternoon and p.m. peak hour, which exceeds the LOS C minimum. LOS D can be accepted by the Town's Circulation Element. No additional intersection improvements are planned at this location by the Town, and improving conditions at this location would require implementation of unfunded Circulation Element improvements.

The un-signalized **Taylor Road / Webb Street intersection** is projected to operate at LOS F during all time periods, which exceeds the Town's LOS C minimum. To improve the Level of Service it would be necessary to limit both of the Webb Street approaches to right turn only or to implement unfunded improvements included in Circulation Element, including signalization of the intersection. However, without other improvements to reduce the volume of Taylor Road traffic, the operation of closely spaced signals at Horseshoe Bar Road and Webb Street could be problematic due to queueing.

The **Taylor Road / Horseshoe Bar Road intersection** is projected to operate at LOS D in the a.m. and afternoon peak hour and LOS E in the p.m. peak hour. Both of these conditions exceed the minimum LOS C threshold, although LOS D can be accepted by the Town. No local intersection improvements are anticipated, and improving the Level of Service at this intersection would require implementing unfunded Circulation Element improvements such as the Webb Street extension and the Doc Barnes Extension.

Conditions at the other un-signalized study intersections in the Town of Loomis would be similar to those associated with the cumulative conditions that include The Village at Loomis These intersections operate with Levels of Service which do not satisfy the minimum LOS C threshold identified for these locations. The deficient locations are described in the text which follows:

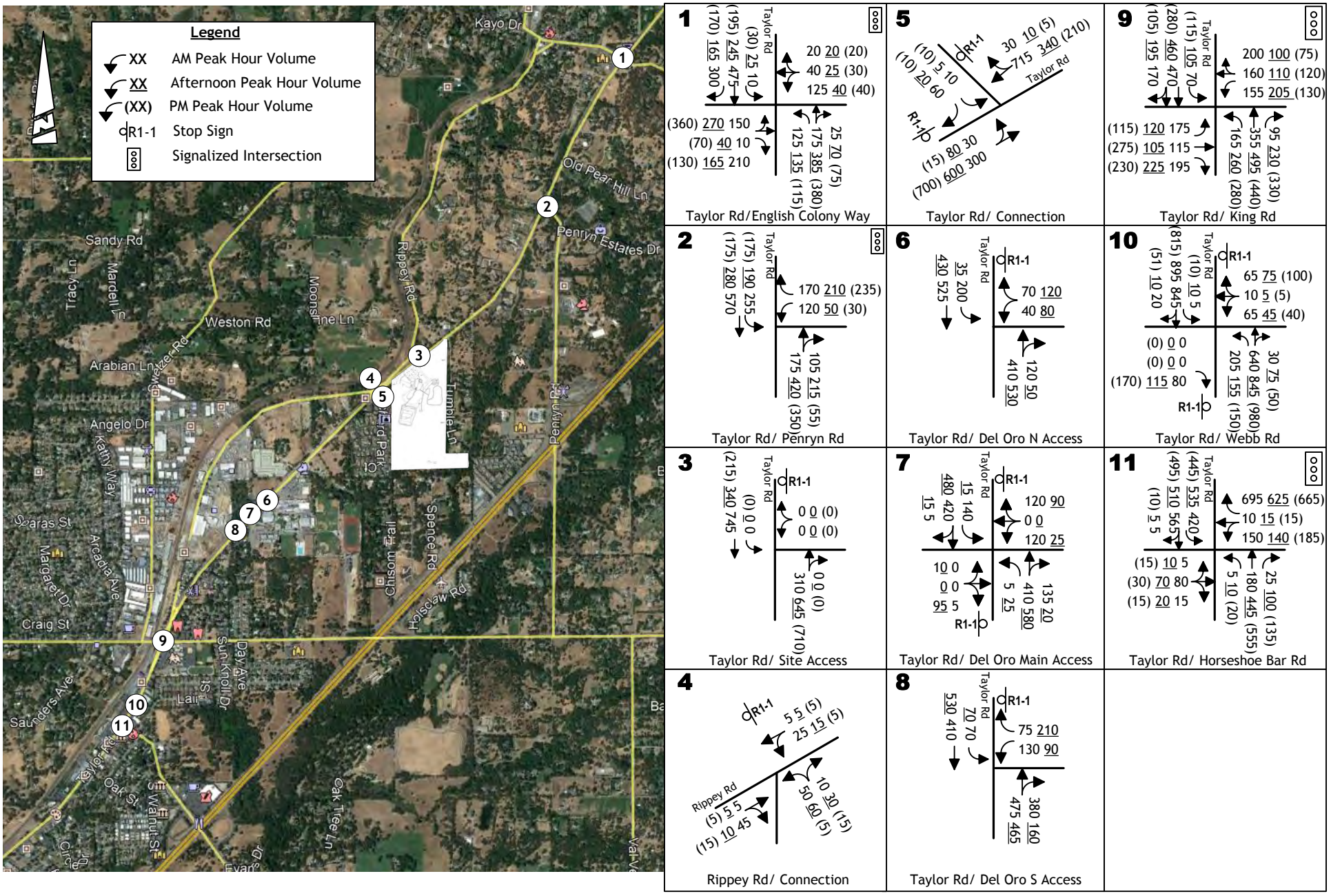
At the **Taylor Road / Rippey Road connection intersection** the southbound approach is projected to operate at E in the a.m. peak hour and LOS D in the afternoon. These conditions would not satisfy the Town's minimum LOS C standard.

The projected traffic volumes at this intersection do not satisfy peak hour traffic signal warrants, and no improvements to this intersection are included in the Town of Loomis CIP or fee program. To improve the Level of Service at this intersection it would be necessary to eliminate left turn access from the connection onto Taylor Road, or install a traffic signal or roundabout intersection. While the feasibility of either improvement has not been established, with these improvements the intersection would operate at LOS C or better during the a.m., afternoon and p.m. peak hours. Alternatively, relocating the connection from Rippey Road onto Taylor Road to a different location might improve safety but would not necessarily reduce the average length of delays.

The **Taylor Road intersections with Del Oro HS access** are projected to operate at LOS F during the morning and afternoon peak periods under the Alternative Cumulative conditions. The Town of Loomis CIP notes that the main western access could be signalized, and a traffic signal with a separate eastbound right turn lane could yield conditions that satisfy the LOS C minimum. It is possible that internal circulation system changes may be made at the school when the intersection is signalized and these changes may improve access at the two remaining locations.

**Alternative Cumulative No Project Traffic Signal Warrants.** If the volume of traffic on Taylor Road increases as suggested by the Town of Loomis traffic model, then both the western and central Del Oro HS access intersections would satisfy peak hour warrants in the a.m. peak hour. The Taylor Road / Webb Street intersection would also satisfy peak hour traffic signal warrants.

**Alternative Cumulative No Project Roadway Segment Levels of Service**. Table 15 displays daily traffic volumes on Taylor Road east and west of the project access under the Alternative Cumulative conditions. Current traffic volumes which were reported to be 7,380 ADT are projected to increase to 10,955. However, based on the Placer County GP LOS thresholds, these volumes remain indicative of LOS B conditions without improvements.

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# ALTERNATIVE CUMULATIVE WITHOUT PROJECT TRAFFIC VOLUMES AND LANE CONFIGURATIONS

figure 11

## TABLE 15
## ALTERNATIVE CUMULATIVE PLUS PROJECT CONDITIONS
## PEAK HOUR INTERSECTION LEVELS OF SERVICE

| No. | Intersection | Control | AM Peak Hour (7:15 to 8:30 a.m.) | | | | Afternoon Peak Hour (2:30 to 3:30 p.m.) | | | | PM Peak Hour (4:30 to 5:30 p.m.) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | No Project | | Plus Project | | No Project | | Plus Project | | No Project | | Plus Project | | | |
| | | | | | | | | | | | | | Regular | | Event | |
| | | | Ave Delay (sec/veh) | LOS | Ave Delay (sec/veh) | LOS | Ave Delay (sec/veh) | LOS | Ave Delay (sec/veh) | LOS | Ave Delay (sec/veh) | LOS | Ave Delay (sec/veh) | LOS | Ave Delay (sec/veh) | LOS |
| 1 | Taylor Rd / English Colony Way | Signal | 20.7 | C | 21.4 | C | 24.2 | C | 24.1 | C | 30.0 | C | 30.3 | C | 30.3 | C |
| 2 | Taylor Rd / Penryn Rd* | Signal | 19.9 | C | 33.0 | C | 18.7 | C | 27.7 | C | 19.6 | C | 21.2 | C | 21.2 | C |
| 3 | Taylor Rd / Access | NB Stop | - | | (10.9) | (B) | - | | (16.5) | (C) | - | | (19.4) | (C) | (17.5) | (C) |
| | (overall) | | | | | | | | | | | | | | | |
| | NB approach | | | | 17.1 | C | | | 19.5 | C | | | 21.5 | C | 24.5 | C |
| 4 | Taylor Rd / Rippey Rd | SB Stop | | | | | | | | | | | | | | |
| | SB approach | | **39.3** | **E** | **40.3** | **E** | **25.7** | **D** | **26.4** | **D** | 16.4 | C | 16.8 | C | 17.6 | C |
| 5 | Taylor Rd / East Del Oro | NB Stop | | | | | | | | | | | | | | |
| | NB approach | | **>999** | **F** | **>999** | **F** | **287.6** | **F** | **301.4** | **F** | | | | | | |
| 6 | Taylor Rd / Central Del Oro | NB/SB Stop | | | | | | | | | | | | | | |
| | NB approach | | 12.6 | B | 12.6 | B | **54.3** | **F** | **57.3** | **F** | | | | | | |
| | SB approach | | **<999** | **F** | **>999** | **F** | **231.8** | **F** | **253.5** | **F** | | | | | | |
| 7 | Taylor Rd / West Del Oro | NB Stop | | | | | | | | | | | | | | |
| | NB approach | | **260.2** | **F** | **285.4** | **F** | **130.6** | **F** | **135.8** | **F** | | | | | | |
| 8 | Taylor Rd / King Rd | Signal | **60.3** | **E** | **60.6** | **E** | **40.1** | **D**** | **40.5** | **D**** | **38.8** | **D**** | **39.3** | **D**** | **39.0** | **D**** |
| 9 | Taylor Rd / Webb Street | NB/SB Stop | | | | | | | | | | | | | | |
| | NB approach | | **>999** | **F** | **>999** | **F** | **>999** | **F** | **>999** | **F** | **>999** | **F** | **>999** | **F** | **>999** | **F** |
| | SB Approach | | 16.7 | C | 16.7 | C | **25.3** | **D**** | **25.7** | **D**** | **28.3** | **D**** | **30.0** | **D**** | **30.2** | **D**** |
| 10 | Taylor Rd / HBR | Signal | **39.0** | **D**** | **41.0** | **D**** | **46.4** | **D**** | **46.5** | **D**** | **51.3** | **E** | **51.9** | **E** | **68.7** | **E** |

**Bold** values are conditions at public road intersections in excess of applicable minimum Levels of Service **Highlighted** Values are a significant impact. (*) based on Simtraffic simulation analysis. Conditions at Del Oro HS driveways are for information only and are not significance criteria. (**) Town of Loomis Circulation Element allows the Town to accept LOS D at this intersection.

The overall average intersection control delay is reported in seconds per vehicle for signalized and all-way stop controlled locations. For side street stop controlled intersections, Placer County uses the overall weighted average control delay for movements yielding the right-of-way. For side-street stop controlled intersections in the Town of Loomis, the average control delay for the movement with the greatest delay is reported.

**Alternative Cumulative Plus Project Levels of Service Without the Village at Loomis**

Figures 12 and 13 present Alternative Cumulative Plus Project traffic volumes at study area intersections.

**Alternative Cumulative Plus Project Intersection Levels of Service.** The UAIC School project will add a small amount of traffic to study area intersections under long term Alternative Cumulative conditions. As shown in Table 15, the addition of project trips will not change the Level of Service at the two signalized study area intersections in Placer County, and anticipated conditions remain within the minimum LOS C standard at both locations. Thus, the project's cumulative impact at these locations is not significant.

In Loomis, the signalized **King Road / Taylor Road intersection** will continue to operate at LOS E in the a.m. peak hour and LOS D in the afternoon and p.m. peak hours with and without the project. While the minimum LOS C standard is exceeded, LOS D can be accepted under the policies contained in the Loomis Circulation Element. However, because a.m. conditions reach LOS E and the length of delays are increased the project's cumulative impact at this location is significant.

Measures to improve the Level of Service at this intersection would include installation of unfunded community-wide improvements that are described in the Town of Loomis Circulation Element. For example, the Doc Barns Extension and the Swetzer Road extension from Sierra College Blvd across Webb Street to King Road would alter local travel patterns and improve the Level of Service. However, because these improvements are not funded and Placer County has no control over the construction or funding for this improvement, there is no guarantee that improvements will be installed and ***the project's cumulative impact is significant and unavoidable.***

The project will add traffic and lengthen delays at the **Taylor Road / Horseshoe Bar Road intersection** which is projected to operate at LOS D in the a.m. and afternoon peak hour and LOS E in the p.m. peak hour. Both of these conditions exceed the minimum LOS C threshold, although LOS D can be accepted by the Town. No local intersection improvements are anticipated, and improving the Level of Service at this intersection would require implementing unfunded Circulation Element improvements such as the Webb Street extension and the Doc Barnes Extension. However, because these improvements are not funded and Placer County has no control over the construction or funding for this improvement, there is no guarantee that improvements will be installed and ***the project's cumulative impact is significant and unavoidable.***

The project will add traffic and lengthen delays at the un-signalized **Taylor Road / Webb Street intersection** which is projected to operate at LOS F. LOS F exceeds the Town's minimum LOS C standard. Measures to improve the Level of Service at this location include limiting both of the Webb Street approaches to right turn only or to implement unfunded improvements included in Circulation Element, including signalization of the intersection. However, because these

improvements are not funded and Placer County has no control over the construction or funding for this improvement, there is no guarantee that improvements will be installed and ***the project's cumulative impact is significant and unavoidable.***

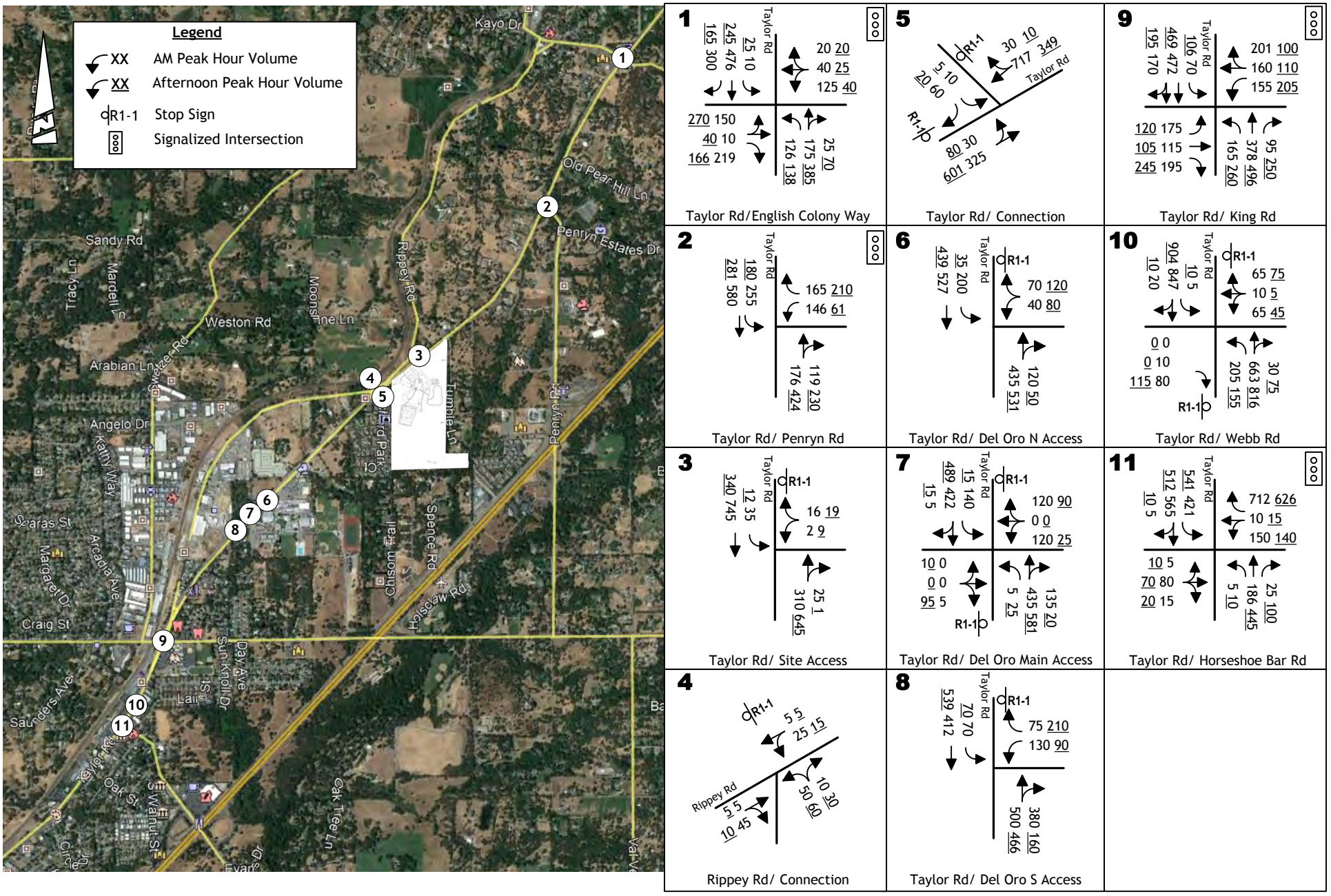
The project will add traffic to the other un-signalized Taylor Road intersections in the Town of Loomis, and while Levels of Service will not change, delays for motorists waiting to turn onto Taylor Road may increase. The un-signalized Taylor Road / Del Oro HS access intersections will operate at LOS F with and without the project. However, impacts to private driveways are not significance criteria under Town of Loomis policy, nor have the intersections been addressed in other studies prepared for the Town.

The project will add traffic to the un-signalized **Taylor Road / Rippey Road intersection** which will operate at LOS E in the a.m. peak hour and LOS D in the afternoon with and without the project. The Town of Loomis has not adopted significance criteria for situations at intersections where background traffic conditions already exceed their minimum standard, but any change in delay has been judged a significant impact in other Loomis traffic studies. Based on Town of Loomis precedent, the impact is judged to be significant.

Improvement options would remain as discussed under the Cumulative No Project conditions. However, improvements are not funded and are not in the Town's impact fee program. It also appears that no development project in Loomis has been required to participate in the costs of improvements at this location. There is no fee program to ensure that the balance of the cost of the improvement would be funded. Because there is no guarantee that mitigation will be installed, ***the project's cumulative impact to the Taylor Road / Rippey Road intersection is significant and unavoidable.***

**Alternative Cumulative Plus Project Traffic Signal Warrants.** If the volume of traffic on Taylor Road increases as suggested by the Town of Loomis traffic model with project trips, then both the western and central Del Oro HS access intersections would satisfy peak hour warrants in the a.m. peak hour. The Taylor Road / Webb Street intersection would also satisfy peak hour traffic signal warrants. No additional locations satisfy warrants with project traffic.

**Alternative Cumulative Plus Project Roadway Segment Levels of Service**. Table 15 also displays daily traffic volumes and Levels of Service on Taylor Road under long term Cumulative conditions. As shown, Taylor Road is projected to operate at LOS B with the project. As LOS B satisfies the County's minimum LOS C standard, the project's impact is not significant and no mitigation is required.




ALTERNATIVE CUMULATIVE PLUS PROJECT
TRAFFIC VOLUMES AND LANE CONFIGURATIONS – AM AND AFTERNOON

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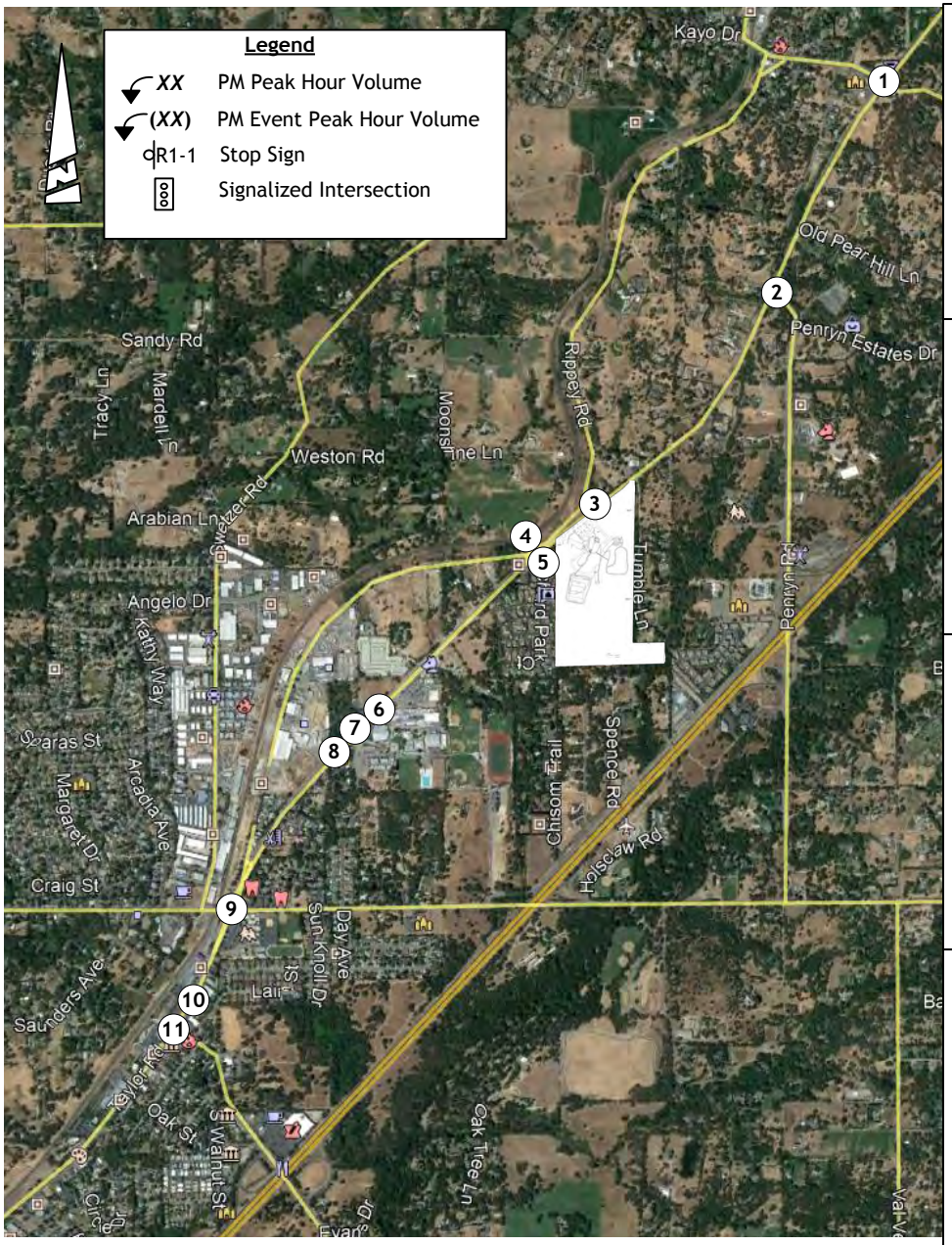
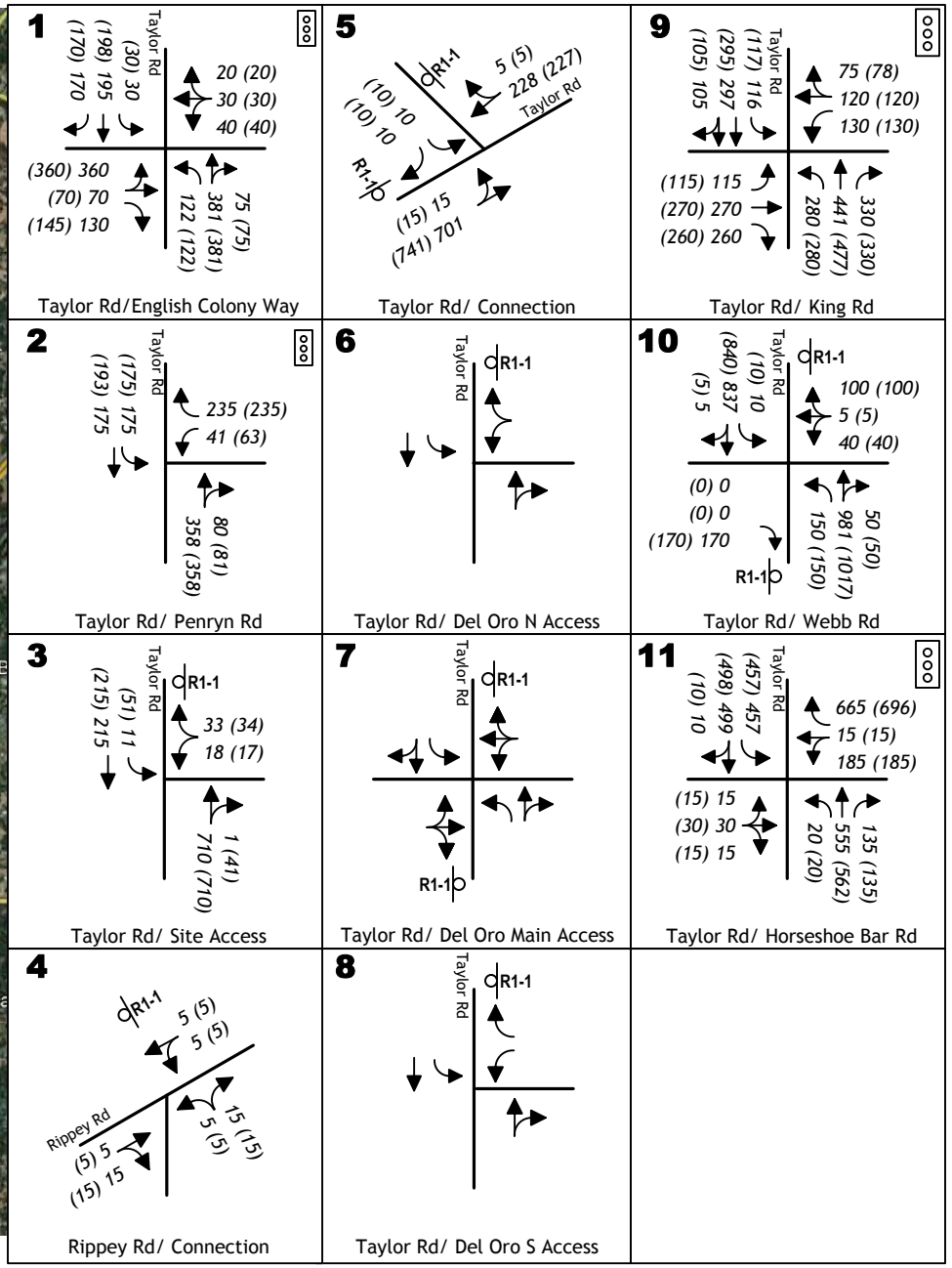
figure 12




# ALTERNATIVE CUMULATIVE PLUS PROJECT
# TRAFFIC VOLUMES AND LANE CONFIGURATIONS – PM PEAK HOUR

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6260-21 RA 6/7/2018

figure 13

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# APPENDICES

(under separate cover)

# TECHNICAL APPENDIX 1 of 3

**FOR**

**UNITED AUBURN INDIAN COMMUNITY SCHOOL PROJECT**
**TRAFFIC IMPACT ANALYSIS**
Placer County, CA

Prepared For:

**RANEY PLANNING & MANAGEMENT**
1501 Sports Drive
Sacramento, CA 95834

Prepared By:

**KD Anderson & Associates, Inc.**
3853 Taylor Road, Suite G
Loomis, CA 95650
(916) 660-1555

June 25, 2018

5765-21

# ALL TRAFFIC DATA

**(916) 771-8700**
orders@atdtraffic.com

5765-21

File Name : 17-08163-001
Date : 12/12/2017

**Unshifted Count = All Vehicles & Uturns**

| | Taylor Rd Southbound | | | | | Horseshoe Bar Rd Westbound | | | | | Taylor Rd Northbound | | | | | Horseshoe Bar Rd Eastbound | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| START TIME | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | Total | Uturns Total |
| 7:00 | 115 | 44 | 0 | 0 | 159 | 13 | 1 | 107 | 0 | 121 | 1 | 48 | 6 | 0 | 55 | 0 | 8 | 1 | 0 | 9 | 344 | 0 |
| 7:15 | 76 | 66 | 1 | 0 | 143 | 5 | 0 | 142 | 0 | 147 | 0 | 86 | 6 | 0 | 92 | 3 | 12 | 1 | 0 | 16 | 398 | 0 |
| 7:30 | 103 | 67 | 0 | 0 | 170 | 10 | 3 | 140 | 0 | 153 | 2 | 65 | 6 | 0 | 73 | 0 | 27 | 2 | 0 | 29 | 425 | 0 |
| 7:45 | 99 | 107 | 0 | 0 | 206 | 13 | 3 | 118 | 0 | 134 | 1 | 79 | 7 | 0 | 87 | 3 | 24 | 4 | 0 | 31 | 458 | 0 |
| Total | 393 | 284 | 1 | 0 | 678 | 41 | 7 | 507 | 0 | 555 | 4 | 278 | 25 | 0 | 307 | 6 | 71 | 8 | 0 | 85 | 1625 | 0 |
| 8:00 | 99 | 93 | 2 | 0 | 194 | 14 | 0 | 117 | 0 | 131 | 2 | 63 | 9 | 0 | 74 | 3 | 19 | 2 | 0 | 24 | 423 | 0 |
| 8:15 | 87 | 115 | 3 | 0 | 205 | 15 | 1 | 126 | 0 | 142 | 1 | 83 | 8 | 0 | 92 | 0 | 12 | 3 | 0 | 15 | 454 | 0 |
| 8:30 | 66 | 92 | 0 | 0 | 158 | 15 | 1 | 72 | 0 | 88 | 0 | 45 | 8 | 0 | 53 | 0 | 2 | 3 | 0 | 5 | 304 | 0 |
| 8:45 | 71 | 66 | 1 | 0 | 138 | 8 | 1 | 72 | 0 | 81 | 0 | 59 | 8 | 0 | 67 | 2 | 5 | 0 | 0 | 7 | 293 | 0 |
| Total | 323 | 366 | 6 | 0 | 695 | 52 | 3 | 387 | 0 | 442 | 3 | 250 | 33 | 0 | 286 | 5 | 38 | 8 | 0 | 51 | 1474 | 0 |
| 14:00 | 53 | 77 | 0 | 0 | 130 | 24 | 1 | 107 | 0 | 132 | 4 | 106 | 24 | 0 | 134 | 1 | 5 | 4 | 0 | 10 | 406 | 0 |
| 14:15 | 75 | 75 | 2 | 0 | 152 | 21 | 2 | 131 | 0 | 154 | 5 | 108 | 21 | 0 | 134 | 1 | 7 | 1 | 0 | 9 | 449 | 0 |
| 14:30 | 110 | 108 | 3 | 0 | 221 | 19 | 1 | 119 | 0 | 139 | 1 | 95 | 15 | 0 | 111 | 3 | 22 | 5 | 0 | 30 | 501 | 0 |
| 14:45 | 99 | 104 | 0 | 0 | 203 | 26 | 4 | 143 | 0 | 173 | 3 | 99 | 16 | 0 | 118 | 2 | 8 | 2 | 0 | 12 | 506 | 0 |
| Total | 337 | 364 | 5 | 0 | 706 | 90 | 8 | 500 | 0 | 598 | 13 | 408 | 76 | 0 | 497 | 7 | 42 | 12 | 0 | 61 | 1862 | 0 |
| 15:00 | 111 | 110 | 4 | 0 | 225 | 20 | 3 | 126 | 0 | 149 | 2 | 82 | 14 | 0 | 98 | 7 | 25 | 8 | 0 | 40 | 512 | 0 |
| 15:15 | 100 | 127 | 2 | 0 | 229 | 16 | 2 | 113 | 0 | 131 | 2 | 114 | 12 | 0 | 128 | 2 | 11 | 3 | 0 | 16 | 504 | 0 |
| 15:30 | 97 | 92 | 3 | 0 | 192 | 23 | 1 | 114 | 0 | 138 | 3 | 118 | 16 | 0 | 137 | 5 | 6 | 1 | 0 | 12 | 479 | 0 |
| 15:45 | 100 | 104 | 0 | 0 | 204 | 17 | 5 | 127 | 0 | 149 | 3 | 90 | 22 | 0 | 115 | 4 | 9 | 4 | 0 | 17 | 485 | 0 |
| Total | 408 | 433 | 9 | 0 | 850 | 76 | 11 | 480 | 0 | 567 | 10 | 404 | 64 | 0 | 478 | 18 | 51 | 16 | 0 | 85 | 1980 | 0 |
| 16:00 | 107 | 77 | 0 | 0 | 184 | 24 | 4 | 131 | 0 | 159 | 3 | 113 | 12 | 0 | 128 | 5 | 8 | 4 | 0 | 17 | 488 | 0 |
| 16:15 | 96 | 112 | 0 | 0 | 208 | 18 | 3 | 111 | 0 | 132 | 7 | 116 | 19 | 0 | 142 | 7 | 3 | 2 | 0 | 12 | 494 | 0 |
| 16:30 | 120 | 98 | 0 | 0 | 218 | 28 | 1 | 119 | 0 | 148 | 7 | 100 | 20 | 0 | 127 | 3 | 6 | 3 | 0 | 12 | 505 | 0 |
| 16:45 | 79 | 86 | 1 | 0 | 166 | 15 | 2 | 124 | 0 | 141 | 2 | 114 | 31 | 0 | 147 | 5 | 8 | 2 | 0 | 15 | 469 | 0 |
| Total | 402 | 373 | 1 | 0 | 776 | 85 | 10 | 485 | 0 | 580 | 19 | 443 | 82 | 0 | 544 | 20 | 25 | 11 | 0 | 56 | 1956 | 0 |
| 17:00 | 90 | 91 | 0 | 0 | 181 | 17 | 1 | 117 | 0 | 135 | 5 | 109 | 26 | 0 | 140 | 3 | 5 | 2 | 0 | 10 | 466 | 0 |
| 17:15 | 96 | 93 | 1 | 0 | 190 | 15 | 4 | 148 | 0 | 167 | 3 | 105 | 10 | 0 | 118 | 6 | 7 | 1 | 0 | 14 | 489 | 0 |
| 17:30 | 77 | 90 | 1 | 0 | 168 | 12 | 3 | 135 | 0 | 150 | 2 | 104 | 12 | 0 | 118 | 4 | 7 | 2 | 0 | 13 | 449 | 0 |
| 17:45 | 97 | 90 | 0 | 0 | 187 | 24 | 2 | 127 | 0 | 153 | 2 | 90 | 17 | 0 | 109 | 8 | 2 | 6 | 0 | 16 | 465 | 0 |
| Total | 360 | 364 | 2 | 0 | 726 | 68 | 10 | 527 | 0 | 605 | 12 | 408 | 65 | 0 | 485 | 21 | 21 | 11 | 0 | 53 | 1869 | 0 |
| Grand Total | 2223 | 2184 | 24 | 0 | 4431 | 412 | 49 | 2886 | 0 | 3347 | 61 | 2191 | 345 | 0 | 2597 | 77 | 248 | 66 | 0 | 391 | 10766 | 0 |
| Apprch % | 50.2% | 49.3% | 0.5% | 0.0% | | 12.3% | 1.5% | 86.2% | 0.0% | | 2.3% | 84.4% | 13.3% | 0.0% | | 19.7% | 63.4% | 16.9% | 0.0% | | | |
| Total % | 20.6% | 20.3% | 0.2% | 0.0% | 41.2% | 3.8% | 0.5% | 26.8% | 0.0% | 31.1% | 0.6% | 20.4% | 3.2% | 0.0% | 24.1% | 0.7% | 2.3% | 0.6% | 0.0% | 3.6% | 100.0% | |

| **AM PEAK HOUR** | Taylor Rd Southbound | | | | | Horseshoe Bar Rd Westbound | | | | | Taylor Rd Northbound | | | | | Horseshoe Bar Rd Eastbound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| START TIME | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | Total |
| Peak Hour Analysis From 07:30 to 08:30 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour For Entire Intersection Begins at 07:30 | | | | | | | | | | | | | | | | | | | | | |
| 7:30 | 103 | 67 | 0 | 0 | 170 | 10 | 3 | 140 | 0 | 153 | 2 | 65 | 6 | 0 | 73 | 0 | 27 | 2 | 0 | 29 | 425 |
| 7:45 | 99 | 107 | 0 | 0 | 206 | 13 | 3 | 118 | 0 | 134 | 1 | 79 | 7 | 0 | 87 | 3 | 24 | 4 | 0 | 31 | 458 |
| 8:00 | 99 | 93 | 2 | 0 | 194 | 14 | 0 | 117 | 0 | 131 | 2 | 63 | 9 | 0 | 74 | 3 | 19 | 2 | 0 | 24 | 423 |
| 8:15 | 87 | 115 | 3 | 0 | 205 | 15 | 1 | 126 | 0 | 142 | 1 | 83 | 8 | 0 | 92 | 0 | 12 | 3 | 0 | 15 | 454 |
| Total Volume | 388 | 382 | 5 | 0 | 775 | 52 | 7 | 501 | 0 | 560 | 6 | 290 | 30 | 0 | 326 | 6 | 82 | 11 | 0 | 99 | 1760 |
| % App Total | 50.1% | 49.3% | 0.6% | 0.0% | | 9.3% | 1.3% | 89.5% | 0.0% | | 1.8% | 89.0% | 9.2% | 0.0% | | 6.1% | 82.8% | 11.1% | 0.0% | | |
| PHF | .942 | .830 | .417 | .000 | .941 | .867 | .583 | .895 | .000 | .915 | .750 | .873 | .833 | .000 | .886 | .500 | .759 | .688 | .000 | .798 | .961 |

| **PM PEAK HOUR** | Taylor Rd Southbound | | | | | Horseshoe Bar Rd Westbound | | | | | Taylor Rd Northbound | | | | | Horseshoe Bar Rd Eastbound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| START TIME | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | Total |
| Peak Hour Analysis From 14:30 to 15:30 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour For Entire Intersection Begins at 14:30 | | | | | | | | | | | | | | | | | | | | | |
| 14:30 | 110 | 108 | 3 | 0 | 221 | 19 | 1 | 119 | 0 | 139 | 1 | 95 | 15 | 0 | 111 | 3 | 22 | 5 | 0 | 30 | 501 |
| 14:45 | 99 | 104 | 0 | 0 | 203 | 26 | 4 | 143 | 0 | 173 | 3 | 99 | 16 | 0 | 118 | 2 | 8 | 2 | 0 | 12 | 506 |
| 15:00 | 111 | 110 | 4 | 0 | 225 | 20 | 3 | 126 | 0 | 149 | 2 | 82 | 14 | 0 | 98 | 7 | 25 | 8 | 0 | 40 | 512 |
| 15:15 | 100 | 127 | 2 | 0 | 229 | 16 | 2 | 113 | 0 | 131 | 2 | 114 | 12 | 0 | 128 | 2 | 11 | 3 | 0 | 16 | 504 |
| Total Volume | 420 | 449 | 9 | 0 | 878 | 81 | 10 | 501 | 0 | 592 | 8 | 390 | 57 | 0 | 455 | 14 | 66 | 18 | 0 | 98 | 2023 |
| % App Total | 47.8% | 51.1% | 1.0% | 0.0% | | 13.7% | 1.7% | 84.6% | 0.0% | | 1.8% | 85.7% | 12.5% | 0.0% | | 14.3% | 67.3% | 18.4% | 0.0% | | |
| PHF | .946 | .884 | .563 | .000 | .959 | .779 | .625 | .876 | .000 | .855 | .667 | .855 | .891 | .000 | .889 | .500 | .660 | .563 | .000 | .613 | .988 |

# ALL TRAFFIC DATA

**(916) 771-8700**
orders@atdtraffic.com

File Name : 17-08163-001
Date : 12/12/2017

**Bank 1 Count = Bikes & Peds**

| | Taylor Rd Southbound | | | | | Horseshoe Bar Rd Westbound | | | | | Taylor Rd Northbound | | | | | Horseshoe Bar Rd Eastbound | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| START TIME | LEFT | THRU | RIGHT | PEDS | APP.TOTAL | LEFT | THRU | RIGHT | PEDS | APP.TOTAL | LEFT | THRU | RIGHT | PEDS | APP.TOTAL | LEFT | THRU | RIGHT | PEDS | APP.TOTAL | Total | Peds Total |
| 7:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 7:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 2 |
| 7:45 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 1 | 2 | 0 | 0 | 0 | 2 | 0 | 3 | 6 |
| Total | 0 | 2 | 0 | 1 | 2 | 0 | 0 | 0 | 3 | 0 | 0 | 3 | 0 | 1 | 3 | 0 | 0 | 0 | 3 | 0 | 5 | 8 |
| 8:00 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 4 | 0 | 1 | 5 |
| 8:15 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 8:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 8:45 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 9 |
| Total | 0 | 2 | 0 | 1 | 2 | 0 | 0 | 0 | 5 | 0 | 0 | 1 | 0 | 5 | 1 | 0 | 0 | 0 | 4 | 0 | 3 | 15 |
| 14:00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 2 | 2 |
| 14:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 6 |
| 14:30 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 2 | 9 |
| 14:45 | 0 | 2 | 0 | 6 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 11 |
| Total | 0 | 3 | 0 | 7 | 3 | 0 | 1 | 0 | 11 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 1 | 8 | 2 | 6 | 28 |
| 15:00 | 1 | 1 | 0 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 1 | 0 | 0 | 0 | 9 | 0 | 3 | 16 |
| 15:15 | 0 | 3 | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 4 | 1 | 5 | 5 |
| 15:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 6 |
| 15:45 | 0 | 1 | 0 | 2 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 6 |
| Total | 1 | 5 | 0 | 7 | 6 | 0 | 0 | 0 | 3 | 0 | 0 | 2 | 0 | 6 | 2 | 0 | 1 | 0 | 17 | 1 | 9 | 33 |
| 16:00 | 0 | 1 | 0 | 6 | 1 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 1 | 13 |
| 16:15 | 0 | 1 | 3 | 6 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 6 |
| 16:30 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 3 | 3 | 9 |
| 16:45 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| Total | 0 | 2 | 3 | 23 | 5 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 3 | 0 | 5 | 3 | 8 | 33 |
| 17:00 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 17:15 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 4 |
| 17:30 | 0 | 0 | 0 | 3 | 0 | 0 | 2 | 0 | 3 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 2 | 4 | 7 |
| 17:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Total | 0 | 0 | 0 | 9 | 0 | 0 | 2 | 0 | 4 | 2 | 0 | 2 | 0 | 1 | 2 | 0 | 2 | 0 | 1 | 2 | 6 | 15 |
| Grand Total | 1 | 14 | 3 | 48 | 18 | 0 | 3 | 0 | 30 | 3 | 0 | 8 | 0 | 16 | 8 | 0 | 7 | 1 | 38 | 8 | 37 | 132 |
| Apprch % | 5.6% | 77.8% | 16.7% | | | 0.0% | 100.0% | 0.0% | | | 0.0% | 100.0% | 0.0% | | | 0.0% | 87.5% | 12.5% | | | | |
| Total % | 2.7% | 37.8% | 8.1% | | 48.6% | 0.0% | 8.1% | 0.0% | | 8.1% | 0.0% | 21.6% | 0.0% | | 21.6% | 0.0% | 18.9% | 2.7% | | 21.6% | 100.0% | |

| **AM PEAK HOUR** | Taylor Rd Southbound | | | | | Horseshoe Bar Rd Westbound | | | | | Taylor Rd Northbound | | | | | Horseshoe Bar Rd Eastbound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| START TIME | LEFT | THRU | RIGHT | PEDS | APP.TOTAL | LEFT | THRU | RIGHT | PEDS | APP.TOTAL | LEFT | THRU | RIGHT | PEDS | APP.TOTAL | LEFT | THRU | RIGHT | PEDS | APP.TOTAL | Total |
| Peak Hour Analysis From 07:30 to 08:30 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour For Entire Intersection Begins at 07:30 | | | | | | | | | | | | | | | | | | | | | |
| 7:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 |
| 7:45 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 1 | 2 | 0 | 0 | 0 | 2 | 0 | 3 |
| 8:00 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 4 | 0 | 1 |
| 8:15 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Volume | 0 | 2 | 0 | 2 | 2 | 0 | 0 | 0 | 3 | 0 | 0 | 3 | 0 | 2 | 3 | 0 | 0 | 0 | 7 | 0 | 5 |
| % App Total | 0.0% | 100.0% | 0.0% | | | 0.0% | 0.0% | 0.0% | | | 0.0% | 100.0% | 0.0% | | | 0.0% | 0.0% | 0.0% | | | |
| PHF | .000 | .500 | .000 | | .500 | .000 | .000 | .000 | | .000 | .000 | .375 | .000 | | .375 | .000 | .000 | .000 | | .000 | .417 |

| **PM PEAK HOUR** | Taylor Rd Southbound | | | | | Horseshoe Bar Rd Westbound | | | | | Taylor Rd Northbound | | | | | Horseshoe Bar Rd Eastbound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| START TIME | LEFT | THRU | RIGHT | PEDS | APP.TOTAL | LEFT | THRU | RIGHT | PEDS | APP.TOTAL | LEFT | THRU | RIGHT | PEDS | APP.TOTAL | LEFT | THRU | RIGHT | PEDS | APP.TOTAL | Total |
| Peak Hour Analysis From 14:30 to 15:30 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour For Entire Intersection Begins at 14:30 | | | | | | | | | | | | | | | | | | | | | |
| 14:30 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 2 |
| 14:45 | 0 | 2 | 0 | 6 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 2 |
| 15:00 | 1 | 1 | 0 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 1 | 0 | 0 | 0 | 9 | 0 | 3 |
| 15:15 | 0 | 3 | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 4 | 1 | 5 |
| Total Volume | 1 | 7 | 0 | 11 | 8 | 0 | 1 | 0 | 5 | 1 | 0 | 2 | 0 | 5 | 2 | 0 | 1 | 0 | 20 | 1 | 12 |
| % App Total | 12.5% | 87.5% | 0.0% | | | 0.0% | 100.0% | 0.0% | | | 0.0% | 100.0% | 0.0% | | | 0.0% | 100.0% | 0.0% | | | |
| PHF | .250 | .583 | .000 | | .667 | .000 | .250 | .000 | | .250 | .000 | .500 | .000 | | .500 | .000 | .250 | .000 | | .250 | .600 |

Prepared by National Data & Surveying Services

# Taylor Rd & Horseshoe Bar Rd

## Peak Hour Turning Movement Count

**ID:** 17-08163-001
**City:** Loomis

**Day:** Tuesday
**Date:** 12/12/2017

| PEAK HOURS | | COUNT PERIODS |
|---|---|---|
| 07:30 AM - 08:30 AM | | 07:00 AM - 09:00 AM |
| NONE | | NONE |
| 02:30 PM - 03:30 PM | | 02:00 PM - 06:00 PM |

### SOUTHBOUND (Taylor Rd)

| | Left | Thru | Right | U-turn | Total |
|---|---|---|---|---|---|
| AM | 5 | 382 | 388 | 0 | 797 |
| NOON | 0 | 0 | 0 | 0 | 0 |
| PM | 9 | 449 | 420 | 0 | 905 |
| Peak factor | 0 | 1 | 1 | 0 | |

### EASTBOUND (Horseshoe Bar Rd)

| | AM | NOON | PM |
|---|---|---|---|
| | 18 | 0 | 27 |
| U-turn | 0 | 0 | 0 |
| Left | 6 | 0 | 14 |
| Thru | 82 | 0 | 66 |
| Right | 11 | 0 | 18 |
| Peak factor | 0 | 0 | 1 |

### WESTBOUND (Horseshoe Bar Rd)

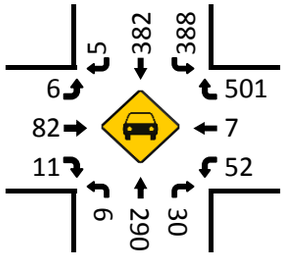
| | PM | NOON | AM |
|---|---|---|---|
| | 501 | 0 | 501 |
| Left | 10 | 0 | 7 |
| Thru | 81 | 0 | 52 |
| Right | 0 | 0 | 0 |
| U-turn | 543 | 0 | 500 |
| Peak factor | 1 | 0.5 | 0.5 | 0 |

### NORTHBOUND (Taylor Rd)

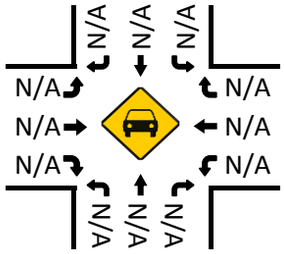
| | U-turn | Left | Thru | Right | Total |
|---|---|---|---|---|---|
| PM | 548 | 0 | 8 | 390 | 57 |
| NOON | 0 | 0 | 0 | 0 | 0 |
| AM | 445 | 0 | 6 | 290 | 30 |
| Peak factor | 0 | 1 | 1 | 1 | |

| CONTROL | | | |
|---|---|---|---|
| Signalized | | | |
| TEV | 1760 | 0 | 2023 |
| | AM | NOON | PM |
| PHF | 0.96 | | 0.99 |

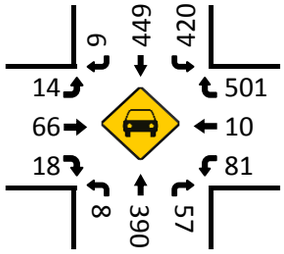
**Total Vehicles (AM)**



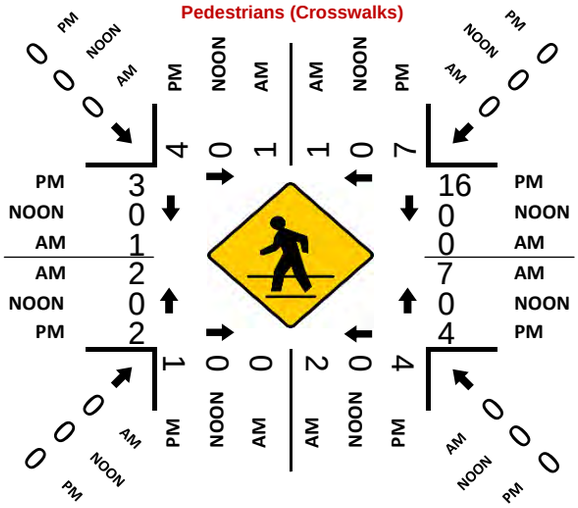

**Total Vehicles (NOON)**



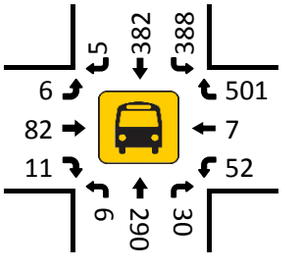

**Total Vehicles (PM)**



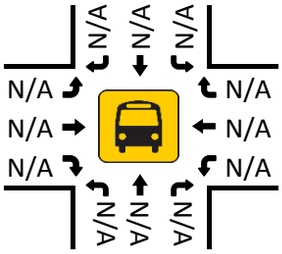

**Pedestrians (Crosswalks)**



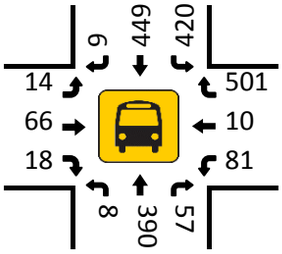

**Total Vehicles (AM)**




**Total Vehicles (NOON)**




**Total Vehicles (PM)**



# ALL TRAFFIC DATA

**(916) 771-8700**
orders@atdtraffic.com

5765-21

File Name : 17-08163-002
Date : 12/12/2017

**Unshifted Count = All Vehicles & Uturns**

| | Taylor Rd Southbound | | | | | Webb St Westbound | | | | | Taylor Rd Northbound | | | | | Webb St Eastbound | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| START TIME | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | Total | Uturns Total |
| 7:00 | 0 | 108 | 0 | 0 | 108 | 0 | 1 | 0 | 0 | 1 | 13 | 137 | 1 | 0 | 151 | 0 | 0 | 42 | 0 | 42 | 302 | 0 |
| 7:15 | 1 | 113 | 1 | 0 | 115 | 0 | 0 | 1 | 0 | 1 | 14 | 209 | 2 | 0 | 225 | 0 | 0 | 36 | 0 | 36 | 377 | 0 |
| 7:30 | 1 | 154 | 2 | 0 | 157 | 0 | 0 | 10 | 0 | 10 | 10 | 190 | 4 | 0 | 204 | 0 | 0 | 24 | 0 | 24 | 395 | 0 |
| 7:45 | 1 | 176 | 3 | 0 | 180 | 0 | 0 | 1 | 0 | 1 | 26 | 180 | 0 | 0 | 206 | 0 | 0 | 20 | 0 | 20 | 407 | 0 |
| Total | 3 | 551 | 6 | 0 | 560 | 0 | 1 | 12 | 0 | 13 | 63 | 716 | 7 | 0 | 786 | 0 | 0 | 122 | 0 | 122 | 1481 | 0 |
| 8:00 | 1 | 147 | 2 | 0 | 150 | 0 | 0 | 5 | 0 | 5 | 33 | 146 | 1 | 0 | 180 | 1 | 0 | 43 | 0 | 44 | 379 | 0 |
| 8:15 | 1 | 164 | 2 | 0 | 167 | 1 | 0 | 2 | 0 | 3 | 12 | 193 | 1 | 0 | 206 | 0 | 0 | 38 | 0 | 38 | 414 | 0 |
| 8:30 | 0 | 133 | 3 | 0 | 136 | 2 | 0 | 2 | 0 | 4 | 9 | 106 | 3 | 0 | 118 | 0 | 0 | 21 | 0 | 21 | 279 | 0 |
| 8:45 | 0 | 114 | 2 | 0 | 116 | 0 | 1 | 1 | 0 | 2 | 11 | 120 | 0 | 0 | 131 | 0 | 0 | 34 | 0 | 34 | 283 | 0 |
| Total | 2 | 558 | 9 | 0 | 569 | 3 | 1 | 10 | 0 | 14 | 65 | 565 | 5 | 0 | 635 | 1 | 0 | 136 | 0 | 137 | 1355 | 0 |
| 14:00 | 1 | 116 | 0 | 0 | 117 | 0 | 0 | 4 | 0 | 4 | 45 | 167 | 1 | 0 | 213 | 0 | 1 | 22 | 0 | 23 | 357 | 0 |
| 14:15 | 1 | 108 | 1 | 0 | 110 | 2 | 1 | 1 | 0 | 4 | 39 | 198 | 4 | 0 | 241 | 1 | 0 | 28 | 0 | 29 | 384 | 0 |
| 14:30 | 1 | 196 | 1 | 0 | 198 | 1 | 0 | 5 | 0 | 6 | 20 | 190 | 2 | 0 | 212 | 1 | 0 | 32 | 0 | 33 | 449 | 0 |
| 14:45 | 1 | 175 | 1 | 0 | 177 | 0 | 1 | 8 | 0 | 9 | 25 | 214 | 2 | 0 | 241 | 0 | 0 | 20 | 0 | 20 | 447 | 0 |
| Total | 4 | 595 | 3 | 0 | 602 | 3 | 2 | 18 | 0 | 23 | 129 | 769 | 9 | 0 | 907 | 2 | 1 | 102 | 0 | 105 | 1637 | 0 |
| 15:00 | 4 | 223 | 5 | 0 | 232 | 0 | 0 | 2 | 0 | 2 | 24 | 185 | 2 | 0 | 211 | 0 | 0 | 18 | 0 | 18 | 463 | 0 |
| 15:15 | 2 | 205 | 2 | 0 | 209 | 0 | 0 | 6 | 0 | 6 | 38 | 183 | 1 | 0 | 222 | 0 | 0 | 14 | 0 | 14 | 451 | 0 |
| 15:30 | 1 | 176 | 3 | 0 | 180 | 0 | 1 | 5 | 0 | 6 | 30 | 188 | 4 | 0 | 222 | 0 | 0 | 21 | 0 | 21 | 429 | 0 |
| 15:45 | 1 | 168 | 4 | 0 | 173 | 0 | 0 | 6 | 0 | 6 | 36 | 174 | 4 | 0 | 214 | 0 | 0 | 21 | 0 | 21 | 414 | 0 |
| Total | 8 | 772 | 14 | 0 | 794 | 0 | 1 | 19 | 0 | 20 | 128 | 730 | 11 | 0 | 869 | 0 | 0 | 74 | 0 | 74 | 1757 | 0 |
| 16:00 | 4 | 173 | 6 | 0 | 183 | 0 | 0 | 7 | 0 | 7 | 40 | 203 | 2 | 0 | 245 | 0 | 0 | 19 | 0 | 19 | 454 | 0 |
| 16:15 | 3 | 184 | 4 | 0 | 191 | 0 | 0 | 2 | 0 | 2 | 46 | 180 | 2 | 1 | 229 | 0 | 0 | 26 | 0 | 26 | 448 | 1 |
| 16:30 | 1 | 185 | 2 | 0 | 188 | 0 | 0 | 2 | 0 | 2 | 46 | 178 | 2 | 0 | 226 | 1 | 0 | 23 | 0 | 24 | 440 | 0 |
| 16:45 | 3 | 142 | 2 | 0 | 147 | 2 | 0 | 5 | 1 | 8 | 49 | 181 | 5 | 0 | 235 | 0 | 0 | 26 | 0 | 26 | 416 | 1 |
| Total | 11 | 684 | 14 | 0 | 709 | 2 | 0 | 16 | 1 | 19 | 181 | 742 | 11 | 1 | 935 | 1 | 0 | 94 | 0 | 95 | 1758 | 2 |
| 17:00 | 4 | 149 | 4 | 0 | 157 | 0 | 0 | 6 | 0 | 6 | 41 | 177 | 7 | 0 | 225 | 1 | 0 | 36 | 0 | 37 | 425 | 0 |
| 17:15 | 3 | 157 | 4 | 0 | 164 | 0 | 1 | 1 | 0 | 2 | 54 | 185 | 4 | 0 | 243 | 1 | 0 | 29 | 0 | 30 | 439 | 0 |
| 17:30 | 0 | 150 | 3 | 0 | 153 | 0 | 3 | 6 | 0 | 9 | 59 | 189 | 6 | 0 | 254 | 0 | 0 | 22 | 0 | 22 | 438 | 0 |
| 17:45 | 1 | 176 | 5 | 0 | 182 | 1 | 0 | 6 | 0 | 7 | 38 | 184 | 1 | 0 | 223 | 1 | 0 | 17 | 0 | 18 | 430 | 0 |
| Total | 8 | 632 | 16 | 0 | 656 | 1 | 4 | 19 | 0 | 24 | 192 | 735 | 18 | 0 | 945 | 3 | 0 | 104 | 0 | 107 | 1732 | 0 |
| Grand Total | 36 | 3792 | 62 | 0 | 3890 | 9 | 9 | 94 | 1 | 113 | 758 | 4257 | 61 | 1 | 5077 | 7 | 1 | 632 | 0 | 640 | 9720 | 2 |
| Apprch % | 0.9% | 97.5% | 1.6% | 0.0% | | 8.0% | 8.0% | 83.2% | 0.9% | | 14.9% | 83.8% | 1.2% | 0.0% | | 1.1% | 0.2% | 98.8% | 0.0% | | | |
| Total % | 0.4% | 39.0% | 0.6% | 0.0% | 40.0% | 0.1% | 0.1% | 1.0% | 0.0% | 1.2% | 7.8% | 43.8% | 0.6% | 0.0% | 52.2% | 0.1% | 0.0% | 6.5% | 0.0% | 6.6% | 100.0% | |

| AM PEAK HOUR | Taylor Rd Southbound | | | | | Webb St Westbound | | | | | Taylor Rd Northbound | | | | | Webb St Eastbound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| START TIME | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | Total |
| Peak Hour Analysis From 07:30 to 08:30 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour For Entire Intersection Begins at 07:30 | | | | | | | | | | | | | | | | | | | | | |
| 7:30 | 1 | 154 | 2 | 0 | 157 | 0 | 0 | 10 | 0 | 10 | 10 | 190 | 4 | 0 | 204 | 0 | 0 | 24 | 0 | 24 | 395 |
| 7:45 | 1 | 176 | 3 | 0 | 180 | 0 | 0 | 1 | 0 | 1 | 26 | 180 | 0 | 0 | 206 | 0 | 0 | 20 | 0 | 20 | 407 |
| 8:00 | 1 | 147 | 2 | 0 | 150 | 0 | 0 | 5 | 0 | 5 | 33 | 146 | 1 | 0 | 180 | 1 | 0 | 43 | 0 | 44 | 379 |
| 8:15 | 1 | 164 | 2 | 0 | 167 | 1 | 0 | 2 | 0 | 3 | 12 | 193 | 1 | 0 | 206 | 0 | 0 | 38 | 0 | 38 | 414 |
| Total Volume | 4 | 641 | 9 | 0 | 654 | 1 | 0 | 18 | 0 | 19 | 81 | 709 | 6 | 0 | 796 | 1 | 0 | 125 | 0 | 126 | 1595 |
| % App Total | 0.6% | 98.0% | 1.4% | 0.0% | | 5.3% | 0.0% | 94.7% | 0.0% | | 10.2% | 89.1% | 0.8% | 0.0% | | 0.8% | 0.0% | 99.2% | 0.0% | | |
| PHF | 1.000 | .911 | .750 | .000 | .908 | .250 | .000 | .450 | .000 | .475 | .614 | .918 | .375 | .000 | .966 | .250 | .000 | .727 | .000 | .716 | .963 |

| PM PEAK HOUR | Taylor Rd Southbound | | | | | Webb St Westbound | | | | | Taylor Rd Northbound | | | | | Webb St Eastbound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| START TIME | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | Total |
| Peak Hour Analysis From 14:30 to 15:30 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour For Entire Intersection Begins at 14:30 | | | | | | | | | | | | | | | | | | | | | |
| 14:30 | 1 | 196 | 1 | 0 | 198 | 1 | 0 | 5 | 0 | 6 | 20 | 190 | 2 | 0 | 212 | 1 | 0 | 32 | 0 | 33 | 449 |
| 14:45 | 1 | 175 | 1 | 0 | 177 | 0 | 1 | 8 | 0 | 9 | 25 | 214 | 2 | 0 | 241 | 0 | 0 | 20 | 0 | 20 | 447 |
| 15:00 | 4 | 223 | 5 | 0 | 232 | 0 | 0 | 2 | 0 | 2 | 24 | 185 | 2 | 0 | 211 | 0 | 0 | 18 | 0 | 18 | 463 |
| 15:15 | 2 | 205 | 2 | 0 | 209 | 0 | 0 | 6 | 0 | 6 | 38 | 183 | 1 | 0 | 222 | 0 | 0 | 14 | 0 | 14 | 451 |
| Total Volume | 8 | 799 | 9 | 0 | 816 | 1 | 1 | 21 | 0 | 23 | 107 | 772 | 7 | 0 | 886 | 1 | 0 | 84 | 0 | 85 | 1810 |
| % App Total | 1.0% | 97.9% | 1.1% | 0.0% | | 4.3% | 4.3% | 91.3% | 0.0% | | 12.1% | 87.1% | 0.8% | 0.0% | | 1.2% | 0.0% | 98.8% | 0.0% | | |
| PHF | .500 | .896 | .450 | .000 | .879 | .250 | .250 | .656 | .000 | .639 | .704 | .902 | .875 | .000 | .919 | .250 | .000 | .656 | .000 | .644 | .977 |

# ALL TRAFFIC DATA

**(916) 771-8700**
orders@atdtraffic.com

File Name : 17-08163-002
Date : 12/12/2017

**Bank 1 Count = Bikes & Peds**

| | Taylor Rd Southbound | | | | | Webb St Westbound | | | | | Taylor Rd Northbound | | | | | Webb St Eastbound | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| START TIME | LEFT | THRU | RIGHT | PEDS | APP.TOTAL | LEFT | THRU | RIGHT | PEDS | APP.TOTAL | LEFT | THRU | RIGHT | PEDS | APP.TOTAL | LEFT | THRU | RIGHT | PEDS | APP.TOTAL | Total | Peds Total |
| 7:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 7:15 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 7:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 |
| 7:45 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 3 | 0 | 2 | 8 |
| Total | 0 | 1 | 0 | 2 | 1 | 0 | 0 | 0 | 4 | 0 | 1 | 2 | 0 | 0 | 3 | 0 | 0 | 0 | 4 | 0 | 4 | 10 |
| 8:00 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 1 | 5 |
| 8:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:30 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 8:45 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Total | 0 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 3 | 5 |
| 14:00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 |
| 14:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 22 |
| 14:30 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 15 |
| 14:45 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 3 |
| Total | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 42 |
| 15:00 | 0 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 6 | 0 | 4 | 6 |
| 15:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 5 | 0 | 1 | 5 |
| 15:30 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 4 |
| 15:45 | 0 | 1 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 6 | 1 | 2 | 8 |
| Total | 0 | 4 | 0 | 4 | 4 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 1 | 18 | 1 | 7 | 23 |
| 16:00 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 4 | 0 | 1 | 6 |
| 16:15 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 11 |
| 16:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 3 |
| 16:45 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 3 |
| Total | 0 | 1 | 0 | 3 | 1 | 0 | 0 | 0 | 6 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 13 | 0 | 2 | 23 |
| 17:00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 6 |
| 17:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| 17:30 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 17:45 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Total | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 5 | 0 | 1 | 14 |
| Grand Total | 0 | 9 | 0 | 19 | 9 | 0 | 0 | 0 | 43 | 0 | 1 | 6 | 0 | 1 | 7 | 0 | 0 | 1 | 54 | 1 | 17 | 117 |
| Apprch % | 0.0% | 100.0% | 0.0% | | | 0.0% | 0.0% | 0.0% | | | 14.3% | 85.7% | 0.0% | | | 0.0% | 0.0% | 100.0% | | | | |
| Total % | 0.0% | 52.9% | 0.0% | | 52.9% | 0.0% | 0.0% | 0.0% | | 0.0% | 5.9% | 35.3% | 0.0% | | 41.2% | 0.0% | 0.0% | 5.9% | | 5.9% | 100.0% | |

| **AM PEAK HOUR** | Taylor Rd Southbound | | | | | Webb St Westbound | | | | | Taylor Rd Northbound | | | | | Webb St Eastbound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| START TIME | LEFT | THRU | RIGHT | PEDS | APP.TOTAL | LEFT | THRU | RIGHT | PEDS | APP.TOTAL | LEFT | THRU | RIGHT | PEDS | APP.TOTAL | LEFT | THRU | RIGHT | PEDS | APP.TOTAL | Total |
| Peak Hour Analysis From 07:30 to 08:30 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour For Entire Intersection Begins at 07:30 | | | | | | | | | | | | | | | | | | | | | |
| 7:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 7:45 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 3 | 0 | 2 |
| 8:00 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 1 |
| 8:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Volume | 0 | 1 | 0 | 2 | 1 | 0 | 0 | 0 | 4 | 0 | 1 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 9 | 0 | 3 |
| % App Total | 0.0% | 100.0% | 0.0% | | | 0.0% | 0.0% | 0.0% | | | 50.0% | 50.0% | 0.0% | | | 0.0% | 0.0% | 0.0% | | | |
| PHF | .000 | .250 | .000 | | .250 | .000 | .000 | .000 | | .000 | .250 | .250 | .000 | | .250 | .000 | .000 | .000 | | .000 | .375 |

| **PM PEAK HOUR** | Taylor Rd Southbound | | | | | Webb St Westbound | | | | | Taylor Rd Northbound | | | | | Webb St Eastbound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| START TIME | LEFT | THRU | RIGHT | PEDS | APP.TOTAL | LEFT | THRU | RIGHT | PEDS | APP.TOTAL | LEFT | THRU | RIGHT | PEDS | APP.TOTAL | LEFT | THRU | RIGHT | PEDS | APP.TOTAL | Total |
| Peak Hour Analysis From 14:30 to 15:30 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour For Entire Intersection Begins at 14:30 | | | | | | | | | | | | | | | | | | | | | |
| 14:30 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 |
| 14:45 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 15:00 | 0 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 6 | 0 | 4 |
| 15:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 5 | 0 | 1 |
| Total Volume | 0 | 3 | 0 | 3 | 3 | 0 | 0 | 0 | 8 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 18 | 0 | 5 |
| % App Total | 0.0% | 100.0% | 0.0% | | | 0.0% | 0.0% | 0.0% | | | 0.0% | 100.0% | 0.0% | | | 0.0% | 0.0% | 0.0% | | | |
| PHF | .000 | .250 | .000 | | .250 | .000 | .000 | .000 | | .000 | .000 | .500 | .000 | | .500 | .000 | .000 | .000 | | .000 | .313 |

Prepared by National Data & Surveying Services

# Taylor Rd & Webb St

## Peak Hour Turning Movement Count

**ID:** 17-08163-002
**City:** Loomis

**Day:** Tuesday
**Date:** 12/12/2017

| PEAK HOURS | | COUNT PERIODS |
|---|---|---|
| 07:30 AM - 08:30 AM | AM | 07:00 AM - 09:00 AM |
| NONE | NOON | NONE |
| 02:30 PM - 03:30 PM | PM | 02:00 PM - 06:00 PM |

### SOUTHBOUND (Taylor Rd)

| | | | | | |
|---|---|---|---|---|---|
| AM | 9 | 641 | 4 | 0 | 728 |
| NOON | 0 | 0 | 0 | 0 | 0 |
| PM | 9 | 799 | 8 | 0 | 794 |

### EASTBOUND (Webb St)

| AM | NOON | PM | |
|---|---|---|---|
| 90 | 0 | 117 | |
| 0 | 0 | 0 | 0 |
| 1 | 0 | 1 | 0 |
| 0 | 0 | 0 | 0 |
| 125 | 0 | 84 | 1 |

### WESTBOUND (Webb St)

| | PM | NOON | AM |
|---|---|---|---|
| 0 | 21 | 0 | 18 |
| 1 | 1 | 0 | 0 |
| 0 | 1 | 0 | 1 |
| 0 | 0 | 0 | 0 |
| | 15 | 0 | 10 |

### NORTHBOUND (Taylor Rd)

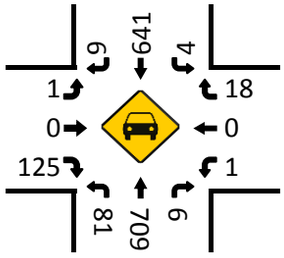
| | | | | | |
|---|---|---|---|---|---|
| PM | 884 | 0 | 107 | 772 | 7 |
| NOON | 0 | 0 | 0 | 0 | 0 |
| AM | 767 | 0 | 81 | 709 | 6 |

Turning movements (AM / NOON / PM):

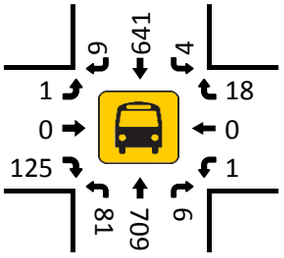
| | AM | NOON | PM |
|---|---|---|---|
| Southbound left | 1 | 1 | 0 |
| Southbound thru | 0 | 0 | 0 |
| Southbound right | 0 | 0 | 1 |
| Southbound U-turn | 0 | 0 | 0 |
| Eastbound left | 0 | 0 | 0 |
| Eastbound thru | 0 | 0 | 0 |
| Eastbound right | 0 | 0 | 0 |
| Eastbound U-turn | 1 | 0 | 0 |
| Westbound left | 0 | 0 | 0 |
| Westbound thru | 1 | 0 | 0 |
| Westbound right | 0 | 0 | 0 |
| Westbound U-turn | 0 | 0 | 0 |
| Northbound left | 0 | 0 | 1 |
| Northbound thru | 0 | 0 | 0 |
| Northbound right | 0 | 0 | 0 |
| Northbound U-turn | 0 | 0 | 0 |

| CONTROL | | | |
|---|---|---|---|
| 2-Way Stop(EB/WB) | | | |
| TEV | 1595 | 0 | 1810 |
| | AM | NOON | PM |
| PHF | 0.96 | | 0.98 |

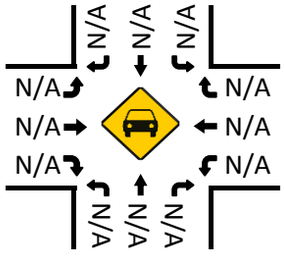
Total Vehicles (AM)



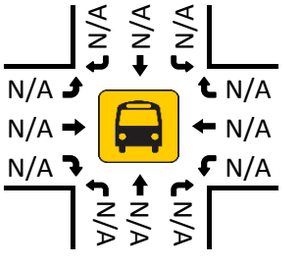

Total Vehicles (AM)



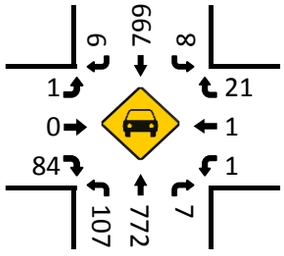

Total Vehicles (NOON)



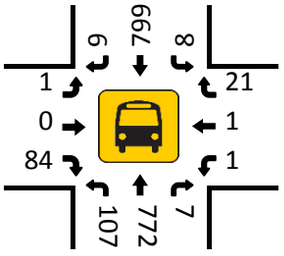

Total Vehicles (NOON)



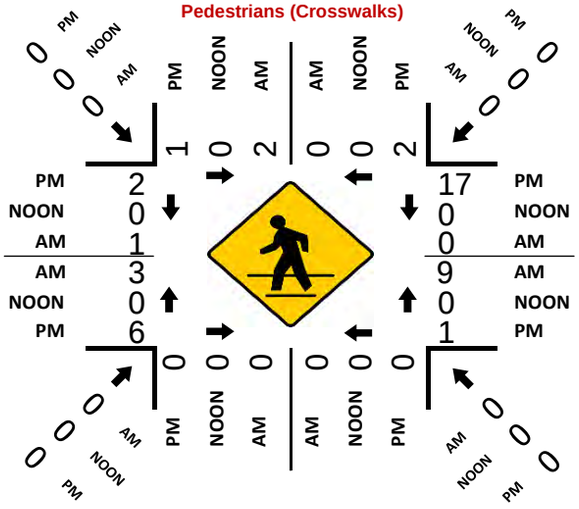

Total Vehicles (PM)




Total Vehicles (PM)




Pedestrians (Crosswalks)



# National Data and Surveying Services

6260-21

City of Loomis
All Vehicles & Uturns On Unshifted
Nothing On Bank 1
Nothing On Bank 2

**(323) 782-0090**
info@ndsdata.com

File Name : 17-7077-001 Taylor Rd & Penryn Rd
Date : 1/31/2017

**Unshifted Count = All Vehicles & Uturns**

| | Taylor Rd Southbound | | | | | Penryn Rd Westbound | | | | | Taylor Rd Northbound | | | | | Penryn Rd Eastbound | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| START TIME | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | Total | Uturns Total |
| 7:00 | 30 | 50 | 0 | 0 | 80 | 11 | 0 | 13 | 0 | 24 | 0 | 18 | 8 | 0 | 26 | 0 | 0 | 1 | 0 | 1 | 131 | 0 |
| 7:15 | 44 | 113 | 0 | 0 | 157 | 23 | 0 | 18 | 0 | 41 | 1 | 31 | 21 | 0 | 53 | 0 | 0 | 0 | 0 | 0 | 251 | 0 |
| 7:30 | 60 | 194 | 0 | 0 | 254 | 47 | 0 | 30 | 0 | 77 | 0 | 59 | 55 | 0 | 114 | 0 | 0 | 0 | 0 | 0 | 445 | 0 |
| 7:45 | 61 | 49 | 0 | 0 | 110 | 15 | 0 | 33 | 0 | 48 | 0 | 41 | 43 | 0 | 84 | 0 | 1 | 0 | 0 | 1 | 243 | 0 |
| Total | 195 | 406 | 0 | 0 | 601 | 96 | 0 | 94 | 0 | 190 | 1 | 149 | 127 | 0 | 277 | 0 | 1 | 1 | 0 | 2 | 1070 | 0 |
| 8:00 | 58 | 25 | 0 | 0 | 83 | 5 | 1 | 42 | 0 | 48 | 0 | 23 | 7 | 0 | 30 | 0 | 0 | 0 | 0 | 0 | 161 | 0 |
| 8:15 | 63 | 28 | 0 | 0 | 91 | 9 | 0 | 31 | 0 | 40 | 1 | 29 | 6 | 0 | 36 | 0 | 1 | 1 | 0 | 2 | 169 | 0 |
| 8:30 | 53 | 21 | 0 | 0 | 74 | 6 | 0 | 16 | 0 | 22 | 0 | 31 | 2 | 0 | 33 | 0 | 0 | 0 | 0 | 0 | 129 | 0 |
| 8:45 | 35 | 30 | 0 | 0 | 65 | 7 | 1 | 21 | 0 | 29 | 0 | 17 | 8 | 0 | 25 | 0 | 1 | 0 | 0 | 1 | 120 | 0 |
| Total | 209 | 104 | 0 | 0 | 313 | 27 | 2 | 110 | 0 | 139 | 1 | 100 | 23 | 0 | 124 | 0 | 2 | 1 | 0 | 3 | 579 | 0 |
| 14:00 | 31 | 29 | 0 | 0 | 60 | 5 | 0 | 42 | 0 | 47 | 0 | 40 | 6 | 0 | 46 | 0 | 0 | 0 | 0 | 0 | 153 | 0 |
| 14:15 | 50 | 40 | 0 | 0 | 90 | 8 | 0 | 41 | 0 | 49 | 1 | 39 | 10 | 0 | 50 | 0 | 0 | 0 | 0 | 0 | 189 | 0 |
| 14:30 | 50 | 50 | 0 | 0 | 100 | 16 | 0 | 41 | 0 | 57 | 0 | 38 | 15 | 0 | 53 | 0 | 0 | 1 | 0 | 1 | 211 | 0 |
| 14:45 | 42 | 69 | 0 | 0 | 111 | 17 | 0 | 38 | 0 | 55 | 1 | 83 | 61 | 0 | 145 | 0 | 1 | 0 | 0 | 1 | 312 | 0 |
| Total | 173 | 188 | 0 | 0 | 361 | 46 | 0 | 162 | 0 | 208 | 2 | 200 | 92 | 0 | 294 | 0 | 1 | 1 | 0 | 2 | 865 | 0 |
| 15:00 | 34 | 52 | 1 | 0 | 87 | 9 | 1 | 32 | 0 | 42 | 0 | 108 | 101 | 0 | 209 | 1 | 0 | 0 | 0 | 1 | 339 | 0 |
| 15:15 | 27 | 34 | 0 | 0 | 61 | 10 | 0 | 65 | 0 | 75 | 1 | 67 | 25 | 0 | 93 | 0 | 0 | 1 | 0 | 1 | 230 | 0 |
| Total | 61 | 86 | 1 | 0 | 148 | 19 | 1 | 97 | 0 | 117 | 1 | 175 | 126 | 0 | 302 | 1 | 0 | 1 | 0 | 2 | 569 | 0 |
| Grand Total | 638 | 784 | 1 | 0 | 1423 | 188 | 3 | 463 | 0 | 654 | 5 | 624 | 368 | 0 | 997 | 1 | 4 | 4 | 0 | 9 | 3083 | 0 |
| Apprch % | 44.8% | 55.1% | 0.1% | 0.0% | | 28.7% | 0.5% | 70.8% | 0.0% | | 0.5% | 62.6% | 36.9% | 0.0% | | 11.1% | 44.4% | 44.4% | 0.0% | | | |
| Total % | 20.7% | 25.4% | 0.0% | 0.0% | 46.2% | 6.1% | 0.1% | 15.0% | 0.0% | 21.2% | 0.2% | 20.2% | 11.9% | 0.0% | 32.3% | 0.0% | 0.1% | 0.1% | 0.0% | 0.3% | 100.0% | |

| **AM PEAK HOUR** | Taylor Rd Southbound | | | | | Penryn Rd Westbound | | | | | Taylor Rd Northbound | | | | | Penryn Rd Eastbound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| START TIME | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | Total |
| Peak Hour Analysis From 07:15 to 08:15 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour For Entire Intersection Begins at 07:15 | | | | | | | | | | | | | | | | | | | | | |
| 7:15 | 44 | 113 | 0 | 0 | 157 | 23 | 0 | 18 | 0 | 41 | 1 | 31 | 21 | 0 | 53 | 0 | 0 | 0 | 0 | 0 | 251 |
| 7:30 | 60 | 194 | 0 | 0 | 254 | 47 | 0 | 30 | 0 | 77 | 0 | 59 | 55 | 0 | 114 | 0 | 0 | 0 | 0 | 0 | 445 |
| 7:45 | 61 | 49 | 0 | 0 | 110 | 15 | 0 | 33 | 0 | 48 | 0 | 41 | 43 | 0 | 84 | 0 | 1 | 0 | 0 | 1 | 243 |
| 8:00 | 58 | 25 | 0 | 0 | 83 | 5 | 1 | 42 | 0 | 48 | 0 | 23 | 7 | 0 | 30 | 0 | 0 | 0 | 0 | 0 | 161 |
| Total Volume | 223 | 381 | 0 | 0 | 604 | 90 | 1 | 123 | 0 | 214 | 1 | 154 | 126 | 0 | 281 | 0 | 1 | 0 | 0 | 1 | 1100 |
| % App Total | 36.9% | 63.1% | 0.0% | 0.0% | | 42.1% | 0.5% | 57.5% | 0.0% | | 0.4% | 54.8% | 44.8% | 0.0% | | 0.0% | 100.0% | 0.0% | 0.0% | | |
| PHF | .914 | .491 | .000 | .000 | .594 | .479 | .250 | .732 | .000 | .695 | .250 | .653 | .573 | .000 | .616 | .000 | .250 | .000 | .000 | .250 | .618 |

| **PM PEAK HOUR** | Taylor Rd Southbound | | | | | Penryn Rd Westbound | | | | | Taylor Rd Northbound | | | | | Penryn Rd Eastbound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| START TIME | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | Total |
| Peak Hour Analysis From 14:30 to 15:30 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour For Entire Intersection Begins at 14:30 | | | | | | | | | | | | | | | | | | | | | |
| 14:30 | 50 | 50 | 0 | 0 | 100 | 16 | 0 | 41 | 0 | 57 | 0 | 38 | 15 | 0 | 53 | 0 | 0 | 1 | 0 | 1 | 211 |
| 14:45 | 42 | 69 | 0 | 0 | 111 | 17 | 0 | 38 | 0 | 55 | 1 | 83 | 61 | 0 | 145 | 0 | 1 | 0 | 0 | 1 | 312 |
| 15:00 | 34 | 52 | 1 | 0 | 87 | 9 | 1 | 32 | 0 | 42 | 0 | 108 | 101 | 0 | 209 | 1 | 0 | 0 | 0 | 1 | 339 |
| 15:15 | 27 | 34 | 0 | 0 | 61 | 10 | 0 | 65 | 0 | 75 | 1 | 67 | 25 | 0 | 93 | 0 | 0 | 1 | 0 | 1 | 230 |
| Total Volume | 153 | 205 | 1 | 0 | 359 | 52 | 1 | 176 | 0 | 229 | 2 | 296 | 202 | 0 | 500 | 1 | 1 | 2 | 0 | 4 | 1092 |
| % App Total | 42.6% | 57.1% | 0.3% | 0.0% | | 22.7% | 0.4% | 76.9% | 0.0% | | 0.4% | 59.2% | 40.4% | 0.0% | | 25.0% | 25.0% | 50.0% | 0.0% | | |
| PHF | .765 | .743 | .250 | .000 | .809 | .765 | .250 | .677 | .000 | .763 | .500 | .685 | .500 | .000 | .598 | .250 | .250 | .500 | .000 | 1.000 | .805 |

## *Taylor Rd & Penryn Rd*

Date: 1/31/2017

Day: Tuesday

Project #: 17-7077-001

6260-21

| | |
|---|---|
| AM Peak Hour | 07:15 - 08:15 |
| NOON Peak Hour | |
| PM Peak Hour | 14:30 - 15:30 |

### Peak Hour Summary

**Southbound Approach** (Taylor Rd)

| | | | | | |
|---|---|---|---|---|---|
| AM | 0 | 381 | 223 | 0 | 277 AM |
| NOON | 0 | 0 | 0 | 0 | 0 NOON |
| PM | 1 | 205 | 153 | 0 | 473 PM |

**Eastbound Approach** (Penryn Rd)

| | AM | NOON | PM |
|---|---|---|---|
| | 2 | 0 | 4 |
| | 0 | 0 | 0 |
| | 0 | 0 | 1 |
| | 1 | 0 | 1 |
| | 0 | 0 | 2 |

**Westbound Approach**

| | AM | NOON | PM |
|---|---|---|---|
| | 123 | 0 | 176 |
| | 1 | 0 | 1 |
| | 90 | 0 | 52 |
| | 0 | 0 | 0 |
| | 350 | 0 | 356 |

CONTROL

**Northbound Approach**

| | | | | | |
|---|---|---|---|---|---|
| AM | 471 | 0 | 1 | 154 | 126 AM |
| NOON | 0 | 0 | 0 | 0 | 0 NOON |
| PM | 259 | 0 | 2 | 296 | 202 PM |

| Count Periods | Start | End |
|---|---|---|
| AM | 7:00 AM | 9:00 AM |
| NOON | NONE | NONE |
| PM | 2:00 PM | 3:30 PM |

### Total Ins & Outs

| | North Leg | East Leg | South Leg | West Leg |
|---|---|---|---|---|
| AM | 604 | 214 | 471 | 2 |
| NOON | 0 | 0 | 0 | 0 |
| PM | 359 | 229 | 259 | 4 |
| AM | 277 | 350 | 281 | 1 |
| NOON | 0 | 0 | 0 | 0 |
| PM | 473 | 356 | 500 | 4 |

### Total Volume Per Leg

| | North Leg | East Leg | South Leg | West Leg |
|---|---|---|---|---|
| AM | 881 | 564 | 752 | 3 |
| NOON | 0 | 0 | 0 | 0 |
| PM | 832 | 585 | 759 | 8 |

# National Data and Surveying Services

6260-21

City of Loomis
All Vehicles & Uturns On Unshifted
Nothing On Bank 1
Nothing On Bank 2

**(323) 782-0090**
info@ndsdata.com

File Name : 17-7077-002 Taylor Rd & Del Oro High School Northern Parking Lot
Date : 1/31/2017

**Unshifted Count = All Vehicles & Uturns**

| | Taylor Rd Southbound | | | | | Del Oro High School Northern Parking Lot Westbound | | | | | Taylor Rd Northbound | | | | | Del Oro High School Northern Parking Lot Eastbound | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| START TIME | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | Total | Uturns Total |
| 7:00 | 18 | 43 | 0 | 0 | 61 | 3 | 0 | 5 | 0 | 8 | 0 | 24 | 17 | 0 | 41 | 0 | 0 | 0 | 0 | 0 | 110 | 0 |
| 7:15 | 56 | 83 | 0 | 0 | 139 | 16 | 0 | 15 | 0 | 31 | 0 | 54 | 54 | 1 | 109 | 0 | 0 | 0 | 0 | 0 | 279 | 1 |
| 7:30 | 99 | 171 | 0 | 0 | 270 | 9 | 0 | 34 | 0 | 43 | 0 | 104 | 26 | 0 | 130 | 0 | 0 | 0 | 0 | 0 | 443 | 0 |
| 7:45 | 17 | 81 | 0 | 0 | 98 | 8 | 0 | 11 | 0 | 19 | 0 | 69 | 4 | 0 | 73 | 0 | 0 | 0 | 0 | 0 | 190 | 0 |
| Total | 190 | 378 | 0 | 0 | 568 | 36 | 0 | 65 | 0 | 101 | 0 | 251 | 101 | 1 | 353 | 0 | 0 | 0 | 0 | 0 | 1022 | 1 |
| 8:00 | 1 | 32 | 0 | 0 | 33 | 3 | 0 | 0 | 0 | 3 | 0 | 29 | 2 | 0 | 31 | 0 | 0 | 0 | 0 | 0 | 67 | 0 |
| 8:15 | 0 | 41 | 0 | 0 | 41 | 0 | 0 | 0 | 0 | 0 | 0 | 38 | 3 | 0 | 41 | 0 | 0 | 0 | 0 | 0 | 82 | 0 |
| 8:30 | 1 | 33 | 0 | 0 | 34 | 3 | 0 | 1 | 0 | 4 | 0 | 34 | 2 | 0 | 36 | 0 | 0 | 0 | 0 | 0 | 74 | 0 |
| 8:45 | 0 | 40 | 0 | 0 | 40 | 2 | 0 | 0 | 0 | 2 | 0 | 28 | 4 | 0 | 32 | 0 | 0 | 0 | 0 | 0 | 74 | 0 |
| Total | 2 | 146 | 0 | 0 | 148 | 8 | 0 | 1 | 0 | 9 | 0 | 129 | 11 | 0 | 140 | 0 | 0 | 0 | 0 | 0 | 297 | 0 |
| 14:00 | 0 | 48 | 0 | 0 | 48 | 0 | 0 | 0 | 0 | 0 | 0 | 50 | 1 | 0 | 51 | 0 | 0 | 0 | 0 | 0 | 99 | 0 |
| 14:15 | 2 | 43 | 0 | 1 | 46 | 3 | 0 | 1 | 0 | 4 | 0 | 60 | 1 | 0 | 61 | 0 | 0 | 0 | 0 | 0 | 111 | 1 |
| 14:30 | 11 | 55 | 0 | 0 | 66 | 7 | 0 | 4 | 0 | 11 | 0 | 63 | 11 | 0 | 74 | 0 | 0 | 0 | 0 | 0 | 151 | 0 |
| 14:45 | 9 | 71 | 0 | 0 | 80 | 30 | 0 | 51 | 0 | 81 | 0 | 132 | 14 | 1 | 147 | 0 | 0 | 0 | 0 | 0 | 308 | 1 |
| Total | 22 | 217 | 0 | 1 | 240 | 40 | 0 | 56 | 0 | 96 | 0 | 305 | 27 | 1 | 333 | 0 | 0 | 0 | 0 | 0 | 669 | 2 |
| 15:00 | 9 | 82 | 0 | 0 | 91 | 28 | 0 | 45 | 0 | 73 | 0 | 183 | 11 | 0 | 194 | 0 | 0 | 0 | 0 | 0 | 358 | 0 |
| 15:15 | 1 | 46 | 0 | 0 | 47 | 11 | 0 | 6 | 0 | 17 | 0 | 90 | 3 | 0 | 93 | 0 | 0 | 0 | 0 | 0 | 157 | 0 |
| 15:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 10 | 128 | 0 | 0 | 138 | 39 | 0 | 51 | 0 | 90 | 0 | 273 | 14 | 0 | 287 | 0 | 0 | 0 | 0 | 0 | 515 | 0 |
| Grand Total | 224 | 869 | 0 | 1 | 1094 | 123 | 0 | 173 | 0 | 296 | 0 | 958 | 153 | 2 | 1113 | 0 | 0 | 0 | 0 | 0 | 2503 | 3 |
| Apprch % | 20.5% | 79.4% | 0.0% | 0.1% | | 41.6% | 0.0% | 58.4% | 0.0% | | 0.0% | 86.1% | 13.7% | 0.2% | | 0.0% | 0.0% | 0.0% | 0.0% | | | |
| Total % | 8.9% | 34.7% | 0.0% | 0.0% | 43.7% | 4.9% | 0.0% | 6.9% | 0.0% | 11.8% | 0.0% | 38.3% | 6.1% | 0.1% | 44.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 100.0% | |

| **AM PEAK HOUR** | Taylor Rd Southbound | | | | | Del Oro High School Northern Parking Lot Westbound | | | | | Taylor Rd Northbound | | | | | Del Oro High School Northern Parking Lot Eastbound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| START TIME | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | Total |
| Peak Hour Analysis From 07:00 to 08:00 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour For Entire Intersection Begins at 07:00 | | | | | | | | | | | | | | | | | | | | | |
| 7:00 | 18 | 43 | 0 | 0 | 61 | 3 | 0 | 5 | 0 | 8 | 0 | 24 | 17 | 0 | 41 | 0 | 0 | 0 | 0 | 0 | 110 |
| 7:15 | 56 | 83 | 0 | 0 | 139 | 16 | 0 | 15 | 0 | 31 | 0 | 54 | 54 | 1 | 109 | 0 | 0 | 0 | 0 | 0 | 279 |
| 7:30 | 99 | 171 | 0 | 0 | 270 | 9 | 0 | 34 | 0 | 43 | 0 | 104 | 26 | 0 | 130 | 0 | 0 | 0 | 0 | 0 | 443 |
| 7:45 | 17 | 81 | 0 | 0 | 98 | 8 | 0 | 11 | 0 | 19 | 0 | 69 | 4 | 0 | 73 | 0 | 0 | 0 | 0 | 0 | 190 |
| Total Volume | 190 | 378 | 0 | 0 | 568 | 36 | 0 | 65 | 0 | 101 | 0 | 251 | 101 | 1 | 353 | 0 | 0 | 0 | 0 | 0 | 1022 |
| % App Total | 33.5% | 66.5% | 0.0% | 0.0% | | 35.6% | 0.0% | 64.4% | 0.0% | | 0.0% | 71.1% | 28.6% | 0.3% | | 0.0% | 0.0% | 0.0% | 0.0% | | |
| PHF | .480 | .553 | .000 | .000 | .526 | .563 | .000 | .478 | .000 | .587 | .000 | .603 | .468 | .250 | .679 | .000 | .000 | .000 | .000 | .000 | .577 |

| **PM PEAK HOUR** | Taylor Rd Southbound | | | | | Del Oro High School Northern Parking Lot Westbound | | | | | Taylor Rd Northbound | | | | | Del Oro High School Northern Parking Lot Eastbound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| START TIME | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | Total |
| Peak Hour Analysis From 14:30 to 15:30 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour For Entire Intersection Begins at 14:30 | | | | | | | | | | | | | | | | | | | | | |
| 14:30 | 11 | 55 | 0 | 0 | 66 | 7 | 0 | 4 | 0 | 11 | 0 | 63 | 11 | 0 | 74 | 0 | 0 | 0 | 0 | 0 | 151 |
| 14:45 | 9 | 71 | 0 | 0 | 80 | 30 | 0 | 51 | 0 | 81 | 0 | 132 | 14 | 1 | 147 | 0 | 0 | 0 | 0 | 0 | 308 |
| 15:00 | 9 | 82 | 0 | 0 | 91 | 28 | 0 | 45 | 0 | 73 | 0 | 183 | 11 | 0 | 194 | 0 | 0 | 0 | 0 | 0 | 358 |
| 15:15 | 1 | 46 | 0 | 0 | 47 | 11 | 0 | 6 | 0 | 17 | 0 | 90 | 3 | 0 | 93 | 0 | 0 | 0 | 0 | 0 | 157 |
| Total Volume | 30 | 254 | 0 | 0 | 284 | 76 | 0 | 106 | 0 | 182 | 0 | 468 | 39 | 1 | 508 | 0 | 0 | 0 | 0 | 0 | 974 |
| % App Total | 10.6% | 89.4% | 0.0% | 0.0% | | 41.8% | 0.0% | 58.2% | 0.0% | | 0.0% | 92.1% | 7.7% | 0.2% | | 0.0% | 0.0% | 0.0% | 0.0% | | |
| PHF | .682 | .774 | .000 | .000 | .780 | .633 | .000 | .520 | .000 | .562 | .000 | .639 | .696 | .250 | .655 | .000 | .000 | .000 | .000 | .000 | .680 |

## *Taylor Rd & Del Oro High School Northern Parking L*

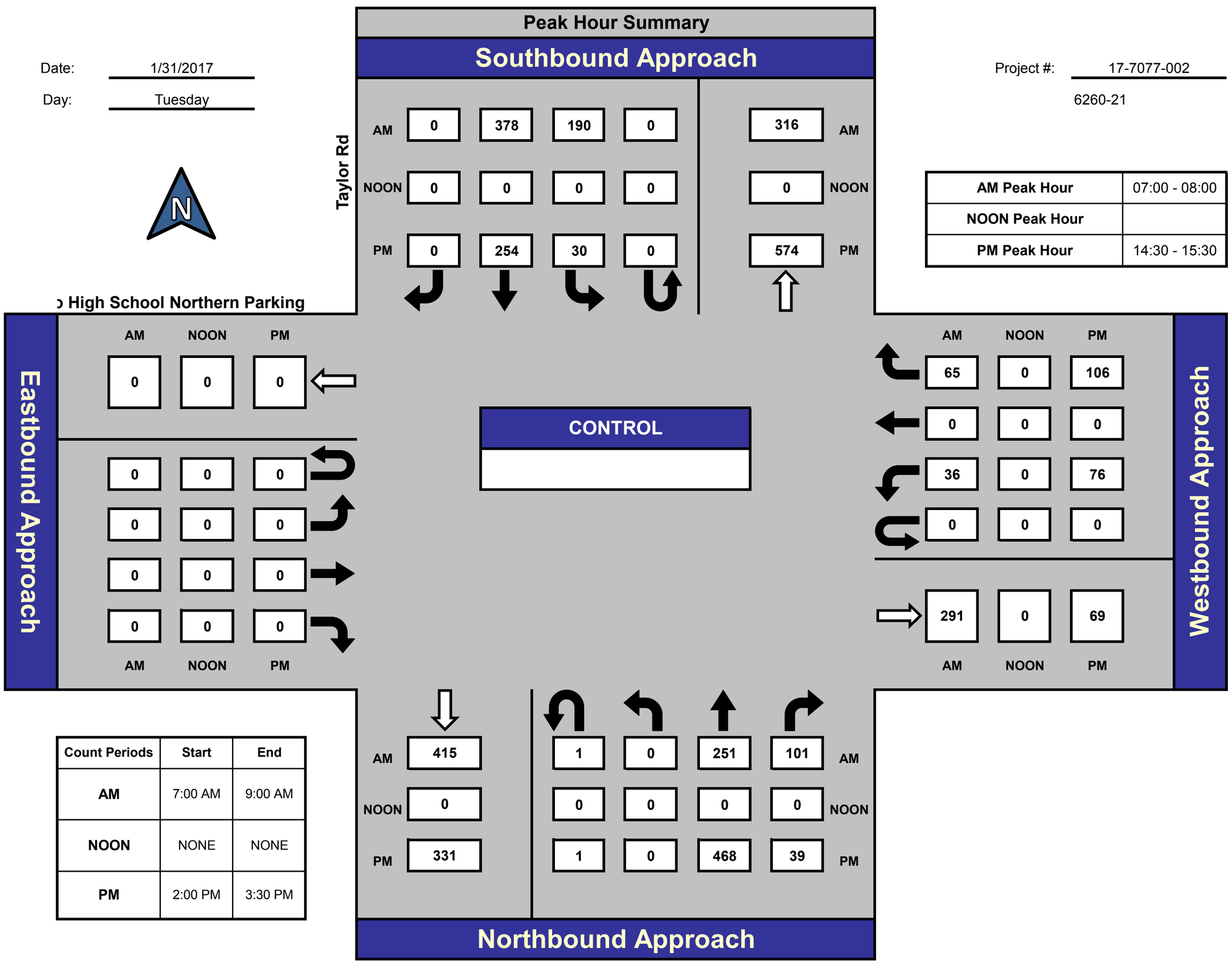
Date: 1/31/2017

Day: Tuesday

Project #: 17-7077-002

6260-21

| | |
|---|---|
| AM Peak Hour | 07:00 - 08:00 |
| NOON Peak Hour | |
| PM Peak Hour | 14:30 - 15:30 |




| Count Periods | Start | End |
|---|---|---|
| AM | 7:00 AM | 9:00 AM |
| NOON | NONE | NONE |
| PM | 2:00 PM | 3:30 PM |

### Total Ins & Outs

| | North Leg | | East Leg | | | West Leg | | | South Leg | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | AM | NOON | PM | AM | NOON | PM | | |
| AM | 568 | 316 | 101 | 0 | 182 | 0 | 0 | 0 | 415 | 353 |
| NOON | 0 | 0 | 291 | 0 | 69 | 0 | 0 | 0 | 0 | 0 |
| PM | 284 | 574 | AM | NOON | PM | AM | NOON | PM | 331 | 508 |

### Total Volume Per Leg

| | North Leg | East Leg | West Leg | South Leg |
|---|---|---|---|---|
| | | AM NOON PM | AM NOON PM | |
| AM | 884 | 392 0 251 | 0 0 0 | 768 |
| NOON | 0 | | | 0 |
| PM | 858 | AM NOON PM | | 839 |

# National Data and Surveying Services

6260-21

City of Loomis
All Vehicles & Uturns On Unshifted
Nothing On Bank 1
Nothing On Bank 2

**(323) 782-0090**
info@ndsdata.com

File Name : 17-7077-003 Taylor Rd & Del Oro High School Drop Off/ Baptist Ch
Date : 1/31/2017

**Unshifted Count = All Vehicles & Uturns**

| | Taylor Rd Southbound | | | | | Del Oro High School Drop Off/ Baptist Church Westbound | | | | | Taylor Rd Northbound | | | | | Del Oro High School Drop Off/ Baptist Church Eastbound | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| START TIME | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | Total | Uturns Total |
| 7:00 | 9 | 32 | 0 | 0 | 41 | 11 | 0 | 8 | 0 | 19 | 1 | 42 | 14 | 0 | 57 | 0 | 0 | 1 | 0 | 1 | 118 | 0 |
| 7:15 | 40 | 72 | 0 | 0 | 112 | 30 | 0 | 27 | 0 | 57 | 0 | 86 | 41 | 0 | 127 | 0 | 0 | 0 | 0 | 0 | 296 | 0 |
| 7:30 | 59 | 101 | 3 | 0 | 163 | 45 | 0 | 54 | 0 | 99 | 1 | 73 | 38 | 0 | 112 | 0 | 0 | 2 | 0 | 2 | 376 | 0 |
| 7:45 | 26 | 58 | 2 | 0 | 86 | 29 | 1 | 26 | 0 | 56 | 0 | 48 | 22 | 0 | 70 | 0 | 0 | 2 | 0 | 2 | 214 | 0 |
| Total | 134 | 263 | 5 | 0 | 402 | 115 | 1 | 115 | 0 | 231 | 2 | 249 | 115 | 0 | 366 | 0 | 0 | 5 | 0 | 5 | 1004 | 0 |
| 8:00 | 4 | 47 | 0 | 0 | 51 | 4 | 0 | 3 | 0 | 7 | 0 | 30 | 2 | 0 | 32 | 0 | 0 | 0 | 0 | 0 | 90 | 0 |
| 8:15 | 1 | 44 | 0 | 0 | 45 | 3 | 0 | 0 | 0 | 3 | 0 | 34 | 1 | 0 | 35 | 0 | 0 | 0 | 0 | 0 | 83 | 0 |
| 8:30 | 0 | 41 | 0 | 0 | 41 | 6 | 0 | 0 | 0 | 6 | 0 | 34 | 3 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 84 | 0 |
| 8:45 | 2 | 31 | 0 | 0 | 33 | 1 | 0 | 1 | 0 | 2 | 0 | 31 | 0 | 0 | 31 | 0 | 0 | 0 | 0 | 0 | 66 | 0 |
| Total | 7 | 163 | 0 | 0 | 170 | 14 | 0 | 4 | 0 | 18 | 0 | 129 | 6 | 0 | 135 | 0 | 0 | 0 | 0 | 0 | 323 | 0 |
| 14:00 | 3 | 45 | 1 | 0 | 49 | 1 | 0 | 2 | 0 | 3 | 2 | 45 | 3 | 0 | 50 | 4 | 0 | 1 | 0 | 5 | 107 | 0 |
| 14:15 | 1 | 45 | 1 | 0 | 47 | 5 | 0 | 2 | 0 | 7 | 5 | 59 | 5 | 0 | 69 | 0 | 0 | 0 | 0 | 0 | 123 | 0 |
| 14:30 | 2 | 57 | 2 | 0 | 61 | 1 | 0 | 2 | 0 | 3 | 21 | 73 | 4 | 1 | 99 | 0 | 0 | 0 | 0 | 0 | 163 | 1 |
| 14:45 | 0 | 96 | 8 | 0 | 104 | 1 | 0 | 34 | 0 | 35 | 29 | 107 | 0 | 0 | 136 | 6 | 0 | 43 | 0 | 49 | 324 | 0 |
| Total | 6 | 243 | 12 | 0 | 261 | 8 | 0 | 40 | 0 | 48 | 57 | 284 | 12 | 1 | 354 | 10 | 0 | 44 | 0 | 54 | 717 | 1 |
| 15:00 | 0 | 106 | 4 | 0 | 110 | 7 | 1 | 35 | 0 | 43 | 25 | 158 | 1 | 1 | 185 | 3 | 0 | 45 | 0 | 48 | 386 | 1 |
| 15:15 | 5 | 52 | 1 | 0 | 58 | 13 | 0 | 11 | 0 | 24 | 1 | 79 | 8 | 0 | 88 | 1 | 0 | 6 | 0 | 7 | 177 | 0 |
| Total | 5 | 158 | 5 | 0 | 168 | 20 | 1 | 46 | 0 | 67 | 26 | 237 | 9 | 1 | 273 | 4 | 0 | 51 | 0 | 55 | 563 | 1 |
| Grand Total | 152 | 827 | 22 | 0 | 1001 | 157 | 2 | 205 | 0 | 364 | 85 | 899 | 142 | 2 | 1128 | 14 | 0 | 100 | 0 | 114 | 2607 | 2 |
| Apprch % | 15.2% | 82.6% | 2.2% | 0.0% | | 43.1% | 0.5% | 56.3% | 0.0% | | 7.5% | 79.7% | 12.6% | 0.2% | | 12.3% | 0.0% | 87.7% | 0.0% | | | |
| Total % | 5.8% | 31.7% | 0.8% | 0.0% | 38.4% | 6.0% | 0.1% | 7.9% | 0.0% | 14.0% | 3.3% | 34.5% | 5.4% | 0.1% | 43.3% | 0.5% | 0.0% | 3.8% | 0.0% | 4.4% | 100.0% | |

| **AM PEAK HOUR** | Taylor Rd Southbound | | | | | Del Oro High School Drop Off/ Baptist Church Westbound | | | | | Taylor Rd Northbound | | | | | Del Oro High School Drop Off/ Baptist Church Eastbound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| START TIME | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | Total |
| Peak Hour Analysis From 07:00 to 08:00 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour For Entire Intersection Begins at 07:00 | | | | | | | | | | | | | | | | | | | | | |
| 7:00 | 9 | 32 | 0 | 0 | 41 | 11 | 0 | 8 | 0 | 19 | 1 | 42 | 14 | 0 | 57 | 0 | 0 | 1 | 0 | 1 | 118 |
| 7:15 | 40 | 72 | 0 | 0 | 112 | 30 | 0 | 27 | 0 | 57 | 0 | 86 | 41 | 0 | 127 | 0 | 0 | 0 | 0 | 0 | 296 |
| 7:30 | 59 | 101 | 3 | 0 | 163 | 45 | 0 | 54 | 0 | 99 | 1 | 73 | 38 | 0 | 112 | 0 | 0 | 2 | 0 | 2 | 376 |
| 7:45 | 26 | 58 | 2 | 0 | 86 | 29 | 1 | 26 | 0 | 56 | 0 | 48 | 22 | 0 | 70 | 0 | 0 | 2 | 0 | 2 | 214 |
| Total Volume | 134 | 263 | 5 | 0 | 402 | 115 | 1 | 115 | 0 | 231 | 2 | 249 | 115 | 0 | 366 | 0 | 0 | 5 | 0 | 5 | 1004 |
| % App Total | 33.3% | 65.4% | 1.2% | 0.0% | | 49.8% | 0.4% | 49.8% | 0.0% | | 0.5% | 68.0% | 31.4% | 0.0% | | 0.0% | 0.0% | 100.0% | 0.0% | | |
| PHF | .568 | .651 | .417 | .000 | .617 | .639 | .250 | .532 | .000 | .583 | .500 | .724 | .701 | .000 | .720 | .000 | .000 | .625 | .000 | .625 | .668 |

| **PM PEAK HOUR** | Taylor Rd Southbound | | | | | Del Oro High School Drop Off/ Baptist Church Westbound | | | | | Taylor Rd Northbound | | | | | Del Oro High School Drop Off/ Baptist Church Eastbound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| START TIME | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | Total |
| Peak Hour Analysis From 14:30 to 15:30 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour For Entire Intersection Begins at 14:30 | | | | | | | | | | | | | | | | | | | | | |
| 14:30 | 2 | 57 | 2 | 0 | 61 | 1 | 0 | 2 | 0 | 3 | 21 | 73 | 4 | 1 | 99 | 0 | 0 | 0 | 0 | 0 | 163 |
| 14:45 | 0 | 96 | 8 | 0 | 104 | 1 | 0 | 34 | 0 | 35 | 29 | 107 | 0 | 0 | 136 | 6 | 0 | 43 | 0 | 49 | 324 |
| 15:00 | 0 | 106 | 4 | 0 | 110 | 7 | 1 | 35 | 0 | 43 | 25 | 158 | 1 | 1 | 185 | 3 | 0 | 45 | 0 | 48 | 386 |
| 15:15 | 5 | 52 | 1 | 0 | 58 | 13 | 0 | 11 | 0 | 24 | 1 | 79 | 8 | 0 | 88 | 1 | 0 | 6 | 0 | 7 | 177 |
| Total Volume | 7 | 311 | 15 | 0 | 333 | 22 | 1 | 82 | 0 | 105 | 76 | 417 | 13 | 2 | 508 | 10 | 0 | 94 | 0 | 104 | 1050 |
| % App Total | 2.1% | 93.4% | 4.5% | 0.0% | | 21.0% | 1.0% | 78.1% | 0.0% | | 15.0% | 82.1% | 2.6% | 0.4% | | 9.6% | 0.0% | 90.4% | 0.0% | | |
| PHF | .350 | .733 | .469 | .000 | .757 | .423 | .250 | .586 | .000 | .610 | .655 | .660 | .406 | .500 | .686 | .417 | .000 | .522 | .000 | .531 | .680 |

## *Taylor Rd & Del Oro High School Drop Off/ Baptist*

Date: 1/31/2017

Day: Tuesday

Project #: 17-7077-003

6260-21

| | |
|---|---|
| AM Peak Hour | 07:00 - 08:00 |
| NOON Peak Hour | |
| PM Peak Hour | 14:30 - 15:30 |

### Peak Hour Summary

**Southbound Approach** (Taylor Rd)

| | | | | | |
|---|---|---|---|---|---|
| AM | 5 | 263 | 134 | 0 | 364 AM |
| NOON | 0 | 0 | 0 | 0 | 0 NOON |
| PM | 15 | 311 | 7 | 0 | 509 PM |

**Eastbound Approach** (High School Drop Off/ Baptist C)

| | AM | NOON | PM |
|---|---|---|---|
| | 8 | 0 | 92 |
| | 0 | 0 | 0 |
| | 0 | 0 | 10 |
| | 0 | 0 | 0 |
| | 5 | 0 | 94 |

**Westbound Approach**

| | AM | NOON | PM |
|---|---|---|---|
| | 115 | 0 | 82 |
| | 1 | 0 | 1 |
| | 115 | 0 | 22 |
| | 0 | 0 | 0 |
| | 249 | 0 | 20 |

**CONTROL**

**Northbound Approach**

| | | | | | |
|---|---|---|---|---|---|
| AM | 383 | 0 | 2 | 249 | 115 AM |
| NOON | 0 | 0 | 0 | 0 | 0 NOON |
| PM | 429 | 2 | 76 | 417 | 13 PM |

| Count Periods | Start | End |
|---|---|---|
| AM | 7:00 AM | 9:00 AM |
| NOON | NONE | NONE |
| PM | 2:00 PM | 3:30 PM |

### Total Ins & Outs

| | North Leg | East Leg | South Leg | West Leg |
|---|---|---|---|---|
| AM | 402 | 231 | 383 | 8 |
| NOON | 0 | 0 | 0 | 0 |
| PM | 333 | 105 | 429 | 92 |
| AM | 364 | 249 | 366 | 5 |
| NOON | 0 | 0 | 0 | 0 |
| PM | 509 | 20 | 508 | 104 |

### Total Volume Per Leg

| | North Leg | East Leg | South Leg | West Leg |
|---|---|---|---|---|
| AM | 766 | 480 | 749 | 13 |
| NOON | 0 | 0 | 0 | 0 |
| PM | 842 | 125 | 937 | 196 |

# National Data and Surveying Services

6260-21

City of Loomis
All Vehicles & Uturns On Unshifted
Nothing On Bank 1
Nothing On Bank 2

**(323) 782-0090**
info@ndsdata.com

File Name : 17-7077-004 Taylor Rd & Del Oro High School Southern Parking Lo
Date : 1/31/2017

**Unshifted Count = All Vehicles & Uturns**

| | Taylor Rd Southbound | | | | | Del Oro High School Southern Parking Lot Westbound | | | | | Taylor Rd Northbound | | | | | Del Oro High School Southern Parking Lot Eastbound | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| START TIME | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | Total | Uturns Total |
| 7:00 | 13 | 34 | 0 | 0 | 47 | 10 | 0 | 2 | 0 | 12 | 0 | 44 | 59 | 0 | 103 | 0 | 0 | 0 | 0 | 0 | 162 | 0 |
| 7:15 | 30 | 74 | 0 | 0 | 104 | 38 | 0 | 19 | 0 | 57 | 0 | 118 | 118 | 0 | 236 | 0 | 0 | 0 | 0 | 0 | 397 | 0 |
| 7:30 | 66 | 80 | 0 | 0 | 146 | 36 | 0 | 37 | 0 | 73 | 0 | 70 | 113 | 0 | 183 | 0 | 0 | 0 | 0 | 0 | 402 | 0 |
| 7:45 | 23 | 75 | 0 | 0 | 98 | 36 | 0 | 16 | 0 | 52 | 0 | 48 | 71 | 0 | 119 | 0 | 0 | 0 | 0 | 0 | 269 | 0 |
| Total | 132 | 263 | 0 | 0 | 395 | 120 | 0 | 74 | 0 | 194 | 0 | 280 | 361 | 0 | 641 | 0 | 0 | 0 | 0 | 0 | 1230 | 0 |
| 8:00 | 6 | 33 | 0 | 0 | 39 | 5 | 0 | 3 | 0 | 8 | 0 | 32 | 17 | 0 | 49 | 0 | 0 | 0 | 0 | 0 | 96 | 0 |
| 8:15 | 5 | 37 | 0 | 0 | 42 | 9 | 0 | 4 | 0 | 13 | 0 | 41 | 19 | 0 | 60 | 0 | 0 | 0 | 0 | 0 | 115 | 0 |
| 8:30 | 4 | 31 | 0 | 0 | 35 | 9 | 0 | 6 | 0 | 15 | 0 | 27 | 10 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 87 | 0 |
| 8:45 | 5 | 38 | 0 | 0 | 43 | 1 | 0 | 6 | 0 | 7 | 0 | 27 | 10 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 87 | 0 |
| Total | 20 | 139 | 0 | 0 | 159 | 24 | 0 | 19 | 0 | 43 | 0 | 127 | 56 | 0 | 183 | 0 | 0 | 0 | 0 | 0 | 385 | 0 |
| 14:00 | 3 | 44 | 0 | 0 | 47 | 5 | 0 | 1 | 0 | 6 | 0 | 50 | 6 | 0 | 56 | 0 | 0 | 0 | 0 | 0 | 109 | 0 |
| 14:15 | 6 | 45 | 0 | 0 | 51 | 3 | 0 | 9 | 0 | 12 | 0 | 60 | 11 | 0 | 71 | 0 | 0 | 0 | 0 | 0 | 134 | 0 |
| 14:30 | 9 | 50 | 0 | 0 | 59 | 6 | 0 | 1 | 0 | 7 | 0 | 96 | 28 | 0 | 124 | 0 | 0 | 0 | 0 | 0 | 190 | 0 |
| 14:45 | 15 | 124 | 0 | 0 | 139 | 11 | 0 | 63 | 0 | 74 | 0 | 72 | 33 | 0 | 105 | 0 | 0 | 0 | 0 | 0 | 318 | 0 |
| Total | 33 | 263 | 0 | 0 | 296 | 25 | 0 | 74 | 0 | 99 | 0 | 278 | 78 | 0 | 356 | 0 | 0 | 0 | 0 | 0 | 751 | 0 |
| 15:00 | 23 | 139 | 0 | 0 | 162 | 11 | 0 | 107 | 0 | 118 | 0 | 77 | 49 | 0 | 126 | 0 | 0 | 0 | 0 | 0 | 406 | 0 |
| 15:15 | 14 | 59 | 0 | 0 | 73 | 55 | 0 | 28 | 0 | 83 | 0 | 58 | 32 | 0 | 90 | 0 | 0 | 0 | 0 | 0 | 246 | 0 |
| Total | 37 | 198 | 0 | 0 | 235 | 66 | 0 | 135 | 0 | 201 | 0 | 135 | 81 | 0 | 216 | 0 | 0 | 0 | 0 | 0 | 652 | 0 |
| Grand Total | 222 | 863 | 0 | 0 | 1085 | 235 | 0 | 302 | 0 | 537 | 0 | 820 | 576 | 0 | 1396 | 0 | 0 | 0 | 0 | 0 | 3018 | 0 |
| Apprch % | 20.5% | 79.5% | 0.0% | 0.0% | | 43.8% | 0.0% | 56.2% | 0.0% | | 0.0% | 58.7% | 41.3% | 0.0% | | 0.0% | 0.0% | 0.0% | 0.0% | | | |
| Total % | 7.4% | 28.6% | 0.0% | 0.0% | 36.0% | 7.8% | 0.0% | 10.0% | 0.0% | 17.8% | 0.0% | 27.2% | 19.1% | 0.0% | 46.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 100.0% | |

| **AM PEAK HOUR** | Taylor Rd Southbound | | | | | Del Oro High School Southern Parking Lot Westbound | | | | | Taylor Rd Northbound | | | | | Del Oro High School Southern Parking Lot Eastbound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| START TIME | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | Total |
| Peak Hour Analysis From 07:00 to 08:00 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour For Entire Intersection Begins at 07:00 | | | | | | | | | | | | | | | | | | | | | |
| 7:00 | 13 | 34 | 0 | 0 | 47 | 10 | 0 | 2 | 0 | 12 | 0 | 44 | 59 | 0 | 103 | 0 | 0 | 0 | 0 | 0 | 162 |
| 7:15 | 30 | 74 | 0 | 0 | 104 | 38 | 0 | 19 | 0 | 57 | 0 | 118 | 118 | 0 | 236 | 0 | 0 | 0 | 0 | 0 | 397 |
| 7:30 | 66 | 80 | 0 | 0 | 146 | 36 | 0 | 37 | 0 | 73 | 0 | 70 | 113 | 0 | 183 | 0 | 0 | 0 | 0 | 0 | 402 |
| 7:45 | 23 | 75 | 0 | 0 | 98 | 36 | 0 | 16 | 0 | 52 | 0 | 48 | 71 | 0 | 119 | 0 | 0 | 0 | 0 | 0 | 269 |
| Total Volume | 132 | 263 | 0 | 0 | 395 | 120 | 0 | 74 | 0 | 194 | 0 | 280 | 361 | 0 | 641 | 0 | 0 | 0 | 0 | 0 | 1230 |
| % App Total | 33.4% | 66.6% | 0.0% | 0.0% | | 61.9% | 0.0% | 38.1% | 0.0% | | 0.0% | 43.7% | 56.3% | 0.0% | | 0.0% | 0.0% | 0.0% | 0.0% | | |
| PHF | .500 | .822 | .000 | .000 | .676 | .789 | .000 | .500 | .000 | .664 | .000 | .593 | .765 | .000 | .679 | .000 | .000 | .000 | .000 | .000 | .765 |

| **PM PEAK HOUR** | Taylor Rd Southbound | | | | | Del Oro High School Southern Parking Lot Westbound | | | | | Taylor Rd Northbound | | | | | Del Oro High School Southern Parking Lot Eastbound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| START TIME | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | Total |
| Peak Hour Analysis From 14:30 to 15:30 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour For Entire Intersection Begins at 14:30 | | | | | | | | | | | | | | | | | | | | | |
| 14:30 | 9 | 50 | 0 | 0 | 59 | 6 | 0 | 1 | 0 | 7 | 0 | 96 | 28 | 0 | 124 | 0 | 0 | 0 | 0 | 0 | 190 |
| 14:45 | 15 | 124 | 0 | 0 | 139 | 11 | 0 | 63 | 0 | 74 | 0 | 72 | 33 | 0 | 105 | 0 | 0 | 0 | 0 | 0 | 318 |
| 15:00 | 23 | 139 | 0 | 0 | 162 | 11 | 0 | 107 | 0 | 118 | 0 | 77 | 49 | 0 | 126 | 0 | 0 | 0 | 0 | 0 | 406 |
| 15:15 | 14 | 59 | 0 | 0 | 73 | 55 | 0 | 28 | 0 | 83 | 0 | 58 | 32 | 0 | 90 | 0 | 0 | 0 | 0 | 0 | 246 |
| Total Volume | 61 | 372 | 0 | 0 | 433 | 83 | 0 | 199 | 0 | 282 | 0 | 303 | 142 | 0 | 445 | 0 | 0 | 0 | 0 | 0 | 1160 |
| % App Total | 14.1% | 85.9% | 0.0% | 0.0% | | 29.4% | 0.0% | 70.6% | 0.0% | | 0.0% | 68.1% | 31.9% | 0.0% | | 0.0% | 0.0% | 0.0% | 0.0% | | |
| PHF | .663 | .669 | .000 | .000 | .668 | .377 | .000 | .465 | .000 | .597 | .000 | .789 | .724 | .000 | .883 | .000 | .000 | .000 | .000 | .000 | .714 |

## *Taylor Rd & Del Oro High School Southern Parking L*

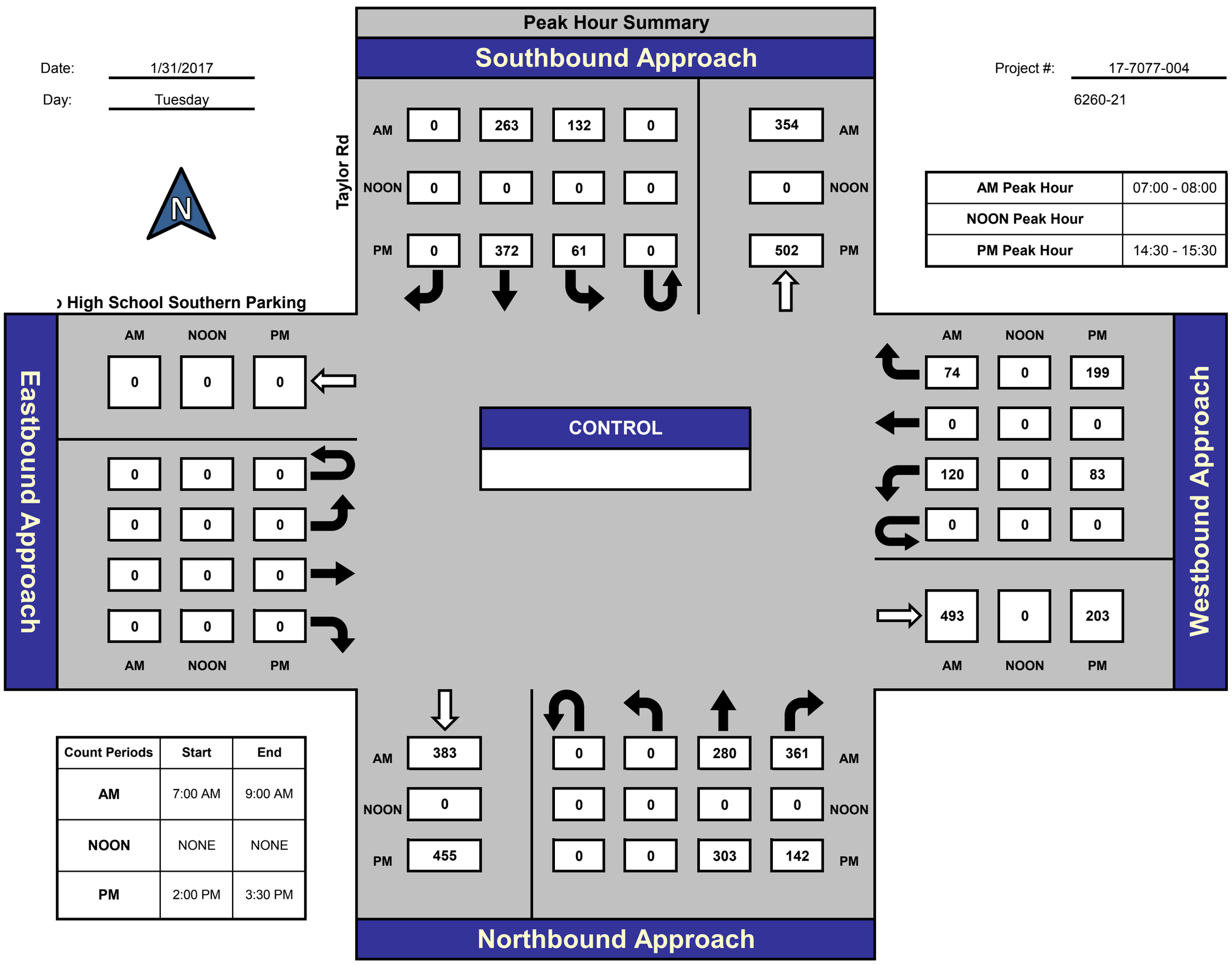
Date: 1/31/2017

Day: Tuesday

Project #: 17-7077-004

6260-21

| | |
|---|---|
| AM Peak Hour | 07:00 - 08:00 |
| NOON Peak Hour | |
| PM Peak Hour | 14:30 - 15:30 |




| Count Periods | Start | End |
|---|---|---|
| AM | 7:00 AM | 9:00 AM |
| NOON | NONE | NONE |
| PM | 2:00 PM | 3:30 PM |

### Total Ins & Outs

| | North Leg | | East Leg | | West Leg | | South Leg |
|---|---|---|---|---|---|---|---|
| AM | 395 | 354 | 194 | 282 | 0 | 0 | 383 |
| NOON | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PM | 433 | 502 | 493 | 203 | 0 | 0 | 455 |
| | | | AM | PM | AM | PM | 445 |

### Total Volume Per Leg

| | North Leg | East Leg | West Leg | South Leg |
|---|---|---|---|---|
| AM | 749 | 687 | 0 | 1024 |
| NOON | 0 | 0 | 0 | 0 |
| PM | 935 | 485 | 0 | 900 |

# National Data and Surveying Services

6260-21

City of Loomis
All Vehicles & Uturns On Unshifted
Nothing On Bank 1
Nothing On Bank 2

**(323) 782-0090**
info@ndsdata.com

File Name : 17-7077-005 Taylor Rd & King Rd
Date : 1/31/2017

**Unshifted Count = All Vehicles & Uturns**

| | Taylor Rd Southbound | | | | | King Rd Westbound | | | | | Taylor Rd Northbound | | | | | King Rd Eastbound | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| START TIME | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | Total | Uturns Total |
| 7:00 | 3 | 39 | 11 | 0 | 53 | 29 | 22 | 21 | 0 | 72 | 72 | 74 | 13 | 0 | 159 | 31 | 12 | 42 | 0 | 85 | 369 | 0 |
| 7:15 | 6 | 74 | 29 | 0 | 109 | 24 | 20 | 43 | 0 | 87 | 53 | 139 | 12 | 0 | 204 | 86 | 20 | 52 | 0 | 158 | 558 | 0 |
| 7:30 | 13 | 91 | 33 | 0 | 137 | 39 | 25 | 70 | 0 | 134 | 39 | 107 | 20 | 0 | 166 | 58 | 19 | 54 | 0 | 131 | 568 | 0 |
| 7:45 | 20 | 86 | 36 | 0 | 142 | 37 | 38 | 10 | 0 | 85 | 83 | 42 | 26 | 0 | 151 | 21 | 32 | 72 | 0 | 125 | 503 | 0 |
| Total | 42 | 290 | 109 | 0 | 441 | 129 | 105 | 144 | 0 | 378 | 247 | 362 | 71 | 0 | 680 | 196 | 83 | 220 | 0 | 499 | 1998 | 0 |
| 8:00 | 8 | 42 | 15 | 0 | 65 | 37 | 44 | 10 | 0 | 91 | 89 | 50 | 32 | 0 | 171 | 13 | 33 | 60 | 0 | 106 | 433 | 0 |
| 8:15 | 5 | 35 | 15 | 0 | 55 | 52 | 21 | 6 | 0 | 79 | 76 | 52 | 50 | 0 | 178 | 16 | 35 | 77 | 0 | 128 | 440 | 0 |
| 8:30 | 2 | 45 | 7 | 0 | 54 | 24 | 21 | 5 | 0 | 50 | 53 | 35 | 28 | 0 | 116 | 11 | 17 | 63 | 0 | 91 | 311 | 0 |
| 8:45 | 6 | 43 | 8 | 0 | 57 | 19 | 12 | 2 | 0 | 33 | 48 | 37 | 19 | 0 | 104 | 12 | 11 | 38 | 0 | 61 | 255 | 0 |
| Total | 21 | 165 | 45 | 0 | 231 | 132 | 98 | 23 | 0 | 253 | 266 | 174 | 129 | 0 | 569 | 52 | 96 | 238 | 0 | 386 | 1439 | 0 |
| 14:00 | 1 | 46 | 18 | 0 | 65 | 26 | 11 | 4 | 0 | 41 | 44 | 49 | 29 | 0 | 122 | 13 | 22 | 50 | 0 | 85 | 313 | 0 |
| 14:15 | 4 | 44 | 14 | 0 | 62 | 22 | 16 | 7 | 0 | 45 | 68 | 68 | 51 | 0 | 187 | 19 | 25 | 62 | 0 | 106 | 400 | 0 |
| 14:30 | 9 | 51 | 16 | 0 | 76 | 37 | 21 | 20 | 0 | 78 | 70 | 110 | 69 | 0 | 249 | 24 | 26 | 94 | 0 | 144 | 547 | 0 |
| 14:45 | 15 | 104 | 37 | 0 | 156 | 42 | 20 | 16 | 0 | 78 | 60 | 96 | 48 | 0 | 204 | 20 | 24 | 44 | 0 | 88 | 526 | 0 |
| Total | 29 | 245 | 85 | 0 | 359 | 127 | 68 | 47 | 0 | 242 | 242 | 323 | 197 | 0 | 762 | 76 | 97 | 250 | 0 | 423 | 1786 | 0 |
| 15:00 | 20 | 114 | 55 | 0 | 189 | 53 | 23 | 9 | 0 | 85 | 70 | 97 | 45 | 0 | 212 | 22 | 18 | 62 | 0 | 102 | 588 | 0 |
| 15:15 | 14 | 89 | 37 | 0 | 140 | 36 | 23 | 10 | 0 | 69 | 80 | 82 | 27 | 0 | 189 | 19 | 13 | 67 | 0 | 99 | 497 | 0 |
| Total | 34 | 203 | 92 | 0 | 329 | 89 | 46 | 19 | 0 | 154 | 150 | 179 | 72 | 0 | 401 | 41 | 31 | 129 | 0 | 201 | 1085 | 0 |
| Grand Total | 126 | 903 | 331 | 0 | 1360 | 477 | 317 | 233 | 0 | 1027 | 905 | 1038 | 469 | 0 | 2412 | 365 | 307 | 837 | 0 | 1509 | 6308 | 0 |
| Apprch % | 9.3% | 66.4% | 24.3% | 0.0% | | 46.4% | 30.9% | 22.7% | 0.0% | | 37.5% | 43.0% | 19.4% | 0.0% | | 24.2% | 20.3% | 55.5% | 0.0% | | | |
| Total % | 2.0% | 14.3% | 5.2% | 0.0% | 21.6% | 7.6% | 5.0% | 3.7% | 0.0% | 16.3% | 14.3% | 16.5% | 7.4% | 0.0% | 38.2% | 5.8% | 4.9% | 13.3% | 0.0% | 23.9% | 100.0% | |

| **AM PEAK HOUR** | Taylor Rd Southbound | | | | | King Rd Westbound | | | | | Taylor Rd Northbound | | | | | King Rd Eastbound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| START TIME | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | Total |
| Peak Hour Analysis From 07:15 to 08:15 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour For Entire Intersection Begins at 07:15 | | | | | | | | | | | | | | | | | | | | | |
| 7:15 | 6 | 74 | 29 | 0 | 109 | 24 | 20 | 43 | 0 | 87 | 53 | 139 | 12 | 0 | 204 | 86 | 20 | 52 | 0 | 158 | 558 |
| 7:30 | 13 | 91 | 33 | 0 | 137 | 39 | 25 | 70 | 0 | 134 | 39 | 107 | 20 | 0 | 166 | 58 | 19 | 54 | 0 | 131 | 568 |
| 7:45 | 20 | 86 | 36 | 0 | 142 | 37 | 38 | 10 | 0 | 85 | 83 | 42 | 26 | 0 | 151 | 21 | 32 | 72 | 0 | 125 | 503 |
| 8:00 | 8 | 42 | 15 | 0 | 65 | 37 | 44 | 10 | 0 | 91 | 89 | 50 | 32 | 0 | 171 | 13 | 33 | 60 | 0 | 106 | 433 |
| Total Volume | 47 | 293 | 113 | 0 | 453 | 137 | 127 | 133 | 0 | 397 | 264 | 338 | 90 | 0 | 692 | 178 | 104 | 238 | 0 | 520 | 2062 |
| % App Total | 10.4% | 64.7% | 24.9% | 0.0% | | 34.5% | 32.0% | 33.5% | 0.0% | | 38.2% | 48.8% | 13.0% | 0.0% | | 34.2% | 20.0% | 45.8% | 0.0% | | |
| PHF | .588 | .805 | .785 | .000 | .798 | .878 | .722 | .475 | .000 | .741 | .742 | .608 | .703 | .000 | .848 | .517 | .788 | .826 | .000 | .823 | .908 |

| **PM PEAK HOUR** | Taylor Rd Southbound | | | | | King Rd Westbound | | | | | Taylor Rd Northbound | | | | | King Rd Eastbound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| START TIME | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | LEFT | THRU | RIGHT | UTURNS | APP.TOTAL | Total |
| Peak Hour Analysis From 14:30 to 15:30 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour For Entire Intersection Begins at 14:30 | | | | | | | | | | | | | | | | | | | | | |
| 14:30 | 9 | 51 | 16 | 0 | 76 | 37 | 21 | 20 | 0 | 78 | 70 | 110 | 69 | 0 | 249 | 24 | 26 | 94 | 0 | 144 | 547 |
| 14:45 | 15 | 104 | 37 | 0 | 156 | 42 | 20 | 16 | 0 | 78 | 60 | 96 | 48 | 0 | 204 | 20 | 24 | 44 | 0 | 88 | 526 |
| 15:00 | 20 | 114 | 55 | 0 | 189 | 53 | 23 | 9 | 0 | 85 | 70 | 97 | 45 | 0 | 212 | 22 | 18 | 62 | 0 | 102 | 588 |
| 15:15 | 14 | 89 | 37 | 0 | 140 | 36 | 23 | 10 | 0 | 69 | 80 | 82 | 27 | 0 | 189 | 19 | 13 | 67 | 0 | 99 | 497 |
| Total Volume | 58 | 358 | 145 | 0 | 561 | 168 | 87 | 55 | 0 | 310 | 280 | 385 | 189 | 0 | 854 | 85 | 81 | 267 | 0 | 433 | 2158 |
| % App Total | 10.3% | 63.8% | 25.8% | 0.0% | | 54.2% | 28.1% | 17.7% | 0.0% | | 32.8% | 45.1% | 22.1% | 0.0% | | 19.6% | 18.7% | 61.7% | 0.0% | | |
| PHF | .725 | .785 | .659 | .000 | .742 | .792 | .946 | .688 | .000 | .912 | .875 | .875 | .685 | .000 | .857 | .885 | .779 | .710 | .000 | .752 | .918 |

## *Taylor Rd & King Rd*

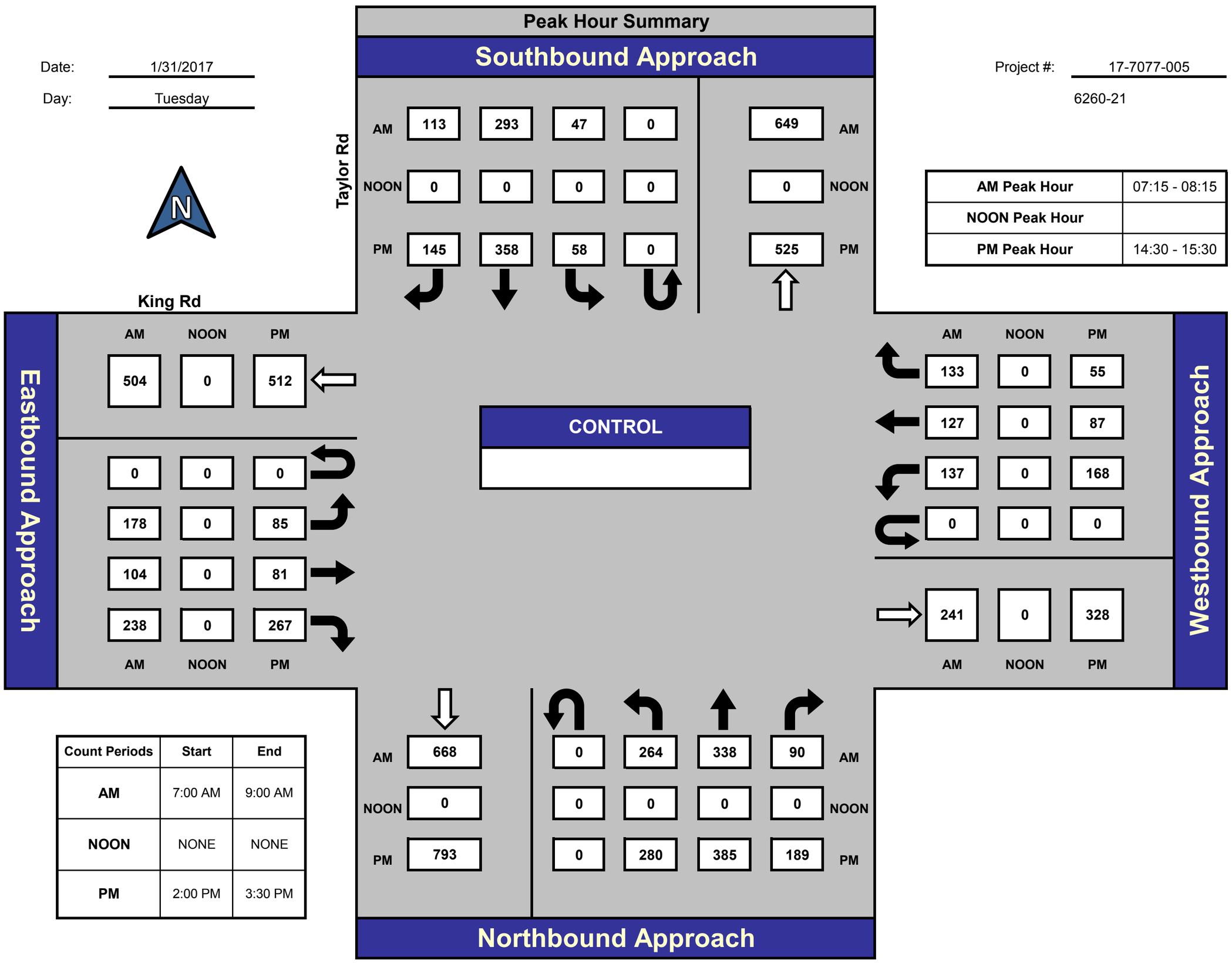
Date: 1/31/2017

Day: Tuesday

Project #: 17-7077-005

6260-21

| | |
|---|---|
| AM Peak Hour | 07:15 - 08:15 |
| NOON Peak Hour | |
| PM Peak Hour | 14:30 - 15:30 |




| Count Periods | Start | End |
|---|---|---|
| AM | 7:00 AM | 9:00 AM |
| NOON | NONE | NONE |
| PM | 2:00 PM | 3:30 PM |

### Total Ins & Outs

| | North Leg | | |
|---|---|---|---|
| AM | 453 | 649 | AM |
| NOON | 0 | 0 | NOON |
| PM | 561 | 525 | PM |

| West Leg | | | East Leg | | |
|---|---|---|---|---|---|
| AM | NOON | PM | AM | NOON | PM |
| 504 | 0 | 512 | 397 | 0 | 310 |
| 520 | 0 | 433 | 241 | 0 | 328 |

| | South Leg | |
|---|---|---|
| AM | 668 | 692 |
| NOON | 0 | 0 |
| PM | 793 | 854 |

### Total Volume Per Leg

| | North Leg |
|---|---|
| AM | 1102 |
| NOON | 0 |
| PM | 1086 |

| West Leg | | | East Leg | | |
|---|---|---|---|---|---|
| AM | NOON | PM | AM | NOON | PM |
| 1024 | 0 | 945 | 638 | 0 | 638 |

| | South Leg |
|---|---|
| AM | 1360 |
| NOON | 0 |
| PM | 1647 |

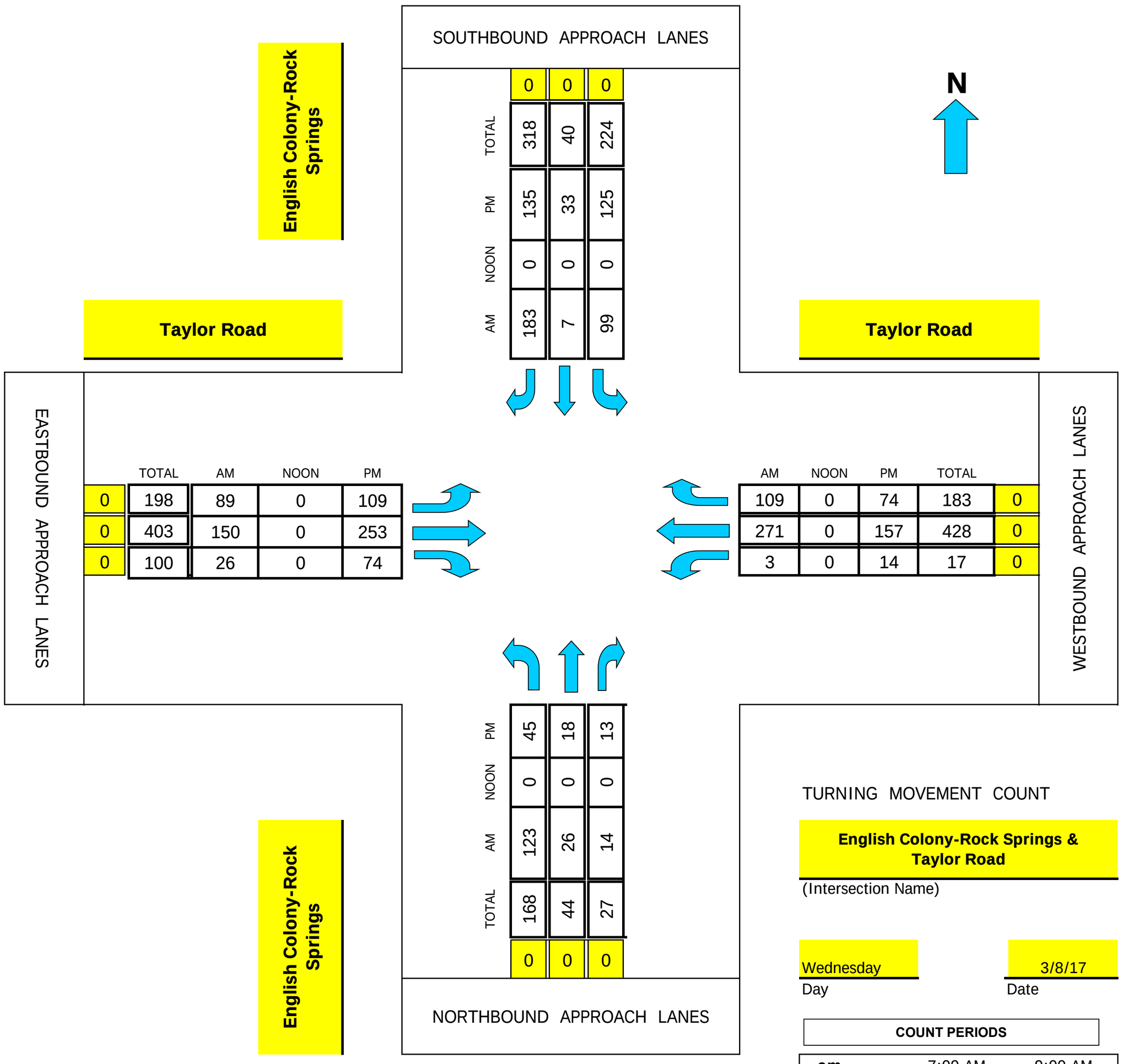
# Intersection Turning Movement

**Prepared by:**

KD Anderson Associates, Inc.

## *TMC Summary of English Colony-Rock Springs/ Taylor Road*

Project #: 6260-21




| | TOTAL | AM | NOON | PM |
|---|---|---|---|---|
| | 318 | 183 | 0 | 135 |
| | 40 | 7 | 0 | 33 |
| | 224 | 99 | 0 | 125 |
| | 0 | 0 | 0 | |

| | TOTAL | AM | NOON | PM |
|---|---|---|---|---|
| 0 | 198 | 89 | 0 | 109 |
| 0 | 403 | 150 | 0 | 253 |
| 0 | 100 | 26 | 0 | 74 |

| | AM | NOON | PM | TOTAL |
|---|---|---|---|---|
| | 109 | 0 | 74 | 183 |
| | 271 | 0 | 157 | 428 |
| | 3 | 0 | 14 | 17 |
| | 0 | 0 | 0 | |

| | TOTAL | AM | NOON | PM |
|---|---|---|---|---|
| | 168 | 123 | 0 | 45 |
| | 44 | 26 | 0 | 18 |
| | 27 | 14 | 0 | 13 |
| | 0 | 0 | 0 | |

TURNING MOVEMENT COUNT

**English Colony-Rock Springs & Taylor Road**

(Intersection Name)

Wednesday — Day

3/8/17 — Date

| COUNT PERIODS | | | |
|---|---|---|---|
| **am** | 7:00 AM | - | 9:00 AM |
| **noon** | 11:00 AM | - | 1:00 PM |
| **pm** | 2:00 PM | - | 3:15 PM |

| | |
|---|---|
| AM PEAK HOUR | 715 AM |
| NOON PEAK HOUR | 0 AM |
| PM PEAK HOUR | 230 PM |

# Intersection Turning Movement

**Prepared by:**

N-S STREET: English Colony-Rock Springs DATE: 3/8/17 LOCATION: Loomis

E-W STREET: Taylor Road DAY: WEDNESDAY PROJECT# 6260-21

| | NORTHBOUND | | | SOUTHBOUND | | | EASTBOUND | | | WESTBOUND | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | NL | NT | NR | SL | ST | SR | EL | ET | ER | WL | WT | WR | TOTAL |
| LANES: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:00 AM | | | | | | | | | | | | | |
| 6:15 AM | | | | | | | | | | | | | |
| 6:30 AM | | | | | | | | | | | | | |
| 6:45 AM | | | | | | | | | | | | | |
| 7:00 AM | 25 | 2 | 0 | 12 | 2 | 47 | 16 | 10 | 6 | 1 | 56 | 17 | 194 |
| 7:15 AM | 38 | 2 | 5 | 25 | 2 | 56 | 14 | 36 | 2 | 0 | 86 | 19 | 285 |
| 7:30 AM | 48 | 3 | 4 | 26 | 2 | 40 | 17 | 54 | 9 | 1 | 112 | 27 | 343 |
| 7:45 AM | 23 | 8 | 3 | 23 | 1 | 39 | 26 | 41 | 10 | 1 | 42 | 31 | 248 |
| 8:00 AM | 14 | 13 | 2 | 25 | 2 | 48 | 32 | 19 | 5 | 1 | 31 | 32 | 224 |
| 8:15 AM | 15 | 10 | 1 | 42 | 8 | 62 | 14 | 30 | 5 | 1 | 26 | 27 | 241 |
| 8:30 AM | 9 | 4 | 1 | 17 | 5 | 25 | 11 | 20 | 4 | 1 | 26 | 14 | 137 |
| 8:45 AM | 11 | 6 | 2 | 21 | 3 | 21 | 11 | 15 | 5 | 2 | 26 | 16 | 139 |
| 9:00 AM | | | | | | | | | | | | | |
| 9:15 AM | | | | | | | | | | | | | |
| 9:30 AM | | | | | | | | | | | | | |
| 9:45 AM | | | | | | | | | | | | | |
| 10:00 AM | | | | | | | | | | | | | |
| 10:15 AM | | | | | | | | | | | | | |
| 10:30 AM | | | | | | | | | | | | | |
| 10:45 AM | | | | | | | | | | | | | |
| 11:00 AM | | | | | | | | | | | | | |
| 11:15 AM | | | | | | | | | | | | | |
| 11:30 AM | | | | | | | | | | | | | |
| 11:45 AM | | | | | | | | | | | | | |
| TOTAL VOLUMES = | 183 | 48 | 18 | 191 | 25 | 338 | 141 | 225 | 46 | 8 | 405 | 183 | 1811 |

AM Peak Hr Begins at: 715 AM

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PEAK VOLUMES = | 123 | 26 | 14 | 99 | 7 | 183 | 89 | 150 | 26 | 3 | 271 | 109 | 1100 |
| PEAK HR. FACTOR: | | 0.741 | | | 0.870 | | | 0.828 | | | 0.684 | | 0.802 |

CONTROL:

# Intersection Turning Movement

**Prepared by:**

N-S STREET: English Colony-Rock Springs DATE: 3/8/17 LOCATION: Loomis

E-W STREET: Taylor Road DAY: WEDNESDAY PROJECT# 6260-21

| | NORTHBOUND | | | SOUTHBOUND | | | EASTBOUND | | | WESTBOUND | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LANES: | NL | NT | NR | SL | ST | SR | EL | ET | ER | WL | WT | WR | TOTAL |
| 1:00 PM | | | | | | | | | | | | | |
| 1:15 PM | | | | | | | | | | | | | |
| 1:30 PM | | | | | | | | | | | | | |
| 1:45 PM | | | | | | | | | | | | | |
| 2:00 PM | 9 | 5 | 2 | 13 | 3 | 32 | 27 | 29 | 11 | 3 | 29 | 21 | 184 |
| 2:15 PM | 6 | 7 | 4 | 18 | 3 | 23 | 26 | 35 | 8 | 3 | 29 | 22 | 184 |
| 2:30 PM | 11 | 6 | 4 | 35 | 11 | 53 | 22 | 42 | 11 | 3 | 32 | 21 | 251 |
| 2:45 PM | 17 | 3 | 3 | 25 | 10 | 43 | 23 | 68 | 19 | 3 | 49 | 20 | 283 |
| 3:00 PM | 8 | 5 | 4 | 37 | 6 | 25 | 45 | 92 | 34 | 4 | 45 | 19 | 324 |
| 3:15 PM | 9 | 4 | 2 | 28 | 6 | 14 | 19 | 51 | 10 | 4 | 31 | 14 | 192 |
| 3:30 PM | | | | | | | | | | | | | |
| 3:45 PM | | | | | | | | | | | | | |
| 4:00 PM | | | | | | | | | | | | | |
| 4:15 PM | | | | | | | | | | | | | |
| 4:30 PM | | | | | | | | | | | | | |
| 4:45 PM | | | | | | | | | | | | | |
| 5:00 PM | | | | | | | | | | | | | |
| 5:15 PM | | | | | | | | | | | | | |
| 5:30 PM | | | | | | | | | | | | | |
| 5:45 PM | | | | | | | | | | | | | |
| 6:00 PM | | | | | | | | | | | | | |
| 6:15 PM | | | | | | | | | | | | | |
| 6:30 PM | | | | | | | | | | | | | |
| 6:45 PM | | | | | | | | | | | | | |
| TOTAL VOLUMES = | NL 60 | NT 30 | NR 19 | SL 156 | ST 39 | SR 190 | EL 162 | ET 317 | ER 93 | WL 20 | WT 215 | WR 117 | TOTAL 1418 |

PM Peak Hr Begins at: 230 PM

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PEAK VOLUMES = | 45 | 18 | 13 | 125 | 33 | 135 | 109 | 253 | 74 | 14 | 157 | 74 | 1050 |
| PEAK HR. FACTOR: | | 0.826 | | | 0.740 | | | 0.637 | | | 0.851 | | 0.810 |

CONTROL:

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 22.2 |
| Intersection LOS | C |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 99 | 7 | 183 | 123 | 26 | 14 | 89 | 150 | 26 | 3 | 271 | 109 |
| Future Vol, veh/h | 99 | 7 | 183 | 123 | 26 | 14 | 89 | 150 | 26 | 3 | 271 | 109 |
| Peak Hour Factor | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 124 | 9 | 229 | 154 | 33 | 18 | 111 | 188 | 33 | 4 | 339 | 136 |
| Number of Lanes | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 1 | 2 | 3 | 2 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 3 | 2 | 2 | 1 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 2 | 3 | 1 | 2 |
| HCM Control Delay | 17.6 | 22 | 18.8 | 28.2 |
| HCM LOS | C | C | C | D |

| Lane | NBLn1 | NBLn2 | EBLn1 | EBLn2 | WBLn1 | SBLn1 | SBLn2 | SBLn3 |
|---|---|---|---|---|---|---|---|---|
| Vol Left, % | 100% | 0% | 93% | 0% | 75% | 100% | 0% | 0% |
| Vol Thru, % | 0% | 85% | 7% | 0% | 16% | 0% | 100% | 0% |
| Vol Right, % | 0% | 15% | 0% | 100% | 9% | 0% | 0% | 100% |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 89 | 176 | 106 | 183 | 163 | 3 | 271 | 109 |
| LT Vol | 89 | 0 | 99 | 0 | 123 | 3 | 0 | 0 |
| Through Vol | 0 | 150 | 7 | 0 | 26 | 0 | 271 | 0 |
| RT Vol | 0 | 26 | 0 | 183 | 14 | 0 | 0 | 109 |
| Lane Flow Rate | 111 | 220 | 132 | 229 | 204 | 4 | 339 | 136 |
| Geometry Grp | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| Degree of Util (X) | 0.284 | 0.523 | 0.335 | 0.501 | 0.526 | 0.009 | 0.776 | 0.285 |
| Departure Headway (Hd) | 9.186 | 8.558 | 9.089 | 7.889 | 9.298 | 8.768 | 8.252 | 7.53 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 392 | 420 | 396 | 458 | 387 | 408 | 437 | 477 |
| Service Time | 6.942 | 6.313 | 6.842 | 5.641 | 7.057 | 6.52 | 6.004 | 5.281 |
| HCM Lane V/C Ratio | 0.283 | 0.524 | 0.333 | 0.5 | 0.527 | 0.01 | 0.776 | 0.285 |
| HCM Control Delay | 15.6 | 20.4 | 16.4 | 18.3 | 22 | 11.6 | 34.4 | 13.3 |
| HCM Lane LOS | C | C | C | C | C | B | D | B |
| HCM 95th-tile Q | 1.2 | 2.9 | 1.4 | 2.7 | 2.9 | 0 | 6.7 | 1.2 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 81.1 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 1 | 0 | 90 | 1 | 123 | 1 | 154 | 126 | 223 | 381 | 0 |
| Future Vol, veh/h | 0 | 1 | 0 | 90 | 1 | 123 | 1 | 154 | 126 | 223 | 381 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | 20 | - | - | - | 85 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 2 | 0 | 145 | 2 | 198 | 2 | 248 | 203 | 360 | 615 | 0 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1789 | 1790 | 615 | 1690 | 1689 | 350 | 615 | 0 | 0 | 451 | 0 | 0 |
| Stage 1 | 1335 | 1335 | - | 354 | 354 | - | - | - | - | - | - | - |
| Stage 2 | 454 | 455 | - | 1336 | 1335 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 | 4.12 | - | - | 4.12 | - | - |
| Critical Hdwy Stg 1 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.218 | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver | 63 | 81 | 491 | ~ 74 | 93 | 693 | 965 | - | - | 1109 | - | - |
| Stage 1 | 189 | 223 | - | 663 | 630 | - | - | - | - | - | - | - |
| Stage 2 | 586 | 569 | - | 189 | 223 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 33 | 55 | 491 | ~ 54 | 63 | 693 | 965 | - | - | 1109 | - | - |
| Mov Cap-2 Maneuver | 33 | 55 | - | ~ 54 | 63 | - | - | - | - | - | - | - |
| Stage 1 | 188 | 151 | - | 661 | 628 | - | - | - | - | - | - | - |
| Stage 2 | 416 | 567 | - | ~ 126 | 151 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 72.4 | $ 406.3 | 0 | 3.6 |
| HCM LOS | F | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | WBLn2 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 965 | - | - | 55 | 54 | 693 | 1109 | - | - |
| HCM Lane V/C Ratio | 0.002 | - | - | 0.029 | 2.718 | 0.286 | 0.324 | - | - |
| HCM Control Delay (s) | 8.7 | 0 | - | 72.4 | $ 938.8 | 12.3 | 9.8 | - | - |
| HCM Lane LOS | A | A | - | F | F | B | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0.1 | 15.2 | 1.2 | 1.4 | - | - |

**Notes**

~: Volume exceeds capacity  $: Delay exceeds 300s  +: Computation Not Defined  *: All major volume in platoon

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.4 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 3 | 40 | 38 | 6 | 27 | 1 |
| Future Vol, veh/h | 3 | 40 | 38 | 6 | 27 | 1 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 3 | 43 | 41 | 7 | 29 | 1 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 48 | 0 | - | 0 | 94 | 45 |
| Stage 1 | - | - | - | - | 45 | - |
| Stage 2 | - | - | - | - | 49 | - |
| Critical Hdwy | 4.12 | - | - | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | 2.218 | - | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | 1559 | - | - | - | 906 | 1025 |
| Stage 1 | - | - | - | - | 977 | - |
| Stage 2 | - | - | - | - | 973 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1559 | - | - | - | 904 | 1025 |
| Mov Cap-2 Maneuver | - | - | - | - | 904 | - |
| Stage 1 | - | - | - | - | 975 | - |
| Stage 2 | - | - | - | - | 973 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0.5 | 0 | 9.1 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1559 | - | - | - | 908 |
| HCM Lane V/C Ratio | 0.002 | - | - | - | 0.034 |
| HCM Control Delay (s) | 7.3 | 0 | - | - | 9.1 |
| HCM Lane LOS | A | A | - | - | A |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0.1 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.8 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 10 | 57 | 22 | 292 | 510 | 22 |
| Future Vol, veh/h | 10 | 57 | 22 | 292 | 510 | 22 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | 45 | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 60 | 60 | 60 | 60 | 60 | 60 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 17 | 95 | 37 | 487 | 850 | 37 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1430 | 869 | 887 | 0 | - | 0 |
| Stage 1 | 869 | - | - | - | - | - |
| Stage 2 | 561 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 148 | 351 | 763 | - | - | - |
| Stage 1 | 410 | - | - | - | - | - |
| Stage 2 | 571 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 138 | 351 | 763 | - | - | - |
| Mov Cap-2 Maneuver | 138 | - | - | - | - | - |
| Stage 1 | 383 | - | - | - | - | - |
| Stage 2 | 571 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 21.3 | 0.7 | 0 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 763 | - | 138 | 351 | - | - |
| HCM Lane V/C Ratio | 0.048 | - | 0.121 | 0.271 | - | - |
| HCM Control Delay (s) | 10 | 0 | 34.6 | 19 | - | - |
| HCM Lane LOS | A | A | D | C | - | - |
| HCM 95th %tile Q(veh) | 0.2 | - | 0.4 | 1.1 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 26.3 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 36 | 65 | 251 | 101 | 190 | 378 |
| Future Vol, veh/h | 36 | 65 | 251 | 101 | 190 | 378 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | 45 | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 58 | 58 | 58 | 58 | 58 | 58 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 62 | 112 | 433 | 174 | 328 | 652 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1828 | 520 | 0 | 0 | 607 | 0 |
| Stage 1 | 520 | - | - | - | - | - |
| Stage 2 | 1308 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | 84 | 556 | - | - | 971 | - |
| Stage 1 | 597 | - | - | - | - | - |
| Stage 2 | 253 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | ~ 56 | 556 | - | - | 971 | - |
| Mov Cap-2 Maneuver | ~ 56 | - | - | - | - | - |
| Stage 1 | 395 | - | - | - | - | - |
| Stage 2 | 253 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 245.9 | 0 | 3.5 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 133 | 971 | - |
| HCM Lane V/C Ratio | - | - | 1.309 | 0.337 | - |
| HCM Control Delay (s) | - | - | 245.9 | 10.6 | - |
| HCM Lane LOS | - | - | F | B | - |
| HCM 95th %tile Q(veh) | - | - | 11.1 | 1.5 | - |

Notes

~: Volume exceeds capacity  $: Delay exceeds 300s  +: Computation Not Defined  *: All major volume in platoon

| Intersection | |
|---|---|
| Int Delay, s/veh | 87.7 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 5 | 115 | 1 | 115 | 2 | 249 | 115 | 134 | 263 | 5 |
| Future Vol, veh/h | 0 | 0 | 5 | 115 | 1 | 115 | 2 | 249 | 115 | 134 | 263 | 5 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | 100 | - | - | 70 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 7 | 172 | 1 | 172 | 3 | 372 | 172 | 200 | 393 | 7 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1348 | 1347 | 397 | 1264 | 1264 | 458 | 400 | 0 | 0 | 544 | 0 | 0 |
| Stage 1 | 797 | 797 | - | 464 | 464 | - | - | - | - | - | - | - |
| Stage 2 | 551 | 550 | - | 800 | 800 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 | 4.12 | - | - | 4.12 | - | - |
| Critical Hdwy Stg 1 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.218 | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver | 128 | 151 | 652 | ~ 146 | 169 | 603 | 1159 | - | - | 1025 | - | - |
| Stage 1 | 380 | 399 | - | 578 | 564 | - | - | - | - | - | - | - |
| Stage 2 | 519 | 516 | - | 379 | 397 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 77 | 121 | 652 | ~ 122 | 136 | 603 | 1159 | - | - | 1025 | - | - |
| Mov Cap-2 Maneuver | 77 | 121 | - | ~ 122 | 136 | - | - | - | - | - | - | - |
| Stage 1 | 379 | 321 | - | 576 | 562 | - | - | - | - | - | - | - |
| Stage 2 | 369 | 514 | - | 302 | 320 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 10.6 | $ 375.4 | 0 | 3.1 |
| HCM LOS | B | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1159 | - | - | 652 | 203 | 1025 | - | - |
| HCM Lane V/C Ratio | 0.003 | - | - | 0.011 | 1.698 | 0.195 | - | - |
| HCM Control Delay (s) | 8.1 | - | - | 10.6 | $ 375.4 | 9.4 | - | - |
| HCM Lane LOS | A | - | - | B | F | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0 | 23.3 | 0.7 | - | - |

**Notes**

~: Volume exceeds capacity  $: Delay exceeds 300s  +: Computation Not Defined  *: All major volume in platoon

| Intersection | |
|---|---|
| Int Delay, s/veh | 17.9 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 120 | 74 | 280 | 361 | 132 | 263 |
| Future Vol, veh/h | 120 | 74 | 280 | 361 | 132 | 263 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 60 | 0 | - | - | 100 | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 77 | 77 | 77 | 77 | 77 | 77 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 156 | 96 | 364 | 469 | 171 | 342 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1283 | 599 | 0 | 0 | 833 | 0 |
| Stage 1 | 599 | - | - | - | - | - |
| Stage 2 | 684 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | 182 | 502 | - | - | 800 | - |
| Stage 1 | 549 | - | - | - | - | - |
| Stage 2 | 501 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | ~ 143 | 502 | - | - | 800 | - |
| Mov Cap-2 Maneuver | ~ 143 | - | - | - | - | - |
| Stage 1 | 432 | - | - | - | - | - |
| Stage 2 | 501 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 106.3 | 0 | 3.6 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | WBLn2 | SBL | SBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 143 | 502 | 800 | - |
| HCM Lane V/C Ratio | - | - | 1.09 | 0.191 | 0.214 | - |
| HCM Control Delay (s) | - | - | 163.3 | 13.9 | 10.7 | - |
| HCM Lane LOS | - | - | F | B | B | - |
| HCM 95th %tile Q(veh) | - | - | 8.5 | 0.7 | 0.8 | - |

**Notes**

~: Volume exceeds capacity  $: Delay exceeds 300s  +: Computation Not Defined  *: All major volume in platoon

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 178 | 104 | 238 | 137 | 127 | 133 | 264 | 338 | 90 | 47 | 293 | 113 |
| Future Volume (veh/h) | 178 | 104 | 238 | 137 | 127 | 133 | 264 | 338 | 90 | 47 | 293 | 113 |
| Number | 7 | 4 | 14 | 3 | 8 | 18 | 5 | 2 | 12 | 1 | 6 | 16 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 196 | 114 | 262 | 151 | 140 | 146 | 290 | 371 | 99 | 52 | 322 | 124 |
| Adj No. of Lanes | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 2 | 0 |
| Peak Hour Factor | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 195 | 382 | 325 | 177 | 163 | 170 | 470 | 689 | 586 | 293 | 679 | 257 |
| Arrive On Green | 0.11 | 0.21 | 0.21 | 0.10 | 0.20 | 0.20 | 0.26 | 0.37 | 0.37 | 0.16 | 0.27 | 0.27 |
| Sat Flow, veh/h | 1774 | 1863 | 1583 | 1774 | 836 | 872 | 1774 | 1863 | 1583 | 1774 | 2514 | 950 |
| Grp Volume(v), veh/h | 196 | 114 | 262 | 151 | 0 | 286 | 290 | 371 | 99 | 52 | 225 | 221 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1863 | 1583 | 1774 | 0 | 1709 | 1774 | 1863 | 1583 | 1774 | 1770 | 1695 |
| Q Serve(g_s), s | 11.0 | 5.2 | 8.9 | 8.4 | 0.0 | 16.2 | 14.4 | 15.7 | 3.0 | 2.5 | 10.6 | 11.0 |
| Cycle Q Clear(g_c), s | 11.0 | 5.2 | 8.9 | 8.4 | 0.0 | 16.2 | 14.4 | 15.7 | 3.0 | 2.5 | 10.6 | 11.0 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.51 | 1.00 | | 1.00 | 1.00 | | 0.56 |
| Lane Grp Cap(c), veh/h | 195 | 382 | 325 | 177 | 0 | 333 | 470 | 689 | 586 | 293 | 478 | 458 |
| V/C Ratio(X) | 1.00 | 0.30 | 0.81 | 0.85 | 0.00 | 0.86 | 0.62 | 0.54 | 0.17 | 0.18 | 0.47 | 0.48 |
| Avail Cap(c_a), veh/h | 195 | 577 | 491 | 177 | 0 | 513 | 470 | 689 | 586 | 293 | 478 | 458 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 44.5 | 33.7 | 12.1 | 44.3 | 0.0 | 38.9 | 32.3 | 24.8 | 10.8 | 35.9 | 30.5 | 30.6 |
| Incr Delay (d2), s/veh | 65.6 | 0.4 | 5.8 | 30.5 | 0.0 | 8.8 | 2.4 | 3.0 | 0.6 | 0.3 | 3.3 | 3.6 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 8.9 | 2.7 | 4.4 | 5.6 | 0.0 | 8.4 | 7.3 | 8.6 | 1.4 | 1.3 | 5.6 | 5.6 |
| LnGrp Delay(d),s/veh | 110.1 | 34.1 | 18.0 | 74.8 | 0.0 | 47.7 | 34.7 | 27.8 | 11.4 | 36.2 | 33.8 | 34.3 |
| LnGrp LOS | F | C | B | E | | D | C | C | B | D | C | C |
| Approach Vol, veh/h | | 572 | | | 437 | | | 760 | | | 498 | |
| Approach Delay, s/veh | | 52.7 | | | 57.1 | | | 28.3 | | | 34.3 | |
| Approach LOS | | D | | | E | | | C | | | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | 20.5 | 41.0 | 14.0 | 24.5 | 30.5 | 31.0 | 15.0 | 23.5 |
| Change Period (Y+Rc), s | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | 6.0 | 37.0 | 10.0 | 31.0 | 16.0 | 27.0 | 11.0 | 30.0 |
| Max Q Clear Time (g_c+I1), s | 4.5 | 17.7 | 10.4 | 10.9 | 16.4 | 13.0 | 13.0 | 18.2 |
| Green Ext Time (p_c), s | 0.0 | 2.5 | 0.0 | 1.5 | 0.0 | 2.3 | 0.0 | 1.3 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 41.3 |
| HCM 2010 LOS | D |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.3 |

| Movement | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 1 | 0 | 125 | 1 | 0 | 18 | 81 | 709 | 6 | 4 | 641 | 9 |
| Future Vol, veh/h | 1 | 0 | 125 | 1 | 0 | 18 | 81 | 709 | 6 | 4 | 641 | 9 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | 1 | - | - | 1 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 88 | 88 | 88 | 80 | 80 | 80 | 94 | 94 | 94 | 91 | 91 | 91 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 1 | 0 | 142 | 1 | 0 | 23 | 86 | 754 | 6 | 4 | 704 | 10 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1658 | 1649 | 709 | 1717 | 1651 | 757 | 714 | 0 | 0 | 760 | 0 | 0 |
| Stage 1 | 717 | 717 | - | 929 | 929 | - | - | - | - | - | - | - |
| Stage 2 | 941 | 932 | - | 788 | 722 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 | 4.12 | - | - | 4.12 | - | - |
| Critical Hdwy Stg 1 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.218 | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver | 78 | 99 | 434 | 71 | 99 | 408 | 886 | - | - | 852 | - | - |
| Stage 1 | 421 | 434 | - | 321 | 346 | - | - | - | - | - | - | - |
| Stage 2 | 316 | 345 | - | 384 | 431 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 68 | 89 | 434 | 44 | 89 | 408 | 886 | - | - | 852 | - | - |
| Mov Cap-2 Maneuver | 68 | 89 | - | 44 | 89 | - | - | - | - | - | - | - |
| Stage 1 | 380 | 432 | - | 290 | 312 | - | - | - | - | - | - | - |
| Stage 2 | 270 | 312 | - | 257 | 429 | - | - | - | - | - | - | - |

| Approach | SE | NW | NE | SW |
|---|---|---|---|---|
| HCM Control Delay, s | 18.1 | 18.8 | 1 | 0.1 |
| HCM LOS | C | C | | |

| Minor Lane/Major Mvmt | NEL | NET | NER | NWLn1 | SELn1 | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 886 | - | - | 284 | 416 | 852 | - | - |
| HCM Lane V/C Ratio | 0.097 | - | - | 0.084 | 0.344 | 0.005 | - | - |
| HCM Control Delay (s) | 9.5 | - | - | 18.8 | 18.1 | 9.2 | - | - |
| HCM Lane LOS | A | - | - | C | C | A | - | - |
| HCM 95th %tile Q(veh) | 0.3 | - | - | 0.3 | 1.5 | 0 | - | - |

| Movement | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 6 | 82 | 11 | 52 | 7 | 501 | 6 | 290 | 30 | 388 | 382 | 5 |
| Future Volume (veh/h) | 6 | 82 | 11 | 52 | 7 | 501 | 6 | 290 | 30 | 388 | 382 | 5 |
| Number | 1 | 6 | 16 | 5 | 2 | 12 | 7 | 4 | 14 | 3 | 8 | 18 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1900 | 1863 | 1900 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 9 | 124 | 17 | 55 | 7 | 527 | 7 | 326 | 34 | 422 | 415 | 5 |
| Adj No. of Lanes | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| Peak Hour Factor | 0.66 | 0.66 | 0.66 | 0.95 | 0.95 | 0.95 | 0.89 | 0.89 | 0.89 | 0.92 | 0.92 | 0.92 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 12 | 162 | 22 | 336 | 43 | 757 | 13 | 376 | 320 | 471 | 845 | 10 |
| Arrive On Green | 0.11 | 0.11 | 0.11 | 0.21 | 0.21 | 0.21 | 0.01 | 0.20 | 0.20 | 0.27 | 0.46 | 0.46 |
| Sat Flow, veh/h | 109 | 1505 | 206 | 1582 | 201 | 1583 | 1774 | 1863 | 1583 | 1774 | 1837 | 22 |
| Grp Volume(v), veh/h | 150 | 0 | 0 | 62 | 0 | 527 | 7 | 326 | 34 | 422 | 0 | 420 |
| Grp Sat Flow(s),veh/h/ln | 1821 | 0 | 0 | 1784 | 0 | 1583 | 1774 | 1863 | 1583 | 1774 | 0 | 1859 |
| Q Serve(g_s), s | 6.0 | 0.0 | 0.0 | 2.1 | 0.0 | 16.0 | 0.3 | 12.7 | 1.3 | 17.3 | 0.0 | 11.9 |
| Cycle Q Clear(g_c), s | 6.0 | 0.0 | 0.0 | 2.1 | 0.0 | 16.0 | 0.3 | 12.7 | 1.3 | 17.3 | 0.0 | 11.9 |
| Prop In Lane | 0.06 | | 0.11 | 0.89 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.01 |
| Lane Grp Cap(c), veh/h | 195 | 0 | 0 | 379 | 0 | 757 | 13 | 376 | 320 | 471 | 0 | 855 |
| V/C Ratio(X) | 0.77 | 0.00 | 0.00 | 0.16 | 0.00 | 0.70 | 0.55 | 0.87 | 0.11 | 0.90 | 0.00 | 0.49 |
| Avail Cap(c_a), veh/h | 387 | 0 | 0 | 379 | 0 | 757 | 94 | 421 | 358 | 589 | 0 | 939 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 32.7 | 0.0 | 0.0 | 24.2 | 0.0 | 15.4 | 37.2 | 29.0 | 24.5 | 26.6 | 0.0 | 14.2 |
| Incr Delay (d2), s/veh | 6.2 | 0.0 | 0.0 | 0.2 | 0.0 | 2.8 | 31.5 | 15.9 | 0.1 | 14.0 | 0.0 | 0.4 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 3.4 | 0.0 | 0.0 | 1.1 | 0.0 | 9.1 | 0.3 | 8.2 | 0.6 | 10.3 | 0.0 | 6.2 |
| LnGrp Delay(d),s/veh | 38.9 | 0.0 | 0.0 | 24.4 | 0.0 | 18.2 | 68.7 | 45.0 | 24.6 | 40.7 | 0.0 | 14.6 |
| LnGrp LOS | D | | | C | | B | E | D | C | D | | B |
| Approach Vol, veh/h | | 150 | | | 589 | | | 367 | | | 842 | |
| Approach Delay, s/veh | | 38.9 | | | 18.8 | | | 43.5 | | | 27.7 | |
| Approach LOS | | D | | | B | | | D | | | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | 3 | 4 | | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | | 20.0 | 24.0 | 19.2 | | 12.1 | 4.5 | 38.6 |
| Change Period (Y+Rc), s | | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | | 16.0 | 25.0 | 17.0 | | 16.0 | 4.0 | 38.0 |
| Max Q Clear Time (g_c+I1), s | | 18.0 | 19.3 | 14.7 | | 8.0 | 2.3 | 13.9 |
| Green Ext Time (p_c), s | | 0.0 | 0.7 | 0.5 | | 0.4 | 0.0 | 2.7 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 28.8 |
| HCM 2010 LOS | C |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 20.7 |
| Intersection LOS | C |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 125 | 33 | 135 | 45 | 18 | 13 | 109 | 253 | 74 | 14 | 157 | 74 |
| Future Vol, veh/h | 125 | 33 | 135 | 45 | 18 | 13 | 109 | 253 | 74 | 14 | 157 | 74 |
| Peak Hour Factor | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 154 | 41 | 167 | 56 | 22 | 16 | 135 | 312 | 91 | 17 | 194 | 91 |
| Number of Lanes | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 1 | 2 | 3 | 2 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 3 | 2 | 2 | 1 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 2 | 3 | 1 | 2 |
| HCM Control Delay | 15.6 | 14.3 | 28.6 | 14.7 |
| HCM LOS | C | B | D | B |

| Lane | NBLn1 | NBLn2 | EBLn1 | EBLn2 | WBLn1 | SBLn1 | SBLn2 | SBLn3 |
|---|---|---|---|---|---|---|---|---|
| Vol Left, % | 100% | 0% | 79% | 0% | 59% | 100% | 0% | 0% |
| Vol Thru, % | 0% | 77% | 21% | 0% | 24% | 0% | 100% | 0% |
| Vol Right, % | 0% | 23% | 0% | 100% | 17% | 0% | 0% | 100% |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 109 | 327 | 158 | 135 | 76 | 14 | 157 | 74 |
| LT Vol | 109 | 0 | 125 | 0 | 45 | 14 | 0 | 0 |
| Through Vol | 0 | 253 | 33 | 0 | 18 | 0 | 157 | 0 |
| RT Vol | 0 | 74 | 0 | 135 | 13 | 0 | 0 | 74 |
| Lane Flow Rate | 135 | 404 | 195 | 167 | 94 | 17 | 194 | 91 |
| Geometry Grp | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| Degree of Util (X) | 0.294 | 0.805 | 0.446 | 0.33 | 0.23 | 0.041 | 0.427 | 0.183 |
| Departure Headway (Hd) | 7.856 | 7.18 | 8.234 | 7.118 | 8.833 | 8.442 | 7.929 | 7.21 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 456 | 505 | 437 | 503 | 405 | 423 | 454 | 496 |
| Service Time | 5.617 | 4.941 | 6.001 | 4.885 | 6.617 | 6.212 | 5.698 | 4.978 |
| HCM Lane V/C Ratio | 0.296 | 0.8 | 0.446 | 0.332 | 0.232 | 0.04 | 0.427 | 0.183 |
| HCM Control Delay | 13.9 | 33.5 | 17.5 | 13.4 | 14.3 | 11.6 | 16.5 | 11.6 |
| HCM Lane LOS | B | D | C | B | B | B | C | B |
| HCM 95th-tile Q | 1.2 | 7.6 | 2.2 | 1.4 | 0.9 | 0.1 | 2.1 | 0.7 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 6 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 1 | 1 | 2 | 52 | 1 | 176 | 2 | 296 | 202 | 153 | 205 | 1 |
| Future Vol, veh/h | 1 | 1 | 2 | 52 | 1 | 176 | 2 | 296 | 202 | 153 | 205 | 1 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | 20 | - | - | - | 85 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 1 | 1 | 2 | 64 | 1 | 217 | 2 | 365 | 249 | 189 | 253 | 1 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1235 | 1250 | 254 | 1127 | 1126 | 490 | 254 | 0 | 0 | 614 | 0 | 0 |
| Stage 1 | 632 | 632 | - | 494 | 494 | - | - | - | - | - | - | - |
| Stage 2 | 603 | 618 | - | 633 | 632 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 | 4.12 | - | - | 4.12 | - | - |
| Critical Hdwy Stg 1 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.218 | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver | 153 | 173 | 785 | 182 | 205 | 578 | 1311 | - | - | 965 | - | - |
| Stage 1 | 468 | 474 | - | 557 | 546 | - | - | - | - | - | - | - |
| Stage 2 | 486 | 481 | - | 468 | 474 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 80 | 139 | 785 | 153 | 164 | 578 | 1311 | - | - | 965 | - | - |
| Mov Cap-2 Maneuver | 80 | 139 | - | 153 | 164 | - | - | - | - | - | - | - |
| Stage 1 | 467 | 381 | - | 556 | 545 | - | - | - | - | - | - | - |
| Stage 2 | 302 | 480 | - | 374 | 381 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 25.6 | 21.9 | 0 | 4.1 |
| HCM LOS | D | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | WBLn2 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1311 | - | - | 180 | 153 | 578 | 965 | - | - |
| HCM Lane V/C Ratio | 0.002 | - | - | 0.027 | 0.428 | 0.376 | 0.196 | - | - |
| HCM Control Delay (s) | 7.8 | 0 | - | 25.6 | 45.1 | 14.9 | 9.6 | - | - |
| HCM Lane LOS | A | A | - | D | E | B | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0.1 | 1.9 | 1.7 | 0.7 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.9 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 1 | 5 | 43 | 24 | 15 | 3 |
| Future Vol, veh/h | 1 | 5 | 43 | 24 | 15 | 3 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 60 | 60 | 60 | 60 | 60 | 60 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 2 | 8 | 72 | 40 | 25 | 5 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 112 | 0 | - | 0 | 104 | 92 |
| Stage 1 | - | - | - | - | 92 | - |
| Stage 2 | - | - | - | - | 12 | - |
| Critical Hdwy | 4.12 | - | - | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | 2.218 | - | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | 1478 | - | - | - | 894 | 965 |
| Stage 1 | - | - | - | - | 932 | - |
| Stage 2 | - | - | - | - | 1011 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1478 | - | - | - | 893 | 965 |
| Mov Cap-2 Maneuver | - | - | - | - | 893 | - |
| Stage 1 | - | - | - | - | 931 | - |
| Stage 2 | - | - | - | - | 1011 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 1.2 | 0 | 9.1 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1478 | - | - | - | 904 |
| HCM Lane V/C Ratio | 0.001 | - | - | - | 0.033 |
| HCM Control Delay (s) | 7.4 | 0 | - | - | 9.1 |
| HCM Lane LOS | A | A | - | - | A |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0.1 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.9 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 2 | 19 | 60 | 511 | 265 | 7 |
| Future Vol, veh/h | 2 | 19 | 60 | 511 | 265 | 7 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | 45 | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 60 | 60 | 60 | 60 | 60 | 60 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 3 | 32 | 100 | 852 | 442 | 12 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1500 | 448 | 454 | 0 | - | 0 |
| Stage 1 | 448 | - | - | - | - | - |
| Stage 2 | 1052 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 134 | 611 | 1107 | - | - | - |
| Stage 1 | 644 | - | - | - | - | - |
| Stage 2 | 336 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 111 | 611 | 1107 | - | - | - |
| Mov Cap-2 Maneuver | 111 | - | - | - | - | - |
| Stage 1 | 534 | - | - | - | - | - |
| Stage 2 | 336 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 13.8 | 0.9 | 0 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1107 | - | 111 | 611 | - | - |
| HCM Lane V/C Ratio | 0.09 | - | 0.03 | 0.052 | - | - |
| HCM Control Delay (s) | 8.6 | 0 | 38.4 | 11.2 | - | - |
| HCM Lane LOS | A | A | E | B | - | - |
| HCM 95th %tile Q(veh) | 0.3 | - | 0.1 | 0.2 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 14.1 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 76 | 106 | 468 | 39 | 30 | 254 |
| Future Vol, veh/h | 76 | 106 | 468 | 39 | 30 | 254 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | 45 | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 68 | 68 | 68 | 68 | 68 | 68 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 112 | 156 | 688 | 57 | 44 | 374 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1179 | 717 | 0 | 0 | 745 | 0 |
| Stage 1 | 717 | - | - | - | - | - |
| Stage 2 | 462 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | 211 | 430 | - | - | 863 | - |
| Stage 1 | 484 | - | - | - | - | - |
| Stage 2 | 634 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 200 | 430 | - | - | 863 | - |
| Mov Cap-2 Maneuver | 200 | - | - | - | - | - |
| Stage 1 | 459 | - | - | - | - | - |
| Stage 2 | 634 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 73.9 | 0 | 1 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 290 | 863 | - |
| HCM Lane V/C Ratio | - | - | 0.923 | 0.051 | - |
| HCM Control Delay (s) | - | - | 73.9 | 9.4 | - |
| HCM Lane LOS | - | - | F | A | - |
| HCM 95th %tile Q(veh) | - | - | 8.7 | 0.2 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 7.3 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 10 | 0 | 94 | 22 | 1 | 82 | 76 | 417 | 13 | 7 | 311 | 15 |
| Future Vol, veh/h | 10 | 0 | 94 | 22 | 1 | 82 | 76 | 417 | 13 | 7 | 311 | 15 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | 100 | - | - | 70 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 15 | 0 | 138 | 32 | 1 | 121 | 112 | 613 | 19 | 10 | 457 | 22 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1396 | 1344 | 468 | 1404 | 1346 | 623 | 479 | 0 | 0 | 632 | 0 | 0 |
| Stage 1 | 488 | 488 | - | 847 | 847 | - | - | - | - | - | - | - |
| Stage 2 | 908 | 856 | - | 557 | 499 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 | 4.12 | - | - | 4.12 | - | - |
| Critical Hdwy Stg 1 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.218 | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver | 119 | 152 | 595 | 117 | 151 | 486 | 1083 | - | - | 951 | - | - |
| Stage 1 | 561 | 550 | - | 357 | 378 | - | - | - | - | - | - | - |
| Stage 2 | 330 | 374 | - | 515 | 544 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 81 | 135 | 595 | 82 | 134 | 486 | 1083 | - | - | 951 | - | - |
| Mov Cap-2 Maneuver | 81 | 135 | - | 82 | 134 | - | - | - | - | - | - | - |
| Stage 1 | 503 | 544 | - | 320 | 339 | - | - | - | - | - | - | - |
| Stage 2 | 221 | 335 | - | 391 | 538 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 21.4 | 45.1 | 1.3 | 0.2 |
| HCM LOS | C | E | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1083 | - | - | 370 | 236 | 951 | - | - |
| HCM Lane V/C Ratio | 0.103 | - | - | 0.413 | 0.654 | 0.011 | - | - |
| HCM Control Delay (s) | 8.7 | - | - | 21.4 | 45.1 | 8.8 | - | - |
| HCM Lane LOS | A | - | - | C | E | A | - | - |
| HCM 95th %tile Q(veh) | 0.3 | - | - | 2 | 4.1 | 0 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 7.6 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 83 | 199 | 303 | 142 | 61 | 372 |
| Future Vol, veh/h | 83 | 199 | 303 | 142 | 61 | 372 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 60 | 0 | - | - | 100 | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 71 | 71 | 71 | 71 | 71 | 71 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 117 | 280 | 427 | 200 | 86 | 524 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1223 | 527 | 0 | 0 | 627 | 0 |
| Stage 1 | 527 | - | - | - | - | - |
| Stage 2 | 696 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | 198 | 551 | - | - | 955 | - |
| Stage 1 | 592 | - | - | - | - | - |
| Stage 2 | 495 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 180 | 551 | - | - | 955 | - |
| Mov Cap-2 Maneuver | 180 | - | - | - | - | - |
| Stage 1 | 539 | - | - | - | - | - |
| Stage 2 | 495 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 29.3 | 0 | 1.3 |
| HCM LOS | D | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | WBLn2 | SBL | SBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 180 | 551 | 955 | - |
| HCM Lane V/C Ratio | - | - | 0.649 | 0.509 | 0.09 | - |
| HCM Control Delay (s) | - | - | 56 | 18.1 | 9.1 | - |
| HCM Lane LOS | - | - | F | C | A | - |
| HCM 95th %tile Q(veh) | - | - | 3.8 | 2.9 | 0.3 | - |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 85 | 81 | 267 | 168 | 87 | 55 | 280 | 385 | 189 | 58 | 358 | 145 |
| Future Volume (veh/h) | 85 | 81 | 267 | 168 | 87 | 55 | 280 | 385 | 189 | 58 | 358 | 145 |
| Number | 7 | 4 | 14 | 3 | 8 | 18 | 5 | 2 | 12 | 1 | 6 | 16 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 92 | 88 | 233 | 183 | 95 | 60 | 304 | 418 | 205 | 63 | 389 | 158 |
| Adj No. of Lanes | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 2 | 0 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 240 | 270 | 229 | 224 | 145 | 92 | 362 | 737 | 626 | 79 | 584 | 234 |
| Arrive On Green | 0.14 | 0.14 | 0.14 | 0.13 | 0.14 | 0.14 | 0.20 | 0.40 | 0.40 | 0.04 | 0.24 | 0.24 |
| Sat Flow, veh/h | 1774 | 1863 | 1583 | 1774 | 1069 | 675 | 1774 | 1863 | 1583 | 1774 | 2468 | 990 |
| Grp Volume(v), veh/h | 92 | 88 | 233 | 183 | 0 | 155 | 304 | 418 | 205 | 63 | 277 | 270 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1863 | 1583 | 1774 | 0 | 1744 | 1774 | 1863 | 1583 | 1774 | 1770 | 1688 |
| Q Serve(g_s), s | 2.6 | 2.4 | 4.8 | 5.6 | 0.0 | 4.7 | 9.1 | 9.7 | 5.0 | 1.9 | 7.9 | 8.0 |
| Cycle Q Clear(g_c), s | 2.6 | 2.4 | 4.8 | 5.6 | 0.0 | 4.7 | 9.1 | 9.7 | 5.0 | 1.9 | 7.9 | 8.0 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.39 | 1.00 | | 1.00 | 1.00 | | 0.59 |
| Lane Grp Cap(c), veh/h | 240 | 270 | 229 | 224 | 0 | 237 | 362 | 737 | 626 | 79 | 418 | 399 |
| V/C Ratio(X) | 0.38 | 0.33 | 1.02 | 0.82 | 0.00 | 0.65 | 0.84 | 0.57 | 0.33 | 0.79 | 0.66 | 0.68 |
| Avail Cap(c_a), veh/h | 240 | 1076 | 914 | 224 | 0 | 1007 | 448 | 1109 | 943 | 224 | 830 | 792 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 21.9 | 21.3 | 8.3 | 23.6 | 0.0 | 22.7 | 21.2 | 13.1 | 11.6 | 26.2 | 19.2 | 19.2 |
| Incr Delay (d2), s/veh | 1.0 | 0.7 | 31.8 | 20.4 | 0.0 | 3.0 | 11.3 | 0.7 | 0.3 | 16.0 | 1.8 | 2.0 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 1.3 | 1.2 | 4.9 | 4.0 | 0.0 | 2.4 | 5.6 | 5.1 | 2.2 | 1.3 | 4.1 | 4.0 |
| LnGrp Delay(d),s/veh | 22.9 | 22.0 | 40.3 | 44.0 | 0.0 | 25.8 | 32.5 | 13.7 | 11.9 | 42.2 | 21.0 | 21.2 |
| LnGrp LOS | C | C | F | D | | C | C | B | B | D | C | C |
| Approach Vol, veh/h | | 413 | | | 338 | | | 927 | | | 610 | |
| Approach Delay, s/veh | | 32.5 | | | 35.6 | | | 19.5 | | | 23.3 | |
| Approach LOS | | C | | | D | | | B | | | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | 6.5 | 25.9 | 11.0 | 12.0 | 15.3 | 17.1 | 11.5 | 11.5 |
| Change Period (Y+Rc), s | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | 7.0 | 33.0 | 7.0 | 32.0 | 14.0 | 26.0 | 7.0 | 32.0 |
| Max Q Clear Time (g_c+I1), s | 3.9 | 11.7 | 7.6 | 6.8 | 11.1 | 10.0 | 4.6 | 6.7 |
| Green Ext Time (p_c), s | 0.0 | 3.3 | 0.0 | 1.3 | 0.3 | 3.1 | 0.0 | 0.9 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 25.2 |
| HCM 2010 LOS | C |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.1 |

| Movement | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 1 | 0 | 84 | 1 | 1 | 21 | 107 | 772 | 7 | 8 | 799 | 9 |
| Future Vol, veh/h | 1 | 0 | 84 | 1 | 1 | 21 | 107 | 772 | 7 | 8 | 799 | 9 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | 1 | - | - | 1 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 84 | 84 | 84 | 82 | 82 | 82 | 97 | 97 | 97 | 94 | 94 | 94 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 1 | 0 | 100 | 1 | 1 | 26 | 110 | 796 | 7 | 9 | 850 | 10 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1906 | 1896 | 855 | 1943 | 1898 | 800 | 860 | 0 | 0 | 803 | 0 | 0 |
| Stage 1 | 873 | 873 | - | 1020 | 1020 | - | - | - | - | - | - | - |
| Stage 2 | 1033 | 1023 | - | 923 | 878 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 | 4.12 | - | - | 4.12 | - | - |
| Critical Hdwy Stg 1 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.218 | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver | 52 | 70 | 358 | 49 | 69 | 385 | 781 | - | - | 821 | - | - |
| Stage 1 | 345 | 368 | - | 285 | 314 | - | - | - | - | - | - | - |
| Stage 2 | 281 | 313 | - | 323 | 366 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 42 | 60 | 358 | 31 | 59 | 385 | 781 | - | - | 821 | - | - |
| Mov Cap-2 Maneuver | 42 | 60 | - | 31 | 59 | - | - | - | - | - | - | - |
| Stage 1 | 296 | 364 | - | 245 | 270 | - | - | - | - | - | - | - |
| Stage 2 | 224 | 269 | - | 230 | 362 | - | - | - | - | - | - | - |

| Approach | SE | NW | NE | SW |
|---|---|---|---|---|
| HCM Control Delay, s | 20.7 | 23.5 | 1.3 | 0.1 |
| HCM LOS | C | C | | |

| Minor Lane/Major Mvmt | NEL | NET | NER | NWLn1 | SELn1 | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 781 | - | - | 222 | 329 | 821 | - | - |
| HCM Lane V/C Ratio | 0.141 | - | - | 0.126 | 0.308 | 0.01 | - | - |
| HCM Control Delay (s) | 10.4 | - | - | 23.5 | 20.7 | 9.4 | - | - |
| HCM Lane LOS | B | - | - | C | C | A | - | - |
| HCM 95th %tile Q(veh) | 0.5 | - | - | 0.4 | 1.3 | 0 | - | - |

| Movement | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 14 | 66 | 18 | 81 | 10 | 501 | 8 | 390 | 57 | 420 | 449 | 9 |
| Future Volume (veh/h) | 14 | 66 | 18 | 81 | 10 | 501 | 8 | 390 | 57 | 420 | 449 | 9 |
| Number | 1 | 6 | 16 | 5 | 2 | 12 | 7 | 4 | 14 | 3 | 8 | 18 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1900 | 1863 | 1900 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 18 | 86 | 23 | 88 | 11 | 545 | 9 | 433 | 63 | 483 | 516 | 10 |
| Adj No. of Lanes | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| Peak Hour Factor | 0.77 | 0.77 | 0.77 | 0.92 | 0.92 | 0.92 | 0.90 | 0.90 | 0.90 | 0.87 | 0.87 | 0.87 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 23 | 111 | 30 | 296 | 37 | 720 | 16 | 497 | 422 | 476 | 958 | 19 |
| Arrive On Green | 0.09 | 0.09 | 0.09 | 0.19 | 0.19 | 0.19 | 0.01 | 0.27 | 0.27 | 0.27 | 0.53 | 0.53 |
| Sat Flow, veh/h | 254 | 1214 | 325 | 1585 | 198 | 1583 | 1774 | 1863 | 1583 | 1774 | 1821 | 35 |
| Grp Volume(v), veh/h | 127 | 0 | 0 | 99 | 0 | 545 | 9 | 433 | 63 | 483 | 0 | 526 |
| Grp Sat Flow(s),veh/h/ln | 1793 | 0 | 0 | 1783 | 0 | 1583 | 1774 | 1863 | 1583 | 1774 | 0 | 1857 |
| Q Serve(g_s), s | 5.9 | 0.0 | 0.0 | 4.1 | 0.0 | 16.0 | 0.4 | 19.0 | 2.6 | 23.0 | 0.0 | 16.1 |
| Cycle Q Clear(g_c), s | 5.9 | 0.0 | 0.0 | 4.1 | 0.0 | 16.0 | 0.4 | 19.0 | 2.6 | 23.0 | 0.0 | 16.1 |
| Prop In Lane | 0.14 | | 0.18 | 0.89 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.02 |
| Lane Grp Cap(c), veh/h | 165 | 0 | 0 | 333 | 0 | 720 | 16 | 497 | 422 | 476 | 0 | 976 |
| V/C Ratio(X) | 0.77 | 0.00 | 0.00 | 0.30 | 0.00 | 0.76 | 0.56 | 0.87 | 0.15 | 1.01 | 0.00 | 0.54 |
| Avail Cap(c_a), veh/h | 335 | 0 | 0 | 333 | 0 | 720 | 83 | 630 | 536 | 476 | 0 | 1040 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 38.0 | 0.0 | 0.0 | 30.0 | 0.0 | 19.4 | 42.3 | 30.0 | 24.0 | 31.4 | 0.0 | 13.4 |
| Incr Delay (d2), s/veh | 7.5 | 0.0 | 0.0 | 0.5 | 0.0 | 4.6 | 27.6 | 10.6 | 0.2 | 45.0 | 0.0 | 0.5 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 3.3 | 0.0 | 0.0 | 2.1 | 0.0 | 11.5 | 0.3 | 11.2 | 1.2 | 17.1 | 0.0 | 8.3 |
| LnGrp Delay(d),s/veh | 45.5 | 0.0 | 0.0 | 30.5 | 0.0 | 24.0 | 69.9 | 40.7 | 24.2 | 76.4 | 0.0 | 13.9 |
| LnGrp LOS | D | | | C | | C | E | D | C | F | | B |
| Approach Vol, veh/h | | 127 | | | 644 | | | 505 | | | 1009 | |
| Approach Delay, s/veh | | 45.5 | | | 25.0 | | | 39.1 | | | 43.8 | |
| Approach LOS | | D | | | C | | | D | | | D | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | 3 | 4 | | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | | 20.0 | 27.0 | 26.8 | | 11.9 | 4.8 | 49.1 |
| Change Period (Y+Rc), s | | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | | 16.0 | 23.0 | 29.0 | | 16.0 | 4.0 | 48.0 |
| Max Q Clear Time (g_c+I1), s | | 18.0 | 25.0 | 21.0 | | 7.9 | 2.4 | 18.1 |
| Green Ext Time (p_c), s | | 0.0 | 0.0 | 1.8 | | 0.3 | 0.0 | 3.8 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 37.6 |
| HCM 2010 LOS | D |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 15.4 |
| Intersection LOS | C |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 97 | 33 | 71 | 44 | 25 | 11 | 94 | 219 | 73 | 15 | 126 | 76 |
| Future Vol, veh/h | 97 | 33 | 71 | 44 | 25 | 11 | 94 | 219 | 73 | 15 | 126 | 76 |
| Peak Hour Factor | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 120 | 41 | 88 | 54 | 31 | 14 | 116 | 270 | 90 | 19 | 156 | 94 |
| Number of Lanes | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 1 | 2 | 3 | 2 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 3 | 2 | 2 | 1 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 2 | 3 | 1 | 2 |
| HCM Control Delay | 13.1 | 12.9 | 18.9 | 12.1 |
| HCM LOS | B | B | C | B |

| Lane | NBLn1 | NBLn2 | EBLn1 | EBLn2 | WBLn1 | SBLn1 | SBLn2 | SBLn3 |
|---|---|---|---|---|---|---|---|---|
| Vol Left, % | 100% | 0% | 75% | 0% | 55% | 100% | 0% | 0% |
| Vol Thru, % | 0% | 75% | 25% | 0% | 31% | 0% | 100% | 0% |
| Vol Right, % | 0% | 25% | 0% | 100% | 14% | 0% | 0% | 100% |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 94 | 292 | 130 | 71 | 80 | 15 | 126 | 76 |
| LT Vol | 94 | 0 | 97 | 0 | 44 | 15 | 0 | 0 |
| Through Vol | 0 | 219 | 33 | 0 | 25 | 0 | 126 | 0 |
| RT Vol | 0 | 73 | 0 | 71 | 11 | 0 | 0 | 76 |
| Lane Flow Rate | 116 | 360 | 160 | 88 | 99 | 19 | 156 | 94 |
| Geometry Grp | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| Degree of Util (X) | 0.234 | 0.658 | 0.344 | 0.161 | 0.218 | 0.04 | 0.312 | 0.169 |
| Departure Headway (Hd) | 7.256 | 6.568 | 7.709 | 6.621 | 7.945 | 7.723 | 7.213 | 6.498 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 498 | 555 | 467 | 541 | 451 | 464 | 498 | 552 |
| Service Time | 4.956 | 4.268 | 5.456 | 4.368 | 5.698 | 5.469 | 4.958 | 4.243 |
| HCM Lane V/C Ratio | 0.233 | 0.649 | 0.343 | 0.163 | 0.22 | 0.041 | 0.313 | 0.17 |
| HCM Control Delay | 12.2 | 21 | 14.5 | 10.6 | 12.9 | 10.8 | 13.2 | 10.6 |
| HCM Lane LOS | B | C | B | B | B | B | B | B |
| HCM 95th-tile Q | 0.9 | 4.8 | 1.5 | 0.6 | 0.8 | 0.1 | 1.3 | 0.6 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 5.5 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 0 | 39 | 2 | 195 | 0 | 198 | 46 | 111 | 120 | 0 |
| Future Vol, veh/h | 0 | 0 | 0 | 39 | 2 | 195 | 0 | 198 | 46 | 111 | 120 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | 20 | - | - | - | 85 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 0 | 48 | 2 | 241 | 0 | 244 | 57 | 137 | 148 | 0 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 816 | 723 | 148 | 695 | 695 | 273 | 148 | 0 | 0 | 301 | 0 | 0 |
| Stage 1 | 422 | 422 | - | 273 | 273 | - | - | - | - | - | - | - |
| Stage 2 | 394 | 301 | - | 422 | 422 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 | 4.12 | - | - | 4.12 | - | - |
| Critical Hdwy Stg 1 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.218 | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver | 296 | 352 | 899 | 357 | 366 | 766 | 1434 | - | - | 1260 | - | - |
| Stage 1 | 609 | 588 | - | 733 | 684 | - | - | - | - | - | - | - |
| Stage 2 | 631 | 665 | - | 609 | 588 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 185 | 314 | 899 | 327 | 326 | 766 | 1434 | - | - | 1260 | - | - |
| Mov Cap-2 Maneuver | 185 | 314 | - | 327 | 326 | - | - | - | - | - | - | - |
| Stage 1 | 609 | 524 | - | 733 | 684 | - | - | - | - | - | - | - |
| Stage 2 | 431 | 665 | - | 543 | 524 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0 | 12.9 | 0 | 3.9 |
| HCM LOS | A | B | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | WBLn2 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1434 | - | - | - | 327 | 766 | 1260 | - | - |
| HCM Lane V/C Ratio | - | - | - | - | 0.155 | 0.314 | 0.109 | - | - |
| HCM Control Delay (s) | 0 | - | - | 0 | 18 | 11.8 | 8.2 | - | - |
| HCM Lane LOS | A | - | - | A | C | B | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0.5 | 1.3 | 0.4 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.6 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 3 | 13 | 1 | 17 | 7 | 4 |
| Future Vol, veh/h | 3 | 13 | 1 | 17 | 7 | 4 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 3 | 14 | 1 | 18 | 8 | 4 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 19 | 0 | - | 0 | 30 | 10 |
| Stage 1 | - | - | - | - | 10 | - |
| Stage 2 | - | - | - | - | 20 | - |
| Critical Hdwy | 4.12 | - | - | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | 2.218 | - | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | 1597 | - | - | - | 984 | 1071 |
| Stage 1 | - | - | - | - | 1013 | - |
| Stage 2 | - | - | - | - | 1003 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1597 | - | - | - | 982 | 1071 |
| Mov Cap-2 Maneuver | - | - | - | - | 982 | - |
| Stage 1 | - | - | - | - | 1011 | - |
| Stage 2 | - | - | - | - | 1003 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 1.4 | 0 | 8.6 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1597 | - | - | - | 1013 |
| HCM Lane V/C Ratio | 0.002 | - | - | - | 0.012 |
| HCM Control Delay (s) | 7.3 | 0 | - | - | 8.6 |
| HCM Lane LOS | A | A | - | - | A |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.5 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 10 | 10 | 15 | 518 | 157 | 3 |
| Future Vol, veh/h | 10 | 10 | 15 | 518 | 157 | 3 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | 45 | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 81 | 81 | 81 | 81 | 81 | 81 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 12 | 12 | 19 | 640 | 194 | 4 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 874 | 196 | 198 | 0 | - | 0 |
| Stage 1 | 196 | - | - | - | - | - |
| Stage 2 | 678 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 320 | 845 | 1375 | - | - | - |
| Stage 1 | 837 | - | - | - | - | - |
| Stage 2 | 504 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 313 | 845 | 1375 | - | - | - |
| Mov Cap-2 Maneuver | 313 | - | - | - | - | - |
| Stage 1 | 819 | - | - | - | - | - |
| Stage 2 | 504 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 13.2 | 0.2 | 0 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1375 | - | 313 | 845 | - | - |
| HCM Lane V/C Ratio | 0.013 | - | 0.039 | 0.015 | - | - |
| HCM Control Delay (s) | 7.7 | 0 | 17 | 9.3 | - | - |
| HCM Lane LOS | A | A | C | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 0.1 | 0 | - | - |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 73 | 139 | 262 | 126 | 120 | 46 | 298 | 297 | 182 | 50 | 243 | 92 |
| Future Volume (veh/h) | 73 | 139 | 262 | 126 | 120 | 46 | 298 | 297 | 182 | 50 | 243 | 92 |
| Number | 7 | 4 | 14 | 3 | 8 | 18 | 5 | 2 | 12 | 1 | 6 | 16 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 87 | 165 | 250 | 154 | 146 | 56 | 307 | 306 | 188 | 53 | 259 | 98 |
| Adj No. of Lanes | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 2 | 0 |
| Peak Hour Factor | 0.84 | 0.84 | 0.84 | 0.82 | 0.82 | 0.82 | 0.97 | 0.97 | 0.97 | 0.94 | 0.94 | 0.94 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 184 | 308 | 262 | 196 | 221 | 85 | 374 | 649 | 552 | 75 | 455 | 168 |
| Arrive On Green | 0.10 | 0.17 | 0.17 | 0.11 | 0.17 | 0.17 | 0.21 | 0.35 | 0.35 | 0.04 | 0.18 | 0.18 |
| Sat Flow, veh/h | 1774 | 1863 | 1583 | 1774 | 1284 | 492 | 1774 | 1863 | 1583 | 1774 | 2533 | 935 |
| Grp Volume(v), veh/h | 87 | 165 | 250 | 154 | 0 | 202 | 307 | 306 | 188 | 53 | 179 | 178 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1863 | 1583 | 1774 | 0 | 1776 | 1774 | 1863 | 1583 | 1774 | 1770 | 1698 |
| Q Serve(g_s), s | 2.2 | 3.9 | 4.1 | 4.1 | 0.0 | 5.1 | 7.9 | 6.1 | 4.2 | 1.4 | 4.4 | 4.6 |
| Cycle Q Clear(g_c), s | 2.2 | 3.9 | 4.1 | 4.1 | 0.0 | 5.1 | 7.9 | 6.1 | 4.2 | 1.4 | 4.4 | 4.6 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.28 | 1.00 | | 1.00 | 1.00 | | 0.55 |
| Lane Grp Cap(c), veh/h | 184 | 308 | 262 | 196 | 0 | 306 | 374 | 649 | 552 | 75 | 318 | 305 |
| V/C Ratio(X) | 0.47 | 0.54 | 0.96 | 0.78 | 0.00 | 0.66 | 0.82 | 0.47 | 0.34 | 0.71 | 0.56 | 0.58 |
| Avail Cap(c_a), veh/h | 259 | 1242 | 1056 | 259 | 0 | 1184 | 518 | 1281 | 1089 | 259 | 959 | 920 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 20.3 | 18.3 | 6.0 | 20.8 | 0.0 | 18.6 | 18.1 | 12.2 | 11.6 | 22.7 | 18.0 | 18.0 |
| Incr Delay (d2), s/veh | 1.9 | 1.4 | 17.2 | 10.9 | 0.0 | 2.4 | 7.3 | 0.5 | 0.4 | 11.5 | 1.6 | 1.8 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 1.2 | 2.1 | 3.0 | 2.6 | 0.0 | 2.7 | 4.6 | 3.2 | 1.9 | 0.9 | 2.3 | 2.3 |
| LnGrp Delay(d),s/veh | 22.1 | 19.8 | 23.1 | 31.7 | 0.0 | 21.0 | 25.4 | 12.7 | 11.9 | 34.2 | 19.5 | 19.8 |
| LnGrp LOS | C | B | C | C | | C | C | B | B | C | B | B |
| Approach Vol, veh/h | | 502 | | | 356 | | | 801 | | | 410 | |
| Approach Delay, s/veh | | 21.9 | | | 25.6 | | | 17.4 | | | 21.5 | |
| Approach LOS | | C | | | C | | | B | | | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | 6.0 | 20.7 | 9.3 | 11.9 | 14.1 | 12.6 | 9.0 | 12.3 |
| Change Period (Y+Rc), s | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | 7.0 | 33.0 | 7.0 | 32.0 | 14.0 | 26.0 | 7.0 | 32.0 |
| Max Q Clear Time (g_c+I1), s | 3.4 | 8.1 | 6.1 | 6.1 | 9.9 | 6.6 | 4.2 | 7.1 |
| Green Ext Time (p_c), s | 0.0 | 2.5 | 0.0 | 1.8 | 0.4 | 2.0 | 0.0 | 1.2 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 20.7 |
| HCM 2010 LOS | C |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.6 |

| Movement | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 1 | 0 | 94 | 2 | 0 | 16 | 181 | 742 | 11 | 11 | 684 | 14 |
| Future Vol, veh/h | 1 | 0 | 94 | 2 | 0 | 16 | 181 | 742 | 11 | 11 | 684 | 14 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | 1 | - | - | 1 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 84 | 84 | 84 | 82 | 82 | 82 | 97 | 97 | 97 | 94 | 94 | 94 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 1 | 0 | 112 | 2 | 0 | 20 | 187 | 765 | 11 | 12 | 728 | 15 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1915 | 1910 | 736 | 1961 | 1912 | 771 | 743 | 0 | 0 | 776 | 0 | 0 |
| Stage 1 | 760 | 760 | - | 1145 | 1145 | - | - | - | - | - | - | - |
| Stage 2 | 1155 | 1150 | - | 816 | 767 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 | 4.12 | - | - | 4.12 | - | - |
| Critical Hdwy Stg 1 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.218 | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver | 51 | 68 | 419 | 48 | 68 | 400 | 864 | - | - | 840 | - | - |
| Stage 1 | 398 | 414 | - | 243 | 274 | - | - | - | - | - | - | - |
| Stage 2 | 240 | 273 | - | 371 | 411 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 40 | 53 | 419 | 29 | 53 | 400 | 864 | - | - | 840 | - | - |
| Mov Cap-2 Maneuver | 40 | 53 | - | 29 | 53 | - | - | - | - | - | - | - |
| Stage 1 | 312 | 408 | - | 191 | 215 | - | - | - | - | - | - | - |
| Stage 2 | 179 | 214 | - | 268 | 405 | - | - | - | - | - | - | - |

| Approach | SE | NW | NE | SW |
|---|---|---|---|---|
| HCM Control Delay, s | 18.4 | 30.1 | 2 | 0.1 |
| HCM LOS | C | D | | |

| Minor Lane/Major Mvmt | NEL | NET | NER | NWLn1 | SELn1 | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 864 | - | - | 165 | 381 | 840 | - | - |
| HCM Lane V/C Ratio | 0.216 | - | - | 0.133 | 0.297 | 0.014 | - | - |
| HCM Control Delay (s) | 10.3 | - | - | 30.1 | 18.4 | 9.3 | - | - |
| HCM Lane LOS | B | - | - | D | C | A | - | - |
| HCM 95th %tile Q(veh) | 0.8 | - | - | 0.4 | 1.2 | 0 | - | - |

| Movement | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 20 | 25 | 11 | 85 | 10 | 485 | 19 | 443 | 82 | 402 | 684 | 14 |
| Future Volume (veh/h) | 20 | 25 | 11 | 85 | 10 | 485 | 19 | 443 | 82 | 402 | 684 | 14 |
| Number | 1 | 6 | 16 | 5 | 2 | 12 | 7 | 4 | 14 | 3 | 8 | 18 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1900 | 1863 | 1900 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 26 | 32 | 14 | 92 | 11 | 527 | 21 | 492 | 91 | 462 | 786 | 16 |
| Adj No. of Lanes | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| Peak Hour Factor | 0.77 | 0.77 | 0.77 | 0.92 | 0.92 | 0.92 | 0.90 | 0.90 | 0.90 | 0.87 | 0.87 | 0.87 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 34 | 42 | 19 | 301 | 36 | 730 | 33 | 552 | 469 | 482 | 1000 | 20 |
| Arrive On Green | 0.05 | 0.05 | 0.05 | 0.19 | 0.19 | 0.19 | 0.02 | 0.30 | 0.30 | 0.27 | 0.55 | 0.55 |
| Sat Flow, veh/h | 639 | 787 | 344 | 1593 | 190 | 1583 | 1774 | 1863 | 1583 | 1774 | 1819 | 37 |
| Grp Volume(v), veh/h | 72 | 0 | 0 | 103 | 0 | 527 | 21 | 492 | 91 | 462 | 0 | 802 |
| Grp Sat Flow(s),veh/h/ln | 1770 | 0 | 0 | 1783 | 0 | 1583 | 1774 | 1863 | 1583 | 1774 | 0 | 1856 |
| Q Serve(g_s), s | 3.4 | 0.0 | 0.0 | 4.2 | 0.0 | 16.0 | 1.0 | 21.4 | 3.6 | 21.7 | 0.0 | 29.0 |
| Cycle Q Clear(g_c), s | 3.4 | 0.0 | 0.0 | 4.2 | 0.0 | 16.0 | 1.0 | 21.4 | 3.6 | 21.7 | 0.0 | 29.0 |
| Prop In Lane | 0.36 | | 0.19 | 0.89 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.02 |
| Lane Grp Cap(c), veh/h | 95 | 0 | 0 | 337 | 0 | 730 | 33 | 552 | 469 | 482 | 0 | 1020 |
| V/C Ratio(X) | 0.76 | 0.00 | 0.00 | 0.31 | 0.00 | 0.72 | 0.64 | 0.89 | 0.19 | 0.96 | 0.00 | 0.79 |
| Avail Cap(c_a), veh/h | 335 | 0 | 0 | 337 | 0 | 730 | 84 | 638 | 543 | 482 | 0 | 1053 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 39.5 | 0.0 | 0.0 | 29.5 | 0.0 | 18.4 | 41.3 | 28.5 | 22.2 | 30.3 | 0.0 | 15.1 |
| Incr Delay (d2), s/veh | 11.5 | 0.0 | 0.0 | 0.5 | 0.0 | 3.5 | 19.1 | 13.5 | 0.2 | 30.5 | 0.0 | 3.9 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 2.0 | 0.0 | 0.0 | 2.1 | 0.0 | 10.6 | 0.7 | 13.0 | 1.6 | 14.7 | 0.0 | 15.8 |
| LnGrp Delay(d),s/veh | 51.0 | 0.0 | 0.0 | 30.0 | 0.0 | 21.9 | 60.4 | 41.9 | 22.4 | 60.8 | 0.0 | 19.0 |
| LnGrp LOS | D | | | C | | C | E | D | C | E | | B |
| Approach Vol, veh/h | | 72 | | | 630 | | | 604 | | | 1264 | |
| Approach Delay, s/veh | | 51.0 | | | 23.3 | | | 39.6 | | | 34.3 | |
| Approach LOS | | D | | | C | | | D | | | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | 3 | 4 | | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | | 20.0 | 27.0 | 29.1 | | 8.6 | 5.6 | 50.5 |
| Change Period (Y+Rc), s | | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | | 16.0 | 23.0 | 29.0 | | 16.0 | 4.0 | 48.0 |
| Max Q Clear Time (g_c+I1), s | | 18.0 | 23.7 | 23.4 | | 5.4 | 3.0 | 31.0 |
| Green Ext Time (p_c), s | | 0.0 | 0.0 | 1.7 | | 0.2 | 0.0 | 5.6 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 33.3 |
| HCM 2010 LOS | C |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 22.8 |
| Intersection LOS | C |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 99 | 7 | 192 | 123 | 26 | 14 | 90 | 150 | 26 | 3 | 272 | 109 |
| Future Vol, veh/h | 99 | 7 | 192 | 123 | 26 | 14 | 90 | 150 | 26 | 3 | 272 | 109 |
| Peak Hour Factor | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 124 | 9 | 240 | 154 | 33 | 18 | 113 | 188 | 33 | 4 | 340 | 136 |
| Number of Lanes | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 1 | 2 | 3 | 2 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 3 | 2 | 2 | 1 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 2 | 3 | 1 | 2 |
| HCM Control Delay | 18.3 | 22.3 | 19 | 29 |
| HCM LOS | C | C | C | D |

| Lane | NBLn1 | NBLn2 | EBLn1 | EBLn2 | WBLn1 | SBLn1 | SBLn2 | SBLn3 |
|---|---|---|---|---|---|---|---|---|
| Vol Left, % | 100% | 0% | 93% | 0% | 75% | 100% | 0% | 0% |
| Vol Thru, % | 0% | 85% | 7% | 0% | 16% | 0% | 100% | 0% |
| Vol Right, % | 0% | 15% | 0% | 100% | 9% | 0% | 0% | 100% |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 90 | 176 | 106 | 192 | 163 | 3 | 272 | 109 |
| LT Vol | 90 | 0 | 99 | 0 | 123 | 3 | 0 | 0 |
| Through Vol | 0 | 150 | 7 | 0 | 26 | 0 | 272 | 0 |
| RT Vol | 0 | 26 | 0 | 192 | 14 | 0 | 0 | 109 |
| Lane Flow Rate | 112 | 220 | 132 | 240 | 204 | 4 | 340 | 136 |
| Geometry Grp | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| Degree of Util (X) | 0.289 | 0.527 | 0.336 | 0.528 | 0.53 | 0.009 | 0.785 | 0.287 |
| Departure Headway (Hd) | 9.255 | 8.626 | 9.123 | 7.923 | 9.37 | 8.832 | 8.316 | 7.593 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 388 | 418 | 394 | 456 | 385 | 405 | 435 | 473 |
| Service Time | 7.014 | 6.385 | 6.879 | 5.678 | 7.13 | 6.585 | 6.069 | 5.346 |
| HCM Lane V/C Ratio | 0.289 | 0.526 | 0.335 | 0.526 | 0.53 | 0.01 | 0.782 | 0.288 |
| HCM Control Delay | 15.8 | 20.7 | 16.5 | 19.3 | 22.3 | 11.7 | 35.5 | 13.4 |
| HCM Lane LOS | C | C | C | C | C | B | E | B |
| HCM 95th-tile Q | 1.2 | 3 | 1.5 | 3 | 3 | 0 | 6.9 | 1.2 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 143.7 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 1 | 0 | 116 | 1 | 123 | 1 | 155 | 140 | 223 | 391 | 0 |
| Future Vol, veh/h | 0 | 1 | 0 | 116 | 1 | 123 | 1 | 155 | 140 | 223 | 391 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | 20 | - | - | - | 85 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 2 | 0 | 187 | 2 | 198 | 2 | 250 | 226 | 360 | 631 | 0 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1818 | 1831 | 631 | 1719 | 1718 | 363 | 631 | 0 | 0 | 476 | 0 | 0 |
| Stage 1 | 1351 | 1351 | - | 367 | 367 | - | - | - | - | - | - | - |
| Stage 2 | 467 | 480 | - | 1352 | 1351 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 | 4.12 | - | - | 4.12 | - | - |
| Critical Hdwy Stg 1 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.218 | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver | 60 | 76 | 481 | ~ 71 | 90 | 682 | 951 | - | - | 1086 | - | - |
| Stage 1 | 185 | 219 | - | 653 | 622 | - | - | - | - | - | - | - |
| Stage 2 | 576 | 554 | - | ~ 185 | 219 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 31 | 51 | 481 | ~ 51 | 60 | 682 | 951 | - | - | 1086 | - | - |
| Mov Cap-2 Maneuver | 31 | 51 | - | ~ 51 | 60 | - | - | - | - | - | - | - |
| Stage 1 | 184 | 147 | - | 651 | 620 | - | - | - | - | - | - | - |
| Stage 2 | 406 | 552 | - | ~ 122 | 147 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 77.9 | $ 679.4 | 0 | 3.6 |
| HCM LOS | F | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | WBLn2 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 951 | - | - | 51 | 51 | 682 | 1086 | - | - |
| HCM Lane V/C Ratio | 0.002 | - | - | 0.032 | 3.7 | 0.291 | 0.331 | - | - |
| HCM Control Delay (s) | 8.8 | 0 | - | 77.9 | $ 1380.7 | 12.4 | 9.9 | - | - |
| HCM Lane LOS | A | A | - | F | F | B | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0.1 | 20.6 | 1.2 | 1.5 | - | - |

**Notes**

~: Volume exceeds capacity  $: Delay exceeds 300s  +: Computation Not Defined  *: All major volume in platoon

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.4 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 3 | 40 | 38 | 6 | 27 | 1 |
| Future Vol, veh/h | 3 | 40 | 38 | 6 | 27 | 1 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 3 | 43 | 41 | 7 | 29 | 1 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 48 | 0 | - | 0 | 94 | 45 |
| Stage 1 | - | - | - | - | 45 | - |
| Stage 2 | - | - | - | - | 49 | - |
| Critical Hdwy | 4.12 | - | - | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | 2.218 | - | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | 1559 | - | - | - | 906 | 1025 |
| Stage 1 | - | - | - | - | 977 | - |
| Stage 2 | - | - | - | - | 973 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1559 | - | - | - | 904 | 1025 |
| Mov Cap-2 Maneuver | - | - | - | - | 904 | - |
| Stage 1 | - | - | - | - | 975 | - |
| Stage 2 | - | - | - | - | 973 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0.5 | 0 | 9.1 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1559 | - | - | - | 908 |
| HCM Lane V/C Ratio | 0.002 | - | - | - | 0.034 |
| HCM Control Delay (s) | 7.3 | 0 | - | - | 9.1 |
| HCM Lane LOS | A | A | - | - | A |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0.1 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.8 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 10 | 57 | 22 | 317 | 512 | 22 |
| Future Vol, veh/h | 10 | 57 | 22 | 317 | 512 | 22 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | 45 | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 60 | 60 | 60 | 60 | 60 | 60 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 17 | 95 | 37 | 528 | 853 | 37 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1474 | 872 | 890 | 0 | - | 0 |
| Stage 1 | 872 | - | - | - | - | - |
| Stage 2 | 602 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 139 | 350 | 761 | - | - | - |
| Stage 1 | 409 | - | - | - | - | - |
| Stage 2 | 547 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 129 | 350 | 761 | - | - | - |
| Mov Cap-2 Maneuver | 129 | - | - | - | - | - |
| Stage 1 | 381 | - | - | - | - | - |
| Stage 2 | 547 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 21.8 | 0.6 | 0 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 761 | - | 129 | 350 | - | - |
| HCM Lane V/C Ratio | 0.048 | - | 0.129 | 0.271 | - | - |
| HCM Control Delay (s) | 10 | 0 | 37 | 19.1 | - | - |
| HCM Lane LOS | A | A | E | C | - | - |
| HCM 95th %tile Q(veh) | 0.2 | - | 0.4 | 1.1 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 30.7 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 36 | 65 | 276 | 101 | 190 | 380 |
| Future Vol, veh/h | 36 | 65 | 276 | 101 | 190 | 380 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | 45 | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 58 | 58 | 58 | 58 | 58 | 58 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 62 | 112 | 476 | 174 | 328 | 655 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1874 | 563 | 0 | 0 | 650 | 0 |
| Stage 1 | 563 | - | - | - | - | - |
| Stage 2 | 1311 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | 79 | 526 | - | - | 936 | - |
| Stage 1 | 570 | - | - | - | - | - |
| Stage 2 | 252 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | ~ 51 | 526 | - | - | 936 | - |
| Mov Cap-2 Maneuver | ~ 51 | - | - | - | - | - |
| Stage 1 | 371 | - | - | - | - | - |
| Stage 2 | 252 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 298.6 | 0 | 3.6 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 122 | 936 | - |
| HCM Lane V/C Ratio | - | - | 1.427 | 0.35 | - |
| HCM Control Delay (s) | - | - | 298.6 | 10.9 | - |
| HCM Lane LOS | - | - | F | B | - |
| HCM 95th %tile Q(veh) | - | - | 12 | 1.6 | - |

Notes

~: Volume exceeds capacity  $: Delay exceeds 300s  +: Computation Not Defined  *: All major volume in platoon

| Intersection | |
|---|---|
| Int Delay, s/veh | 97.4 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 5 | 115 | 1 | 115 | 2 | 274 | 115 | 134 | 265 | 5 |
| Future Vol, veh/h | 0 | 0 | 5 | 115 | 1 | 115 | 2 | 274 | 115 | 134 | 265 | 5 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | 100 | - | - | 70 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 7 | 172 | 1 | 172 | 3 | 409 | 172 | 200 | 396 | 7 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1388 | 1387 | 400 | 1304 | 1304 | 495 | 403 | 0 | 0 | 581 | 0 | 0 |
| Stage 1 | 800 | 800 | - | 501 | 501 | - | - | - | - | - | - | - |
| Stage 2 | 588 | 587 | - | 803 | 803 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 | 4.12 | - | - | 4.12 | - | - |
| Critical Hdwy Stg 1 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.218 | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver | 120 | 143 | 650 | ~ 137 | 160 | 575 | 1156 | - | - | 993 | - | - |
| Stage 1 | 379 | 397 | - | 552 | 543 | - | - | - | - | - | - | - |
| Stage 2 | 495 | 497 | - | 377 | 396 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 70 | 114 | 650 | ~ 114 | 128 | 575 | 1156 | - | - | 993 | - | - |
| Mov Cap-2 Maneuver | 70 | 114 | - | ~ 114 | 128 | - | - | - | - | - | - | - |
| Stage 1 | 378 | 317 | - | 550 | 541 | - | - | - | - | - | - | - |
| Stage 2 | 345 | 496 | - | 298 | 316 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 10.6 | $ 428.7 | 0 | 3.2 |
| HCM LOS | B | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1156 | - | - | 650 | 190 | 993 | - | - |
| HCM Lane V/C Ratio | 0.003 | - | - | 0.011 | 1.815 | 0.201 | - | - |
| HCM Control Delay (s) | 8.1 | - | - | 10.6 | $ 428.7 | 9.5 | - | - |
| HCM Lane LOS | A | - | - | B | F | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0 | 24.6 | 0.8 | - | - |

**Notes**

~: Volume exceeds capacity  $: Delay exceeds 300s  +: Computation Not Defined  *: All major volume in platoon

| Intersection | |
|---|---|
| Int Delay, s/veh | 19.7 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 120 | 74 | 305 | 361 | 132 | 265 |
| Future Vol, veh/h | 120 | 74 | 305 | 361 | 132 | 265 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 60 | 0 | - | - | 100 | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 77 | 77 | 77 | 77 | 77 | 77 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 156 | 96 | 396 | 469 | 171 | 344 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1317 | 631 | 0 | 0 | 865 | 0 |
| Stage 1 | 631 | - | - | - | - | - |
| Stage 2 | 686 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | 174 | 481 | - | - | 778 | - |
| Stage 1 | 530 | - | - | - | - | - |
| Stage 2 | 500 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | ~ 136 | 481 | - | - | 778 | - |
| Mov Cap-2 Maneuver | ~ 136 | - | - | - | - | - |
| Stage 1 | 413 | - | - | - | - | - |
| Stage 2 | 500 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 120.3 | 0 | 3.6 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | WBLn2 | SBL | SBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 136 | 481 | 778 | - |
| HCM Lane V/C Ratio | - | - | 1.146 | 0.2 | 0.22 | - |
| HCM Control Delay (s) | - | - | 185.7 | 14.3 | 10.9 | - |
| HCM Lane LOS | - | - | F | B | B | - |
| HCM 95th %tile Q(veh) | - | - | 9 | 0.7 | 0.8 | - |

Notes

~: Volume exceeds capacity  $: Delay exceeds 300s  +: Computation Not Defined  *: All major volume in platoon

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 178 | 104 | 238 | 137 | 127 | 134 | 264 | 361 | 90 | 47 | 295 | 113 |
| Future Volume (veh/h) | 178 | 104 | 238 | 137 | 127 | 134 | 264 | 361 | 90 | 47 | 295 | 113 |
| Number | 7 | 4 | 14 | 3 | 8 | 18 | 5 | 2 | 12 | 1 | 6 | 16 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 196 | 114 | 262 | 151 | 140 | 147 | 290 | 397 | 99 | 52 | 324 | 124 |
| Adj No. of Lanes | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 2 | 0 |
| Peak Hour Factor | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 195 | 383 | 326 | 177 | 163 | 171 | 469 | 689 | 586 | 292 | 680 | 256 |
| Arrive On Green | 0.11 | 0.21 | 0.21 | 0.10 | 0.20 | 0.20 | 0.26 | 0.37 | 0.37 | 0.16 | 0.27 | 0.27 |
| Sat Flow, veh/h | 1774 | 1863 | 1583 | 1774 | 833 | 875 | 1774 | 1863 | 1583 | 1774 | 2519 | 946 |
| Grp Volume(v), veh/h | 196 | 114 | 262 | 151 | 0 | 287 | 290 | 397 | 99 | 52 | 226 | 222 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1863 | 1583 | 1774 | 0 | 1708 | 1774 | 1863 | 1583 | 1774 | 1770 | 1696 |
| Q Serve(g_s), s | 11.0 | 5.2 | 8.9 | 8.4 | 0.0 | 16.2 | 14.4 | 17.1 | 3.0 | 2.5 | 10.7 | 11.0 |
| Cycle Q Clear(g_c), s | 11.0 | 5.2 | 8.9 | 8.4 | 0.0 | 16.2 | 14.4 | 17.1 | 3.0 | 2.5 | 10.7 | 11.0 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.51 | 1.00 | | 1.00 | 1.00 | | 0.56 |
| Lane Grp Cap(c), veh/h | 195 | 383 | 326 | 177 | 0 | 334 | 469 | 689 | 586 | 292 | 478 | 458 |
| V/C Ratio(X) | 1.00 | 0.30 | 0.80 | 0.85 | 0.00 | 0.86 | 0.62 | 0.58 | 0.17 | 0.18 | 0.47 | 0.49 |
| Avail Cap(c_a), veh/h | 195 | 577 | 491 | 177 | 0 | 513 | 469 | 689 | 586 | 292 | 478 | 458 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 44.5 | 33.6 | 12.1 | 44.3 | 0.0 | 38.9 | 32.3 | 25.2 | 10.8 | 36.0 | 30.5 | 30.7 |
| Incr Delay (d2), s/veh | 65.6 | 0.4 | 5.8 | 30.5 | 0.0 | 8.9 | 2.5 | 3.5 | 0.6 | 0.3 | 3.3 | 3.6 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 8.9 | 2.7 | 4.4 | 5.6 | 0.0 | 8.5 | 7.3 | 9.4 | 1.4 | 1.3 | 5.6 | 5.6 |
| LnGrp Delay(d),s/veh | 110.1 | 34.0 | 17.9 | 74.8 | 0.0 | 47.8 | 34.8 | 28.7 | 11.4 | 36.3 | 33.9 | 34.3 |
| LnGrp LOS | F | C | B | E | | D | C | C | B | D | C | C |
| Approach Vol, veh/h | | 572 | | | 438 | | | 786 | | | 500 | |
| Approach Delay, s/veh | | 52.7 | | | 57.1 | | | 28.8 | | | 34.3 | |
| Approach LOS | | D | | | E | | | C | | | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | 20.4 | 41.0 | 14.0 | 24.6 | 30.4 | 31.0 | 15.0 | 23.6 |
| Change Period (Y+Rc), s | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | 6.0 | 37.0 | 10.0 | 31.0 | 16.0 | 27.0 | 11.0 | 30.0 |
| Max Q Clear Time (g_c+I1), s | 4.5 | 19.1 | 10.4 | 10.9 | 16.4 | 13.0 | 13.0 | 18.2 |
| Green Ext Time (p_c), s | 0.0 | 2.6 | 0.0 | 1.5 | 0.0 | 2.3 | 0.0 | 1.3 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 41.3 |
| HCM 2010 LOS | D |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.2 |

| Movement | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 1 | 0 | 125 | 1 | 0 | 18 | 81 | 732 | 6 | 4 | 643 | 9 |
| Future Vol, veh/h | 1 | 0 | 125 | 1 | 0 | 18 | 81 | 732 | 6 | 4 | 643 | 9 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | 1 | - | - | 1 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 88 | 88 | 88 | 80 | 80 | 80 | 94 | 94 | 94 | 91 | 91 | 91 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 1 | 0 | 142 | 1 | 0 | 23 | 86 | 779 | 6 | 4 | 707 | 10 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1686 | 1677 | 712 | 1745 | 1679 | 782 | 717 | 0 | 0 | 785 | 0 | 0 |
| Stage 1 | 720 | 720 | - | 954 | 954 | - | - | - | - | - | - | - |
| Stage 2 | 966 | 957 | - | 791 | 725 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 | 4.12 | - | - | 4.12 | - | - |
| Critical Hdwy Stg 1 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.218 | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver | 74 | 95 | 432 | 68 | 95 | 394 | 884 | - | - | 834 | - | - |
| Stage 1 | 419 | 432 | - | 311 | 337 | - | - | - | - | - | - | - |
| Stage 2 | 306 | 336 | - | 383 | 430 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 64 | 85 | 432 | 42 | 85 | 394 | 884 | - | - | 834 | - | - |
| Mov Cap-2 Maneuver | 64 | 85 | - | 42 | 85 | - | - | - | - | - | - | - |
| Stage 1 | 378 | 430 | - | 281 | 304 | - | - | - | - | - | - | - |
| Stage 2 | 260 | 303 | - | 256 | 428 | - | - | - | - | - | - | - |

| Approach | SE | NW | NE | SW |
|---|---|---|---|---|
| HCM Control Delay, s | 18.3 | 19.4 | 0.9 | 0.1 |
| HCM LOS | C | C | | |

| Minor Lane/Major Mvmt | NEL | NET | NER | NWLn1 | SELn1 | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 884 | - | - | 273 | 413 | 834 | - | - |
| HCM Lane V/C Ratio | 0.097 | - | - | 0.087 | 0.347 | 0.005 | - | - |
| HCM Control Delay (s) | 9.5 | - | - | 19.4 | 18.3 | 9.3 | - | - |
| HCM Lane LOS | A | - | - | C | C | A | - | - |
| HCM 95th %tile Q(veh) | 0.3 | - | - | 0.3 | 1.5 | 0 | - | - |

| Movement | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 6 | 82 | 11 | 52 | 7 | 518 | 6 | 296 | 30 | 389 | 382 | 5 |
| Future Volume (veh/h) | 6 | 82 | 11 | 52 | 7 | 518 | 6 | 296 | 30 | 389 | 382 | 5 |
| Number | 1 | 6 | 16 | 5 | 2 | 12 | 7 | 4 | 14 | 3 | 8 | 18 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1900 | 1863 | 1900 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 9 | 124 | 17 | 55 | 7 | 545 | 7 | 333 | 34 | 423 | 415 | 5 |
| Adj No. of Lanes | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| Peak Hour Factor | 0.66 | 0.66 | 0.66 | 0.95 | 0.95 | 0.95 | 0.89 | 0.89 | 0.89 | 0.92 | 0.92 | 0.92 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 12 | 161 | 22 | 334 | 43 | 755 | 13 | 381 | 324 | 471 | 851 | 10 |
| Arrive On Green | 0.11 | 0.11 | 0.11 | 0.21 | 0.21 | 0.21 | 0.01 | 0.20 | 0.20 | 0.27 | 0.46 | 0.46 |
| Sat Flow, veh/h | 109 | 1505 | 206 | 1582 | 201 | 1583 | 1774 | 1863 | 1583 | 1774 | 1837 | 22 |
| Grp Volume(v), veh/h | 150 | 0 | 0 | 62 | 0 | 545 | 7 | 333 | 34 | 423 | 0 | 420 |
| Grp Sat Flow(s),veh/h/ln | 1821 | 0 | 0 | 1784 | 0 | 1583 | 1774 | 1863 | 1583 | 1774 | 0 | 1859 |
| Q Serve(g_s), s | 6.1 | 0.0 | 0.0 | 2.2 | 0.0 | 16.0 | 0.3 | 13.1 | 1.3 | 17.4 | 0.0 | 11.9 |
| Cycle Q Clear(g_c), s | 6.1 | 0.0 | 0.0 | 2.2 | 0.0 | 16.0 | 0.3 | 13.1 | 1.3 | 17.4 | 0.0 | 11.9 |
| Prop In Lane | 0.06 | | 0.11 | 0.89 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.01 |
| Lane Grp Cap(c), veh/h | 195 | 0 | 0 | 377 | 0 | 755 | 13 | 381 | 324 | 471 | 0 | 861 |
| V/C Ratio(X) | 0.77 | 0.00 | 0.00 | 0.16 | 0.00 | 0.72 | 0.55 | 0.87 | 0.10 | 0.90 | 0.00 | 0.49 |
| Avail Cap(c_a), veh/h | 384 | 0 | 0 | 377 | 0 | 755 | 94 | 418 | 355 | 585 | 0 | 932 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 32.9 | 0.0 | 0.0 | 24.4 | 0.0 | 15.8 | 37.5 | 29.2 | 24.5 | 26.8 | 0.0 | 14.1 |
| Incr Delay (d2), s/veh | 6.2 | 0.0 | 0.0 | 0.2 | 0.0 | 3.4 | 31.5 | 17.1 | 0.1 | 14.4 | 0.0 | 0.4 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 3.4 | 0.0 | 0.0 | 1.1 | 0.0 | 9.7 | 0.3 | 8.6 | 0.6 | 10.3 | 0.0 | 6.2 |
| LnGrp Delay(d),s/veh | 39.1 | 0.0 | 0.0 | 24.6 | 0.0 | 19.2 | 69.0 | 46.2 | 24.6 | 41.2 | 0.0 | 14.5 |
| LnGrp LOS | D | | | C | | B | E | D | C | D | | B |
| Approach Vol, veh/h | | 150 | | | 607 | | | 374 | | | 843 | |
| Approach Delay, s/veh | | 39.1 | | | 19.8 | | | 44.7 | | | 27.9 | |
| Approach LOS | | D | | | B | | | D | | | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | 3 | 4 | | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | | 20.0 | 24.1 | 19.5 | | 12.1 | 4.5 | 39.1 |
| Change Period (Y+Rc), s | | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | | 16.0 | 25.0 | 17.0 | | 16.0 | 4.0 | 38.0 |
| Max Q Clear Time (g_c+I1), s | | 18.0 | 19.4 | 15.1 | | 8.1 | 2.3 | 13.9 |
| Green Ext Time (p_c), s | | 0.0 | 0.7 | 0.4 | | 0.4 | 0.0 | 2.7 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 29.4 |
| HCM 2010 LOS | C |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 20.8 |
| Intersection LOS | C |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 125 | 33 | 136 | 45 | 18 | 13 | 112 | 253 | 74 | 14 | 157 | 74 |
| Future Vol, veh/h | 125 | 33 | 136 | 45 | 18 | 13 | 112 | 253 | 74 | 14 | 157 | 74 |
| Peak Hour Factor | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 154 | 41 | 168 | 56 | 22 | 16 | 138 | 312 | 91 | 17 | 194 | 91 |
| Number of Lanes | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 1 | 2 | 3 | 2 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 3 | 2 | 2 | 1 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 2 | 3 | 1 | 2 |
| HCM Control Delay | 15.7 | 14.3 | 28.6 | 14.8 |
| HCM LOS | C | B | D | B |

| Lane | NBLn1 | NBLn2 | EBLn1 | EBLn2 | WBLn1 | SBLn1 | SBLn2 | SBLn3 |
|---|---|---|---|---|---|---|---|---|
| Vol Left, % | 100% | 0% | 79% | 0% | 59% | 100% | 0% | 0% |
| Vol Thru, % | 0% | 77% | 21% | 0% | 24% | 0% | 100% | 0% |
| Vol Right, % | 0% | 23% | 0% | 100% | 17% | 0% | 0% | 100% |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 112 | 327 | 158 | 136 | 76 | 14 | 157 | 74 |
| LT Vol | 112 | 0 | 125 | 0 | 45 | 14 | 0 | 0 |
| Through Vol | 0 | 253 | 33 | 0 | 18 | 0 | 157 | 0 |
| RT Vol | 0 | 74 | 0 | 136 | 13 | 0 | 0 | 74 |
| Lane Flow Rate | 138 | 404 | 195 | 168 | 94 | 17 | 194 | 91 |
| Geometry Grp | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| Degree of Util (X) | 0.302 | 0.806 | 0.447 | 0.333 | 0.231 | 0.041 | 0.428 | 0.183 |
| Departure Headway (Hd) | 7.865 | 7.19 | 8.247 | 7.131 | 8.848 | 8.456 | 7.943 | 7.224 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 456 | 501 | 435 | 502 | 404 | 422 | 452 | 495 |
| Service Time | 5.627 | 4.951 | 6.014 | 4.897 | 6.634 | 6.229 | 5.715 | 4.995 |
| HCM Lane V/C Ratio | 0.303 | 0.806 | 0.448 | 0.335 | 0.233 | 0.04 | 0.429 | 0.184 |
| HCM Control Delay | 14 | 33.6 | 17.6 | 13.4 | 14.3 | 11.6 | 16.6 | 11.6 |
| HCM Lane LOS | B | D | C | B | B | B | C | B |
| HCM 95th-tile Q | 1.3 | 7.6 | 2.3 | 1.4 | 0.9 | 0.1 | 2.1 | 0.7 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 6.9 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 1 | 1 | 2 | 63 | 1 | 176 | 2 | 300 | 217 | 153 | 206 | 1 |
| Future Vol, veh/h | 1 | 1 | 2 | 63 | 1 | 176 | 2 | 300 | 217 | 153 | 206 | 1 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | 20 | - | - | - | 85 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 1 | 1 | 2 | 78 | 1 | 217 | 2 | 370 | 268 | 189 | 254 | 1 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1250 | 1275 | 255 | 1142 | 1141 | 504 | 255 | 0 | 0 | 638 | 0 | 0 |
| Stage 1 | 633 | 633 | - | 508 | 508 | - | - | - | - | - | - | - |
| Stage 2 | 617 | 642 | - | 634 | 633 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 | 4.12 | - | - | 4.12 | - | - |
| Critical Hdwy Stg 1 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.218 | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver | 150 | 167 | 784 | 177 | 201 | 568 | 1310 | - | - | 946 | - | - |
| Stage 1 | 468 | 473 | - | 547 | 539 | - | - | - | - | - | - | - |
| Stage 2 | 477 | 469 | - | 467 | 473 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 78 | 133 | 784 | 148 | 160 | 568 | 1310 | - | - | 946 | - | - |
| Mov Cap-2 Maneuver | 78 | 133 | - | 148 | 160 | - | - | - | - | - | - | - |
| Stage 1 | 467 | 378 | - | 546 | 538 | - | - | - | - | - | - | - |
| Stage 2 | 293 | 468 | - | 371 | 378 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 26.2 | 25.6 | 0 | 4.1 |
| HCM LOS | D | D | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | WBLn2 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1310 | - | - | 175 | 148 | 568 | 946 | - | - |
| HCM Lane V/C Ratio | 0.002 | - | - | 0.028 | 0.534 | 0.383 | 0.2 | - | - |
| HCM Control Delay (s) | 7.8 | 0 | - | 26.2 | 54.2 | 15.2 | 9.8 | - | - |
| HCM Lane LOS | A | A | - | D | F | C | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0.1 | 2.6 | 1.8 | 0.7 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.7 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 9 | 19 | 513 | 1 | 12 | 272 |
| Future Vol, veh/h | 9 | 19 | 513 | 1 | 12 | 272 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 81 | 81 | 81 | 81 | 81 | 81 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 11 | 23 | 633 | 1 | 15 | 336 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1000 | 634 | 0 | 0 | 634 | 0 |
| Stage 1 | 634 | - | - | - | - | - |
| Stage 2 | 366 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | 270 | 479 | - | - | 949 | - |
| Stage 1 | 529 | - | - | - | - | - |
| Stage 2 | 702 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 265 | 479 | - | - | 949 | - |
| Mov Cap-2 Maneuver | 265 | - | - | - | - | - |
| Stage 1 | 519 | - | - | - | - | - |
| Stage 2 | 702 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 15.4 | 0 | 0.4 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 380 | 949 | - |
| HCM Lane V/C Ratio | - | - | 0.091 | 0.016 | - |
| HCM Control Delay (s) | - | - | 15.4 | 8.9 | 0 |
| HCM Lane LOS | - | - | C | A | A |
| HCM 95th %tile Q(veh) | - | - | 0.3 | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.9 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 1 | 5 | 43 | 24 | 15 | 3 |
| Future Vol, veh/h | 1 | 5 | 43 | 24 | 15 | 3 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 60 | 60 | 60 | 60 | 60 | 60 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 2 | 8 | 72 | 40 | 25 | 5 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 112 | 0 | - | 0 | 104 | 92 |
| Stage 1 | - | - | - | - | 92 | - |
| Stage 2 | - | - | - | - | 12 | - |
| Critical Hdwy | 4.12 | - | - | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | 2.218 | - | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | 1478 | - | - | - | 894 | 965 |
| Stage 1 | - | - | - | - | 932 | - |
| Stage 2 | - | - | - | - | 1011 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1478 | - | - | - | 893 | 965 |
| Mov Cap-2 Maneuver | - | - | - | - | 893 | - |
| Stage 1 | - | - | - | - | 931 | - |
| Stage 2 | - | - | - | - | 1011 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 1.2 | 0 | 9.1 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1478 | - | - | - | 904 |
| HCM Lane V/C Ratio | 0.001 | - | - | - | 0.033 |
| HCM Control Delay (s) | 7.4 | 0 | - | - | 9.1 |
| HCM Lane LOS | A | A | - | - | A |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0.1 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.9 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 2 | 19 | 60 | 512 | 274 | 7 |
| Future Vol, veh/h | 2 | 19 | 60 | 512 | 274 | 7 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | 45 | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 60 | 60 | 60 | 60 | 60 | 60 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 3 | 32 | 100 | 853 | 457 | 12 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1516 | 463 | 469 | 0 | - | 0 |
| Stage 1 | 463 | - | - | - | - | - |
| Stage 2 | 1053 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 131 | 599 | 1093 | - | - | - |
| Stage 1 | 634 | - | - | - | - | - |
| Stage 2 | 336 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 108 | 599 | 1093 | - | - | - |
| Mov Cap-2 Maneuver | 108 | - | - | - | - | - |
| Stage 1 | 524 | - | - | - | - | - |
| Stage 2 | 336 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 14 | 0.9 | 0 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1093 | - | 108 | 599 | - | - |
| HCM Lane V/C Ratio | 0.091 | - | 0.031 | 0.053 | - | - |
| HCM Control Delay (s) | 8.6 | 0 | 39.4 | 11.3 | - | - |
| HCM Lane LOS | A | A | E | B | - | - |
| HCM 95th %tile Q(veh) | 0.3 | - | 0.1 | 0.2 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 14.6 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 76 | 106 | 469 | 39 | 30 | 263 |
| Future Vol, veh/h | 76 | 106 | 469 | 39 | 30 | 263 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | 45 | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 68 | 68 | 68 | 68 | 68 | 68 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 112 | 156 | 690 | 57 | 44 | 387 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1194 | 719 | 0 | 0 | 747 | 0 |
| Stage 1 | 719 | - | - | - | - | - |
| Stage 2 | 475 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | 206 | 428 | - | - | 861 | - |
| Stage 1 | 483 | - | - | - | - | - |
| Stage 2 | 626 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 195 | 428 | - | - | 861 | - |
| Mov Cap-2 Maneuver | 195 | - | - | - | - | - |
| Stage 1 | 458 | - | - | - | - | - |
| Stage 2 | 626 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 77.4 | 0 | 1 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 286 | 861 | - |
| HCM Lane V/C Ratio | - | - | 0.936 | 0.051 | - |
| HCM Control Delay (s) | - | - | 77.4 | 9.4 | - |
| HCM Lane LOS | - | - | F | A | - |
| HCM 95th %tile Q(veh) | - | - | 8.9 | 0.2 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 7.5 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 10 | 0 | 94 | 22 | 1 | 82 | 76 | 418 | 13 | 7 | 320 | 15 |
| Future Vol, veh/h | 10 | 0 | 94 | 22 | 1 | 82 | 76 | 418 | 13 | 7 | 320 | 15 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | 100 | - | - | 70 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 15 | 0 | 138 | 32 | 1 | 121 | 112 | 615 | 19 | 10 | 471 | 22 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1412 | 1360 | 482 | 1420 | 1362 | 625 | 493 | 0 | 0 | 634 | 0 | 0 |
| Stage 1 | 502 | 502 | - | 849 | 849 | - | - | - | - | - | - | - |
| Stage 2 | 910 | 858 | - | 571 | 513 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 | 4.12 | - | - | 4.12 | - | - |
| Critical Hdwy Stg 1 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.218 | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver | 116 | 148 | 584 | 114 | 148 | 485 | 1071 | - | - | 949 | - | - |
| Stage 1 | 552 | 542 | - | 356 | 377 | - | - | - | - | - | - | - |
| Stage 2 | 329 | 374 | - | 506 | 536 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 79 | 131 | 584 | 79 | 131 | 485 | 1071 | - | - | 949 | - | - |
| Mov Cap-2 Maneuver | 79 | 131 | - | 79 | 131 | - | - | - | - | - | - | - |
| Stage 1 | 494 | 536 | - | 319 | 337 | - | - | - | - | - | - | - |
| Stage 2 | 220 | 335 | - | 382 | 530 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 22 | 47.2 | 1.3 | 0.2 |
| HCM LOS | C | E | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1071 | - | - | 362 | 231 | 949 | - | - |
| HCM Lane V/C Ratio | 0.104 | - | - | 0.422 | 0.668 | 0.011 | - | - |
| HCM Control Delay (s) | 8.8 | - | - | 22 | 47.2 | 8.8 | - | - |
| HCM Lane LOS | A | - | - | C | E | A | - | - |
| HCM 95th %tile Q(veh) | 0.3 | - | - | 2 | 4.2 | 0 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 7.7 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 83 | 199 | 304 | 142 | 61 | 381 |
| Future Vol, veh/h | 83 | 199 | 304 | 142 | 61 | 381 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 60 | 0 | - | - | 100 | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 71 | 71 | 71 | 71 | 71 | 71 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 117 | 280 | 428 | 200 | 86 | 537 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1237 | 528 | 0 | 0 | 628 | 0 |
| Stage 1 | 528 | - | - | - | - | - |
| Stage 2 | 709 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | 194 | 550 | - | - | 954 | - |
| Stage 1 | 592 | - | - | - | - | - |
| Stage 2 | 488 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 177 | 550 | - | - | 954 | - |
| Mov Cap-2 Maneuver | 177 | - | - | - | - | - |
| Stage 1 | 539 | - | - | - | - | - |
| Stage 2 | 488 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 29.9 | 0 | 1.3 |
| HCM LOS | D | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | WBLn2 | SBL | SBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 177 | 550 | 954 | - |
| HCM Lane V/C Ratio | - | - | 0.66 | 0.51 | 0.09 | - |
| HCM Control Delay (s) | - | - | 57.9 | 18.2 | 9.1 | - |
| HCM Lane LOS | - | - | F | C | A | - |
| HCM 95th %tile Q(veh) | - | - | 3.9 | 2.9 | 0.3 | - |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 85 | 81 | 267 | 168 | 87 | 55 | 280 | 386 | 189 | 59 | 367 | 145 |
| Future Volume (veh/h) | 85 | 81 | 267 | 168 | 87 | 55 | 280 | 386 | 189 | 59 | 367 | 145 |
| Number | 7 | 4 | 14 | 3 | 8 | 18 | 5 | 2 | 12 | 1 | 6 | 16 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 92 | 88 | 233 | 183 | 95 | 60 | 304 | 420 | 205 | 64 | 399 | 158 |
| Adj No. of Lanes | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 2 | 0 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 238 | 269 | 229 | 223 | 145 | 92 | 361 | 740 | 629 | 80 | 595 | 233 |
| Arrive On Green | 0.13 | 0.14 | 0.14 | 0.13 | 0.14 | 0.14 | 0.20 | 0.40 | 0.40 | 0.05 | 0.24 | 0.24 |
| Sat Flow, veh/h | 1774 | 1863 | 1583 | 1774 | 1069 | 675 | 1774 | 1863 | 1583 | 1774 | 2487 | 973 |
| Grp Volume(v), veh/h | 92 | 88 | 233 | 183 | 0 | 155 | 304 | 420 | 205 | 64 | 282 | 275 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1863 | 1583 | 1774 | 0 | 1744 | 1774 | 1863 | 1583 | 1774 | 1770 | 1691 |
| Q Serve(g_s), s | 2.6 | 2.4 | 4.8 | 5.6 | 0.0 | 4.7 | 9.2 | 9.8 | 5.0 | 2.0 | 8.1 | 8.2 |
| Cycle Q Clear(g_c), s | 2.6 | 2.4 | 4.8 | 5.6 | 0.0 | 4.7 | 9.2 | 9.8 | 5.0 | 2.0 | 8.1 | 8.2 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.39 | 1.00 | | 1.00 | 1.00 | | 0.58 |
| Lane Grp Cap(c), veh/h | 238 | 269 | 229 | 223 | 0 | 237 | 361 | 740 | 629 | 80 | 423 | 405 |
| V/C Ratio(X) | 0.39 | 0.33 | 1.02 | 0.82 | 0.00 | 0.66 | 0.84 | 0.57 | 0.33 | 0.80 | 0.67 | 0.68 |
| Avail Cap(c_a), veh/h | 238 | 1070 | 909 | 223 | 0 | 1001 | 446 | 1103 | 938 | 223 | 826 | 789 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 22.0 | 21.4 | 8.4 | 23.8 | 0.0 | 22.8 | 21.3 | 13.1 | 11.6 | 26.3 | 19.2 | 19.3 |
| Incr Delay (d2), s/veh | 1.0 | 0.7 | 32.5 | 21.1 | 0.0 | 3.1 | 11.4 | 0.7 | 0.3 | 16.1 | 1.8 | 2.0 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 1.3 | 1.3 | 5.0 | 4.1 | 0.0 | 2.4 | 5.6 | 5.2 | 2.2 | 1.3 | 4.1 | 4.0 |
| LnGrp Delay(d),s/veh | 23.0 | 22.1 | 41.1 | 44.9 | 0.0 | 25.9 | 32.8 | 13.7 | 11.9 | 42.4 | 21.0 | 21.3 |
| LnGrp LOS | C | C | F | D | | C | C | B | B | D | C | C |
| Approach Vol, veh/h | | 413 | | | 338 | | | 929 | | | 621 | |
| Approach Delay, s/veh | | 33.0 | | | 36.2 | | | 19.6 | | | 23.3 | |
| Approach LOS | | C | | | D | | | B | | | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | 6.5 | 26.1 | 11.0 | 12.0 | 15.3 | 17.3 | 11.5 | 11.6 |
| Change Period (Y+Rc), s | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | 7.0 | 33.0 | 7.0 | 32.0 | 14.0 | 26.0 | 7.0 | 32.0 |
| Max Q Clear Time (g_c+I1), s | 4.0 | 11.8 | 7.6 | 6.8 | 11.2 | 10.2 | 4.6 | 6.7 |
| Green Ext Time (p_c), s | 0.0 | 3.3 | 0.0 | 1.3 | 0.3 | 3.1 | 0.0 | 0.9 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 25.4 |
| HCM 2010 LOS | C |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.1 |

| Movement | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 1 | 0 | 84 | 1 | 1 | 21 | 107 | 773 | 7 | 8 | 808 | 9 |
| Future Vol, veh/h | 1 | 0 | 84 | 1 | 1 | 21 | 107 | 773 | 7 | 8 | 808 | 9 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | 1 | - | - | 1 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 84 | 84 | 84 | 82 | 82 | 82 | 97 | 97 | 97 | 94 | 94 | 94 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 1 | 0 | 100 | 1 | 1 | 26 | 110 | 797 | 7 | 9 | 860 | 10 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1917 | 1907 | 865 | 1954 | 1909 | 801 | 870 | 0 | 0 | 804 | 0 | 0 |
| Stage 1 | 883 | 883 | - | 1021 | 1021 | - | - | - | - | - | - | - |
| Stage 2 | 1034 | 1024 | - | 933 | 888 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 | 4.12 | - | - | 4.12 | - | - |
| Critical Hdwy Stg 1 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.218 | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver | 51 | 68 | 353 | 48 | 68 | 384 | 775 | - | - | 820 | - | - |
| Stage 1 | 340 | 364 | - | 285 | 314 | - | - | - | - | - | - | - |
| Stage 2 | 280 | 313 | - | 319 | 362 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 41 | 58 | 353 | 30 | 58 | 384 | 775 | - | - | 820 | - | - |
| Mov Cap-2 Maneuver | 41 | 58 | - | 30 | 58 | - | - | - | - | - | - | - |
| Stage 1 | 292 | 360 | - | 245 | 269 | - | - | - | - | - | - | - |
| Stage 2 | 223 | 269 | - | 226 | 358 | - | - | - | - | - | - | - |

| Approach | SE | NW | NE | SW |
|---|---|---|---|---|
| HCM Control Delay, s | 21.1 | 23.8 | 1.3 | 0.1 |
| HCM LOS | C | C | | |

| Minor Lane/Major Mvmt | NEL | NET | NER | NWLn1 | SELn1 | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 775 | - | - | 219 | 324 | 820 | - | - |
| HCM Lane V/C Ratio | 0.142 | - | - | 0.128 | 0.312 | 0.01 | - | - |
| HCM Control Delay (s) | 10.4 | - | - | 23.8 | 21.1 | 9.4 | - | - |
| HCM Lane LOS | B | - | - | C | C | A | - | - |
| HCM 95th %tile Q(veh) | 0.5 | - | - | 0.4 | 1.3 | 0 | - | - |

| Movement | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 14 | 66 | 18 | 81 | 10 | 502 | 8 | 390 | 57 | 426 | 451 | 9 |
| Future Volume (veh/h) | 14 | 66 | 18 | 81 | 10 | 502 | 8 | 390 | 57 | 426 | 451 | 9 |
| Number | 1 | 6 | 16 | 5 | 2 | 12 | 7 | 4 | 14 | 3 | 8 | 18 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1900 | 1863 | 1900 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 18 | 86 | 23 | 88 | 11 | 546 | 9 | 433 | 63 | 490 | 518 | 10 |
| Adj No. of Lanes | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| Peak Hour Factor | 0.77 | 0.77 | 0.77 | 0.92 | 0.92 | 0.92 | 0.90 | 0.90 | 0.90 | 0.87 | 0.87 | 0.87 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 23 | 111 | 30 | 296 | 37 | 720 | 16 | 497 | 422 | 476 | 958 | 18 |
| Arrive On Green | 0.09 | 0.09 | 0.09 | 0.19 | 0.19 | 0.19 | 0.01 | 0.27 | 0.27 | 0.27 | 0.53 | 0.53 |
| Sat Flow, veh/h | 254 | 1214 | 325 | 1585 | 198 | 1583 | 1774 | 1863 | 1583 | 1774 | 1821 | 35 |
| Grp Volume(v), veh/h | 127 | 0 | 0 | 99 | 0 | 546 | 9 | 433 | 63 | 490 | 0 | 528 |
| Grp Sat Flow(s),veh/h/ln | 1793 | 0 | 0 | 1783 | 0 | 1583 | 1774 | 1863 | 1583 | 1774 | 0 | 1857 |
| Q Serve(g_s), s | 5.9 | 0.0 | 0.0 | 4.1 | 0.0 | 16.0 | 0.4 | 19.0 | 2.6 | 23.0 | 0.0 | 16.2 |
| Cycle Q Clear(g_c), s | 5.9 | 0.0 | 0.0 | 4.1 | 0.0 | 16.0 | 0.4 | 19.0 | 2.6 | 23.0 | 0.0 | 16.2 |
| Prop In Lane | 0.14 | | 0.18 | 0.89 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.02 |
| Lane Grp Cap(c), veh/h | 165 | 0 | 0 | 333 | 0 | 720 | 16 | 497 | 422 | 476 | 0 | 976 |
| V/C Ratio(X) | 0.77 | 0.00 | 0.00 | 0.30 | 0.00 | 0.76 | 0.56 | 0.87 | 0.15 | 1.03 | 0.00 | 0.54 |
| Avail Cap(c_a), veh/h | 335 | 0 | 0 | 333 | 0 | 720 | 83 | 630 | 536 | 476 | 0 | 1040 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 38.0 | 0.0 | 0.0 | 30.0 | 0.0 | 19.4 | 42.3 | 30.0 | 24.0 | 31.4 | 0.0 | 13.5 |
| Incr Delay (d2), s/veh | 7.5 | 0.0 | 0.0 | 0.5 | 0.0 | 4.7 | 27.6 | 10.6 | 0.2 | 49.0 | 0.0 | 0.5 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 3.3 | 0.0 | 0.0 | 2.1 | 0.0 | 11.7 | 0.3 | 11.2 | 1.2 | 17.6 | 0.0 | 8.3 |
| LnGrp Delay(d),s/veh | 45.5 | 0.0 | 0.0 | 30.5 | 0.0 | 24.1 | 69.9 | 40.7 | 24.2 | 80.3 | 0.0 | 14.0 |
| LnGrp LOS | D | | | C | | C | E | D | C | F | | B |
| Approach Vol, veh/h | | 127 | | | 645 | | | 505 | | | 1018 | |
| Approach Delay, s/veh | | 45.5 | | | 25.1 | | | 39.1 | | | 45.9 | |
| Approach LOS | | D | | | C | | | D | | | D | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | 3 | 4 | | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | | 20.0 | 27.0 | 26.8 | | 11.9 | 4.8 | 49.1 |
| Change Period (Y+Rc), s | | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | | 16.0 | 23.0 | 29.0 | | 16.0 | 4.0 | 48.0 |
| Max Q Clear Time (g_c+I1), s | | 18.0 | 25.0 | 21.0 | | 7.9 | 2.4 | 18.2 |
| Green Ext Time (p_c), s | | 0.0 | 0.0 | 1.8 | | 0.3 | 0.0 | 3.8 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 38.5 |
| HCM 2010 LOS | D |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 15.5 |
| Intersection LOS | C |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 97 | 33 | 71 | 44 | 25 | 11 | 101 | 220 | 73 | 15 | 126 | 76 |
| Future Vol, veh/h | 97 | 33 | 71 | 44 | 25 | 11 | 101 | 220 | 73 | 15 | 126 | 76 |
| Peak Hour Factor | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 120 | 41 | 88 | 54 | 31 | 14 | 125 | 272 | 90 | 19 | 156 | 94 |
| Number of Lanes | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 1 | 2 | 3 | 2 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 3 | 2 | 2 | 1 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 2 | 3 | 1 | 2 |
| HCM Control Delay | 13.2 | 13 | 18.9 | 12.2 |
| HCM LOS | B | B | C | B |

| Lane | NBLn1 | NBLn2 | EBLn1 | EBLn2 | WBLn1 | SBLn1 | SBLn2 | SBLn3 |
|---|---|---|---|---|---|---|---|---|
| Vol Left, % | 100% | 0% | 75% | 0% | 55% | 100% | 0% | 0% |
| Vol Thru, % | 0% | 75% | 25% | 0% | 31% | 0% | 100% | 0% |
| Vol Right, % | 0% | 25% | 0% | 100% | 14% | 0% | 0% | 100% |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 101 | 293 | 130 | 71 | 80 | 15 | 126 | 76 |
| LT Vol | 101 | 0 | 97 | 0 | 44 | 15 | 0 | 0 |
| Through Vol | 0 | 220 | 33 | 0 | 25 | 0 | 126 | 0 |
| RT Vol | 0 | 73 | 0 | 71 | 11 | 0 | 0 | 76 |
| Lane Flow Rate | 125 | 362 | 160 | 88 | 99 | 19 | 156 | 94 |
| Geometry Grp | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| Degree of Util (X) | 0.252 | 0.661 | 0.345 | 0.162 | 0.219 | 0.04 | 0.313 | 0.17 |
| Departure Headway (Hd) | 7.264 | 6.577 | 7.738 | 6.65 | 7.976 | 7.751 | 7.24 | 6.526 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 498 | 553 | 465 | 539 | 449 | 462 | 496 | 549 |
| Service Time | 4.964 | 4.277 | 5.486 | 4.397 | 5.73 | 5.497 | 4.987 | 4.272 |
| HCM Lane V/C Ratio | 0.251 | 0.655 | 0.344 | 0.163 | 0.22 | 0.041 | 0.315 | 0.171 |
| HCM Control Delay | 12.4 | 21.2 | 14.5 | 10.7 | 13 | 10.8 | 13.3 | 10.6 |
| HCM Lane LOS | B | C | B | B | B | B | B | B |
| HCM 95th-tile Q | 1 | 4.8 | 1.5 | 0.6 | 0.8 | 0.1 | 1.3 | 0.6 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 5.7 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 0 | 50 | 2 | 195 | 0 | 206 | 71 | 111 | 120 | 0 |
| Future Vol, veh/h | 0 | 0 | 0 | 50 | 2 | 195 | 0 | 206 | 71 | 111 | 120 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | 20 | - | - | - | 85 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 0 | 62 | 2 | 241 | 0 | 254 | 88 | 137 | 148 | 0 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 842 | 764 | 148 | 720 | 720 | 298 | 148 | 0 | 0 | 342 | 0 | 0 |
| Stage 1 | 422 | 422 | - | 298 | 298 | - | - | - | - | - | - | - |
| Stage 2 | 420 | 342 | - | 422 | 422 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 | 4.12 | - | - | 4.12 | - | - |
| Critical Hdwy Stg 1 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.218 | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver | 284 | 334 | 899 | 343 | 354 | 741 | 1434 | - | - | 1217 | - | - |
| Stage 1 | 609 | 588 | - | 711 | 667 | - | - | - | - | - | - | - |
| Stage 2 | 611 | 638 | - | 609 | 588 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 174 | 296 | 899 | 314 | 314 | 741 | 1434 | - | - | 1217 | - | - |
| Mov Cap-2 Maneuver | 174 | 296 | - | 314 | 314 | - | - | - | - | - | - | - |
| Stage 1 | 609 | 522 | - | 711 | 667 | - | - | - | - | - | - | - |
| Stage 2 | 411 | 638 | - | 540 | 522 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0 | 13.7 | 0 | 4 |
| HCM LOS | A | B | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | WBLn2 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1434 | - | - | - | 314 | 741 | 1217 | - | - |
| HCM Lane V/C Ratio | - | - | - | - | 0.204 | 0.325 | 0.113 | - | - |
| HCM Control Delay (s) | 0 | - | - | 0 | 19.4 | 12.2 | 8.3 | - | - |
| HCM Lane LOS | A | - | - | A | C | B | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0.8 | 1.4 | 0.4 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.2 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 18 | 33 | 528 | 1 | 11 | 160 |
| Future Vol, veh/h | 18 | 33 | 528 | 1 | 11 | 160 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 81 | 81 | 81 | 81 | 81 | 81 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 22 | 41 | 652 | 1 | 14 | 198 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 879 | 653 | 0 | 0 | 653 | 0 |
| Stage 1 | 653 | - | - | - | - | - |
| Stage 2 | 226 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | 318 | 467 | - | - | 934 | - |
| Stage 1 | 518 | - | - | - | - | - |
| Stage 2 | 812 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 313 | 467 | - | - | 934 | - |
| Mov Cap-2 Maneuver | 313 | - | - | - | - | - |
| Stage 1 | 509 | - | - | - | - | - |
| Stage 2 | 812 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 15.7 | 0 | 0.6 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 398 | 934 | - |
| HCM Lane V/C Ratio | - | - | 0.158 | 0.015 | - |
| HCM Control Delay (s) | - | - | 15.7 | 8.9 | 0 |
| HCM Lane LOS | - | - | C | A | A |
| HCM 95th %tile Q(veh) | - | - | 0.6 | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.6 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 3 | 13 | 1 | 17 | 7 | 4 |
| Future Vol, veh/h | 3 | 13 | 1 | 17 | 7 | 4 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 3 | 14 | 1 | 18 | 8 | 4 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 19 | 0 | - | 0 | 30 | 10 |
| Stage 1 | - | - | - | - | 10 | - |
| Stage 2 | - | - | - | - | 20 | - |
| Critical Hdwy | 4.12 | - | - | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | 2.218 | - | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | 1597 | - | - | - | 984 | 1071 |
| Stage 1 | - | - | - | - | 1013 | - |
| Stage 2 | - | - | - | - | 1003 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1597 | - | - | - | 982 | 1071 |
| Mov Cap-2 Maneuver | - | - | - | - | 982 | - |
| Stage 1 | - | - | - | - | 1011 | - |
| Stage 2 | - | - | - | - | 1003 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 1.4 | 0 | 8.6 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1597 | - | - | - | 1013 |
| HCM Lane V/C Ratio | 0.002 | - | - | - | 0.012 |
| HCM Control Delay (s) | 7.3 | 0 | - | - | 8.6 |
| HCM Lane LOS | A | A | - | - | A |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.5 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 10 | 10 | 15 | 519 | 175 | 3 |
| Future Vol, veh/h | 10 | 10 | 15 | 519 | 175 | 3 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | 45 | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 81 | 81 | 81 | 81 | 81 | 81 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 12 | 12 | 19 | 641 | 216 | 4 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 897 | 218 | 220 | 0 | - | 0 |
| Stage 1 | 218 | - | - | - | - | - |
| Stage 2 | 679 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 310 | 822 | 1349 | - | - | - |
| Stage 1 | 818 | - | - | - | - | - |
| Stage 2 | 504 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 303 | 822 | 1349 | - | - | - |
| Mov Cap-2 Maneuver | 303 | - | - | - | - | - |
| Stage 1 | 800 | - | - | - | - | - |
| Stage 2 | 504 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 13.4 | 0.2 | 0 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1349 | - | 303 | 822 | - | - |
| HCM Lane V/C Ratio | 0.014 | - | 0.041 | 0.015 | - | - |
| HCM Control Delay (s) | 7.7 | 0 | 17.4 | 9.4 | - | - |
| HCM Lane LOS | A | A | C | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 0.1 | 0 | - | - |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 73 | 139 | 262 | 126 | 120 | 46 | 298 | 298 | 182 | 51 | 260 | 92 |
| Future Volume (veh/h) | 73 | 139 | 262 | 126 | 120 | 46 | 298 | 298 | 182 | 51 | 260 | 92 |
| Number | 7 | 4 | 14 | 3 | 8 | 18 | 5 | 2 | 12 | 1 | 6 | 16 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 79 | 151 | 285 | 137 | 130 | 50 | 324 | 324 | 198 | 55 | 283 | 100 |
| Adj No. of Lanes | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 2 | 0 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 200 | 317 | 270 | 175 | 201 | 77 | 389 | 677 | 575 | 76 | 483 | 167 |
| Arrive On Green | 0.11 | 0.17 | 0.17 | 0.10 | 0.16 | 0.16 | 0.22 | 0.36 | 0.36 | 0.04 | 0.19 | 0.19 |
| Sat Flow, veh/h | 1774 | 1863 | 1583 | 1774 | 1282 | 493 | 1774 | 1863 | 1583 | 1774 | 2582 | 893 |
| Grp Volume(v), veh/h | 79 | 151 | 285 | 137 | 0 | 180 | 324 | 324 | 198 | 55 | 192 | 191 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1863 | 1583 | 1774 | 0 | 1776 | 1774 | 1863 | 1583 | 1774 | 1770 | 1705 |
| Q Serve(g_s), s | 2.0 | 3.6 | 4.5 | 3.7 | 0.0 | 4.7 | 8.6 | 6.6 | 4.5 | 1.5 | 4.9 | 5.1 |
| Cycle Q Clear(g_c), s | 2.0 | 3.6 | 4.5 | 3.7 | 0.0 | 4.7 | 8.6 | 6.6 | 4.5 | 1.5 | 4.9 | 5.1 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.28 | 1.00 | | 1.00 | 1.00 | | 0.52 |
| Lane Grp Cap(c), veh/h | 200 | 317 | 270 | 175 | 0 | 278 | 389 | 677 | 575 | 76 | 331 | 319 |
| V/C Ratio(X) | 0.39 | 0.48 | 1.06 | 0.78 | 0.00 | 0.65 | 0.83 | 0.48 | 0.34 | 0.72 | 0.58 | 0.60 |
| Avail Cap(c_a), veh/h | 252 | 1209 | 1027 | 252 | 0 | 1152 | 504 | 1246 | 1059 | 252 | 933 | 899 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 20.3 | 18.5 | 6.0 | 21.7 | 0.0 | 19.5 | 18.4 | 12.1 | 11.4 | 23.3 | 18.3 | 18.4 |
| Incr Delay (d2), s/veh | 1.3 | 1.1 | 41.8 | 9.5 | 0.0 | 2.5 | 9.1 | 0.5 | 0.4 | 12.1 | 1.6 | 1.8 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 1.1 | 1.9 | 6.1 | 2.3 | 0.0 | 2.5 | 5.1 | 3.4 | 2.0 | 1.0 | 2.5 | 2.5 |
| LnGrp Delay(d),s/veh | 21.6 | 19.6 | 47.8 | 31.2 | 0.0 | 22.1 | 27.4 | 12.6 | 11.8 | 35.4 | 19.9 | 20.2 |
| LnGrp LOS | C | B | F | C | | C | C | B | B | D | B | C |
| Approach Vol, veh/h | | 515 | | | 317 | | | 846 | | | 438 | |
| Approach Delay, s/veh | | 35.5 | | | 26.0 | | | 18.1 | | | 22.0 | |
| Approach LOS | | D | | | C | | | B | | | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | 6.1 | 21.9 | 8.9 | 12.4 | 14.8 | 13.2 | 9.6 | 11.7 |
| Change Period (Y+Rc), s | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | 7.0 | 33.0 | 7.0 | 32.0 | 14.0 | 26.0 | 7.0 | 32.0 |
| Max Q Clear Time (g_c+I1), s | 3.5 | 8.6 | 5.7 | 6.5 | 10.6 | 7.1 | 4.0 | 6.7 |
| Green Ext Time (p_c), s | 0.0 | 2.7 | 0.0 | 1.9 | 0.3 | 2.2 | 0.0 | 1.0 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 24.3 |
| HCM 2010 LOS | C |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.6 |

| Movement | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 1 | 0 | 94 | 2 | 0 | 16 | 181 | 742 | 11 | 11 | 701 | 14 |
| Future Vol, veh/h | 1 | 0 | 94 | 2 | 0 | 16 | 181 | 742 | 11 | 11 | 701 | 14 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | 1 | - | - | 1 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 84 | 84 | 84 | 82 | 82 | 82 | 97 | 97 | 97 | 94 | 94 | 94 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 1 | 0 | 112 | 2 | 0 | 20 | 187 | 765 | 11 | 12 | 746 | 15 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1933 | 1928 | 754 | 1979 | 1930 | 771 | 761 | 0 | 0 | 776 | 0 | 0 |
| Stage 1 | 778 | 778 | - | 1145 | 1145 | - | - | - | - | - | - | - |
| Stage 2 | 1155 | 1150 | - | 834 | 785 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 | 4.12 | - | - | 4.12 | - | - |
| Critical Hdwy Stg 1 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.218 | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver | 50 | 66 | 409 | 46 | 66 | 400 | 851 | - | - | 840 | - | - |
| Stage 1 | 389 | 407 | - | 243 | 274 | - | - | - | - | - | - | - |
| Stage 2 | 240 | 273 | - | 362 | 404 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 39 | 51 | 409 | 27 | 51 | 400 | 851 | - | - | 840 | - | - |
| Mov Cap-2 Maneuver | 39 | 51 | - | 27 | 51 | - | - | - | - | - | - | - |
| Stage 1 | 303 | 401 | - | 190 | 214 | - | - | - | - | - | - | - |
| Stage 2 | 178 | 213 | - | 259 | 398 | - | - | - | - | - | - | - |

| Approach | SE | NW | NE | SW |
|---|---|---|---|---|
| HCM Control Delay, s | 18.8 | 31.4 | 2 | 0.1 |
| HCM LOS | C | D | | |

| Minor Lane/Major Mvmt | NEL | NET | NER | NWLn1 | SELn1 | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 851 | - | - | 158 | 372 | 840 | - | - |
| HCM Lane V/C Ratio | 0.219 | - | - | 0.139 | 0.304 | 0.014 | - | - |
| HCM Control Delay (s) | 10.4 | - | - | 31.4 | 18.8 | 9.3 | - | - |
| HCM Lane LOS | B | - | - | D | C | A | - | - |
| HCM 95th %tile Q(veh) | 0.8 | - | - | 0.5 | 1.3 | 0 | - | - |

| Movement | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 20 | 25 | 11 | 85 | 10 | 485 | 19 | 443 | 82 | 414 | 377 | 1 |
| Future Volume (veh/h) | 20 | 25 | 11 | 85 | 10 | 485 | 19 | 443 | 82 | 414 | 377 | 1 |
| Number | 1 | 6 | 16 | 5 | 2 | 12 | 7 | 4 | 14 | 3 | 8 | 18 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1900 | 1863 | 1900 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 26 | 32 | 14 | 92 | 11 | 527 | 21 | 492 | 91 | 476 | 433 | 1 |
| Adj No. of Lanes | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| Peak Hour Factor | 0.77 | 0.77 | 0.77 | 0.92 | 0.92 | 0.92 | 0.90 | 0.90 | 0.90 | 0.87 | 0.87 | 0.87 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 34 | 42 | 19 | 301 | 36 | 730 | 33 | 552 | 469 | 482 | 1021 | 2 |
| Arrive On Green | 0.05 | 0.05 | 0.05 | 0.19 | 0.19 | 0.19 | 0.02 | 0.30 | 0.30 | 0.27 | 0.55 | 0.55 |
| Sat Flow, veh/h | 639 | 787 | 344 | 1593 | 190 | 1583 | 1774 | 1863 | 1583 | 1774 | 1858 | 4 |
| Grp Volume(v), veh/h | 72 | 0 | 0 | 103 | 0 | 527 | 21 | 492 | 91 | 476 | 0 | 434 |
| Grp Sat Flow(s),veh/h/ln | 1770 | 0 | 0 | 1783 | 0 | 1583 | 1774 | 1863 | 1583 | 1774 | 0 | 1862 |
| Q Serve(g_s), s | 3.4 | 0.0 | 0.0 | 4.2 | 0.0 | 16.0 | 1.0 | 21.4 | 3.6 | 22.6 | 0.0 | 11.6 |
| Cycle Q Clear(g_c), s | 3.4 | 0.0 | 0.0 | 4.2 | 0.0 | 16.0 | 1.0 | 21.4 | 3.6 | 22.6 | 0.0 | 11.6 |
| Prop In Lane | 0.36 | | 0.19 | 0.89 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.00 |
| Lane Grp Cap(c), veh/h | 95 | 0 | 0 | 337 | 0 | 730 | 33 | 552 | 469 | 482 | 0 | 1023 |
| V/C Ratio(X) | 0.76 | 0.00 | 0.00 | 0.31 | 0.00 | 0.72 | 0.64 | 0.89 | 0.19 | 0.99 | 0.00 | 0.42 |
| Avail Cap(c_a), veh/h | 335 | 0 | 0 | 337 | 0 | 730 | 84 | 638 | 543 | 482 | 0 | 1056 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 39.5 | 0.0 | 0.0 | 29.5 | 0.0 | 18.4 | 41.3 | 28.5 | 22.2 | 30.7 | 0.0 | 11.2 |
| Incr Delay (d2), s/veh | 11.5 | 0.0 | 0.0 | 0.5 | 0.0 | 3.5 | 19.1 | 13.5 | 0.2 | 37.5 | 0.0 | 0.3 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 2.0 | 0.0 | 0.0 | 2.1 | 0.0 | 10.6 | 0.7 | 13.0 | 1.6 | 16.0 | 0.0 | 6.0 |
| LnGrp Delay(d),s/veh | 51.0 | 0.0 | 0.0 | 30.0 | 0.0 | 21.9 | 60.4 | 41.9 | 22.4 | 68.2 | 0.0 | 11.5 |
| LnGrp LOS | D | | | C | | C | E | D | C | E | | B |
| Approach Vol, veh/h | | 72 | | | 630 | | | 604 | | | 910 | |
| Approach Delay, s/veh | | 51.0 | | | 23.3 | | | 39.6 | | | 41.1 | |
| Approach LOS | | D | | | C | | | D | | | D | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | 3 | 4 | | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | | 20.0 | 27.0 | 29.1 | | 8.6 | 5.6 | 50.5 |
| Change Period (Y+Rc), s | | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | | 16.0 | 23.0 | 29.0 | | 16.0 | 4.0 | 48.0 |
| Max Q Clear Time (g_c+I1), s | | 18.0 | 24.6 | 23.4 | | 5.4 | 3.0 | 13.6 |
| Green Ext Time (p_c), s | | 0.0 | 0.0 | 1.7 | | 0.2 | 0.0 | 3.0 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 36.0 |
| HCM 2010 LOS | D |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 15.6 |
| Intersection LOS | C |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 97 | 33 | 86 | 44 | 25 | 11 | 101 | 220 | 73 | 15 | 129 | 76 |
| Future Vol, veh/h | 97 | 33 | 86 | 44 | 25 | 11 | 101 | 220 | 73 | 15 | 129 | 76 |
| Peak Hour Factor | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 120 | 41 | 106 | 54 | 31 | 14 | 125 | 272 | 90 | 19 | 159 | 94 |
| Number of Lanes | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 1 | 2 | 3 | 2 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 3 | 2 | 2 | 1 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 2 | 3 | 1 | 2 |
| HCM Control Delay | 13.2 | 13.1 | 19.3 | 12.4 |
| HCM LOS | B | B | C | B |

| Lane | NBLn1 | NBLn2 | EBLn1 | EBLn2 | WBLn1 | SBLn1 | SBLn2 | SBLn3 |
|---|---|---|---|---|---|---|---|---|
| Vol Left, % | 100% | 0% | 75% | 0% | 55% | 100% | 0% | 0% |
| Vol Thru, % | 0% | 75% | 25% | 0% | 31% | 0% | 100% | 0% |
| Vol Right, % | 0% | 25% | 0% | 100% | 14% | 0% | 0% | 100% |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 101 | 293 | 130 | 86 | 80 | 15 | 129 | 76 |
| LT Vol | 101 | 0 | 97 | 0 | 44 | 15 | 0 | 0 |
| Through Vol | 0 | 220 | 33 | 0 | 25 | 0 | 129 | 0 |
| RT Vol | 0 | 73 | 0 | 86 | 11 | 0 | 0 | 76 |
| Lane Flow Rate | 125 | 362 | 160 | 106 | 99 | 19 | 159 | 94 |
| Geometry Grp | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| Degree of Util (X) | 0.253 | 0.666 | 0.347 | 0.197 | 0.221 | 0.04 | 0.324 | 0.172 |
| Departure Headway (Hd) | 7.311 | 6.624 | 7.777 | 6.688 | 8.064 | 7.828 | 7.317 | 6.602 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 491 | 546 | 462 | 536 | 445 | 458 | 492 | 543 |
| Service Time | 5.048 | 4.36 | 5.519 | 4.43 | 5.814 | 5.571 | 5.06 | 4.345 |
| HCM Lane V/C Ratio | 0.255 | 0.663 | 0.346 | 0.198 | 0.222 | 0.041 | 0.323 | 0.173 |
| HCM Control Delay | 12.5 | 21.6 | 14.6 | 11.1 | 13.1 | 10.9 | 13.5 | 10.7 |
| HCM Lane LOS | B | C | B | B | B | B | B | B |
| HCM 95th-tile Q | 1 | 4.9 | 1.5 | 0.7 | 0.8 | 0.1 | 1.4 | 0.6 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 6.2 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 0 | 72 | 2 | 195 | 0 | 206 | 72 | 111 | 138 | 0 |
| Future Vol, veh/h | 0 | 0 | 0 | 72 | 2 | 195 | 0 | 206 | 72 | 111 | 138 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | 20 | - | - | - | 85 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 0 | 89 | 2 | 241 | 0 | 254 | 89 | 137 | 170 | 0 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 864 | 787 | 170 | 743 | 743 | 299 | 170 | 0 | 0 | 343 | 0 | 0 |
| Stage 1 | 444 | 444 | - | 299 | 299 | - | - | - | - | - | - | - |
| Stage 2 | 420 | 343 | - | 444 | 444 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 | 4.12 | - | - | 4.12 | - | - |
| Critical Hdwy Stg 1 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.218 | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver | 274 | 324 | 874 | 331 | 343 | 741 | 1407 | - | - | 1216 | - | - |
| Stage 1 | 593 | 575 | - | 710 | 666 | - | - | - | - | - | - | - |
| Stage 2 | 611 | 637 | - | 593 | 575 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 168 | 287 | 874 | 303 | 304 | 741 | 1407 | - | - | 1216 | - | - |
| Mov Cap-2 Maneuver | 168 | 287 | - | 303 | 304 | - | - | - | - | - | - | - |
| Stage 1 | 593 | 510 | - | 710 | 666 | - | - | - | - | - | - | - |
| Stage 2 | 411 | 637 | - | 526 | 510 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0 | 14.9 | 0 | 3.7 |
| HCM LOS | A | B | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | WBLn2 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1407 | - | - | - | 303 | 741 | 1216 | - | - |
| HCM Lane V/C Ratio | - | - | - | - | 0.302 | 0.325 | 0.113 | - | - |
| HCM Control Delay (s) | 0 | - | - | 0 | 21.9 | 12.2 | 8.3 | - | - |
| HCM Lane LOS | A | - | - | A | C | B | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 1.2 | 1.4 | 0.4 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.6 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 17 | 34 | 528 | 41 | 51 | 160 |
| Future Vol, veh/h | 17 | 34 | 528 | 41 | 51 | 160 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 81 | 81 | 81 | 81 | 81 | 81 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 21 | 42 | 652 | 51 | 63 | 198 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1002 | 678 | 0 | 0 | 703 | 0 |
| Stage 1 | 678 | - | - | - | - | - |
| Stage 2 | 324 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | 269 | 452 | - | - | 895 | - |
| Stage 1 | 504 | - | - | - | - | - |
| Stage 2 | 733 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 248 | 452 | - | - | 895 | - |
| Mov Cap-2 Maneuver | 248 | - | - | - | - | - |
| Stage 1 | 464 | - | - | - | - | - |
| Stage 2 | 733 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 17.3 | 0 | 2.3 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 355 | 895 | - |
| HCM Lane V/C Ratio | - | - | 0.177 | 0.07 | - |
| HCM Control Delay (s) | - | - | 17.3 | 9.3 | 0 |
| HCM Lane LOS | - | - | C | A | A |
| HCM 95th %tile Q(veh) | - | - | 0.6 | 0.2 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.6 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 3 | 13 | 1 | 17 | 7 | 4 |
| Future Vol, veh/h | 3 | 13 | 1 | 17 | 7 | 4 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 3 | 14 | 1 | 18 | 8 | 4 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 19 | 0 | - | 0 | 30 | 10 |
| Stage 1 | - | - | - | - | 10 | - |
| Stage 2 | - | - | - | - | 20 | - |
| Critical Hdwy | 4.12 | - | - | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | 2.218 | - | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | 1597 | - | - | - | 984 | 1071 |
| Stage 1 | - | - | - | - | 1013 | - |
| Stage 2 | - | - | - | - | 1003 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1597 | - | - | - | 982 | 1071 |
| Mov Cap-2 Maneuver | - | - | - | - | 982 | - |
| Stage 1 | - | - | - | - | 1011 | - |
| Stage 2 | - | - | - | - | 1003 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 1.4 | 0 | 8.6 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1597 | - | - | - | 1013 |
| HCM Lane V/C Ratio | 0.002 | - | - | - | 0.012 |
| HCM Control Delay (s) | 7.3 | 0 | - | - | 8.6 |
| HCM Lane LOS | A | A | - | - | A |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.5 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 10 | 10 | 15 | 559 | 174 | 3 |
| Future Vol, veh/h | 10 | 10 | 15 | 559 | 174 | 3 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | 45 | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 81 | 81 | 81 | 81 | 81 | 81 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 12 | 12 | 19 | 690 | 215 | 4 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 945 | 217 | 219 | 0 | - | 0 |
| Stage 1 | 217 | - | - | - | - | - |
| Stage 2 | 728 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 291 | 823 | 1350 | - | - | - |
| Stage 1 | 819 | - | - | - | - | - |
| Stage 2 | 478 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 284 | 823 | 1350 | - | - | - |
| Mov Cap-2 Maneuver | 284 | - | - | - | - | - |
| Stage 1 | 800 | - | - | - | - | - |
| Stage 2 | 478 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 13.9 | 0.2 | 0 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1350 | - | 284 | 823 | - | - |
| HCM Lane V/C Ratio | 0.014 | - | 0.043 | 0.015 | - | - |
| HCM Control Delay (s) | 7.7 | 0 | 18.3 | 9.4 | - | - |
| HCM Lane LOS | A | A | C | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 0.1 | 0 | - | - |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 73 | 139 | 262 | 126 | 120 | 49 | 298 | 334 | 182 | 52 | 258 | 92 |
| Future Volume (veh/h) | 73 | 139 | 262 | 126 | 120 | 49 | 298 | 334 | 182 | 52 | 258 | 92 |
| Number | 7 | 4 | 14 | 3 | 8 | 18 | 5 | 2 | 12 | 1 | 6 | 16 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 79 | 151 | 285 | 137 | 130 | 53 | 324 | 363 | 198 | 57 | 280 | 100 |
| Adj No. of Lanes | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 2 | 0 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 197 | 318 | 270 | 175 | 200 | 81 | 389 | 673 | 572 | 78 | 479 | 167 |
| Arrive On Green | 0.11 | 0.17 | 0.17 | 0.10 | 0.16 | 0.16 | 0.22 | 0.36 | 0.36 | 0.04 | 0.19 | 0.19 |
| Sat Flow, veh/h | 1774 | 1863 | 1583 | 1774 | 1259 | 513 | 1774 | 1863 | 1583 | 1774 | 2574 | 899 |
| Grp Volume(v), veh/h | 79 | 151 | 285 | 137 | 0 | 183 | 324 | 363 | 198 | 57 | 191 | 189 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1863 | 1583 | 1774 | 0 | 1772 | 1774 | 1863 | 1583 | 1774 | 1770 | 1704 |
| Q Serve(g_s), s | 2.0 | 3.6 | 4.5 | 3.7 | 0.0 | 4.8 | 8.6 | 7.6 | 4.5 | 1.6 | 4.8 | 5.0 |
| Cycle Q Clear(g_c), s | 2.0 | 3.6 | 4.5 | 3.7 | 0.0 | 4.8 | 8.6 | 7.6 | 4.5 | 1.6 | 4.8 | 5.0 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.29 | 1.00 | | 1.00 | 1.00 | | 0.53 |
| Lane Grp Cap(c), veh/h | 197 | 318 | 270 | 175 | 0 | 281 | 389 | 673 | 572 | 78 | 329 | 317 |
| V/C Ratio(X) | 0.40 | 0.48 | 1.06 | 0.78 | 0.00 | 0.65 | 0.83 | 0.54 | 0.35 | 0.73 | 0.58 | 0.60 |
| Avail Cap(c_a), veh/h | 252 | 1211 | 1029 | 252 | 0 | 1152 | 505 | 1249 | 1062 | 252 | 935 | 900 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 20.4 | 18.4 | 5.9 | 21.7 | 0.0 | 19.4 | 18.3 | 12.5 | 11.5 | 23.2 | 18.3 | 18.3 |
| Incr Delay (d2), s/veh | 1.3 | 1.1 | 41.5 | 9.4 | 0.0 | 2.5 | 9.0 | 0.7 | 0.4 | 12.3 | 1.6 | 1.8 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 1.1 | 1.9 | 6.0 | 2.3 | 0.0 | 2.5 | 5.1 | 4.0 | 2.0 | 1.0 | 2.5 | 2.5 |
| LnGrp Delay(d),s/veh | 21.7 | 19.5 | 47.4 | 31.1 | 0.0 | 22.0 | 27.3 | 13.1 | 11.8 | 35.5 | 19.9 | 20.1 |
| LnGrp LOS | C | B | F | C | | C | C | B | B | D | B | C |
| Approach Vol, veh/h | | 515 | | | 320 | | | 885 | | | 437 | |
| Approach Delay, s/veh | | 35.3 | | | 25.9 | | | 18.0 | | | 22.0 | |
| Approach LOS | | D | | | C | | | B | | | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | 6.2 | 21.8 | 8.9 | 12.4 | 14.8 | 13.2 | 9.5 | 11.8 |
| Change Period (Y+Rc), s | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | 7.0 | 33.0 | 7.0 | 32.0 | 14.0 | 26.0 | 7.0 | 32.0 |
| Max Q Clear Time (g_c+I1), s | 3.6 | 9.6 | 5.7 | 6.5 | 10.6 | 7.0 | 4.0 | 6.8 |
| Green Ext Time (p_c), s | 0.0 | 2.9 | 0.0 | 1.9 | 0.3 | 2.1 | 0.0 | 1.0 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 24.1 |
| HCM 2010 LOS | C |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.5 |

| Movement | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 1 | 0 | 94 | 2 | 0 | 16 | 181 | 779 | 11 | 11 | 699 | 14 |
| Future Vol, veh/h | 1 | 0 | 94 | 2 | 0 | 16 | 181 | 779 | 11 | 11 | 699 | 14 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | 1 | - | - | 1 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 84 | 84 | 84 | 82 | 82 | 82 | 97 | 97 | 97 | 94 | 94 | 94 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 1 | 0 | 112 | 2 | 0 | 20 | 187 | 803 | 11 | 12 | 744 | 15 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1969 | 1964 | 752 | 2015 | 1966 | 809 | 759 | 0 | 0 | 814 | 0 | 0 |
| Stage 1 | 776 | 776 | - | 1183 | 1183 | - | - | - | - | - | - | - |
| Stage 2 | 1193 | 1188 | - | 832 | 783 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 | 4.12 | - | - | 4.12 | - | - |
| Critical Hdwy Stg 1 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.218 | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver | 47 | 63 | 410 | 44 | 63 | 380 | 852 | - | - | 813 | - | - |
| Stage 1 | 390 | 407 | - | 231 | 263 | - | - | - | - | - | - | - |
| Stage 2 | 228 | 262 | - | 363 | 404 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 37 | 48 | 410 | 26 | 48 | 380 | 852 | - | - | 813 | - | - |
| Mov Cap-2 Maneuver | 37 | 48 | - | 26 | 48 | - | - | - | - | - | - | - |
| Stage 1 | 305 | 401 | - | 180 | 205 | - | - | - | - | - | - | - |
| Stage 2 | 169 | 205 | - | 260 | 398 | - | - | - | - | - | - | - |

| Approach | SE | NW | NE | SW |
|---|---|---|---|---|
| HCM Control Delay, s | 18.9 | 32.9 | 1.9 | 0.1 |
| HCM LOS | C | D | | |

| Minor Lane/Major Mvmt | NEL | NET | NER | NWLn1 | SELn1 | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 852 | - | - | 151 | 371 | 813 | - | - |
| HCM Lane V/C Ratio | 0.219 | - | - | 0.145 | 0.305 | 0.014 | - | - |
| HCM Control Delay (s) | 10.4 | - | - | 32.9 | 18.9 | 9.5 | - | - |
| HCM Lane LOS | B | - | - | D | C | A | - | - |
| HCM 95th %tile Q(veh) | 0.8 | - | - | 0.5 | 1.3 | 0 | - | - |

| Movement | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 20 | 25 | 11 | 85 | 10 | 516 | 19 | 450 | 82 | 414 | 376 | 1 |
| Future Volume (veh/h) | 20 | 25 | 11 | 85 | 10 | 516 | 19 | 450 | 82 | 414 | 376 | 1 |
| Number | 1 | 6 | 16 | 5 | 2 | 12 | 7 | 4 | 14 | 3 | 8 | 18 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1900 | 1863 | 1900 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 26 | 32 | 14 | 92 | 11 | 561 | 21 | 500 | 91 | 476 | 432 | 1 |
| Adj No. of Lanes | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| Peak Hour Factor | 0.77 | 0.77 | 0.77 | 0.92 | 0.92 | 0.92 | 0.90 | 0.90 | 0.90 | 0.87 | 0.87 | 0.87 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 34 | 42 | 19 | 300 | 36 | 726 | 33 | 558 | 474 | 480 | 1025 | 2 |
| Arrive On Green | 0.05 | 0.05 | 0.05 | 0.19 | 0.19 | 0.19 | 0.02 | 0.30 | 0.30 | 0.27 | 0.55 | 0.55 |
| Sat Flow, veh/h | 639 | 787 | 344 | 1593 | 190 | 1583 | 1774 | 1863 | 1583 | 1774 | 1858 | 4 |
| Grp Volume(v), veh/h | 72 | 0 | 0 | 103 | 0 | 561 | 21 | 500 | 91 | 476 | 0 | 433 |
| Grp Sat Flow(s),veh/h/ln | 1770 | 0 | 0 | 1783 | 0 | 1583 | 1774 | 1863 | 1583 | 1774 | 0 | 1862 |
| Q Serve(g_s), s | 3.4 | 0.0 | 0.0 | 4.2 | 0.0 | 16.0 | 1.0 | 21.9 | 3.6 | 22.7 | 0.0 | 11.6 |
| Cycle Q Clear(g_c), s | 3.4 | 0.0 | 0.0 | 4.2 | 0.0 | 16.0 | 1.0 | 21.9 | 3.6 | 22.7 | 0.0 | 11.6 |
| Prop In Lane | 0.36 | | 0.19 | 0.89 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.00 |
| Lane Grp Cap(c), veh/h | 95 | 0 | 0 | 335 | 0 | 726 | 33 | 558 | 474 | 480 | 0 | 1027 |
| V/C Ratio(X) | 0.76 | 0.00 | 0.00 | 0.31 | 0.00 | 0.77 | 0.64 | 0.90 | 0.19 | 0.99 | 0.00 | 0.42 |
| Avail Cap(c_a), veh/h | 333 | 0 | 0 | 335 | 0 | 726 | 83 | 635 | 540 | 480 | 0 | 1051 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 39.7 | 0.0 | 0.0 | 29.7 | 0.0 | 19.3 | 41.5 | 28.5 | 22.1 | 30.9 | 0.0 | 11.1 |
| Incr Delay (d2), s/veh | 11.5 | 0.0 | 0.0 | 0.5 | 0.0 | 5.2 | 19.2 | 14.2 | 0.2 | 38.9 | 0.0 | 0.3 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 2.0 | 0.0 | 0.0 | 2.1 | 0.0 | 12.0 | 0.7 | 13.5 | 1.6 | 16.3 | 0.0 | 6.0 |
| LnGrp Delay(d),s/veh | 51.2 | 0.0 | 0.0 | 30.3 | 0.0 | 24.5 | 60.7 | 42.8 | 22.3 | 69.8 | 0.0 | 11.4 |
| LnGrp LOS | D | | | C | | C | E | D | C | E | | B |
| Approach Vol, veh/h | | 72 | | | 664 | | | 612 | | | 909 | |
| Approach Delay, s/veh | | 51.2 | | | 25.4 | | | 40.3 | | | 42.0 | |
| Approach LOS | | D | | | C | | | D | | | D | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | 3 | 4 | | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | | 20.0 | 27.0 | 29.5 | | 8.6 | 5.6 | 50.9 |
| Change Period (Y+Rc), s | | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | | 16.0 | 23.0 | 29.0 | | 16.0 | 4.0 | 48.0 |
| Max Q Clear Time (g_c+I1), s | | 18.0 | 24.7 | 23.9 | | 5.4 | 3.0 | 13.6 |
| Green Ext Time (p_c), s | | 0.0 | 0.0 | 1.6 | | 0.2 | 0.0 | 3.0 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 37.0 |
| HCM 2010 LOS | D |

# TECHNICAL APPENDIX 2 of 3

**FOR**

**UNITED AUBURN INDIAN COMMUNITY SCHOOL PROJECT**
**TRAFFIC IMPACT ANALYSIS**
Placer County, CA

Prepared For:

**RANEY PLANNING & MANAGEMENT**
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Sacramento, CA 95834

Prepared By:

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June 25, 2018

5765-21

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 150 | 10 | 205 | 115 | 40 | 20 | 125 | 175 | 25 | 10 | 475 | 305 |
| Future Volume (veh/h) | 150 | 10 | 205 | 115 | 40 | 20 | 125 | 175 | 25 | 10 | 475 | 305 |
| Number | 7 | 4 | 14 | 3 | 8 | 18 | 5 | 2 | 12 | 1 | 6 | 16 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1900 | 1900 | 1863 | 1900 | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 188 | 12 | 256 | 144 | 50 | 25 | 156 | 219 | 31 | 12 | 594 | 381 |
| Adj No. of Lanes | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 |
| Peak Hour Factor | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 524 | 23 | 484 | 256 | 82 | 30 | 189 | 730 | 103 | 22 | 676 | 575 |
| Arrive On Green | 0.32 | 0.32 | 0.32 | 0.32 | 0.32 | 0.32 | 0.11 | 0.46 | 0.46 | 0.01 | 0.36 | 0.36 |
| Sat Flow, veh/h | 1319 | 71 | 1523 | 472 | 258 | 94 | 1774 | 1597 | 226 | 1774 | 1863 | 1583 |
| Grp Volume(v), veh/h | 188 | 0 | 268 | 219 | 0 | 0 | 156 | 0 | 250 | 12 | 594 | 381 |
| Grp Sat Flow(s),veh/h/ln | 1319 | 0 | 1594 | 824 | 0 | 0 | 1774 | 0 | 1823 | 1774 | 1863 | 1583 |
| Q Serve(g_s), s | 0.0 | 0.0 | 7.8 | 7.8 | 0.0 | 0.0 | 4.9 | 0.0 | 4.9 | 0.4 | 16.8 | 11.4 |
| Cycle Q Clear(g_c), s | 6.9 | 0.0 | 7.8 | 15.6 | 0.0 | 0.0 | 4.9 | 0.0 | 4.9 | 0.4 | 16.8 | 11.4 |
| Prop In Lane | 1.00 | | 0.96 | 0.66 | | 0.11 | 1.00 | | 0.12 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 524 | 0 | 506 | 368 | 0 | 0 | 189 | 0 | 834 | 22 | 676 | 575 |
| V/C Ratio(X) | 0.36 | 0.00 | 0.53 | 0.60 | 0.00 | 0.00 | 0.83 | 0.00 | 0.30 | 0.56 | 0.88 | 0.66 |
| Avail Cap(c_a), veh/h | 573 | 0 | 566 | 415 | 0 | 0 | 189 | 0 | 834 | 126 | 727 | 618 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 15.5 | 0.0 | 15.8 | 20.5 | 0.0 | 0.0 | 24.7 | 0.0 | 9.6 | 27.7 | 16.8 | 15.1 |
| Incr Delay (d2), s/veh | 0.4 | 0.0 | 0.9 | 1.9 | 0.0 | 0.0 | 25.0 | 0.0 | 0.2 | 20.5 | 11.4 | 2.4 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 2.4 | 0.0 | 3.5 | 3.4 | 0.0 | 0.0 | 3.7 | 0.0 | 2.5 | 0.3 | 10.7 | 5.4 |
| LnGrp Delay(d),s/veh | 15.9 | 0.0 | 16.6 | 22.3 | 0.0 | 0.0 | 49.6 | 0.0 | 9.8 | 48.2 | 28.2 | 17.5 |
| LnGrp LOS | B | | B | C | | | D | | A | D | C | B |
| Approach Vol, veh/h | | 456 | | | 219 | | | 406 | | | 987 | |
| Approach Delay, s/veh | | 16.3 | | | 22.3 | | | 25.1 | | | 24.3 | |
| Approach LOS | | B | | | C | | | C | | | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | 4.7 | 29.8 | | 21.9 | 10.0 | 24.5 | | 21.9 |
| Change Period (Y+Rc), s | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 |
| Max Green Setting (Gmax), s | 4.0 | 24.0 | | 20.0 | 6.0 | 22.0 | | 20.0 |
| Max Q Clear Time (g_c+I1), s | 2.4 | 6.9 | | 9.8 | 6.9 | 18.8 | | 17.6 |
| Green Ext Time (p_c), s | 0.0 | 1.3 | | 1.7 | 0.0 | 1.6 | | 0.3 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 22.5 |
| HCM 2010 LOS | C |

Notes

## 1: Taylor Road & Penryn Road Performance by approach

| Approach | EB | WB | NB | SB | All |
|---|---|---|---|---|---|
| Denied Delay (hr) | 0.0 | 0.2 | 0.0 | 0.0 | 0.2 |
| Total Delay (hr) | 0.0 | 1.9 | 1.3 | 3.8 | 7.0 |

## 2: Taylor Road & N. Penryn Road Performance by approach

| Approach | EB | NB | SB | All |
|---|---|---|---|---|
| Denied Delay (hr) | 0.0 | 0.0 | 0.4 | 0.4 |
| Total Delay (hr) | 0.4 | 0.5 | 9.1 | 10.0 |

## Total Network Performance

| | |
|---|---|
| Denied Delay (hr) | 0.6 |
| Total Delay (hr) | 18.1 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.2 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 5 | 45 | 50 | 10 | 25 | 5 |
| Future Vol, veh/h | 5 | 45 | 50 | 10 | 25 | 5 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 5 | 49 | 54 | 11 | 27 | 5 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 65 | 0 | - | 0 | 119 | 60 |
| Stage 1 | - | - | - | - | 60 | - |
| Stage 2 | - | - | - | - | 59 | - |
| Critical Hdwy | 4.12 | - | - | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | 2.218 | - | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | 1537 | - | - | - | 877 | 1005 |
| Stage 1 | - | - | - | - | 963 | - |
| Stage 2 | - | - | - | - | 964 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1537 | - | - | - | 874 | 1005 |
| Mov Cap-2 Maneuver | - | - | - | - | 874 | - |
| Stage 1 | - | - | - | - | 960 | - |
| Stage 2 | - | - | - | - | 964 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0.7 | 0 | 9.2 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1537 | - | - | - | 893 |
| HCM Lane V/C Ratio | 0.004 | - | - | - | 0.037 |
| HCM Control Delay (s) | 7.4 | 0 | - | - | 9.2 |
| HCM Lane LOS | A | A | - | - | A |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0.1 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.7 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 10 | 60 | 30 | 295 | 720 | 30 |
| Future Vol, veh/h | 10 | 60 | 30 | 295 | 720 | 30 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | 0 | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 60 | 60 | 60 | 60 | 60 | 60 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 17 | 100 | 50 | 492 | 1200 | 50 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1817 | 1225 | 1250 | 0 | - | 0 |
| Stage 1 | 1225 | - | - | - | - | - |
| Stage 2 | 592 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 86 | 218 | 557 | - | - | - |
| Stage 1 | 278 | - | - | - | - | - |
| Stage 2 | 553 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 75 | 218 | 557 | - | - | - |
| Mov Cap-2 Maneuver | 75 | - | - | - | - | - |
| Stage 1 | 244 | - | - | - | - | - |
| Stage 2 | 553 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 39.3 | 1.1 | 0 |
| HCM LOS | E | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 557 | - | 75 | 218 | - | - |
| HCM Lane V/C Ratio | 0.09 | - | 0.222 | 0.459 | - | - |
| HCM Control Delay (s) | 12.1 | 0 | 66.2 | 34.8 | - | - |
| HCM Lane LOS | B | A | F | D | - | - |
| HCM 95th %tile Q(veh) | 0.3 | - | 0.8 | 2.2 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 123 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 40 | 70 | 410 | 120 | 200 | 525 |
| Future Vol, veh/h | 40 | 70 | 410 | 120 | 200 | 525 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | 45 | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 58 | 58 | 58 | 58 | 58 | 58 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 69 | 121 | 707 | 207 | 345 | 905 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 2406 | 811 | 0 | 0 | 914 | 0 |
| Stage 1 | 811 | - | - | - | - | - |
| Stage 2 | 1595 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | ~ 36 | 379 | - | - | 746 | - |
| Stage 1 | 437 | - | - | - | - | - |
| Stage 2 | 183 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | ~ 19 | 379 | - | - | 746 | - |
| Mov Cap-2 Maneuver | ~ 19 | - | - | - | - | - |
| Stage 1 | 235 | - | - | - | - | - |
| Stage 2 | 183 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, $ | 1501.8 | 0 | 3.8 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 48 | 746 | - |
| HCM Lane V/C Ratio | - | - | 3.951 | 0.462 | - |
| HCM Control Delay (s) | - | $ | 1501.8 | 13.9 | - |
| HCM Lane LOS | - | - | F | B | - |
| HCM 95th %tile Q(veh) | - | - | 21.1 | 2.5 | - |

Notes

~: Volume exceeds capacity  $: Delay exceeds 300s  +: Computation Not Defined  *: All major volume in platoon

| Intersection | |
|---|---|
| Int Delay, s/veh | 254.9 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 5 | 120 | 0 | 120 | 5 | 410 | 135 | 140 | 420 | 5 |
| Future Vol, veh/h | 0 | 0 | 5 | 120 | 0 | 120 | 5 | 410 | 135 | 140 | 420 | 5 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | 100 | - | - | 70 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 7 | 179 | 0 | 179 | 7 | 612 | 201 | 209 | 627 | 7 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1865 | 1876 | 631 | 1779 | 1779 | 713 | 634 | 0 | 0 | 813 | 0 | 0 |
| Stage 1 | 1049 | 1049 | - | 727 | 727 | - | - | - | - | - | - | - |
| Stage 2 | 816 | 827 | - | 1052 | 1052 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 | 4.12 | - | - | 4.12 | - | - |
| Critical Hdwy Stg 1 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.218 | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver | 56 | 72 | 481 | ~ 64 | 82 | 432 | 949 | - | - | 814 | - | - |
| Stage 1 | 275 | 304 | - | 415 | 429 | - | - | - | - | - | - | - |
| Stage 2 | 371 | 386 | - | 274 | 303 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 26 | 53 | 481 | ~ 50 | 61 | 432 | 949 | - | - | 814 | - | - |
| Mov Cap-2 Maneuver | 26 | 53 | - | ~ 50 | 61 | - | - | - | - | - | - | - |
| Stage 1 | 273 | 226 | - | 412 | 426 | - | - | - | - | - | - | - |
| Stage 2 | 216 | 383 | - | 200 | 225 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 12.6 | $ 1437.5 | 0.1 | 2.7 |
| HCM LOS | B | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 949 | - | - | 481 | 90 | 814 | - | - |
| HCM Lane V/C Ratio | 0.008 | - | - | 0.016 | 3.98 | 0.257 | - | - |
| HCM Control Delay (s) | 8.8 | - | - | 12.8 | $ 1437.5 | 10.9 | - | - |
| HCM Lane LOS | A | - | - | B | F | B | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0 | 37.1 | 1 | - | - |

**Notes**

~: Volume exceeds capacity  $: Delay exceeds 300s  +: Computation Not Defined  *: All major volume in platoon

| Intersection | |
|---|---|
| Int Delay, s/veh | 35.2 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 130 | 75 | 475 | 380 | 70 | 410 |
| Future Vol, veh/h | 130 | 75 | 475 | 380 | 70 | 410 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 60 | 0 | - | - | 100 | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 77 | 77 | 77 | 77 | 77 | 77 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 169 | 97 | 617 | 494 | 91 | 532 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1578 | 864 | 0 | 0 | 1111 | 0 |
| Stage 1 | 864 | - | - | - | - | - |
| Stage 2 | 714 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | ~ 120 | 354 | - | - | 629 | - |
| Stage 1 | 413 | - | - | - | - | - |
| Stage 2 | 485 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | ~ 103 | 354 | - | - | 629 | - |
| Mov Cap-2 Maneuver | ~ 103 | - | - | - | - | - |
| Stage 1 | 353 | - | - | - | - | - |
| Stage 2 | 485 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 260.2 | 0 | 1.7 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | WBLn2 | SBL | SBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 103 | 354 | 629 | - |
| HCM Lane V/C Ratio | - | - | 1.639 | 0.275 | 0.145 | - |
| HCM Control Delay (s) | - | - | $ 399.3 | 19 | 11.7 | - |
| HCM Lane LOS | - | - | F | C | B | - |
| HCM 95th %tile Q(veh) | - | - | 13.1 | 1.1 | 0.5 | - |

**Notes**

~: Volume exceeds capacity  $: Delay exceeds 300s  +: Computation Not Defined  *: All major volume in platoon

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 170 | 115 | 165 | 135 | 155 | 205 | 160 | 360 | 95 | 80 | 465 | 170 |
| Future Volume (veh/h) | 170 | 115 | 165 | 135 | 155 | 205 | 160 | 360 | 95 | 80 | 465 | 170 |
| Number | 7 | 4 | 14 | 3 | 8 | 18 | 5 | 2 | 12 | 1 | 6 | 16 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 193 | 131 | 188 | 180 | 207 | 273 | 193 | 434 | 114 | 95 | 554 | 202 |
| Adj No. of Lanes | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 2 | 0 |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.75 | 0.75 | 0.75 | 0.83 | 0.83 | 0.83 | 0.84 | 0.84 | 0.84 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 238 | 705 | 599 | 158 | 243 | 321 | 177 | 491 | 417 | 162 | 648 | 236 |
| Arrive On Green | 0.13 | 0.38 | 0.38 | 0.09 | 0.33 | 0.33 | 0.10 | 0.26 | 0.26 | 0.09 | 0.25 | 0.25 |
| Sat Flow, veh/h | 1774 | 1863 | 1583 | 1774 | 730 | 963 | 1774 | 1863 | 1583 | 1774 | 2544 | 925 |
| Grp Volume(v), veh/h | 193 | 131 | 188 | 180 | 0 | 480 | 193 | 434 | 114 | 95 | 385 | 371 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1863 | 1583 | 1774 | 0 | 1693 | 1774 | 1863 | 1583 | 1774 | 1770 | 1700 |
| Q Serve(g_s), s | 9.5 | 4.2 | 5.2 | 8.0 | 0.0 | 23.7 | 9.0 | 20.1 | 3.9 | 4.6 | 18.6 | 18.7 |
| Cycle Q Clear(g_c), s | 9.5 | 4.2 | 5.2 | 8.0 | 0.0 | 23.7 | 9.0 | 20.1 | 3.9 | 4.6 | 18.6 | 18.7 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.57 | 1.00 | | 1.00 | 1.00 | | 0.54 |
| Lane Grp Cap(c), veh/h | 238 | 705 | 599 | 158 | 0 | 564 | 177 | 491 | 417 | 162 | 451 | 433 |
| V/C Ratio(X) | 0.81 | 0.19 | 0.31 | 1.14 | 0.00 | 0.85 | 1.09 | 0.88 | 0.27 | 0.59 | 0.85 | 0.86 |
| Avail Cap(c_a), veh/h | 238 | 705 | 599 | 158 | 0 | 564 | 177 | 580 | 493 | 162 | 511 | 491 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 37.9 | 18.7 | 9.6 | 41.0 | 0.0 | 27.9 | 40.5 | 31.8 | 15.1 | 39.3 | 31.9 | 32.0 |
| Incr Delay (d2), s/veh | 18.8 | 0.6 | 1.4 | 114.8 | 0.0 | 14.9 | 93.0 | 13.5 | 0.4 | 5.4 | 12.0 | 12.8 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 5.9 | 2.3 | 2.5 | 8.9 | 0.0 | 13.4 | 9.0 | 12.2 | 1.7 | 2.5 | 10.6 | 10.3 |
| LnGrp Delay(d),s/veh | 56.7 | 19.3 | 10.9 | 155.8 | 0.0 | 42.8 | 133.5 | 45.3 | 15.5 | 44.6 | 44.0 | 44.8 |
| LnGrp LOS | E | B | B | F | | D | F | D | B | D | D | D |
| Approach Vol, veh/h | | 512 | | | 660 | | | 741 | | | 851 | |
| Approach Delay, s/veh | | 30.3 | | | 73.6 | | | 63.7 | | | 44.4 | |
| Approach LOS | | C | | | E | | | E | | | D | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | 12.2 | 27.7 | 12.0 | 38.1 | 13.0 | 26.9 | 16.1 | 34.0 |
| Change Period (Y+Rc), s | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | 7.0 | 28.0 | 8.0 | 31.0 | 9.0 | 26.0 | 9.0 | 30.0 |
| Max Q Clear Time (g_c+I1), s | 6.6 | 22.1 | 10.0 | 7.2 | 11.0 | 20.7 | 11.5 | 25.7 |
| Green Ext Time (p_c), s | 0.0 | 1.6 | 0.0 | 1.3 | 0.0 | 2.2 | 0.0 | 1.2 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 53.9 |
| HCM 2010 LOS | D |

| Movement | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 5 | 35 | 80 | 5 | 30 | 235 | 125 | 465 | 70 | 175 | 550 | 55 |
| Future Volume (veh/h) | 5 | 35 | 80 | 5 | 30 | 235 | 125 | 465 | 70 | 175 | 550 | 55 |
| Number | 1 | 6 | 16 | 5 | 2 | 12 | 7 | 4 | 14 | 3 | 8 | 18 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1900 | 1863 | 1900 | 1900 | 1863 | 1900 | 1863 | 1863 | 1900 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 6 | 40 | 91 | 6 | 38 | 294 | 133 | 495 | 74 | 192 | 604 | 60 |
| Adj No. of Lanes | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.80 | 0.80 | 0.80 | 0.94 | 0.94 | 0.94 | 0.91 | 0.91 | 0.91 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 55 | 135 | 279 | 50 | 50 | 351 | 161 | 756 | 113 | 207 | 839 | 83 |
| Arrive On Green | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.09 | 0.48 | 0.48 | 0.12 | 0.50 | 0.50 |
| Sat Flow, veh/h | 23 | 540 | 1114 | 9 | 201 | 1401 | 1774 | 1584 | 237 | 1774 | 1668 | 166 |
| Grp Volume(v), veh/h | 137 | 0 | 0 | 338 | 0 | 0 | 133 | 0 | 569 | 192 | 0 | 664 |
| Grp Sat Flow(s),veh/h/ln | 1678 | 0 | 0 | 1611 | 0 | 0 | 1774 | 0 | 1821 | 1774 | 0 | 1834 |
| Q Serve(g_s), s | 0.0 | 0.0 | 0.0 | 2.1 | 0.0 | 0.0 | 5.7 | 0.0 | 18.3 | 8.3 | 0.0 | 21.7 |
| Cycle Q Clear(g_c), s | 5.2 | 0.0 | 0.0 | 15.3 | 0.0 | 0.0 | 5.7 | 0.0 | 18.3 | 8.3 | 0.0 | 21.7 |
| Prop In Lane | 0.04 | | 0.66 | 0.02 | | 0.87 | 1.00 | | 0.13 | 1.00 | | 0.09 |
| Lane Grp Cap(c), veh/h | 469 | 0 | 0 | 451 | 0 | 0 | 161 | 0 | 869 | 207 | 0 | 922 |
| V/C Ratio(X) | 0.29 | 0.00 | 0.00 | 0.75 | 0.00 | 0.00 | 0.82 | 0.00 | 0.65 | 0.93 | 0.00 | 0.72 |
| Avail Cap(c_a), veh/h | 469 | 0 | 0 | 737 | 0 | 0 | 161 | 0 | 869 | 207 | 0 | 922 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.85 | 0.00 | 0.85 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 23.6 | 0.0 | 0.0 | 27.4 | 0.0 | 0.0 | 34.4 | 0.0 | 15.3 | 33.7 | 0.0 | 14.9 |
| Incr Delay (d2), s/veh | 0.3 | 0.0 | 0.0 | 2.5 | 0.0 | 0.0 | 24.6 | 0.0 | 3.3 | 42.3 | 0.0 | 4.8 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 2.4 | 0.0 | 0.0 | 7.1 | 0.0 | 0.0 | 3.9 | 0.0 | 10.0 | 6.5 | 0.0 | 12.1 |
| LnGrp Delay(d),s/veh | 23.9 | 0.0 | 0.0 | 29.9 | 0.0 | 0.0 | 59.0 | 0.0 | 18.6 | 76.0 | 0.0 | 19.7 |
| LnGrp LOS | C | | | C | | | E | | B | E | | B |
| Approach Vol, veh/h | | 137 | | | 338 | | | 702 | | | 856 | |
| Approach Delay, s/veh | | 23.9 | | | 29.9 | | | 26.2 | | | 32.3 | |
| Approach LOS | | C | | | C | | | C | | | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | 3 | 4 | | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | | 23.3 | 13.0 | 40.7 | | 23.3 | 11.0 | 42.7 |
| Change Period (Y+Rc), s | | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | | 33.0 | 9.0 | 23.0 | | 16.0 | 7.0 | 25.0 |
| Max Q Clear Time (g_c+I1), s | | 17.3 | 10.3 | 20.3 | | 7.2 | 7.7 | 23.7 |
| Green Ext Time (p_c), s | | 2.0 | 0.0 | 1.0 | | 0.4 | 0.0 | 0.6 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 29.3 |
| HCM 2010 LOS | C |

| Movement | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 10 | 40 | 50 | 140 | 10 | 475 | 5 | 185 | 10 | 65 | 580 | 5 |
| Future Volume (veh/h) | 10 | 40 | 50 | 140 | 10 | 475 | 5 | 185 | 10 | 65 | 580 | 5 |
| Number | 1 | 6 | 16 | 5 | 2 | 12 | 7 | 4 | 14 | 3 | 8 | 18 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1900 | 1863 | 1900 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 15 | 61 | 76 | 147 | 11 | 500 | 6 | 208 | 11 | 71 | 630 | 5 |
| Adj No. of Lanes | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| Peak Hour Factor | 0.66 | 0.66 | 0.66 | 0.95 | 0.95 | 0.95 | 0.89 | 0.89 | 0.89 | 0.92 | 0.92 | 0.92 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 19 | 77 | 96 | 331 | 25 | 600 | 11 | 574 | 488 | 317 | 887 | 7 |
| Arrive On Green | 0.11 | 0.11 | 0.11 | 0.20 | 0.20 | 0.20 | 0.01 | 0.31 | 0.31 | 0.18 | 0.48 | 0.48 |
| Sat Flow, veh/h | 168 | 684 | 852 | 1656 | 124 | 1583 | 1774 | 1863 | 1583 | 1774 | 1846 | 15 |
| Grp Volume(v), veh/h | 152 | 0 | 0 | 158 | 0 | 500 | 6 | 208 | 11 | 71 | 0 | 635 |
| Grp Sat Flow(s),veh/h/ln | 1704 | 0 | 0 | 1780 | 0 | 1583 | 1774 | 1863 | 1583 | 1774 | 0 | 1860 |
| Q Serve(g_s), s | 7.0 | 0.0 | 0.0 | 6.2 | 0.0 | 16.0 | 0.3 | 7.0 | 0.4 | 2.7 | 0.0 | 21.5 |
| Cycle Q Clear(g_c), s | 7.0 | 0.0 | 0.0 | 6.2 | 0.0 | 16.0 | 0.3 | 7.0 | 0.4 | 2.7 | 0.0 | 21.5 |
| Prop In Lane | 0.10 | | 0.50 | 0.93 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.01 |
| Lane Grp Cap(c), veh/h | 192 | 0 | 0 | 356 | 0 | 600 | 11 | 574 | 488 | 317 | 0 | 894 |
| V/C Ratio(X) | 0.79 | 0.00 | 0.00 | 0.44 | 0.00 | 0.83 | 0.54 | 0.36 | 0.02 | 0.22 | 0.00 | 0.71 |
| Avail Cap(c_a), veh/h | 341 | 0 | 0 | 356 | 0 | 600 | 89 | 574 | 488 | 355 | 0 | 894 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.72 | 0.00 | 0.72 |
| Uniform Delay (d), s/veh | 34.6 | 0.0 | 0.0 | 28.1 | 0.0 | 22.6 | 39.6 | 21.5 | 19.3 | 28.1 | 0.0 | 16.4 |
| Incr Delay (d2), s/veh | 7.1 | 0.0 | 0.0 | 0.9 | 0.0 | 9.8 | 35.5 | 0.4 | 0.0 | 0.3 | 0.0 | 3.5 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 3.6 | 0.0 | 0.0 | 3.2 | 0.0 | 11.6 | 0.2 | 3.6 | 0.2 | 1.4 | 0.0 | 11.8 |
| LnGrp Delay(d),s/veh | 41.6 | 0.0 | 0.0 | 29.0 | 0.0 | 32.4 | 75.1 | 21.9 | 19.3 | 28.4 | 0.0 | 19.8 |
| LnGrp LOS | D | | | C | | C | E | C | B | C | | B |
| Approach Vol, veh/h | | 152 | | | 658 | | | 225 | | | 706 | |
| Approach Delay, s/veh | | 41.6 | | | 31.6 | | | 23.2 | | | 20.7 | |
| Approach LOS | | D | | | C | | | C | | | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | 3 | 4 | | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | | 20.0 | 18.3 | 28.7 | | 13.0 | 4.5 | 42.5 |
| Change Period (Y+Rc), s | | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | | 16.0 | 16.0 | 16.0 | | 16.0 | 4.0 | 28.0 |
| Max Q Clear Time (g_c+I1), s | | 18.0 | 4.7 | 9.0 | | 9.0 | 2.3 | 23.5 |
| Green Ext Time (p_c), s | | 0.0 | 0.1 | 0.6 | | 0.4 | 0.0 | 1.7 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 27.0 |
| HCM 2010 LOS | C |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 275 | 40 | 160 | 40 | 25 | 20 | 135 | 385 | 65 | 25 | 245 | 170 |
| Future Volume (veh/h) | 275 | 40 | 160 | 40 | 25 | 20 | 135 | 385 | 65 | 25 | 245 | 170 |
| Number | 7 | 4 | 14 | 3 | 8 | 18 | 5 | 2 | 12 | 1 | 6 | 16 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1900 | 1900 | 1863 | 1900 | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 340 | 49 | 198 | 49 | 31 | 25 | 167 | 475 | 80 | 31 | 302 | 210 |
| Adj No. of Lanes | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 |
| Peak Hour Factor | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 441 | 80 | 325 | 67 | 42 | 34 | 210 | 547 | 92 | 49 | 486 | 413 |
| Arrive On Green | 0.25 | 0.25 | 0.25 | 0.08 | 0.08 | 0.08 | 0.12 | 0.35 | 0.35 | 0.03 | 0.26 | 0.26 |
| Sat Flow, veh/h | 1774 | 324 | 1308 | 816 | 516 | 416 | 1774 | 1555 | 262 | 1774 | 1863 | 1583 |
| Grp Volume(v), veh/h | 340 | 0 | 247 | 105 | 0 | 0 | 167 | 0 | 555 | 31 | 302 | 210 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 0 | 1632 | 1748 | 0 | 0 | 1774 | 0 | 1817 | 1774 | 1863 | 1583 |
| Q Serve(g_s), s | 9.8 | 0.0 | 7.4 | 3.2 | 0.0 | 0.0 | 5.0 | 0.0 | 15.7 | 1.0 | 7.9 | 6.2 |
| Cycle Q Clear(g_c), s | 9.8 | 0.0 | 7.4 | 3.2 | 0.0 | 0.0 | 5.0 | 0.0 | 15.7 | 1.0 | 7.9 | 6.2 |
| Prop In Lane | 1.00 | | 0.80 | 0.47 | | 0.24 | 1.00 | | 0.14 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 441 | 0 | 405 | 143 | 0 | 0 | 210 | 0 | 639 | 49 | 486 | 413 |
| V/C Ratio(X) | 0.77 | 0.00 | 0.61 | 0.73 | 0.00 | 0.00 | 0.79 | 0.00 | 0.87 | 0.64 | 0.62 | 0.51 |
| Avail Cap(c_a), veh/h | 676 | 0 | 622 | 666 | 0 | 0 | 257 | 0 | 758 | 129 | 642 | 546 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 19.3 | 0.0 | 18.3 | 24.7 | 0.0 | 0.0 | 23.6 | 0.0 | 16.7 | 26.5 | 18.0 | 17.4 |
| Incr Delay (d2), s/veh | 3.0 | 0.0 | 1.5 | 7.0 | 0.0 | 0.0 | 12.9 | 0.0 | 9.3 | 13.0 | 1.3 | 1.0 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 5.2 | 0.0 | 3.5 | 1.8 | 0.0 | 0.0 | 3.2 | 0.0 | 9.5 | 0.6 | 4.2 | 2.8 |
| LnGrp Delay(d),s/veh | 22.2 | 0.0 | 19.8 | 31.8 | 0.0 | 0.0 | 36.6 | 0.0 | 26.0 | 39.5 | 19.3 | 18.3 |
| LnGrp LOS | C | | B | C | | | D | | C | D | B | B |
| Approach Vol, veh/h | | 587 | | | 105 | | | 722 | | | 543 | |
| Approach Delay, s/veh | | 21.2 | | | 31.8 | | | 28.4 | | | 20.1 | |
| Approach LOS | | C | | | C | | | C | | | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | 5.5 | 23.4 | | 17.7 | 10.5 | 18.4 | | 8.5 |
| Change Period (Y+Rc), s | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 |
| Max Green Setting (Gmax), s | 4.0 | 23.0 | | 21.0 | 8.0 | 19.0 | | 21.0 |
| Max Q Clear Time (g_c+I1), s | 3.0 | 17.7 | | 11.8 | 7.0 | 9.9 | | 5.2 |
| Green Ext Time (p_c), s | 0.0 | 1.7 | | 1.9 | 0.0 | 1.7 | | 0.4 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 24.1 |
| HCM 2010 LOS | C |

Notes

## 1: Taylor Road & Penryn Road Performance by approach

| Approach | EB | WB | NB | SB | All |
|---|---|---|---|---|---|
| Denied Delay (hr) | 0.0 | 0.2 | 0.1 | 0.0 | 0.3 |
| Total Delay (hr) | 0.0 | 1.2 | 9.3 | 2.0 | 12.5 |

## 2: Taylor Road & N. Penryn Road Performance by approach

| Approach | EB | NB | SB | All |
|---|---|---|---|---|
| Denied Delay (hr) | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay (hr) | 0.1 | 0.7 | 1.4 | 2.2 |

## Total Network Performance

| | |
|---|---|
| Denied Delay (hr) | 0.3 |
| Total Delay (hr) | 15.5 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.8 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 5 | 10 | 60 | 30 | 15 | 5 |
| Future Vol, veh/h | 5 | 10 | 60 | 30 | 15 | 5 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 60 | 60 | 60 | 60 | 60 | 60 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 8 | 17 | 100 | 50 | 25 | 8 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 150 | 0 | - | 0 | 158 | 125 |
| Stage 1 | - | - | - | - | 125 | - |
| Stage 2 | - | - | - | - | 33 | - |
| Critical Hdwy | 4.12 | - | - | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | 2.218 | - | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | 1431 | - | - | - | 833 | 926 |
| Stage 1 | - | - | - | - | 901 | - |
| Stage 2 | - | - | - | - | 989 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1431 | - | - | - | 828 | 926 |
| Mov Cap-2 Maneuver | - | - | - | - | 828 | - |
| Stage 1 | - | - | - | - | 896 | - |
| Stage 2 | - | - | - | - | 989 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 2.5 | 0 | 9.4 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1431 | - | - | - | 851 |
| HCM Lane V/C Ratio | 0.006 | - | - | - | 0.039 |
| HCM Control Delay (s) | 7.5 | 0 | - | - | 9.4 |
| HCM Lane LOS | A | A | - | - | A |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0.1 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.3 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 5 | 20 | 80 | 605 | 340 | 10 |
| Future Vol, veh/h | 5 | 20 | 80 | 605 | 340 | 10 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | 0 | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 60 | 60 | 60 | 60 | 60 | 60 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 8 | 33 | 133 | 1008 | 567 | 17 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1850 | 576 | 584 | 0 | - | 0 |
| Stage 1 | 576 | - | - | - | - | - |
| Stage 2 | 1274 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 82 | 517 | 991 | - | - | - |
| Stage 1 | 562 | - | - | - | - | - |
| Stage 2 | 263 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 57 | 517 | 991 | - | - | - |
| Mov Cap-2 Maneuver | 57 | - | - | - | - | - |
| Stage 1 | 391 | - | - | - | - | - |
| Stage 2 | 263 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 25.7 | 1.1 | 0 |
| HCM LOS | D | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 991 | - | 57 | 517 | - | - |
| HCM Lane V/C Ratio | 0.135 | - | 0.146 | 0.064 | - | - |
| HCM Control Delay (s) | 9.2 | 0 | 78.7 | 12.4 | - | - |
| HCM Lane LOS | A | A | F | B | - | - |
| HCM 95th %tile Q(veh) | 0.5 | - | 0.5 | 0.2 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 46.3 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 80 | 120 | 535 | 50 | 35 | 430 |
| Future Vol, veh/h | 80 | 120 | 535 | 50 | 35 | 430 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | 45 | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 68 | 68 | 68 | 68 | 68 | 68 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 118 | 176 | 787 | 74 | 51 | 632 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1558 | 824 | 0 | 0 | 861 | 0 |
| Stage 1 | 824 | - | - | - | - | - |
| Stage 2 | 734 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | 124 | 373 | - | - | 781 | - |
| Stage 1 | 431 | - | - | - | - | - |
| Stage 2 | 475 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | ~ 116 | 373 | - | - | 781 | - |
| Mov Cap-2 Maneuver | ~ 116 | - | - | - | - | - |
| Stage 1 | 403 | - | - | - | - | - |
| Stage 2 | 475 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 287.6 | 0 | 0.7 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 198 | 781 | - |
| HCM Lane V/C Ratio | - | - | 1.485 | 0.066 | - |
| HCM Control Delay (s) | - | - | 287.6 | 9.9 | - |
| HCM Lane LOS | - | - | F | A | - |
| HCM 95th %tile Q(veh) | - | - | 18.1 | 0.2 | - |

**Notes**

~: Volume exceeds capacity  $: Delay exceeds 300s  +: Computation Not Defined  *: All major volume in platoon

| Intersection | |
|---|---|
| Int Delay, s/veh | 24.1 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 10 | 0 | 95 | 25 | 0 | 90 | 25 | 585 | 20 | 15 | 480 | 15 |
| Future Vol, veh/h | 10 | 0 | 95 | 25 | 0 | 90 | 25 | 585 | 20 | 15 | 480 | 15 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | 100 | - | - | 70 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 15 | 0 | 140 | 37 | 0 | 132 | 37 | 860 | 29 | 22 | 706 | 22 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1776 | 1724 | 717 | 1780 | 1721 | 875 | 728 | 0 | 0 | 889 | 0 | 0 |
| Stage 1 | 761 | 761 | - | 949 | 949 | - | - | - | - | - | - | - |
| Stage 2 | 1015 | 963 | - | 831 | 772 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 | 4.12 | - | - | 4.12 | - | - |
| Critical Hdwy Stg 1 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.218 | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver | 64 | 89 | 430 | 64 | 89 | 349 | 876 | - | - | 762 | - | - |
| Stage 1 | 398 | 414 | - | 313 | 339 | - | - | - | - | - | - | - |
| Stage 2 | 287 | 334 | - | 364 | 409 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 38 | 83 | 430 | 41 | 83 | 349 | 876 | - | - | 762 | - | - |
| Mov Cap-2 Maneuver | 38 | 83 | - | 41 | 83 | - | - | - | - | - | - | - |
| Stage 1 | 381 | 402 | - | 300 | 325 | - | - | - | - | - | - | - |
| Stage 2 | 171 | 320 | - | 239 | 397 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 54.3 | 231.8 | 0.4 | 0.3 |
| HCM LOS | F | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 876 | - | - | 217 | 133 | 762 | - | - |
| HCM Lane V/C Ratio | 0.042 | - | - | 0.712 | 1.272 | 0.029 | - | - |
| HCM Control Delay (s) | 9.3 | - | - | 54.3 | 231.8 | 9.9 | - | - |
| HCM Lane LOS | A | - | - | F | F | A | - | - |
| HCM 95th %tile Q(veh) | 0.1 | - | - | 4.6 | 10.5 | 0.1 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 26.1 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 90 | 210 | 470 | 160 | 70 | 530 |
| Future Vol, veh/h | 90 | 210 | 470 | 160 | 70 | 530 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 60 | 0 | - | - | 100 | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 71 | 71 | 71 | 71 | 71 | 71 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 127 | 296 | 662 | 225 | 99 | 746 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1719 | 775 | 0 | 0 | 887 | 0 |
| Stage 1 | 775 | - | - | - | - | - |
| Stage 2 | 944 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | ~ 99 | 398 | - | - | 763 | - |
| Stage 1 | 454 | - | - | - | - | - |
| Stage 2 | 378 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | ~ 86 | 398 | - | - | 763 | - |
| Mov Cap-2 Maneuver | ~ 86 | - | - | - | - | - |
| Stage 1 | 395 | - | - | - | - | - |
| Stage 2 | 378 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 130.6 | 0 | 1.2 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | WBLn2 | SBL | SBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 86 | 398 | 763 | - |
| HCM Lane V/C Ratio | - | - | 1.474 | 0.743 | 0.129 | - |
| HCM Control Delay (s) | - | - | $ 351.3 | 36 | 10.4 | - |
| HCM Lane LOS | - | - | F | E | B | - |
| HCM 95th %tile Q(veh) | - | - | 9.9 | 5.9 | 0.4 | - |

Notes

~: Volume exceeds capacity  $: Delay exceeds 300s  +: Computation Not Defined  *: All major volume in platoon

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 125 | 105 | 225 | 190 | 110 | 110 | 235 | 490 | 215 | 115 | 455 | 200 |
| Future Volume (veh/h) | 125 | 105 | 225 | 190 | 110 | 110 | 235 | 490 | 215 | 115 | 455 | 200 |
| Number | 7 | 4 | 14 | 3 | 8 | 18 | 5 | 2 | 12 | 1 | 6 | 16 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 149 | 125 | 268 | 232 | 134 | 134 | 242 | 505 | 222 | 122 | 484 | 213 |
| Adj No. of Lanes | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 2 | 0 |
| Peak Hour Factor | 0.84 | 0.84 | 0.84 | 0.82 | 0.82 | 0.82 | 0.97 | 0.97 | 0.97 | 0.94 | 0.94 | 0.94 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 187 | 371 | 315 | 196 | 175 | 175 | 293 | 626 | 532 | 181 | 655 | 286 |
| Arrive On Green | 0.11 | 0.20 | 0.20 | 0.11 | 0.20 | 0.20 | 0.16 | 0.34 | 0.34 | 0.10 | 0.27 | 0.27 |
| Sat Flow, veh/h | 1774 | 1863 | 1583 | 1774 | 856 | 856 | 1774 | 1863 | 1583 | 1774 | 2398 | 1049 |
| Grp Volume(v), veh/h | 149 | 125 | 268 | 232 | 0 | 268 | 242 | 505 | 222 | 122 | 356 | 341 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1863 | 1583 | 1774 | 0 | 1712 | 1774 | 1863 | 1583 | 1774 | 1770 | 1678 |
| Q Serve(g_s), s | 5.2 | 3.7 | 6.6 | 7.0 | 0.0 | 9.4 | 8.4 | 15.7 | 4.4 | 4.2 | 11.6 | 11.7 |
| Cycle Q Clear(g_c), s | 5.2 | 3.7 | 6.6 | 7.0 | 0.0 | 9.4 | 8.4 | 15.7 | 4.4 | 4.2 | 11.6 | 11.7 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.50 | 1.00 | | 1.00 | 1.00 | | 0.63 |
| Lane Grp Cap(c), veh/h | 187 | 371 | 315 | 196 | 0 | 350 | 293 | 626 | 532 | 181 | 483 | 458 |
| V/C Ratio(X) | 0.80 | 0.34 | 0.85 | 1.18 | 0.00 | 0.77 | 0.83 | 0.81 | 0.42 | 0.67 | 0.74 | 0.74 |
| Avail Cap(c_a), veh/h | 196 | 941 | 800 | 196 | 0 | 864 | 392 | 970 | 824 | 196 | 726 | 688 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 27.7 | 21.8 | 9.9 | 28.2 | 0.0 | 23.8 | 25.6 | 19.2 | 6.7 | 27.4 | 21.0 | 21.0 |
| Incr Delay (d2), s/veh | 19.5 | 0.5 | 6.4 | 122.7 | 0.0 | 3.5 | 10.4 | 2.9 | 0.5 | 8.0 | 2.2 | 2.4 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 3.5 | 1.9 | 4.2 | 10.1 | 0.0 | 4.7 | 4.9 | 8.5 | 2.5 | 2.5 | 5.9 | 5.7 |
| LnGrp Delay(d),s/veh | 47.2 | 22.3 | 16.3 | 150.8 | 0.0 | 27.3 | 36.0 | 22.1 | 7.3 | 35.4 | 23.2 | 23.4 |
| LnGrp LOS | D | C | B | F | | C | D | C | A | D | C | C |
| Approach Vol, veh/h | | 542 | | | 500 | | | 969 | | | 819 | |
| Approach Delay, s/veh | | 26.2 | | | 84.6 | | | 22.1 | | | 25.1 | |
| Approach LOS | | C | | | F | | | C | | | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | 10.5 | 25.3 | 11.0 | 16.6 | 14.5 | 21.3 | 10.7 | 16.9 |
| Change Period (Y+Rc), s | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | 7.0 | 33.0 | 7.0 | 32.0 | 14.0 | 26.0 | 7.0 | 32.0 |
| Max Q Clear Time (g_c+I1), s | 6.2 | 17.7 | 9.0 | 8.6 | 10.4 | 13.7 | 7.2 | 11.4 |
| Green Ext Time (p_c), s | 0.0 | 3.6 | 0.0 | 1.6 | 0.2 | 3.6 | 0.0 | 1.6 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 34.8 |
| HCM 2010 LOS | C |

| Movement | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 5 | 30 | 90 | 10 | 30 | 355 | 125 | 505 | 75 | 185 | 635 | 25 |
| Future Volume (veh/h) | 5 | 30 | 90 | 10 | 30 | 355 | 125 | 505 | 75 | 185 | 635 | 25 |
| Number | 1 | 6 | 16 | 5 | 2 | 12 | 7 | 4 | 14 | 3 | 8 | 18 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1900 | 1863 | 1900 | 1900 | 1863 | 1900 | 1863 | 1863 | 1900 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 6 | 36 | 107 | 12 | 37 | 433 | 129 | 521 | 77 | 197 | 676 | 27 |
| Adj No. of Lanes | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 |
| Peak Hour Factor | 0.84 | 0.84 | 0.84 | 0.82 | 0.82 | 0.82 | 0.97 | 0.97 | 0.97 | 0.94 | 0.94 | 0.94 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 68 | 122 | 327 | 66 | 39 | 384 | 164 | 635 | 94 | 237 | 785 | 31 |
| Arrive On Green | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.09 | 0.40 | 0.40 | 0.13 | 0.44 | 0.44 |
| Sat Flow, veh/h | 23 | 459 | 1228 | 16 | 147 | 1438 | 1774 | 1587 | 235 | 1774 | 1779 | 71 |
| Grp Volume(v), veh/h | 149 | 0 | 0 | 482 | 0 | 0 | 129 | 0 | 598 | 197 | 0 | 703 |
| Grp Sat Flow(s),veh/h/ln | 1710 | 0 | 0 | 1601 | 0 | 0 | 1774 | 0 | 1821 | 1774 | 0 | 1850 |
| Q Serve(g_s), s | 0.0 | 0.0 | 0.0 | 6.3 | 0.0 | 0.0 | 4.3 | 0.0 | 17.6 | 6.5 | 0.0 | 20.6 |
| Cycle Q Clear(g_c), s | 4.4 | 0.0 | 0.0 | 16.0 | 0.0 | 0.0 | 4.3 | 0.0 | 17.6 | 6.5 | 0.0 | 20.6 |
| Prop In Lane | 0.04 | | 0.72 | 0.02 | | 0.90 | 1.00 | | 0.13 | 1.00 | | 0.04 |
| Lane Grp Cap(c), veh/h | 518 | 0 | 0 | 488 | 0 | 0 | 164 | 0 | 729 | 237 | 0 | 816 |
| V/C Ratio(X) | 0.29 | 0.00 | 0.00 | 0.99 | 0.00 | 0.00 | 0.79 | 0.00 | 0.82 | 0.83 | 0.00 | 0.86 |
| Avail Cap(c_a), veh/h | 518 | 0 | 0 | 488 | 0 | 0 | 177 | 0 | 729 | 237 | 0 | 816 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.65 | 0.00 | 0.65 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 17.7 | 0.0 | 0.0 | 22.9 | 0.0 | 0.0 | 26.7 | 0.0 | 16.1 | 25.3 | 0.0 | 15.1 |
| Incr Delay (d2), s/veh | 0.3 | 0.0 | 0.0 | 37.2 | 0.0 | 0.0 | 13.3 | 0.0 | 6.8 | 21.7 | 0.0 | 11.6 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 2.0 | 0.0 | 0.0 | 12.9 | 0.0 | 0.0 | 2.7 | 0.0 | 10.2 | 4.6 | 0.0 | 13.0 |
| LnGrp Delay(d),s/veh | 18.0 | 0.0 | 0.0 | 60.1 | 0.0 | 0.0 | 40.0 | 0.0 | 22.9 | 47.1 | 0.0 | 26.7 |
| LnGrp LOS | B | | | E | | | D | | C | D | | C |
| Approach Vol, veh/h | | 149 | | | 482 | | | 727 | | | 900 | |
| Approach Delay, s/veh | | 18.0 | | | 60.1 | | | 25.9 | | | 31.2 | |
| Approach LOS | | B | | | E | | | C | | | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | 3 | 4 | | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | | 20.0 | 12.0 | 28.0 | | 20.0 | 9.5 | 30.5 |
| Change Period (Y+Rc), s | | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | | 16.0 | 8.0 | 24.0 | | 16.0 | 6.0 | 26.0 |
| Max Q Clear Time (g_c+I1), s | | 18.0 | 8.5 | 19.6 | | 6.4 | 6.3 | 22.6 |
| Green Ext Time (p_c), s | | 0.0 | 0.0 | 1.6 | | 0.5 | 0.0 | 1.5 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 34.8 |
| HCM 2010 LOS | C |

| Movement | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 10 | 60 | 35 | 130 | 10 | 280 | 15 | 470 | 90 | 225 | 520 | 5 |
| Future Volume (veh/h) | 10 | 60 | 35 | 130 | 10 | 280 | 15 | 470 | 90 | 225 | 520 | 5 |
| Number | 1 | 6 | 16 | 5 | 2 | 12 | 7 | 4 | 14 | 3 | 8 | 18 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1900 | 1863 | 1900 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 13 | 78 | 45 | 141 | 11 | 304 | 17 | 522 | 100 | 259 | 598 | 6 |
| Adj No. of Lanes | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| Peak Hour Factor | 0.77 | 0.77 | 0.77 | 0.92 | 0.92 | 0.92 | 0.90 | 0.90 | 0.90 | 0.87 | 0.87 | 0.87 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 17 | 101 | 58 | 303 | 24 | 558 | 28 | 647 | 550 | 300 | 922 | 9 |
| Arrive On Green | 0.10 | 0.10 | 0.10 | 0.18 | 0.18 | 0.18 | 0.02 | 0.35 | 0.35 | 0.17 | 0.50 | 0.50 |
| Sat Flow, veh/h | 167 | 1005 | 580 | 1651 | 129 | 1583 | 1774 | 1863 | 1583 | 1774 | 1841 | 18 |
| Grp Volume(v), veh/h | 136 | 0 | 0 | 152 | 0 | 304 | 17 | 522 | 100 | 259 | 0 | 604 |
| Grp Sat Flow(s),veh/h/ln | 1752 | 0 | 0 | 1780 | 0 | 1583 | 1774 | 1863 | 1583 | 1774 | 0 | 1859 |
| Q Serve(g_s), s | 6.1 | 0.0 | 0.0 | 6.1 | 0.0 | 12.3 | 0.8 | 20.3 | 3.5 | 11.4 | 0.0 | 19.2 |
| Cycle Q Clear(g_c), s | 6.1 | 0.0 | 0.0 | 6.1 | 0.0 | 12.3 | 0.8 | 20.3 | 3.5 | 11.4 | 0.0 | 19.2 |
| Prop In Lane | 0.10 | | 0.33 | 0.93 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.01 |
| Lane Grp Cap(c), veh/h | 176 | 0 | 0 | 327 | 0 | 558 | 28 | 647 | 550 | 300 | 0 | 931 |
| V/C Ratio(X) | 0.77 | 0.00 | 0.00 | 0.47 | 0.00 | 0.54 | 0.61 | 0.81 | 0.18 | 0.86 | 0.00 | 0.65 |
| Avail Cap(c_a), veh/h | 350 | 0 | 0 | 356 | 0 | 584 | 89 | 647 | 550 | 355 | 0 | 931 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.62 | 0.00 | 0.62 |
| Uniform Delay (d), s/veh | 35.1 | 0.0 | 0.0 | 29.2 | 0.0 | 20.8 | 39.1 | 23.7 | 18.2 | 32.3 | 0.0 | 14.8 |
| Incr Delay (d2), s/veh | 7.1 | 0.0 | 0.0 | 1.0 | 0.0 | 1.0 | 19.5 | 10.4 | 0.7 | 11.5 | 0.0 | 2.2 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 3.3 | 0.0 | 0.0 | 3.1 | 0.0 | 5.5 | 0.5 | 12.3 | 1.6 | 6.5 | 0.0 | 10.3 |
| LnGrp Delay(d),s/veh | 42.2 | 0.0 | 0.0 | 30.2 | 0.0 | 21.7 | 58.7 | 34.1 | 18.9 | 43.8 | 0.0 | 17.0 |
| LnGrp LOS | D | | | C | | C | E | C | B | D | | B |
| Approach Vol, veh/h | | 136 | | | 456 | | | 639 | | | 863 | |
| Approach Delay, s/veh | | 42.2 | | | 24.5 | | | 32.4 | | | 25.0 | |
| Approach LOS | | D | | | C | | | C | | | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | 3 | 4 | | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | | 18.7 | 17.5 | 31.8 | | 12.0 | 5.3 | 44.0 |
| Change Period (Y+Rc), s | | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | | 16.0 | 16.0 | 16.0 | | 16.0 | 4.0 | 28.0 |
| Max Q Clear Time (g_c+I1), s | | 14.3 | 13.4 | 22.3 | | 8.1 | 2.8 | 21.2 |
| Green Ext Time (p_c), s | | 0.4 | 0.2 | 0.0 | | 0.4 | 0.0 | 2.2 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 28.3 |
| HCM 2010 LOS | C |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 350 | 70 | 125 | 40 | 30 | 20 | 115 | 380 | 75 | 30 | 195 | 170 |
| Future Volume (veh/h) | 350 | 70 | 125 | 40 | 30 | 20 | 115 | 380 | 75 | 30 | 195 | 170 |
| Number | 7 | 4 | 14 | 3 | 8 | 18 | 5 | 2 | 12 | 1 | 6 | 16 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1900 | 1900 | 1863 | 1900 | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 432 | 86 | 154 | 49 | 37 | 25 | 142 | 469 | 93 | 37 | 241 | 210 |
| Adj No. of Lanes | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 |
| Peak Hour Factor | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 479 | 162 | 290 | 66 | 50 | 34 | 180 | 555 | 110 | 53 | 552 | 469 |
| Arrive On Green | 0.27 | 0.27 | 0.27 | 0.09 | 0.09 | 0.09 | 0.10 | 0.37 | 0.37 | 0.03 | 0.30 | 0.30 |
| Sat Flow, veh/h | 1774 | 600 | 1074 | 774 | 585 | 395 | 1774 | 1510 | 300 | 1774 | 1863 | 1583 |
| Grp Volume(v), veh/h | 432 | 0 | 240 | 111 | 0 | 0 | 142 | 0 | 562 | 37 | 241 | 210 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 0 | 1673 | 1754 | 0 | 0 | 1774 | 0 | 1810 | 1774 | 1863 | 1583 |
| Q Serve(g_s), s | 15.3 | 0.0 | 7.9 | 4.0 | 0.0 | 0.0 | 5.1 | 0.0 | 18.5 | 1.3 | 6.8 | 7.0 |
| Cycle Q Clear(g_c), s | 15.3 | 0.0 | 7.9 | 4.0 | 0.0 | 0.0 | 5.1 | 0.0 | 18.5 | 1.3 | 6.8 | 7.0 |
| Prop In Lane | 1.00 | | 0.64 | 0.44 | | 0.23 | 1.00 | | 0.17 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 479 | 0 | 452 | 151 | 0 | 0 | 180 | 0 | 666 | 53 | 552 | 469 |
| V/C Ratio(X) | 0.90 | 0.00 | 0.53 | 0.74 | 0.00 | 0.00 | 0.79 | 0.00 | 0.84 | 0.70 | 0.44 | 0.45 |
| Avail Cap(c_a), veh/h | 492 | 0 | 464 | 568 | 0 | 0 | 246 | 0 | 1004 | 109 | 890 | 756 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 22.9 | 0.0 | 20.2 | 29.0 | 0.0 | 0.0 | 28.5 | 0.0 | 18.8 | 31.2 | 18.5 | 18.5 |
| Incr Delay (d2), s/veh | 19.4 | 0.0 | 1.1 | 6.9 | 0.0 | 0.0 | 11.3 | 0.0 | 4.3 | 15.0 | 0.5 | 0.7 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 10.0 | 0.0 | 3.8 | 2.2 | 0.0 | 0.0 | 3.0 | 0.0 | 10.0 | 0.9 | 3.6 | 3.1 |
| LnGrp Delay(d),s/veh | 42.3 | 0.0 | 21.3 | 35.8 | 0.0 | 0.0 | 39.8 | 0.0 | 23.1 | 46.2 | 19.0 | 19.2 |
| LnGrp LOS | D | | C | D | | | D | | C | D | B | B |
| Approach Vol, veh/h | | 672 | | | 111 | | | 704 | | | 488 | |
| Approach Delay, s/veh | | 34.8 | | | 35.8 | | | 26.5 | | | 21.2 | |
| Approach LOS | | C | | | D | | | C | | | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | 5.9 | 27.9 | | 21.5 | 10.6 | 23.2 | | 9.6 |
| Change Period (Y+Rc), s | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 |
| Max Green Setting (Gmax), s | 4.0 | 36.0 | | 18.0 | 9.0 | 31.0 | | 21.0 |
| Max Q Clear Time (g_c+I1), s | 3.3 | 20.5 | | 17.3 | 7.1 | 9.0 | | 6.0 |
| Green Ext Time (p_c), s | 0.0 | 3.4 | | 0.3 | 0.1 | 2.1 | | 0.4 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 28.5 |
| HCM 2010 LOS | C |

Notes

## 1: Taylor Road & Penryn Road Performance by approach

| Approach | EB | WB | NB | SB | All |
|---|---|---|---|---|---|
| Denied Del/Veh (s) | 0.1 | 2.7 | 0.3 | 0.0 | 0.8 |
| Total Del/Veh (s) | 14.7 | 12.6 | 12.6 | 14.8 | 13.3 |

## 2: Taylor Road & N. Penryn Road Performance by approach

| Approach | EB | NB | SB | All |
|---|---|---|---|---|
| Denied Del/Veh (s) | 0.1 | 0.0 | 0.3 | 0.1 |
| Total Del/Veh (s) | 6.6 | 3.0 | 11.5 | 6.1 |

## Total Network Performance

| | |
|---|---|
| Denied Del/Veh (s) | 0.9 |
| Total Del/Veh (s) | 20.2 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.4 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 5 | 15 | 5 | 15 | 5 | 5 |
| Future Vol, veh/h | 5 | 15 | 5 | 15 | 5 | 5 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 5 | 16 | 5 | 16 | 5 | 5 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 21 | 0 | - | 0 | 39 | 13 |
| Stage 1 | - | - | - | - | 13 | - |
| Stage 2 | - | - | - | - | 26 | - |
| Critical Hdwy | 4.12 | - | - | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | 2.218 | - | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | 1595 | - | - | - | 973 | 1067 |
| Stage 1 | - | - | - | - | 1010 | - |
| Stage 2 | - | - | - | - | 997 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1595 | - | - | - | 970 | 1067 |
| Mov Cap-2 Maneuver | - | - | - | - | 970 | - |
| Stage 1 | - | - | - | - | 1007 | - |
| Stage 2 | - | - | - | - | 997 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 1.8 | 0 | 8.6 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1595 | - | - | - | 1016 |
| HCM Lane V/C Ratio | 0.003 | - | - | - | 0.011 |
| HCM Control Delay (s) | 7.3 | 0 | - | - | 8.6 |
| HCM Lane LOS | A | A | - | - | A |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.5 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 10 | 10 | 15 | 705 | 200 | 5 |
| Future Vol, veh/h | 10 | 10 | 15 | 705 | 200 | 5 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | 0 | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 81 | 81 | 81 | 81 | 81 | 81 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 12 | 12 | 19 | 870 | 247 | 6 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1158 | 250 | 253 | 0 | - | 0 |
| Stage 1 | 250 | - | - | - | - | - |
| Stage 2 | 908 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 217 | 789 | 1312 | - | - | - |
| Stage 1 | 792 | - | - | - | - | - |
| Stage 2 | 393 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 211 | 789 | 1312 | - | - | - |
| Mov Cap-2 Maneuver | 211 | - | - | - | - | - |
| Stage 1 | 770 | - | - | - | - | - |
| Stage 2 | 393 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 16.4 | 0.2 | 0 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1312 | - | 211 | 789 | - | - |
| HCM Lane V/C Ratio | 0.014 | - | 0.059 | 0.016 | - | - |
| HCM Control Delay (s) | 7.8 | 0 | 23.1 | 9.6 | - | - |
| HCM Lane LOS | A | A | C | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 0.2 | 0 | - | - |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 115 | 275 | 230 | 120 | 125 | 75 | 275 | 445 | 345 | 125 | 265 | 110 |
| Future Volume (veh/h) | 115 | 275 | 230 | 120 | 125 | 75 | 275 | 445 | 345 | 125 | 265 | 110 |
| Number | 7 | 4 | 14 | 3 | 8 | 18 | 5 | 2 | 12 | 1 | 6 | 16 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 137 | 327 | 274 | 146 | 152 | 91 | 284 | 459 | 356 | 133 | 282 | 117 |
| Adj No. of Lanes | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 2 | 0 |
| Peak Hour Factor | 0.84 | 0.84 | 0.84 | 0.82 | 0.82 | 0.82 | 0.97 | 0.97 | 0.97 | 0.94 | 0.94 | 0.94 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 271 | 706 | 600 | 178 | 357 | 214 | 352 | 520 | 442 | 131 | 379 | 154 |
| Arrive On Green | 0.15 | 0.38 | 0.38 | 0.10 | 0.33 | 0.33 | 0.20 | 0.28 | 0.28 | 0.07 | 0.15 | 0.15 |
| Sat Flow, veh/h | 1774 | 1863 | 1583 | 1774 | 1093 | 654 | 1774 | 1863 | 1583 | 1774 | 2460 | 997 |
| Grp Volume(v), veh/h | 137 | 327 | 274 | 146 | 0 | 243 | 284 | 459 | 356 | 133 | 201 | 198 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1863 | 1583 | 1774 | 0 | 1747 | 1774 | 1863 | 1583 | 1774 | 1770 | 1687 |
| Q Serve(g_s), s | 6.7 | 12.6 | 6.7 | 7.7 | 0.0 | 10.3 | 14.5 | 22.4 | 14.8 | 7.0 | 10.3 | 10.7 |
| Cycle Q Clear(g_c), s | 6.7 | 12.6 | 6.7 | 7.7 | 0.0 | 10.3 | 14.5 | 22.4 | 14.8 | 7.0 | 10.3 | 10.7 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.37 | 1.00 | | 1.00 | 1.00 | | 0.59 |
| Lane Grp Cap(c), veh/h | 271 | 706 | 600 | 178 | 0 | 570 | 352 | 520 | 442 | 131 | 273 | 260 |
| V/C Ratio(X) | 0.51 | 0.46 | 0.46 | 0.82 | 0.00 | 0.43 | 0.81 | 0.88 | 0.81 | 1.02 | 0.74 | 0.76 |
| Avail Cap(c_a), veh/h | 271 | 706 | 600 | 205 | 0 | 570 | 352 | 588 | 500 | 131 | 484 | 462 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 37.0 | 22.2 | 6.6 | 41.9 | 0.0 | 25.0 | 36.3 | 32.8 | 17.6 | 44.0 | 38.3 | 38.5 |
| Incr Delay (d2), s/veh | 1.5 | 2.2 | 2.5 | 20.4 | 0.0 | 2.3 | 12.9 | 13.6 | 8.4 | 83.4 | 3.9 | 4.6 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 3.4 | 6.9 | 3.3 | 4.8 | 0.0 | 5.4 | 8.4 | 13.4 | 7.5 | 6.4 | 5.3 | 5.3 |
| LnGrp Delay(d),s/veh | 38.5 | 24.4 | 9.1 | 62.3 | 0.0 | 27.4 | 49.2 | 46.4 | 26.1 | 127.6 | 42.2 | 43.1 |
| LnGrp LOS | D | C | A | E | | C | D | D | C | F | D | D |
| Approach Vol, veh/h | | 738 | | | 389 | | | 1099 | | | 532 | |
| Approach Delay, s/veh | | 21.3 | | | 40.5 | | | 40.5 | | | 63.9 | |
| Approach LOS | | C | | | D | | | D | | | E | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | 11.0 | 30.5 | 13.5 | 40.0 | 22.9 | 18.6 | 18.5 | 35.0 |
| Change Period (Y+Rc), s | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | 7.0 | 30.0 | 11.0 | 31.0 | 11.0 | 26.0 | 11.0 | 31.0 |
| Max Q Clear Time (g_c+I1), s | 9.0 | 24.4 | 9.7 | 14.6 | 16.5 | 12.7 | 8.7 | 12.3 |
| Green Ext Time (p_c), s | 0.0 | 2.1 | 0.0 | 2.7 | 0.0 | 2.0 | 0.1 | 1.3 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 39.9 |
| HCM 2010 LOS | D |

| Movement | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 10 | 55 | 160 | 5 | 25 | 390 | 115 | 685 | 35 | 170 | 485 | 45 |
| Future Volume (veh/h) | 10 | 55 | 160 | 5 | 25 | 390 | 115 | 685 | 35 | 170 | 485 | 45 |
| Number | 1 | 6 | 16 | 5 | 2 | 12 | 7 | 4 | 14 | 3 | 8 | 18 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1900 | 1863 | 1900 | 1900 | 1863 | 1900 | 1863 | 1863 | 1900 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 12 | 65 | 190 | 6 | 30 | 476 | 119 | 706 | 36 | 181 | 516 | 48 |
| Adj No. of Lanes | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 |
| Peak Hour Factor | 0.84 | 0.84 | 0.84 | 0.82 | 0.82 | 0.82 | 0.97 | 0.97 | 0.97 | 0.94 | 0.94 | 0.94 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 71 | 123 | 325 | 62 | 28 | 396 | 152 | 716 | 36 | 224 | 752 | 70 |
| Arrive On Green | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.09 | 0.41 | 0.41 | 0.13 | 0.45 | 0.45 |
| Sat Flow, veh/h | 32 | 462 | 1219 | 6 | 107 | 1485 | 1774 | 1757 | 90 | 1774 | 1679 | 156 |
| Grp Volume(v), veh/h | 267 | 0 | 0 | 512 | 0 | 0 | 119 | 0 | 742 | 181 | 0 | 564 |
| Grp Sat Flow(s),veh/h/ln | 1713 | 0 | 0 | 1597 | 0 | 0 | 1774 | 0 | 1847 | 1774 | 0 | 1835 |
| Q Serve(g_s), s | 0.0 | 0.0 | 0.0 | 4.9 | 0.0 | 0.0 | 3.9 | 0.0 | 23.9 | 6.0 | 0.0 | 14.7 |
| Cycle Q Clear(g_c), s | 8.5 | 0.0 | 0.0 | 16.0 | 0.0 | 0.0 | 3.9 | 0.0 | 23.9 | 6.0 | 0.0 | 14.7 |
| Prop In Lane | 0.04 | | 0.71 | 0.01 | | 0.93 | 1.00 | | 0.05 | 1.00 | | 0.09 |
| Lane Grp Cap(c), veh/h | 520 | 0 | 0 | 487 | 0 | 0 | 152 | 0 | 752 | 224 | 0 | 822 |
| V/C Ratio(X) | 0.51 | 0.00 | 0.00 | 1.05 | 0.00 | 0.00 | 0.78 | 0.00 | 0.99 | 0.81 | 0.00 | 0.69 |
| Avail Cap(c_a), veh/h | 520 | 0 | 0 | 487 | 0 | 0 | 177 | 0 | 752 | 237 | 0 | 822 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.58 | 0.00 | 0.58 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 19.2 | 0.0 | 0.0 | 23.0 | 0.0 | 0.0 | 26.9 | 0.0 | 17.6 | 25.5 | 0.0 | 13.2 |
| Incr Delay (d2), s/veh | 0.9 | 0.0 | 0.0 | 55.2 | 0.0 | 0.0 | 10.9 | 0.0 | 22.0 | 17.8 | 0.0 | 4.6 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 4.0 | 0.0 | 0.0 | 15.4 | 0.0 | 0.0 | 2.4 | 0.0 | 16.5 | 4.0 | 0.0 | 8.4 |
| LnGrp Delay(d),s/veh | 20.1 | 0.0 | 0.0 | 78.2 | 0.0 | 0.0 | 37.8 | 0.0 | 39.6 | 43.3 | 0.0 | 17.8 |
| LnGrp LOS | C | | | F | | | D | | D | D | | B |
| Approach Vol, veh/h | | 267 | | | 512 | | | 861 | | | 745 | |
| Approach Delay, s/veh | | 20.1 | | | 78.2 | | | 39.3 | | | 24.0 | |
| Approach LOS | | C | | | E | | | D | | | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | 3 | 4 | | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | | 20.0 | 11.6 | 28.4 | | 20.0 | 9.1 | 30.9 |
| Change Period (Y+Rc), s | | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | | 16.0 | 8.0 | 24.0 | | 16.0 | 6.0 | 26.0 |
| Max Q Clear Time (g_c+I1), s | | 18.0 | 8.0 | 25.9 | | 10.5 | 5.9 | 16.7 |
| Green Ext Time (p_c), s | | 0.0 | 0.0 | 0.0 | | 0.7 | 0.0 | 2.6 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 40.8 |
| HCM 2010 LOS | D |

| Movement | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 15 | 25 | 25 | 190 | 10 | 325 | 25 | 550 | 140 | 210 | 465 | 10 |
| Future Volume (veh/h) | 15 | 25 | 25 | 190 | 10 | 325 | 25 | 550 | 140 | 210 | 465 | 10 |
| Number | 1 | 6 | 16 | 5 | 2 | 12 | 7 | 4 | 14 | 3 | 8 | 18 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1900 | 1863 | 1900 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 19 | 32 | 32 | 207 | 11 | 353 | 28 | 611 | 156 | 241 | 534 | 11 |
| Adj No. of Lanes | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| Peak Hour Factor | 0.77 | 0.77 | 0.77 | 0.92 | 0.92 | 0.92 | 0.90 | 0.90 | 0.90 | 0.87 | 0.87 | 0.87 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 25 | 42 | 42 | 338 | 18 | 569 | 41 | 703 | 598 | 283 | 934 | 19 |
| Arrive On Green | 0.06 | 0.06 | 0.06 | 0.20 | 0.20 | 0.20 | 0.02 | 0.38 | 0.38 | 0.16 | 0.51 | 0.51 |
| Sat Flow, veh/h | 395 | 665 | 665 | 1689 | 90 | 1583 | 1774 | 1863 | 1583 | 1774 | 1819 | 37 |
| Grp Volume(v), veh/h | 83 | 0 | 0 | 218 | 0 | 353 | 28 | 611 | 156 | 241 | 0 | 545 |
| Grp Sat Flow(s),veh/h/ln | 1726 | 0 | 0 | 1778 | 0 | 1583 | 1774 | 1863 | 1583 | 1774 | 0 | 1856 |
| Q Serve(g_s), s | 3.8 | 0.0 | 0.0 | 8.9 | 0.0 | 14.7 | 1.3 | 24.3 | 5.4 | 10.6 | 0.0 | 16.2 |
| Cycle Q Clear(g_c), s | 3.8 | 0.0 | 0.0 | 8.9 | 0.0 | 14.7 | 1.3 | 24.3 | 5.4 | 10.6 | 0.0 | 16.2 |
| Prop In Lane | 0.23 | | 0.39 | 0.95 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.02 |
| Lane Grp Cap(c), veh/h | 109 | 0 | 0 | 356 | 0 | 569 | 41 | 703 | 598 | 283 | 0 | 953 |
| V/C Ratio(X) | 0.76 | 0.00 | 0.00 | 0.61 | 0.00 | 0.62 | 0.68 | 0.87 | 0.26 | 0.85 | 0.00 | 0.57 |
| Avail Cap(c_a), veh/h | 345 | 0 | 0 | 356 | 0 | 569 | 89 | 703 | 598 | 355 | 0 | 953 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.77 | 0.00 | 0.77 |
| Uniform Delay (d), s/veh | 36.9 | 0.0 | 0.0 | 29.2 | 0.0 | 21.1 | 38.8 | 23.1 | 17.2 | 32.7 | 0.0 | 13.4 |
| Incr Delay (d2), s/veh | 10.3 | 0.0 | 0.0 | 3.1 | 0.0 | 2.1 | 18.0 | 13.8 | 1.1 | 11.9 | 0.0 | 1.9 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 2.1 | 0.0 | 0.0 | 4.7 | 0.0 | 6.7 | 0.8 | 15.1 | 2.6 | 6.1 | 0.0 | 8.7 |
| LnGrp Delay(d),s/veh | 47.2 | 0.0 | 0.0 | 32.3 | 0.0 | 23.2 | 56.8 | 36.8 | 18.3 | 44.6 | 0.0 | 15.3 |
| LnGrp LOS | D | | | C | | C | E | D | B | D | | B |
| Approach Vol, veh/h | | 83 | | | 571 | | | 795 | | | 786 | |
| Approach Delay, s/veh | | 47.2 | | | 26.7 | | | 33.9 | | | 24.3 | |
| Approach LOS | | D | | | C | | | C | | | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | 3 | 4 | | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | | 20.0 | 16.7 | 34.2 | | 9.1 | 5.9 | 45.1 |
| Change Period (Y+Rc), s | | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | | 16.0 | 16.0 | 16.0 | | 16.0 | 4.0 | 28.0 |
| Max Q Clear Time (g_c+I1), s | | 16.7 | 12.6 | 26.3 | | 5.8 | 3.3 | 18.2 |
| Green Ext Time (p_c), s | | 0.0 | 0.2 | 0.0 | | 0.2 | 0.0 | 2.5 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 29.2 |
| HCM 2010 LOS | C |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 150 | 10 | 214 | 115 | 40 | 20 | 126 | 175 | 25 | 10 | 476 | 305 |
| Future Volume (veh/h) | 150 | 10 | 214 | 115 | 40 | 20 | 126 | 175 | 25 | 10 | 476 | 305 |
| Number | 7 | 4 | 14 | 3 | 8 | 18 | 5 | 2 | 12 | 1 | 6 | 16 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1900 | 1900 | 1863 | 1900 | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 188 | 12 | 268 | 144 | 50 | 25 | 158 | 219 | 31 | 12 | 595 | 381 |
| Adj No. of Lanes | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 |
| Peak Hour Factor | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 529 | 22 | 494 | 253 | 81 | 30 | 186 | 725 | 103 | 22 | 673 | 572 |
| Arrive On Green | 0.32 | 0.32 | 0.32 | 0.32 | 0.32 | 0.32 | 0.10 | 0.45 | 0.45 | 0.01 | 0.36 | 0.36 |
| Sat Flow, veh/h | 1319 | 68 | 1525 | 459 | 250 | 91 | 1774 | 1597 | 226 | 1774 | 1863 | 1583 |
| Grp Volume(v), veh/h | 188 | 0 | 280 | 219 | 0 | 0 | 158 | 0 | 250 | 12 | 595 | 381 |
| Grp Sat Flow(s),veh/h/ln | 1319 | 0 | 1594 | 801 | 0 | 0 | 1774 | 0 | 1823 | 1774 | 1863 | 1583 |
| Q Serve(g_s), s | 0.0 | 0.0 | 8.2 | 8.1 | 0.0 | 0.0 | 5.0 | 0.0 | 5.0 | 0.4 | 17.1 | 11.6 |
| Cycle Q Clear(g_c), s | 6.9 | 0.0 | 8.2 | 16.3 | 0.0 | 0.0 | 5.0 | 0.0 | 5.0 | 0.4 | 17.1 | 11.6 |
| Prop In Lane | 1.00 | | 0.96 | 0.66 | | 0.11 | 1.00 | | 0.12 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 529 | 0 | 516 | 364 | 0 | 0 | 186 | 0 | 828 | 22 | 673 | 572 |
| V/C Ratio(X) | 0.36 | 0.00 | 0.54 | 0.60 | 0.00 | 0.00 | 0.85 | 0.00 | 0.30 | 0.56 | 0.88 | 0.67 |
| Avail Cap(c_a), veh/h | 564 | 0 | 558 | 397 | 0 | 0 | 186 | 0 | 828 | 124 | 717 | 610 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 15.4 | 0.0 | 15.8 | 20.7 | 0.0 | 0.0 | 25.1 | 0.0 | 9.9 | 28.1 | 17.1 | 15.4 |
| Incr Delay (d2), s/veh | 0.4 | 0.0 | 0.9 | 2.2 | 0.0 | 0.0 | 28.9 | 0.0 | 0.2 | 20.6 | 12.2 | 2.5 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 2.4 | 0.0 | 3.7 | 3.5 | 0.0 | 0.0 | 4.0 | 0.0 | 2.5 | 0.3 | 11.0 | 5.4 |
| LnGrp Delay(d),s/veh | 15.8 | 0.0 | 16.8 | 22.9 | 0.0 | 0.0 | 54.1 | 0.0 | 10.1 | 48.7 | 29.3 | 17.9 |
| LnGrp LOS | B | | B | C | | | D | | B | D | C | B |
| Approach Vol, veh/h | | 468 | | | 219 | | | 408 | | | 988 | |
| Approach Delay, s/veh | | 16.4 | | | 22.9 | | | 27.1 | | | 25.1 | |
| Approach LOS | | B | | | C | | | C | | | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | 4.7 | 29.9 | | 22.5 | 10.0 | 24.6 | | 22.5 |
| Change Period (Y+Rc), s | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 |
| Max Green Setting (Gmax), s | 4.0 | 24.0 | | 20.0 | 6.0 | 22.0 | | 20.0 |
| Max Q Clear Time (g_c+I1), s | 2.4 | 7.0 | | 10.2 | 7.0 | 19.1 | | 18.3 |
| Green Ext Time (p_c), s | 0.0 | 1.3 | | 1.7 | 0.0 | 1.5 | | 0.2 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 23.3 |
| HCM 2010 LOS | C |

Notes

## 1: Taylor Road & Penryn Road Performance by approach

| Approach | EB | WB | NB | SB | All |
|---|---|---|---|---|---|
| Denied Del/Veh (s) | 0.1 | 2.0 | 0.3 | 0.0 | 0.5 |
| Total Del/Veh (s) | 7.9 | 26.5 | 15.8 | 12.5 | 16.3 |

## 2: Taylor Road & N. Penryn Road Performance by approach

| Approach | EB | NB | SB | All |
|---|---|---|---|---|
| Denied Del/Veh (s) | 0.1 | 0.0 | 0.8 | 0.6 |
| Total Del/Veh (s) | 24.4 | 3.9 | 21.2 | 16.1 |

## Total Network Performance

| | |
|---|---|
| Denied Del/Veh (s) | 1.0 |
| Total Del/Veh (s) | 31.6 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.5 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 2 | 16 | 305 | 25 | 35 | 750 |
| Future Vol, veh/h | 2 | 16 | 305 | 25 | 35 | 750 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 2 | 17 | 332 | 27 | 38 | 815 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1237 | 346 | 0 | 0 | 359 | 0 |
| Stage 1 | 346 | - | - | - | - | - |
| Stage 2 | 891 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | 194 | 697 | - | - | 1200 | - |
| Stage 1 | 716 | - | - | - | - | - |
| Stage 2 | 401 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 183 | 697 | - | - | 1200 | - |
| Mov Cap-2 Maneuver | 183 | - | - | - | - | - |
| Stage 1 | 674 | - | - | - | - | - |
| Stage 2 | 401 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 12 | 0 | 0.4 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 531 | 1200 | - |
| HCM Lane V/C Ratio | - | - | 0.037 | 0.032 | - |
| HCM Control Delay (s) | - | - | 12 | 8.1 | 0 |
| HCM Lane LOS | - | - | B | A | A |
| HCM 95th %tile Q(veh) | - | - | 0.1 | 0.1 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.2 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 5 | 45 | 50 | 10 | 25 | 5 |
| Future Vol, veh/h | 5 | 45 | 50 | 10 | 25 | 5 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 5 | 49 | 54 | 11 | 27 | 5 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 65 | 0 | - | 0 | 119 | 60 |
| Stage 1 | - | - | - | - | 60 | - |
| Stage 2 | - | - | - | - | 59 | - |
| Critical Hdwy | 4.12 | - | - | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | 2.218 | - | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | 1537 | - | - | - | 877 | 1005 |
| Stage 1 | - | - | - | - | 963 | - |
| Stage 2 | - | - | - | - | 964 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1537 | - | - | - | 874 | 1005 |
| Mov Cap-2 Maneuver | - | - | - | - | 874 | - |
| Stage 1 | - | - | - | - | 960 | - |
| Stage 2 | - | - | - | - | 964 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0.7 | 0 | 9.2 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1537 | - | - | - | 893 |
| HCM Lane V/C Ratio | 0.004 | - | - | - | 0.037 |
| HCM Control Delay (s) | 7.4 | 0 | - | - | 9.2 |
| HCM Lane LOS | A | A | - | - | A |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0.1 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.7 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 10 | 60 | 30 | 320 | 722 | 30 |
| Future Vol, veh/h | 10 | 60 | 30 | 320 | 722 | 30 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | 0 | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 60 | 60 | 60 | 60 | 60 | 60 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 17 | 100 | 50 | 533 | 1203 | 50 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1861 | 1228 | 1253 | 0 | - | 0 |
| Stage 1 | 1228 | - | - | - | - | - |
| Stage 2 | 633 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 80 | 217 | 555 | - | - | - |
| Stage 1 | 277 | - | - | - | - | - |
| Stage 2 | 529 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 70 | 217 | 555 | - | - | - |
| Mov Cap-2 Maneuver | 70 | - | - | - | - | - |
| Stage 1 | 242 | - | - | - | - | - |
| Stage 2 | 529 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 40.3 | 1 | 0 |
| HCM LOS | E | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 555 | - | 70 | 217 | - | - |
| HCM Lane V/C Ratio | 0.09 | - | 0.238 | 0.461 | - | - |
| HCM Control Delay (s) | 12.1 | 0 | 71.8 | 35 | - | - |
| HCM Lane LOS | B | A | F | E | - | - |
| HCM 95th %tile Q(veh) | 0.3 | - | 0.8 | 2.2 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 130.9 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 40 | 70 | 435 | 120 | 200 | 527 |
| Future Vol, veh/h | 40 | 70 | 435 | 120 | 200 | 527 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | 45 | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 58 | 58 | 58 | 58 | 58 | 58 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 69 | 121 | 750 | 207 | 345 | 909 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 2453 | 854 | 0 | 0 | 957 | 0 |
| Stage 1 | 854 | - | - | - | - | - |
| Stage 2 | 1599 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | ~ 34 | 358 | - | - | 719 | - |
| Stage 1 | 417 | - | - | - | - | - |
| Stage 2 | 182 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | ~ 18 | 358 | - | - | 719 | - |
| Mov Cap-2 Maneuver | ~ 18 | - | - | - | - | - |
| Stage 1 | 217 | - | - | - | - | - |
| Stage 2 | 182 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, $ | 1629.8 | 0 | 4 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 45 | 719 | - |
| HCM Lane V/C Ratio | - | - | 4.215 | 0.48 | - |
| HCM Control Delay (s) | - | - | $ 1629.8 | 14.5 | - |
| HCM Lane LOS | - | - | F | B | - |
| HCM 95th %tile Q(veh) | - | - | 21.4 | 2.6 | - |

**Notes**

~: Volume exceeds capacity  $: Delay exceeds 300s  +: Computation Not Defined  *: All major volume in platoon

| Intersection | |
|---|---|
| Int Delay, s/veh | 273 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 5 | 120 | 0 | 120 | 5 | 435 | 135 | 140 | 422 | 5 |
| Future Vol, veh/h | 0 | 0 | 5 | 120 | 0 | 120 | 5 | 435 | 135 | 140 | 422 | 5 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | 100 | - | - | 70 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 7 | 179 | 0 | 179 | 7 | 649 | 201 | 209 | 630 | 7 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1905 | 1916 | 634 | 1819 | 1819 | 750 | 637 | 0 | 0 | 850 | 0 | 0 |
| Stage 1 | 1052 | 1052 | - | 764 | 764 | - | - | - | - | - | - | - |
| Stage 2 | 853 | 864 | - | 1055 | 1055 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 | 4.12 | - | - | 4.12 | - | - |
| Critical Hdwy Stg 1 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.218 | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver | 52 | 68 | 479 | ~ 60 | 78 | 411 | 947 | - | - | 788 | - | - |
| Stage 1 | 274 | 303 | - | 396 | 413 | - | - | - | - | - | - | - |
| Stage 2 | 354 | 371 | - | 273 | 302 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 23 | 50 | 479 | ~ 47 | 57 | 411 | 947 | - | - | 788 | - | - |
| Mov Cap-2 Maneuver | 23 | 50 | - | ~ 47 | 57 | - | - | - | - | - | - | - |
| Stage 1 | 272 | 223 | - | 393 | 410 | - | - | - | - | - | - | - |
| Stage 2 | 198 | 368 | - | 197 | 222 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 12.6 | $ 1570.8 | 0.1 | 2.8 |
| HCM LOS | B | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 947 | - | - | 479 | 84 | 788 | - | - |
| HCM Lane V/C Ratio | 0.008 | - | - | 0.016 | 4.264 | 0.265 | - | - |
| HCM Control Delay (s) | 8.8 | - | - | 12.5 | $ 1570.8 | 11.2 | - | - |
| HCM Lane LOS | A | - | - | B | F | B | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0 | 37.8 | 1.1 | - | - |

**Notes**

~: Volume exceeds capacity  $: Delay exceeds 300s  +: Computation Not Defined  *: All major volume in platoon

| Intersection | |
|---|---|
| Int Delay, s/veh | 37.9 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 130 | 75 | 500 | 380 | 70 | 412 |
| Future Vol, veh/h | 130 | 75 | 500 | 380 | 70 | 412 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 60 | 0 | - | - | 100 | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 77 | 77 | 77 | 77 | 77 | 77 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 169 | 97 | 649 | 494 | 91 | 535 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1613 | 896 | 0 | 0 | 1143 | 0 |
| Stage 1 | 896 | - | - | - | - | - |
| Stage 2 | 717 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | ~ 115 | 339 | - | - | 611 | - |
| Stage 1 | 399 | - | - | - | - | - |
| Stage 2 | 484 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | ~ 98 | 339 | - | - | 611 | - |
| Mov Cap-2 Maneuver | ~ 98 | - | - | - | - | - |
| Stage 1 | 340 | - | - | - | - | - |
| Stage 2 | 484 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 285.4 | 0 | 1.7 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | WBLn2 | SBL | SBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 98 | 339 | 611 | - |
| HCM Lane V/C Ratio | - | - | 1.723 | 0.287 | 0.149 | - |
| HCM Control Delay (s) | - | - | $ 438.7 | 19.8 | 11.9 | - |
| HCM Lane LOS | - | - | F | C | B | - |
| HCM 95th %tile Q(veh) | - | - | 13.5 | 1.2 | 0.5 | - |

**Notes**

~: Volume exceeds capacity  $: Delay exceeds 300s  +: Computation Not Defined  *: All major volume in platoon

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 170 | 115 | 165 | 135 | 155 | 206 | 160 | 383 | 95 | 80 | 467 | 170 |
| Future Volume (veh/h) | 170 | 115 | 165 | 135 | 155 | 206 | 160 | 383 | 95 | 80 | 467 | 170 |
| Number | 7 | 4 | 14 | 3 | 8 | 18 | 5 | 2 | 12 | 1 | 6 | 16 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 193 | 131 | 188 | 180 | 207 | 275 | 193 | 461 | 114 | 95 | 556 | 202 |
| Adj No. of Lanes | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 2 | 0 |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.75 | 0.75 | 0.75 | 0.83 | 0.83 | 0.83 | 0.84 | 0.84 | 0.84 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 237 | 704 | 599 | 158 | 242 | 322 | 177 | 514 | 437 | 141 | 650 | 236 |
| Arrive On Green | 0.13 | 0.38 | 0.38 | 0.09 | 0.33 | 0.33 | 0.10 | 0.28 | 0.28 | 0.08 | 0.26 | 0.26 |
| Sat Flow, veh/h | 1774 | 1863 | 1583 | 1774 | 727 | 966 | 1774 | 1863 | 1583 | 1774 | 2547 | 923 |
| Grp Volume(v), veh/h | 193 | 131 | 188 | 180 | 0 | 482 | 193 | 461 | 114 | 95 | 386 | 372 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1863 | 1583 | 1774 | 0 | 1692 | 1774 | 1863 | 1583 | 1774 | 1770 | 1700 |
| Q Serve(g_s), s | 9.5 | 4.2 | 5.3 | 8.0 | 0.0 | 23.9 | 9.0 | 21.4 | 3.8 | 4.7 | 18.7 | 18.8 |
| Cycle Q Clear(g_c), s | 9.5 | 4.2 | 5.3 | 8.0 | 0.0 | 23.9 | 9.0 | 21.4 | 3.8 | 4.7 | 18.7 | 18.8 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.57 | 1.00 | | 1.00 | 1.00 | | 0.54 |
| Lane Grp Cap(c), veh/h | 237 | 704 | 599 | 158 | 0 | 564 | 177 | 514 | 437 | 141 | 452 | 434 |
| V/C Ratio(X) | 0.81 | 0.19 | 0.31 | 1.14 | 0.00 | 0.85 | 1.09 | 0.90 | 0.26 | 0.67 | 0.85 | 0.86 |
| Avail Cap(c_a), veh/h | 237 | 704 | 599 | 158 | 0 | 564 | 177 | 580 | 493 | 141 | 511 | 491 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 37.9 | 18.7 | 9.6 | 41.0 | 0.0 | 28.0 | 40.5 | 31.4 | 14.5 | 40.3 | 31.9 | 32.0 |
| Incr Delay (d2), s/veh | 19.2 | 0.6 | 1.4 | 114.8 | 0.0 | 15.2 | 93.0 | 15.6 | 0.3 | 11.9 | 12.1 | 12.9 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 5.9 | 2.3 | 2.5 | 8.9 | 0.0 | 13.5 | 9.0 | 13.2 | 1.7 | 2.8 | 10.6 | 10.3 |
| LnGrp Delay(d),s/veh | 57.1 | 19.3 | 10.9 | 155.8 | 0.0 | 43.2 | 133.5 | 46.9 | 14.8 | 52.2 | 44.0 | 44.9 |
| LnGrp LOS | E | B | B | F | | D | F | D | B | D | D | D |
| Approach Vol, veh/h | | 512 | | | 662 | | | 768 | | | 853 | |
| Approach Delay, s/veh | | 30.5 | | | 73.8 | | | 63.9 | | | 45.3 | |
| Approach LOS | | C | | | E | | | E | | | D | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | 11.2 | 28.8 | 12.0 | 38.0 | 13.0 | 27.0 | 16.0 | 34.0 |
| Change Period (Y+Rc), s | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | 7.0 | 28.0 | 8.0 | 31.0 | 9.0 | 26.0 | 9.0 | 30.0 |
| Max Q Clear Time (g_c+I1), s | 6.7 | 23.4 | 10.0 | 7.3 | 11.0 | 20.8 | 11.5 | 25.9 |
| Green Ext Time (p_c), s | 0.0 | 1.4 | 0.0 | 1.3 | 0.0 | 2.2 | 0.0 | 1.2 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 54.4 |
| HCM 2010 LOS | D |

| Movement | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 5 | 35 | 80 | 5 | 30 | 235 | 125 | 488 | 70 | 175 | 552 | 55 |
| Future Volume (veh/h) | 5 | 35 | 80 | 5 | 30 | 235 | 125 | 488 | 70 | 175 | 552 | 55 |
| Number | 1 | 6 | 16 | 5 | 2 | 12 | 7 | 4 | 14 | 3 | 8 | 18 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1900 | 1863 | 1900 | 1900 | 1863 | 1900 | 1863 | 1863 | 1900 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 6 | 40 | 91 | 6 | 38 | 294 | 133 | 519 | 74 | 192 | 607 | 60 |
| Adj No. of Lanes | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.80 | 0.80 | 0.80 | 0.94 | 0.94 | 0.94 | 0.91 | 0.91 | 0.91 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 55 | 135 | 279 | 50 | 50 | 351 | 161 | 761 | 109 | 207 | 839 | 83 |
| Arrive On Green | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.09 | 0.48 | 0.48 | 0.12 | 0.50 | 0.50 |
| Sat Flow, veh/h | 23 | 540 | 1114 | 9 | 201 | 1401 | 1774 | 1595 | 227 | 1774 | 1669 | 165 |
| Grp Volume(v), veh/h | 137 | 0 | 0 | 338 | 0 | 0 | 133 | 0 | 593 | 192 | 0 | 667 |
| Grp Sat Flow(s),veh/h/ln | 1678 | 0 | 0 | 1611 | 0 | 0 | 1774 | 0 | 1823 | 1774 | 0 | 1834 |
| Q Serve(g_s), s | 0.0 | 0.0 | 0.0 | 2.1 | 0.0 | 0.0 | 5.7 | 0.0 | 19.4 | 8.3 | 0.0 | 21.9 |
| Cycle Q Clear(g_c), s | 5.2 | 0.0 | 0.0 | 15.3 | 0.0 | 0.0 | 5.7 | 0.0 | 19.4 | 8.3 | 0.0 | 21.9 |
| Prop In Lane | 0.04 | | 0.66 | 0.02 | | 0.87 | 1.00 | | 0.12 | 1.00 | | 0.09 |
| Lane Grp Cap(c), veh/h | 469 | 0 | 0 | 451 | 0 | 0 | 161 | 0 | 870 | 207 | 0 | 922 |
| V/C Ratio(X) | 0.29 | 0.00 | 0.00 | 0.75 | 0.00 | 0.00 | 0.82 | 0.00 | 0.68 | 0.93 | 0.00 | 0.72 |
| Avail Cap(c_a), veh/h | 469 | 0 | 0 | 737 | 0 | 0 | 161 | 0 | 870 | 207 | 0 | 922 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.84 | 0.00 | 0.84 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 23.6 | 0.0 | 0.0 | 27.4 | 0.0 | 0.0 | 34.4 | 0.0 | 15.6 | 33.7 | 0.0 | 14.9 |
| Incr Delay (d2), s/veh | 0.3 | 0.0 | 0.0 | 2.5 | 0.0 | 0.0 | 24.3 | 0.0 | 3.6 | 42.3 | 0.0 | 4.9 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 2.4 | 0.0 | 0.0 | 7.1 | 0.0 | 0.0 | 3.9 | 0.0 | 10.6 | 6.5 | 0.0 | 12.2 |
| LnGrp Delay(d),s/veh | 23.9 | 0.0 | 0.0 | 29.9 | 0.0 | 0.0 | 58.7 | 0.0 | 19.2 | 76.0 | 0.0 | 19.8 |
| LnGrp LOS | C | | | C | | | E | | B | E | | B |
| Approach Vol, veh/h | | 137 | | | 338 | | | 726 | | | 859 | |
| Approach Delay, s/veh | | 23.9 | | | 29.9 | | | 26.5 | | | 32.4 | |
| Approach LOS | | C | | | C | | | C | | | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | 3 | 4 | | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | | 23.3 | 13.0 | 40.7 | | 23.3 | 11.0 | 42.7 |
| Change Period (Y+Rc), s | | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | | 33.0 | 9.0 | 23.0 | | 16.0 | 7.0 | 25.0 |
| Max Q Clear Time (g_c+I1), s | | 17.3 | 10.3 | 21.4 | | 7.2 | 7.7 | 23.9 |
| Green Ext Time (p_c), s | | 2.0 | 0.0 | 0.6 | | 0.4 | 0.0 | 0.5 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 29.3 |
| HCM 2010 LOS | C |

| Movement | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 10 | 40 | 50 | 140 | 10 | 492 | 5 | 191 | 10 | 66 | 580 | 5 |
| Future Volume (veh/h) | 10 | 40 | 50 | 140 | 10 | 492 | 5 | 191 | 10 | 66 | 580 | 5 |
| Number | 1 | 6 | 16 | 5 | 2 | 12 | 7 | 4 | 14 | 3 | 8 | 18 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1900 | 1863 | 1900 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 15 | 61 | 76 | 147 | 11 | 518 | 6 | 215 | 11 | 72 | 630 | 5 |
| Adj No. of Lanes | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| Peak Hour Factor | 0.66 | 0.66 | 0.66 | 0.95 | 0.95 | 0.95 | 0.89 | 0.89 | 0.89 | 0.92 | 0.92 | 0.92 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 19 | 77 | 96 | 331 | 25 | 601 | 11 | 573 | 487 | 318 | 887 | 7 |
| Arrive On Green | 0.11 | 0.11 | 0.11 | 0.20 | 0.20 | 0.20 | 0.01 | 0.31 | 0.31 | 0.18 | 0.48 | 0.48 |
| Sat Flow, veh/h | 168 | 684 | 852 | 1656 | 124 | 1583 | 1774 | 1863 | 1583 | 1774 | 1846 | 15 |
| Grp Volume(v), veh/h | 152 | 0 | 0 | 158 | 0 | 518 | 6 | 215 | 11 | 72 | 0 | 635 |
| Grp Sat Flow(s),veh/h/ln | 1704 | 0 | 0 | 1780 | 0 | 1583 | 1774 | 1863 | 1583 | 1774 | 0 | 1860 |
| Q Serve(g_s), s | 7.0 | 0.0 | 0.0 | 6.2 | 0.0 | 16.0 | 0.3 | 7.2 | 0.4 | 2.8 | 0.0 | 21.5 |
| Cycle Q Clear(g_c), s | 7.0 | 0.0 | 0.0 | 6.2 | 0.0 | 16.0 | 0.3 | 7.2 | 0.4 | 2.8 | 0.0 | 21.5 |
| Prop In Lane | 0.10 | | 0.50 | 0.93 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.01 |
| Lane Grp Cap(c), veh/h | 192 | 0 | 0 | 356 | 0 | 601 | 11 | 573 | 487 | 318 | 0 | 894 |
| V/C Ratio(X) | 0.79 | 0.00 | 0.00 | 0.44 | 0.00 | 0.86 | 0.54 | 0.38 | 0.02 | 0.23 | 0.00 | 0.71 |
| Avail Cap(c_a), veh/h | 341 | 0 | 0 | 356 | 0 | 601 | 89 | 573 | 487 | 355 | 0 | 894 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.72 | 0.00 | 0.72 |
| Uniform Delay (d), s/veh | 34.6 | 0.0 | 0.0 | 28.1 | 0.0 | 22.9 | 39.6 | 21.7 | 19.3 | 28.1 | 0.0 | 16.4 |
| Incr Delay (d2), s/veh | 7.1 | 0.0 | 0.0 | 0.9 | 0.0 | 12.3 | 35.5 | 0.4 | 0.0 | 0.3 | 0.0 | 3.5 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 3.6 | 0.0 | 0.0 | 3.2 | 0.0 | 12.5 | 0.2 | 3.8 | 0.2 | 1.4 | 0.0 | 11.8 |
| LnGrp Delay(d),s/veh | 41.6 | 0.0 | 0.0 | 29.0 | 0.0 | 35.2 | 75.1 | 22.1 | 19.3 | 28.3 | 0.0 | 19.8 |
| LnGrp LOS | D | | | C | | D | E | C | B | C | | B |
| Approach Vol, veh/h | | 152 | | | 676 | | | 232 | | | 707 | |
| Approach Delay, s/veh | | 41.6 | | | 33.7 | | | 23.3 | | | 20.7 | |
| Approach LOS | | D | | | C | | | C | | | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | 3 | 4 | | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | | 20.0 | 18.4 | 28.6 | | 13.0 | 4.5 | 42.5 |
| Change Period (Y+Rc), s | | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | | 16.0 | 16.0 | 16.0 | | 16.0 | 4.0 | 28.0 |
| Max Q Clear Time (g_c+I1), s | | 18.0 | 4.8 | 9.2 | | 9.0 | 2.3 | 23.5 |
| Green Ext Time (p_c), s | | 0.0 | 0.1 | 0.6 | | 0.4 | 0.0 | 1.7 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 27.8 |
| HCM 2010 LOS | C |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 275 | 40 | 161 | 40 | 25 | 20 | 138 | 385 | 65 | 25 | 245 | 170 |
| Future Volume (veh/h) | 275 | 40 | 161 | 40 | 25 | 20 | 138 | 385 | 65 | 25 | 245 | 170 |
| Number | 7 | 4 | 14 | 3 | 8 | 18 | 5 | 2 | 12 | 1 | 6 | 16 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1900 | 1900 | 1863 | 1900 | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 340 | 49 | 199 | 49 | 31 | 25 | 170 | 475 | 80 | 31 | 302 | 210 |
| Adj No. of Lanes | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 |
| Peak Hour Factor | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 441 | 80 | 325 | 67 | 42 | 34 | 214 | 547 | 92 | 49 | 482 | 410 |
| Arrive On Green | 0.25 | 0.25 | 0.25 | 0.08 | 0.08 | 0.08 | 0.12 | 0.35 | 0.35 | 0.03 | 0.26 | 0.26 |
| Sat Flow, veh/h | 1774 | 322 | 1309 | 816 | 516 | 416 | 1774 | 1555 | 262 | 1774 | 1863 | 1583 |
| Grp Volume(v), veh/h | 340 | 0 | 248 | 105 | 0 | 0 | 170 | 0 | 555 | 31 | 302 | 210 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 0 | 1632 | 1748 | 0 | 0 | 1774 | 0 | 1817 | 1774 | 1863 | 1583 |
| Q Serve(g_s), s | 9.8 | 0.0 | 7.4 | 3.2 | 0.0 | 0.0 | 5.1 | 0.0 | 15.7 | 1.0 | 7.9 | 6.2 |
| Cycle Q Clear(g_c), s | 9.8 | 0.0 | 7.4 | 3.2 | 0.0 | 0.0 | 5.1 | 0.0 | 15.7 | 1.0 | 7.9 | 6.2 |
| Prop In Lane | 1.00 | | 0.80 | 0.47 | | 0.24 | 1.00 | | 0.14 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 441 | 0 | 405 | 143 | 0 | 0 | 214 | 0 | 639 | 49 | 482 | 410 |
| V/C Ratio(X) | 0.77 | 0.00 | 0.61 | 0.73 | 0.00 | 0.00 | 0.79 | 0.00 | 0.87 | 0.64 | 0.63 | 0.51 |
| Avail Cap(c_a), veh/h | 676 | 0 | 622 | 666 | 0 | 0 | 257 | 0 | 758 | 129 | 642 | 546 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 19.3 | 0.0 | 18.4 | 24.7 | 0.0 | 0.0 | 23.6 | 0.0 | 16.7 | 26.5 | 18.1 | 17.5 |
| Incr Delay (d2), s/veh | 3.0 | 0.0 | 1.5 | 7.0 | 0.0 | 0.0 | 13.3 | 0.0 | 9.3 | 13.0 | 1.3 | 1.0 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 5.2 | 0.0 | 3.5 | 1.8 | 0.0 | 0.0 | 3.3 | 0.0 | 9.5 | 0.6 | 4.2 | 2.9 |
| LnGrp Delay(d),s/veh | 22.2 | 0.0 | 19.9 | 31.8 | 0.0 | 0.0 | 36.9 | 0.0 | 26.0 | 39.5 | 19.4 | 18.5 |
| LnGrp LOS | C | | B | C | | | D | | C | D | B | B |
| Approach Vol, veh/h | | 588 | | | 105 | | | 725 | | | 543 | |
| Approach Delay, s/veh | | 21.2 | | | 31.8 | | | 28.5 | | | 20.2 | |
| Approach LOS | | C | | | C | | | C | | | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | 5.5 | 23.4 | | 17.7 | 10.6 | 18.3 | | 8.5 |
| Change Period (Y+Rc), s | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 |
| Max Green Setting (Gmax), s | 4.0 | 23.0 | | 21.0 | 8.0 | 19.0 | | 21.0 |
| Max Q Clear Time (g_c+I1), s | 3.0 | 17.7 | | 11.8 | 7.1 | 9.9 | | 5.2 |
| Green Ext Time (p_c), s | 0.0 | 1.7 | | 1.9 | 0.0 | 1.7 | | 0.4 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 24.2 |
| HCM 2010 LOS | C |

Notes

## 1: Taylor Road & Penryn Road Performance by approach

| Approach | EB | WB | NB | SB | All |
|---|---|---|---|---|---|
| Denied Del/Veh (s) | 0.1 | 2.5 | 0.6 | 0.0 | 0.7 |
| Total Del/Veh (s) | 17.6 | 18.9 | 23.2 | 19.9 | 21.3 |

## 2: Taylor Road & N. Penryn Road Performance by approach

| Approach | EB | NB | SB | All |
|---|---|---|---|---|
| Denied Del/Veh (s) | 0.1 | 0.0 | 0.4 | 0.2 |
| Total Del/Veh (s) | 13.7 | 3.8 | 13.6 | 8.0 |

## Total Network Performance

| | |
|---|---|
| Denied Del/Veh (s) | 0.9 |
| Total Del/Veh (s) | 29.2 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.6 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 9 | 19 | 650 | 1 | 12 | 345 |
| Future Vol, veh/h | 9 | 19 | 650 | 1 | 12 | 345 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 81 | 81 | 81 | 81 | 81 | 81 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 11 | 23 | 802 | 1 | 15 | 426 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1259 | 803 | 0 | 0 | 803 | 0 |
| Stage 1 | 803 | - | - | - | - | - |
| Stage 2 | 456 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | 188 | 383 | - | - | 821 | - |
| Stage 1 | 441 | - | - | - | - | - |
| Stage 2 | 638 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 183 | 383 | - | - | 821 | - |
| Mov Cap-2 Maneuver | 183 | - | - | - | - | - |
| Stage 1 | 430 | - | - | - | - | - |
| Stage 2 | 638 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 19.5 | 0 | 0.3 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 283 | 821 | - |
| HCM Lane V/C Ratio | - | - | 0.122 | 0.018 | - |
| HCM Control Delay (s) | - | - | 19.5 | 9.5 | 0 |
| HCM Lane LOS | - | - | C | A | A |
| HCM 95th %tile Q(veh) | - | - | 0.4 | 0.1 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.8 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 5 | 10 | 60 | 30 | 15 | 5 |
| Future Vol, veh/h | 5 | 10 | 60 | 30 | 15 | 5 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 60 | 60 | 60 | 60 | 60 | 60 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 8 | 17 | 100 | 50 | 25 | 8 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 150 | 0 | - | 0 | 158 | 125 |
| Stage 1 | - | - | - | - | 125 | - |
| Stage 2 | - | - | - | - | 33 | - |
| Critical Hdwy | 4.12 | - | - | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | 2.218 | - | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | 1431 | - | - | - | 833 | 926 |
| Stage 1 | - | - | - | - | 901 | - |
| Stage 2 | - | - | - | - | 989 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1431 | - | - | - | 828 | 926 |
| Mov Cap-2 Maneuver | - | - | - | - | 828 | - |
| Stage 1 | - | - | - | - | 896 | - |
| Stage 2 | - | - | - | - | 989 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 2.5 | 0 | 9.4 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1431 | - | - | - | 851 |
| HCM Lane V/C Ratio | 0.006 | - | - | - | 0.039 |
| HCM Control Delay (s) | 7.5 | 0 | - | - | 9.4 |
| HCM Lane LOS | A | A | - | - | A |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0.1 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.3 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 5 | 20 | 80 | 606 | 349 | 10 |
| Future Vol, veh/h | 5 | 20 | 80 | 606 | 349 | 10 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | 0 | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 60 | 60 | 60 | 60 | 60 | 60 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 8 | 33 | 133 | 1010 | 582 | 17 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1867 | 591 | 599 | 0 | - | 0 |
| Stage 1 | 591 | - | - | - | - | - |
| Stage 2 | 1276 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 80 | 507 | 978 | - | - | - |
| Stage 1 | 553 | - | - | - | - | - |
| Stage 2 | 262 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 55 | 507 | 978 | - | - | - |
| Mov Cap-2 Maneuver | 55 | - | - | - | - | - |
| Stage 1 | 382 | - | - | - | - | - |
| Stage 2 | 262 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 26.4 | 1.1 | 0 |
| HCM LOS | D | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 978 | - | 55 | 507 | - | - |
| HCM Lane V/C Ratio | 0.136 | - | 0.152 | 0.066 | - | - |
| HCM Control Delay (s) | 9.3 | 0 | 81.8 | 12.6 | - | - |
| HCM Lane LOS | A | A | F | B | - | - |
| HCM 95th %tile Q(veh) | 0.5 | - | 0.5 | 0.2 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 48.1 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 80 | 120 | 536 | 50 | 35 | 439 |
| Future Vol, veh/h | 80 | 120 | 536 | 50 | 35 | 439 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | 45 | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 68 | 68 | 68 | 68 | 68 | 68 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 118 | 176 | 788 | 74 | 51 | 646 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1573 | 825 | 0 | 0 | 862 | 0 |
| Stage 1 | 825 | - | - | - | - | - |
| Stage 2 | 748 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | 121 | 372 | - | - | 780 | - |
| Stage 1 | 430 | - | - | - | - | - |
| Stage 2 | 468 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | ~ 113 | 372 | - | - | 780 | - |
| Mov Cap-2 Maneuver | ~ 113 | - | - | - | - | - |
| Stage 1 | 402 | - | - | - | - | - |
| Stage 2 | 468 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s$ | 301.4 | 0 | 0.7 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 194 | 780 | - |
| HCM Lane V/C Ratio | - | - | 1.516 | 0.066 | - |
| HCM Control Delay (s) | - | - | $ 301.4 | 9.9 | - |
| HCM Lane LOS | - | - | F | A | - |
| HCM 95th %tile Q(veh) | - | - | 18.5 | 0.2 | - |

Notes

~: Volume exceeds capacity  $: Delay exceeds 300s  +: Computation Not Defined  *: All major volume in platoon

| Intersection | |
|---|---|
| Int Delay, s/veh | 26 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 10 | 0 | 95 | 25 | 0 | 90 | 25 | 586 | 20 | 15 | 489 | 15 |
| Future Vol, veh/h | 10 | 0 | 95 | 25 | 0 | 90 | 25 | 586 | 20 | 15 | 489 | 15 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | 100 | - | - | 70 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 15 | 0 | 140 | 37 | 0 | 132 | 37 | 862 | 29 | 22 | 719 | 22 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1791 | 1739 | 730 | 1795 | 1736 | 877 | 741 | 0 | 0 | 891 | 0 | 0 |
| Stage 1 | 774 | 774 | - | 951 | 951 | - | - | - | - | - | - | - |
| Stage 2 | 1017 | 965 | - | 844 | 785 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 | 4.12 | - | - | 4.12 | - | - |
| Critical Hdwy Stg 1 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.218 | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver | 63 | 87 | 422 | 62 | 87 | 348 | 866 | - | - | 761 | - | - |
| Stage 1 | 391 | 408 | - | 312 | 338 | - | - | - | - | - | - | - |
| Stage 2 | 287 | 333 | - | 358 | 404 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 37 | 81 | 422 | 39 | 81 | 348 | 866 | - | - | 761 | - | - |
| Mov Cap-2 Maneuver | 37 | 81 | - | 39 | 81 | - | - | - | - | - | - | - |
| Stage 1 | 374 | 396 | - | 299 | 323 | - | - | - | - | - | - | - |
| Stage 2 | 170 | 319 | - | 233 | 392 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 57.3 | 253.5 | 0.4 | 0.3 |
| HCM LOS | F | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 866 | - | - | 212 | 128 | 761 | - | - |
| HCM Lane V/C Ratio | 0.042 | - | - | 0.728 | 1.321 | 0.029 | - | - |
| HCM Control Delay (s) | 9.3 | - | - | 57.3 | 253.5 | 9.9 | - | - |
| HCM Lane LOS | A | - | - | F | F | A | - | - |
| HCM 95th %tile Q(veh) | 0.1 | - | - | 4.8 | 10.9 | 0.1 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 26.9 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 90 | 210 | 471 | 160 | 70 | 539 |
| Future Vol, veh/h | 90 | 210 | 471 | 160 | 70 | 539 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 60 | 0 | - | - | 100 | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 71 | 71 | 71 | 71 | 71 | 71 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 127 | 296 | 663 | 225 | 99 | 759 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1733 | 776 | 0 | 0 | 888 | 0 |
| Stage 1 | 776 | - | - | - | - | - |
| Stage 2 | 957 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | ~ 97 | 397 | - | - | 763 | - |
| Stage 1 | 454 | - | - | - | - | - |
| Stage 2 | 373 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | ~ 84 | 397 | - | - | 763 | - |
| Mov Cap-2 Maneuver | ~ 84 | - | - | - | - | - |
| Stage 1 | 395 | - | - | - | - | - |
| Stage 2 | 373 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 135.8 | 0 | 1.2 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | WBLn2 | SBL | SBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 84 | 397 | 763 | - |
| HCM Lane V/C Ratio | - | - | 1.509 | 0.745 | 0.129 | - |
| HCM Control Delay (s) | - | - | $ 367.9 | 36.3 | 10.4 | - |
| HCM Lane LOS | - | - | F | E | B | - |
| HCM 95th %tile Q(veh) | - | - | 10.1 | 6 | 0.4 | - |

Notes

~: Volume exceeds capacity  $: Delay exceeds 300s  +: Computation Not Defined  *: All major volume in platoon

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 125 | 105 | 225 | 190 | 110 | 110 | 235 | 491 | 215 | 116 | 464 | 200 |
| Future Volume (veh/h) | 125 | 105 | 225 | 190 | 110 | 110 | 235 | 491 | 215 | 116 | 464 | 200 |
| Number | 7 | 4 | 14 | 3 | 8 | 18 | 5 | 2 | 12 | 1 | 6 | 16 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 149 | 125 | 268 | 232 | 134 | 134 | 242 | 506 | 222 | 123 | 494 | 213 |
| Adj No. of Lanes | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 2 | 0 |
| Peak Hour Factor | 0.84 | 0.84 | 0.84 | 0.82 | 0.82 | 0.82 | 0.97 | 0.97 | 0.97 | 0.94 | 0.94 | 0.94 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 187 | 371 | 316 | 195 | 174 | 174 | 292 | 626 | 532 | 185 | 665 | 285 |
| Arrive On Green | 0.11 | 0.20 | 0.20 | 0.11 | 0.20 | 0.20 | 0.16 | 0.34 | 0.34 | 0.10 | 0.28 | 0.28 |
| Sat Flow, veh/h | 1774 | 1863 | 1583 | 1774 | 856 | 856 | 1774 | 1863 | 1583 | 1774 | 2414 | 1035 |
| Grp Volume(v), veh/h | 149 | 125 | 268 | 232 | 0 | 268 | 242 | 506 | 222 | 123 | 361 | 346 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1863 | 1583 | 1774 | 0 | 1712 | 1774 | 1863 | 1583 | 1774 | 1770 | 1680 |
| Q Serve(g_s), s | 5.2 | 3.7 | 6.6 | 7.0 | 0.0 | 9.4 | 8.4 | 15.8 | 4.5 | 4.3 | 11.9 | 12.0 |
| Cycle Q Clear(g_c), s | 5.2 | 3.7 | 6.6 | 7.0 | 0.0 | 9.4 | 8.4 | 15.8 | 4.5 | 4.3 | 11.9 | 12.0 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.50 | 1.00 | | 1.00 | 1.00 | | 0.62 |
| Lane Grp Cap(c), veh/h | 187 | 371 | 316 | 195 | 0 | 349 | 292 | 626 | 532 | 185 | 487 | 462 |
| V/C Ratio(X) | 0.80 | 0.34 | 0.85 | 1.19 | 0.00 | 0.77 | 0.83 | 0.81 | 0.42 | 0.67 | 0.74 | 0.75 |
| Avail Cap(c_a), veh/h | 195 | 934 | 794 | 195 | 0 | 859 | 389 | 964 | 819 | 195 | 721 | 685 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 27.9 | 21.9 | 10.0 | 28.4 | 0.0 | 24.0 | 25.8 | 19.3 | 6.8 | 27.5 | 21.1 | 21.1 |
| Incr Delay (d2), s/veh | 19.7 | 0.5 | 6.3 | 125.7 | 0.0 | 3.6 | 10.6 | 3.0 | 0.5 | 7.8 | 2.3 | 2.5 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 3.6 | 1.9 | 4.3 | 10.2 | 0.0 | 4.8 | 5.0 | 8.5 | 2.6 | 2.5 | 6.0 | 5.9 |
| LnGrp Delay(d),s/veh | 47.6 | 22.4 | 16.3 | 154.1 | 0.0 | 27.5 | 36.4 | 22.3 | 7.3 | 35.3 | 23.3 | 23.6 |
| LnGrp LOS | D | C | B | F | | C | D | C | A | D | C | C |
| Approach Vol, veh/h | | 542 | | | 500 | | | 970 | | | 830 | |
| Approach Delay, s/veh | | 26.3 | | | 86.3 | | | 22.4 | | | 25.2 | |
| Approach LOS | | C | | | F | | | C | | | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | 10.6 | 25.4 | 11.0 | 16.7 | 14.5 | 21.6 | 10.7 | 17.0 |
| Change Period (Y+Rc), s | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | 7.0 | 33.0 | 7.0 | 32.0 | 14.0 | 26.0 | 7.0 | 32.0 |
| Max Q Clear Time (g_c+I1), s | 6.3 | 17.8 | 9.0 | 8.6 | 10.4 | 14.0 | 7.2 | 11.4 |
| Green Ext Time (p_c), s | 0.0 | 3.6 | 0.0 | 1.6 | 0.2 | 3.6 | 0.0 | 1.6 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 35.2 |
| HCM 2010 LOS | D |

| Movement | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 5 | 30 | 90 | 10 | 30 | 355 | 125 | 506 | 75 | 185 | 644 | 25 |
| Future Volume (veh/h) | 5 | 30 | 90 | 10 | 30 | 355 | 125 | 506 | 75 | 185 | 644 | 25 |
| Number | 1 | 6 | 16 | 5 | 2 | 12 | 7 | 4 | 14 | 3 | 8 | 18 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1900 | 1863 | 1900 | 1900 | 1863 | 1900 | 1863 | 1863 | 1900 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 6 | 36 | 107 | 12 | 37 | 433 | 129 | 522 | 77 | 197 | 685 | 27 |
| Adj No. of Lanes | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 |
| Peak Hour Factor | 0.84 | 0.84 | 0.84 | 0.82 | 0.82 | 0.82 | 0.97 | 0.97 | 0.97 | 0.94 | 0.94 | 0.94 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 68 | 122 | 327 | 66 | 39 | 384 | 164 | 635 | 94 | 237 | 785 | 31 |
| Arrive On Green | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.09 | 0.40 | 0.40 | 0.13 | 0.44 | 0.44 |
| Sat Flow, veh/h | 23 | 459 | 1228 | 16 | 147 | 1438 | 1774 | 1587 | 234 | 1774 | 1780 | 70 |
| Grp Volume(v), veh/h | 149 | 0 | 0 | 482 | 0 | 0 | 129 | 0 | 599 | 197 | 0 | 712 |
| Grp Sat Flow(s),veh/h/ln | 1710 | 0 | 0 | 1601 | 0 | 0 | 1774 | 0 | 1821 | 1774 | 0 | 1850 |
| Q Serve(g_s), s | 0.0 | 0.0 | 0.0 | 6.3 | 0.0 | 0.0 | 4.3 | 0.0 | 17.6 | 6.5 | 0.0 | 21.0 |
| Cycle Q Clear(g_c), s | 4.4 | 0.0 | 0.0 | 16.0 | 0.0 | 0.0 | 4.3 | 0.0 | 17.6 | 6.5 | 0.0 | 21.0 |
| Prop In Lane | 0.04 | | 0.72 | 0.02 | | 0.90 | 1.00 | | 0.13 | 1.00 | | 0.04 |
| Lane Grp Cap(c), veh/h | 518 | 0 | 0 | 488 | 0 | 0 | 164 | 0 | 729 | 237 | 0 | 816 |
| V/C Ratio(X) | 0.29 | 0.00 | 0.00 | 0.99 | 0.00 | 0.00 | 0.79 | 0.00 | 0.82 | 0.83 | 0.00 | 0.87 |
| Avail Cap(c_a), veh/h | 518 | 0 | 0 | 488 | 0 | 0 | 177 | 0 | 729 | 237 | 0 | 816 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.65 | 0.00 | 0.65 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 17.7 | 0.0 | 0.0 | 22.9 | 0.0 | 0.0 | 26.7 | 0.0 | 16.1 | 25.3 | 0.0 | 15.2 |
| Incr Delay (d2), s/veh | 0.3 | 0.0 | 0.0 | 37.2 | 0.0 | 0.0 | 13.2 | 0.0 | 6.8 | 21.7 | 0.0 | 12.4 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 2.0 | 0.0 | 0.0 | 12.9 | 0.0 | 0.0 | 2.7 | 0.0 | 10.2 | 4.6 | 0.0 | 13.3 |
| LnGrp Delay(d),s/veh | 18.0 | 0.0 | 0.0 | 60.1 | 0.0 | 0.0 | 39.9 | 0.0 | 22.9 | 47.1 | 0.0 | 27.7 |
| LnGrp LOS | B | | | E | | | D | | C | D | | C |
| Approach Vol, veh/h | | 149 | | | 482 | | | 728 | | | 909 | |
| Approach Delay, s/veh | | 18.0 | | | 60.1 | | | 25.9 | | | 31.9 | |
| Approach LOS | | B | | | E | | | C | | | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | 3 | 4 | | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | | 20.0 | 12.0 | 28.0 | | 20.0 | 9.5 | 30.5 |
| Change Period (Y+Rc), s | | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | | 16.0 | 8.0 | 24.0 | | 16.0 | 6.0 | 26.0 |
| Max Q Clear Time (g_c+I1), s | | 18.0 | 8.5 | 19.6 | | 6.4 | 6.3 | 23.0 |
| Green Ext Time (p_c), s | | 0.0 | 0.0 | 1.6 | | 0.5 | 0.0 | 1.4 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 35.0 |
| HCM 2010 LOS | D |

| Movement | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 10 | 60 | 35 | 130 | 10 | 281 | 15 | 470 | 90 | 231 | 522 | 5 |
| Future Volume (veh/h) | 10 | 60 | 35 | 130 | 10 | 281 | 15 | 470 | 90 | 231 | 522 | 5 |
| Number | 1 | 6 | 16 | 5 | 2 | 12 | 7 | 4 | 14 | 3 | 8 | 18 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1900 | 1863 | 1900 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 13 | 78 | 45 | 141 | 11 | 305 | 17 | 522 | 100 | 266 | 600 | 6 |
| Adj No. of Lanes | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| Peak Hour Factor | 0.77 | 0.77 | 0.77 | 0.92 | 0.92 | 0.92 | 0.90 | 0.90 | 0.90 | 0.87 | 0.87 | 0.87 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 17 | 101 | 58 | 303 | 24 | 564 | 28 | 640 | 544 | 307 | 922 | 9 |
| Arrive On Green | 0.10 | 0.10 | 0.10 | 0.18 | 0.18 | 0.18 | 0.02 | 0.34 | 0.34 | 0.17 | 0.50 | 0.50 |
| Sat Flow, veh/h | 167 | 1005 | 580 | 1651 | 129 | 1583 | 1774 | 1863 | 1583 | 1774 | 1841 | 18 |
| Grp Volume(v), veh/h | 136 | 0 | 0 | 152 | 0 | 305 | 17 | 522 | 100 | 266 | 0 | 606 |
| Grp Sat Flow(s),veh/h/ln | 1752 | 0 | 0 | 1780 | 0 | 1583 | 1774 | 1863 | 1583 | 1774 | 0 | 1859 |
| Q Serve(g_s), s | 6.1 | 0.0 | 0.0 | 6.1 | 0.0 | 12.3 | 0.8 | 20.4 | 3.5 | 11.7 | 0.0 | 19.3 |
| Cycle Q Clear(g_c), s | 6.1 | 0.0 | 0.0 | 6.1 | 0.0 | 12.3 | 0.8 | 20.4 | 3.5 | 11.7 | 0.0 | 19.3 |
| Prop In Lane | 0.10 | | 0.33 | 0.93 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.01 |
| Lane Grp Cap(c), veh/h | 176 | 0 | 0 | 326 | 0 | 564 | 28 | 640 | 544 | 307 | 0 | 931 |
| V/C Ratio(X) | 0.77 | 0.00 | 0.00 | 0.47 | 0.00 | 0.54 | 0.61 | 0.82 | 0.18 | 0.87 | 0.00 | 0.65 |
| Avail Cap(c_a), veh/h | 350 | 0 | 0 | 356 | 0 | 590 | 89 | 640 | 544 | 355 | 0 | 931 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.61 | 0.00 | 0.61 |
| Uniform Delay (d), s/veh | 35.1 | 0.0 | 0.0 | 29.2 | 0.0 | 20.5 | 39.1 | 23.9 | 18.4 | 32.2 | 0.0 | 14.8 |
| Incr Delay (d2), s/veh | 7.1 | 0.0 | 0.0 | 1.0 | 0.0 | 0.9 | 19.5 | 11.0 | 0.7 | 11.9 | 0.0 | 2.2 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 3.3 | 0.0 | 0.0 | 3.1 | 0.0 | 5.5 | 0.5 | 12.4 | 1.7 | 6.7 | 0.0 | 10.3 |
| LnGrp Delay(d),s/veh | 42.2 | 0.0 | 0.0 | 30.2 | 0.0 | 21.4 | 58.7 | 34.9 | 19.1 | 44.1 | 0.0 | 17.0 |
| LnGrp LOS | D | | | C | | C | E | C | B | D | | B |
| Approach Vol, veh/h | | 136 | | | 457 | | | 639 | | | 872 | |
| Approach Delay, s/veh | | 42.2 | | | 24.4 | | | 33.1 | | | 25.2 | |
| Approach LOS | | D | | | C | | | C | | | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | 3 | 4 | | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | | 18.7 | 17.8 | 31.5 | | 12.0 | 5.3 | 44.1 |
| Change Period (Y+Rc), s | | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | | 16.0 | 16.0 | 16.0 | | 16.0 | 4.0 | 28.0 |
| Max Q Clear Time (g_c+I1), s | | 14.3 | 13.7 | 22.4 | | 8.1 | 2.8 | 21.3 |
| Green Ext Time (p_c), s | | 0.4 | 0.2 | 0.0 | | 0.4 | 0.0 | 2.2 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 28.5 |
| HCM 2010 LOS | C |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 350 | 70 | 125 | 40 | 30 | 20 | 122 | 381 | 75 | 30 | 195 | 170 |
| Future Volume (veh/h) | 350 | 70 | 125 | 40 | 30 | 20 | 122 | 381 | 75 | 30 | 195 | 170 |
| Number | 7 | 4 | 14 | 3 | 8 | 18 | 5 | 2 | 12 | 1 | 6 | 16 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1900 | 1900 | 1863 | 1900 | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 432 | 86 | 154 | 49 | 37 | 25 | 151 | 470 | 93 | 37 | 241 | 210 |
| Adj No. of Lanes | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 |
| Peak Hour Factor | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 479 | 162 | 290 | 66 | 50 | 34 | 190 | 556 | 110 | 53 | 542 | 461 |
| Arrive On Green | 0.27 | 0.27 | 0.27 | 0.09 | 0.09 | 0.09 | 0.11 | 0.37 | 0.37 | 0.03 | 0.29 | 0.29 |
| Sat Flow, veh/h | 1774 | 600 | 1074 | 774 | 585 | 395 | 1774 | 1511 | 299 | 1774 | 1863 | 1583 |
| Grp Volume(v), veh/h | 432 | 0 | 240 | 111 | 0 | 0 | 151 | 0 | 563 | 37 | 241 | 210 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 0 | 1673 | 1754 | 0 | 0 | 1774 | 0 | 1810 | 1774 | 1863 | 1583 |
| Q Serve(g_s), s | 15.3 | 0.0 | 7.9 | 4.0 | 0.0 | 0.0 | 5.4 | 0.0 | 18.5 | 1.3 | 6.8 | 7.0 |
| Cycle Q Clear(g_c), s | 15.3 | 0.0 | 7.9 | 4.0 | 0.0 | 0.0 | 5.4 | 0.0 | 18.5 | 1.3 | 6.8 | 7.0 |
| Prop In Lane | 1.00 | | 0.64 | 0.44 | | 0.23 | 1.00 | | 0.17 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 479 | 0 | 451 | 151 | 0 | 0 | 190 | 0 | 666 | 53 | 542 | 461 |
| V/C Ratio(X) | 0.90 | 0.00 | 0.53 | 0.74 | 0.00 | 0.00 | 0.79 | 0.00 | 0.84 | 0.70 | 0.44 | 0.46 |
| Avail Cap(c_a), veh/h | 491 | 0 | 463 | 567 | 0 | 0 | 246 | 0 | 1003 | 109 | 888 | 755 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 22.9 | 0.0 | 20.2 | 29.0 | 0.0 | 0.0 | 28.3 | 0.0 | 18.8 | 31.2 | 18.8 | 18.8 |
| Incr Delay (d2), s/veh | 19.5 | 0.0 | 1.1 | 6.9 | 0.0 | 0.0 | 12.7 | 0.0 | 4.3 | 15.0 | 0.6 | 0.7 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 10.0 | 0.0 | 3.8 | 2.2 | 0.0 | 0.0 | 3.3 | 0.0 | 10.0 | 0.9 | 3.6 | 3.1 |
| LnGrp Delay(d),s/veh | 42.4 | 0.0 | 21.3 | 35.9 | 0.0 | 0.0 | 41.0 | 0.0 | 23.2 | 46.3 | 19.3 | 19.5 |
| LnGrp LOS | D | | C | D | | | D | | C | D | B | B |
| Approach Vol, veh/h | | 672 | | | 111 | | | 714 | | | 488 | |
| Approach Delay, s/veh | | 34.9 | | | 35.9 | | | 26.9 | | | 21.5 | |
| Approach LOS | | C | | | D | | | C | | | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | 5.9 | 27.9 | | 21.5 | 11.0 | 22.9 | | 9.6 |
| Change Period (Y+Rc), s | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 |
| Max Green Setting (Gmax), s | 4.0 | 36.0 | | 18.0 | 9.0 | 31.0 | | 21.0 |
| Max Q Clear Time (g_c+I1), s | 3.3 | 20.5 | | 17.3 | 7.4 | 9.0 | | 6.0 |
| Green Ext Time (p_c), s | 0.0 | 3.4 | | 0.3 | 0.1 | 2.1 | | 0.4 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 28.8 |
| HCM 2010 LOS | C |

Notes

## 1: Taylor Road & Penryn Road Performance by approach

| Approach | EB | WB | NB | SB | All |
|---|---|---|---|---|---|
| Denied Del/Veh (s) | 0.1 | 2.7 | 0.4 | 0.0 | 0.8 |
| Total Del/Veh (s) | 9.8 | 13.4 | 13.3 | 15.5 | 14.0 |

## 2: Taylor Road & N. Penryn Road Performance by approach

| Approach | EB | NB | SB | All |
|---|---|---|---|---|
| Denied Del/Veh (s) | 0.1 | 0.0 | 0.3 | 0.1 |
| Total Del/Veh (s) | 7.0 | 3.0 | 11.6 | 6.1 |

## Total Network Performance

| | |
|---|---|
| Denied Del/Veh (s) | 0.9 |
| Total Del/Veh (s) | 20.8 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.2 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 18 | 33 | 715 | 1 | 11 | 205 |
| Future Vol, veh/h | 18 | 33 | 715 | 1 | 11 | 205 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 81 | 81 | 81 | 81 | 81 | 81 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 22 | 41 | 883 | 1 | 14 | 253 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1165 | 884 | 0 | 0 | 884 | 0 |
| Stage 1 | 884 | - | - | - | - | - |
| Stage 2 | 281 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | 215 | 344 | - | - | 765 | - |
| Stage 1 | 404 | - | - | - | - | - |
| Stage 2 | 767 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 210 | 344 | - | - | 765 | - |
| Mov Cap-2 Maneuver | 210 | - | - | - | - | - |
| Stage 1 | 396 | - | - | - | - | - |
| Stage 2 | 767 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 21.5 | 0 | 0.5 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 281 | 765 | - |
| HCM Lane V/C Ratio | - | - | 0.224 | 0.018 | - |
| HCM Control Delay (s) | - | - | 21.5 | 9.8 | 0 |
| HCM Lane LOS | - | - | C | A | A |
| HCM 95th %tile Q(veh) | - | - | 0.8 | 0.1 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.4 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 5 | 15 | 5 | 15 | 5 | 5 |
| Future Vol, veh/h | 5 | 15 | 5 | 15 | 5 | 5 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 5 | 16 | 5 | 16 | 5 | 5 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 21 | 0 | - | 0 | 39 | 13 |
| Stage 1 | - | - | - | - | 13 | - |
| Stage 2 | - | - | - | - | 26 | - |
| Critical Hdwy | 4.12 | - | - | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | 2.218 | - | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | 1595 | - | - | - | 973 | 1067 |
| Stage 1 | - | - | - | - | 1010 | - |
| Stage 2 | - | - | - | - | 997 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1595 | - | - | - | 970 | 1067 |
| Mov Cap-2 Maneuver | - | - | - | - | 970 | - |
| Stage 1 | - | - | - | - | 1007 | - |
| Stage 2 | - | - | - | - | 997 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 1.8 | 0 | 8.6 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1595 | - | - | - | 1016 |
| HCM Lane V/C Ratio | 0.003 | - | - | - | 0.011 |
| HCM Control Delay (s) | 7.3 | 0 | - | - | 8.6 |
| HCM Lane LOS | A | A | - | - | A |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.5 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 10 | 10 | 15 | 706 | 218 | 5 |
| Future Vol, veh/h | 10 | 10 | 15 | 706 | 218 | 5 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | 0 | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 81 | 81 | 81 | 81 | 81 | 81 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 12 | 12 | 19 | 872 | 269 | 6 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1182 | 272 | 275 | 0 | - | 0 |
| Stage 1 | 272 | - | - | - | - | - |
| Stage 2 | 910 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 210 | 767 | 1288 | - | - | - |
| Stage 1 | 774 | - | - | - | - | - |
| Stage 2 | 393 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 204 | 767 | 1288 | - | - | - |
| Mov Cap-2 Maneuver | 204 | - | - | - | - | - |
| Stage 1 | 752 | - | - | - | - | - |
| Stage 2 | 393 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 16.8 | 0.2 | 0 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1288 | - | 204 | 767 | - | - |
| HCM Lane V/C Ratio | 0.014 | - | 0.061 | 0.016 | - | - |
| HCM Control Delay (s) | 7.8 | 0 | 23.8 | 9.8 | - | - |
| HCM Lane LOS | A | A | C | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 0.2 | 0 | - | - |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 115 | 275 | 230 | 120 | 125 | 75 | 275 | 446 | 345 | 126 | 282 | 110 |
| Future Volume (veh/h) | 115 | 275 | 230 | 120 | 125 | 75 | 275 | 446 | 345 | 126 | 282 | 110 |
| Number | 7 | 4 | 14 | 3 | 8 | 18 | 5 | 2 | 12 | 1 | 6 | 16 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 137 | 327 | 274 | 146 | 152 | 91 | 284 | 460 | 356 | 134 | 300 | 117 |
| Adj No. of Lanes | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 2 | 0 |
| Peak Hour Factor | 0.84 | 0.84 | 0.84 | 0.82 | 0.82 | 0.82 | 0.97 | 0.97 | 0.97 | 0.94 | 0.94 | 0.94 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 270 | 705 | 599 | 178 | 357 | 214 | 344 | 521 | 443 | 131 | 400 | 153 |
| Arrive On Green | 0.15 | 0.38 | 0.38 | 0.10 | 0.33 | 0.33 | 0.19 | 0.28 | 0.28 | 0.07 | 0.16 | 0.16 |
| Sat Flow, veh/h | 1774 | 1863 | 1583 | 1774 | 1093 | 654 | 1774 | 1863 | 1583 | 1774 | 2506 | 957 |
| Grp Volume(v), veh/h | 137 | 327 | 274 | 146 | 0 | 243 | 284 | 460 | 356 | 134 | 210 | 207 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1863 | 1583 | 1774 | 0 | 1747 | 1774 | 1863 | 1583 | 1774 | 1770 | 1694 |
| Q Serve(g_s), s | 6.7 | 12.6 | 6.8 | 7.7 | 0.0 | 10.3 | 14.6 | 22.4 | 14.8 | 7.0 | 10.7 | 11.1 |
| Cycle Q Clear(g_c), s | 6.7 | 12.6 | 6.8 | 7.7 | 0.0 | 10.3 | 14.6 | 22.4 | 14.8 | 7.0 | 10.7 | 11.1 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.37 | 1.00 | | 1.00 | 1.00 | | 0.57 |
| Lane Grp Cap(c), veh/h | 270 | 705 | 599 | 178 | 0 | 570 | 344 | 521 | 443 | 131 | 282 | 270 |
| V/C Ratio(X) | 0.51 | 0.46 | 0.46 | 0.82 | 0.00 | 0.43 | 0.83 | 0.88 | 0.80 | 1.03 | 0.74 | 0.77 |
| Avail Cap(c_a), veh/h | 270 | 705 | 599 | 205 | 0 | 570 | 344 | 588 | 500 | 131 | 484 | 464 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 37.0 | 22.3 | 6.8 | 41.9 | 0.0 | 25.0 | 36.8 | 32.7 | 17.6 | 44.0 | 38.1 | 38.2 |
| Incr Delay (d2), s/veh | 1.6 | 2.2 | 2.5 | 20.4 | 0.0 | 2.3 | 15.2 | 13.7 | 8.4 | 85.5 | 3.9 | 4.5 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 3.4 | 6.9 | 3.4 | 4.8 | 0.0 | 5.4 | 8.6 | 13.5 | 7.5 | 6.5 | 5.6 | 5.5 |
| LnGrp Delay(d),s/veh | 38.6 | 24.5 | 9.3 | 62.3 | 0.0 | 27.4 | 52.0 | 46.4 | 26.0 | 129.9 | 42.0 | 42.8 |
| LnGrp LOS | D | C | A | E | | C | D | D | C | F | D | D |
| Approach Vol, veh/h | | 738 | | | 389 | | | 1100 | | | 551 | |
| Approach Delay, s/veh | | 21.4 | | | 40.5 | | | 41.2 | | | 63.6 | |
| Approach LOS | | C | | | D | | | D | | | E | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | 11.0 | 30.6 | 13.5 | 39.9 | 22.4 | 19.1 | 18.4 | 35.0 |
| Change Period (Y+Rc), s | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | 7.0 | 30.0 | 11.0 | 31.0 | 11.0 | 26.0 | 11.0 | 31.0 |
| Max Q Clear Time (g_c+I1), s | 9.0 | 24.4 | 9.7 | 14.6 | 16.6 | 13.1 | 8.7 | 12.3 |
| Green Ext Time (p_c), s | 0.0 | 2.1 | 0.0 | 2.7 | 0.0 | 2.0 | 0.1 | 1.3 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 40.3 |
| HCM 2010 LOS | D |

| Movement | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 10 | 55 | 160 | 5 | 25 | 390 | 115 | 686 | 35 | 170 | 502 | 45 |
| Future Volume (veh/h) | 10 | 55 | 160 | 5 | 25 | 390 | 115 | 686 | 35 | 170 | 502 | 45 |
| Number | 1 | 6 | 16 | 5 | 2 | 12 | 7 | 4 | 14 | 3 | 8 | 18 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1900 | 1863 | 1900 | 1900 | 1863 | 1900 | 1863 | 1863 | 1900 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 12 | 65 | 190 | 6 | 30 | 476 | 119 | 707 | 36 | 181 | 534 | 48 |
| Adj No. of Lanes | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 |
| Peak Hour Factor | 0.84 | 0.84 | 0.84 | 0.82 | 0.82 | 0.82 | 0.97 | 0.97 | 0.97 | 0.94 | 0.94 | 0.94 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 71 | 123 | 325 | 62 | 28 | 396 | 152 | 716 | 36 | 224 | 754 | 68 |
| Arrive On Green | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.09 | 0.41 | 0.41 | 0.13 | 0.45 | 0.45 |
| Sat Flow, veh/h | 32 | 462 | 1219 | 6 | 107 | 1485 | 1774 | 1757 | 89 | 1774 | 1685 | 151 |
| Grp Volume(v), veh/h | 267 | 0 | 0 | 512 | 0 | 0 | 119 | 0 | 743 | 181 | 0 | 582 |
| Grp Sat Flow(s),veh/h/ln | 1713 | 0 | 0 | 1597 | 0 | 0 | 1774 | 0 | 1847 | 1774 | 0 | 1836 |
| Q Serve(g_s), s | 0.0 | 0.0 | 0.0 | 4.9 | 0.0 | 0.0 | 3.9 | 0.0 | 23.9 | 6.0 | 0.0 | 15.4 |
| Cycle Q Clear(g_c), s | 8.5 | 0.0 | 0.0 | 16.0 | 0.0 | 0.0 | 3.9 | 0.0 | 23.9 | 6.0 | 0.0 | 15.4 |
| Prop In Lane | 0.04 | | 0.71 | 0.01 | | 0.93 | 1.00 | | 0.05 | 1.00 | | 0.08 |
| Lane Grp Cap(c), veh/h | 520 | 0 | 0 | 487 | 0 | 0 | 152 | 0 | 752 | 224 | 0 | 822 |
| V/C Ratio(X) | 0.51 | 0.00 | 0.00 | 1.05 | 0.00 | 0.00 | 0.78 | 0.00 | 0.99 | 0.81 | 0.00 | 0.71 |
| Avail Cap(c_a), veh/h | 520 | 0 | 0 | 487 | 0 | 0 | 177 | 0 | 752 | 237 | 0 | 822 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.56 | 0.00 | 0.56 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 19.2 | 0.0 | 0.0 | 23.0 | 0.0 | 0.0 | 26.9 | 0.0 | 17.6 | 25.5 | 0.0 | 13.4 |
| Incr Delay (d2), s/veh | 0.9 | 0.0 | 0.0 | 55.2 | 0.0 | 0.0 | 10.6 | 0.0 | 21.8 | 17.8 | 0.0 | 5.1 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 4.0 | 0.0 | 0.0 | 15.4 | 0.0 | 0.0 | 2.4 | 0.0 | 16.5 | 4.0 | 0.0 | 8.9 |
| LnGrp Delay(d),s/veh | 20.1 | 0.0 | 0.0 | 78.2 | 0.0 | 0.0 | 37.5 | 0.0 | 39.5 | 43.3 | 0.0 | 18.5 |
| LnGrp LOS | C | | | F | | | D | | D | D | | B |
| Approach Vol, veh/h | | 267 | | | 512 | | | 862 | | | 763 | |
| Approach Delay, s/veh | | 20.1 | | | 78.2 | | | 39.2 | | | 24.4 | |
| Approach LOS | | C | | | E | | | D | | | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | 3 | 4 | | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | | 20.0 | 11.6 | 28.4 | | 20.0 | 9.1 | 30.9 |
| Change Period (Y+Rc), s | | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | | 16.0 | 8.0 | 24.0 | | 16.0 | 6.0 | 26.0 |
| Max Q Clear Time (g_c+I1), s | | 18.0 | 8.0 | 25.9 | | 10.5 | 5.9 | 17.4 |
| Green Ext Time (p_c), s | | 0.0 | 0.0 | 0.0 | | 0.7 | 0.0 | 2.5 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 40.7 |
| HCM 2010 LOS | D |

| Movement | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 15 | 25 | 25 | 190 | 10 | 325 | 25 | 550 | 140 | 222 | 469 | 10 |
| Future Volume (veh/h) | 15 | 25 | 25 | 190 | 10 | 325 | 25 | 550 | 140 | 222 | 469 | 10 |
| Number | 1 | 6 | 16 | 5 | 2 | 12 | 7 | 4 | 14 | 3 | 8 | 18 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1900 | 1863 | 1900 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 19 | 32 | 32 | 207 | 11 | 353 | 28 | 611 | 156 | 255 | 539 | 11 |
| Adj No. of Lanes | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| Peak Hour Factor | 0.77 | 0.77 | 0.77 | 0.92 | 0.92 | 0.92 | 0.90 | 0.90 | 0.90 | 0.87 | 0.87 | 0.87 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 25 | 42 | 42 | 338 | 18 | 581 | 41 | 689 | 586 | 296 | 934 | 19 |
| Arrive On Green | 0.06 | 0.06 | 0.06 | 0.20 | 0.20 | 0.20 | 0.02 | 0.37 | 0.37 | 0.17 | 0.51 | 0.51 |
| Sat Flow, veh/h | 395 | 665 | 665 | 1689 | 90 | 1583 | 1774 | 1863 | 1583 | 1774 | 1819 | 37 |
| Grp Volume(v), veh/h | 83 | 0 | 0 | 218 | 0 | 353 | 28 | 611 | 156 | 255 | 0 | 550 |
| Grp Sat Flow(s),veh/h/ln | 1726 | 0 | 0 | 1778 | 0 | 1583 | 1774 | 1863 | 1583 | 1774 | 0 | 1856 |
| Q Serve(g_s), s | 3.8 | 0.0 | 0.0 | 8.9 | 0.0 | 14.5 | 1.3 | 24.6 | 5.5 | 11.2 | 0.0 | 16.4 |
| Cycle Q Clear(g_c), s | 3.8 | 0.0 | 0.0 | 8.9 | 0.0 | 14.5 | 1.3 | 24.6 | 5.5 | 11.2 | 0.0 | 16.4 |
| Prop In Lane | 0.23 | | 0.39 | 0.95 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.02 |
| Lane Grp Cap(c), veh/h | 109 | 0 | 0 | 356 | 0 | 581 | 41 | 689 | 586 | 296 | 0 | 953 |
| V/C Ratio(X) | 0.76 | 0.00 | 0.00 | 0.61 | 0.00 | 0.61 | 0.68 | 0.89 | 0.27 | 0.86 | 0.00 | 0.58 |
| Avail Cap(c_a), veh/h | 345 | 0 | 0 | 356 | 0 | 581 | 89 | 689 | 586 | 355 | 0 | 953 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.75 | 0.00 | 0.75 |
| Uniform Delay (d), s/veh | 36.9 | 0.0 | 0.0 | 29.2 | 0.0 | 20.6 | 38.8 | 23.6 | 17.6 | 32.4 | 0.0 | 13.4 |
| Incr Delay (d2), s/veh | 10.3 | 0.0 | 0.0 | 3.1 | 0.0 | 1.8 | 18.0 | 15.7 | 1.1 | 13.0 | 0.0 | 1.9 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 2.1 | 0.0 | 0.0 | 4.7 | 0.0 | 6.6 | 0.8 | 15.6 | 2.6 | 6.5 | 0.0 | 8.9 |
| LnGrp Delay(d),s/veh | 47.2 | 0.0 | 0.0 | 32.3 | 0.0 | 22.5 | 56.8 | 39.3 | 18.7 | 45.4 | 0.0 | 15.3 |
| LnGrp LOS | D | | | C | | C | E | D | B | D | | B |
| Approach Vol, veh/h | | 83 | | | 571 | | | 795 | | | 805 | |
| Approach Delay, s/veh | | 47.2 | | | 26.2 | | | 35.9 | | | 24.9 | |
| Approach LOS | | D | | | C | | | D | | | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | 3 | 4 | | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | | 20.0 | 17.4 | 33.6 | | 9.1 | 5.9 | 45.1 |
| Change Period (Y+Rc), s | | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | | 16.0 | 16.0 | 16.0 | | 16.0 | 4.0 | 28.0 |
| Max Q Clear Time (g_c+I1), s | | 16.5 | 13.2 | 26.6 | | 5.8 | 3.3 | 18.4 |
| Green Ext Time (p_c), s | | 0.0 | 0.2 | 0.0 | | 0.2 | 0.0 | 2.5 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 29.9 |
| HCM 2010 LOS | C |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 350 | 70 | 140 | 40 | 30 | 20 | 122 | 381 | 75 | 30 | 198 | 170 |
| Future Volume (veh/h) | 350 | 70 | 140 | 40 | 30 | 20 | 122 | 381 | 75 | 30 | 198 | 170 |
| Number | 7 | 4 | 14 | 3 | 8 | 18 | 5 | 2 | 12 | 1 | 6 | 16 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1900 | 1900 | 1863 | 1900 | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 432 | 86 | 173 | 49 | 37 | 25 | 151 | 470 | 93 | 37 | 244 | 210 |
| Adj No. of Lanes | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 |
| Peak Hour Factor | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 479 | 149 | 300 | 66 | 50 | 34 | 190 | 556 | 110 | 53 | 542 | 461 |
| Arrive On Green | 0.27 | 0.27 | 0.27 | 0.09 | 0.09 | 0.09 | 0.11 | 0.37 | 0.37 | 0.03 | 0.29 | 0.29 |
| Sat Flow, veh/h | 1774 | 553 | 1113 | 774 | 585 | 395 | 1774 | 1511 | 299 | 1774 | 1863 | 1583 |
| Grp Volume(v), veh/h | 432 | 0 | 259 | 111 | 0 | 0 | 151 | 0 | 563 | 37 | 244 | 210 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 0 | 1666 | 1754 | 0 | 0 | 1774 | 0 | 1810 | 1774 | 1863 | 1583 |
| Q Serve(g_s), s | 15.3 | 0.0 | 8.7 | 4.0 | 0.0 | 0.0 | 5.4 | 0.0 | 18.5 | 1.3 | 6.9 | 7.0 |
| Cycle Q Clear(g_c), s | 15.3 | 0.0 | 8.7 | 4.0 | 0.0 | 0.0 | 5.4 | 0.0 | 18.5 | 1.3 | 6.9 | 7.0 |
| Prop In Lane | 1.00 | | 0.67 | 0.44 | | 0.23 | 1.00 | | 0.17 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 479 | 0 | 450 | 151 | 0 | 0 | 190 | 0 | 666 | 53 | 542 | 461 |
| V/C Ratio(X) | 0.90 | 0.00 | 0.58 | 0.74 | 0.00 | 0.00 | 0.79 | 0.00 | 0.84 | 0.70 | 0.45 | 0.46 |
| Avail Cap(c_a), veh/h | 491 | 0 | 461 | 567 | 0 | 0 | 246 | 0 | 1002 | 109 | 888 | 755 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 22.9 | 0.0 | 20.5 | 29.0 | 0.0 | 0.0 | 28.3 | 0.0 | 18.8 | 31.2 | 18.8 | 18.8 |
| Incr Delay (d2), s/veh | 19.5 | 0.0 | 1.7 | 6.9 | 0.0 | 0.0 | 12.7 | 0.0 | 4.3 | 15.0 | 0.6 | 0.7 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 10.0 | 0.0 | 4.2 | 2.2 | 0.0 | 0.0 | 3.3 | 0.0 | 10.0 | 0.9 | 3.6 | 3.1 |
| LnGrp Delay(d),s/veh | 42.4 | 0.0 | 22.2 | 35.9 | 0.0 | 0.0 | 41.0 | 0.0 | 23.2 | 46.3 | 19.4 | 19.5 |
| LnGrp LOS | D | | C | D | | | D | | C | D | B | B |
| Approach Vol, veh/h | | 691 | | | 111 | | | 714 | | | 491 | |
| Approach Delay, s/veh | | 34.8 | | | 35.9 | | | 26.9 | | | 21.5 | |
| Approach LOS | | C | | | D | | | C | | | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | 5.9 | 27.9 | | 21.5 | 11.0 | 22.9 | | 9.6 |
| Change Period (Y+Rc), s | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 |
| Max Green Setting (Gmax), s | 4.0 | 36.0 | | 18.0 | 9.0 | 31.0 | | 21.0 |
| Max Q Clear Time (g_c+I1), s | 3.3 | 20.5 | | 17.3 | 7.4 | 9.0 | | 6.0 |
| Green Ext Time (p_c), s | 0.0 | 3.4 | | 0.3 | 0.1 | 2.1 | | 0.4 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 28.8 |
| HCM 2010 LOS | C |

Notes

## 1: Taylor Road & Penryn Road Performance by approach

| Approach | EB | WB | NB | SB | All |
|---|---|---|---|---|---|
| Denied Del/Veh (s) | 0.1 | 2.5 | 0.4 | 0.0 | 0.8 |
| Total Del/Veh (s) | 12.8 | 14.7 | 14.1 | 15.6 | 14.8 |

## 2: Taylor Road & N. Penryn Road Performance by approach

| Approach | EB | NB | SB | All |
|---|---|---|---|---|
| Denied Del/Veh (s) | 0.1 | 0.0 | 0.3 | 0.1 |
| Total Del/Veh (s) | 4.1 | 3.0 | 11.1 | 5.9 |

## Total Network Performance

| | |
|---|---|
| Denied Del/Veh (s) | 0.9 |
| Total Del/Veh (s) | 21.3 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.7 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 17 | 34 | 715 | 41 | 51 | 205 |
| Future Vol, veh/h | 17 | 34 | 715 | 41 | 51 | 205 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 81 | 81 | 81 | 81 | 81 | 81 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 21 | 42 | 883 | 51 | 63 | 253 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1288 | 909 | 0 | 0 | 934 | 0 |
| Stage 1 | 909 | - | - | - | - | - |
| Stage 2 | 379 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | 181 | 333 | - | - | 733 | - |
| Stage 1 | 393 | - | - | - | - | - |
| Stage 2 | 692 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 163 | 333 | - | - | 733 | - |
| Mov Cap-2 Maneuver | 163 | - | - | - | - | - |
| Stage 1 | 354 | - | - | - | - | - |
| Stage 2 | 692 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 24.5 | 0 | 2.1 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 247 | 733 | - |
| HCM Lane V/C Ratio | - | - | 0.255 | 0.086 | - |
| HCM Control Delay (s) | - | - | 24.5 | 10.4 | 0 |
| HCM Lane LOS | - | - | C | B | A |
| HCM 95th %tile Q(veh) | - | - | 1 | 0.3 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.4 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 5 | 15 | 5 | 15 | 5 | 5 |
| Future Vol, veh/h | 5 | 15 | 5 | 15 | 5 | 5 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 5 | 16 | 5 | 16 | 5 | 5 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 21 | 0 | - | 0 | 39 | 13 |
| Stage 1 | - | - | - | - | 13 | - |
| Stage 2 | - | - | - | - | 26 | - |
| Critical Hdwy | 4.12 | - | - | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | 2.218 | - | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | 1595 | - | - | - | 973 | 1067 |
| Stage 1 | - | - | - | - | 1010 | - |
| Stage 2 | - | - | - | - | 997 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1595 | - | - | - | 970 | 1067 |
| Mov Cap-2 Maneuver | - | - | - | - | 970 | - |
| Stage 1 | - | - | - | - | 1007 | - |
| Stage 2 | - | - | - | - | 997 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 1.8 | 0 | 8.6 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1595 | - | - | - | 1016 |
| HCM Lane V/C Ratio | 0.003 | - | - | - | 0.011 |
| HCM Control Delay (s) | 7.3 | 0 | - | - | 8.6 |
| HCM Lane LOS | A | A | - | - | A |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.5 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 10 | 10 | 15 | 746 | 217 | 5 |
| Future Vol, veh/h | 10 | 10 | 15 | 746 | 217 | 5 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | 0 | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 81 | 81 | 81 | 81 | 81 | 81 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 12 | 12 | 19 | 921 | 268 | 6 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1230 | 271 | 274 | 0 | - | 0 |
| Stage 1 | 271 | - | - | - | - | - |
| Stage 2 | 959 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 196 | 768 | 1289 | - | - | - |
| Stage 1 | 775 | - | - | - | - | - |
| Stage 2 | 372 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 190 | 768 | 1289 | - | - | - |
| Mov Cap-2 Maneuver | 190 | - | - | - | - | - |
| Stage 1 | 752 | - | - | - | - | - |
| Stage 2 | 372 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 17.6 | 0.2 | 0 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1289 | - | 190 | 768 | - | - |
| HCM Lane V/C Ratio | 0.014 | - | 0.065 | 0.016 | - | - |
| HCM Control Delay (s) | 7.8 | 0 | 25.3 | 9.8 | - | - |
| HCM Lane LOS | A | A | D | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 0.2 | 0 | - | - |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 115 | 275 | 230 | 120 | 125 | 78 | 275 | 482 | 345 | 127 | 280 | 110 |
| Future Volume (veh/h) | 115 | 275 | 230 | 120 | 125 | 78 | 275 | 482 | 345 | 127 | 280 | 110 |
| Number | 7 | 4 | 14 | 3 | 8 | 18 | 5 | 2 | 12 | 1 | 6 | 16 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 137 | 327 | 274 | 146 | 152 | 95 | 284 | 497 | 356 | 135 | 298 | 117 |
| Adj No. of Lanes | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 2 | 0 |
| Peak Hour Factor | 0.84 | 0.84 | 0.84 | 0.82 | 0.82 | 0.82 | 0.97 | 0.97 | 0.97 | 0.94 | 0.94 | 0.94 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 243 | 677 | 575 | 178 | 350 | 219 | 371 | 549 | 466 | 131 | 397 | 153 |
| Arrive On Green | 0.14 | 0.36 | 0.36 | 0.10 | 0.33 | 0.33 | 0.21 | 0.29 | 0.29 | 0.07 | 0.16 | 0.16 |
| Sat Flow, veh/h | 1774 | 1863 | 1583 | 1774 | 1073 | 671 | 1774 | 1863 | 1583 | 1774 | 2501 | 961 |
| Grp Volume(v), veh/h | 137 | 327 | 274 | 146 | 0 | 247 | 284 | 497 | 356 | 135 | 209 | 206 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1863 | 1583 | 1774 | 0 | 1744 | 1774 | 1863 | 1583 | 1774 | 1770 | 1693 |
| Q Serve(g_s), s | 6.9 | 12.9 | 6.8 | 7.7 | 0.0 | 10.6 | 14.3 | 24.4 | 14.4 | 7.0 | 10.7 | 11.1 |
| Cycle Q Clear(g_c), s | 6.9 | 12.9 | 6.8 | 7.7 | 0.0 | 10.6 | 14.3 | 24.4 | 14.4 | 7.0 | 10.7 | 11.1 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.38 | 1.00 | | 1.00 | 1.00 | | 0.57 |
| Lane Grp Cap(c), veh/h | 243 | 677 | 575 | 178 | 0 | 569 | 371 | 549 | 466 | 131 | 281 | 269 |
| V/C Ratio(X) | 0.56 | 0.48 | 0.48 | 0.82 | 0.00 | 0.43 | 0.76 | 0.91 | 0.76 | 1.03 | 0.74 | 0.77 |
| Avail Cap(c_a), veh/h | 243 | 677 | 575 | 205 | 0 | 569 | 371 | 588 | 500 | 131 | 484 | 463 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 38.3 | 23.4 | 6.8 | 41.9 | 0.0 | 25.1 | 35.4 | 32.2 | 16.6 | 44.0 | 38.1 | 38.3 |
| Incr Delay (d2), s/veh | 3.0 | 2.5 | 2.8 | 20.4 | 0.0 | 2.4 | 9.2 | 17.1 | 6.4 | 87.7 | 3.9 | 4.5 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 3.5 | 7.1 | 3.4 | 4.8 | 0.0 | 5.5 | 8.0 | 15.2 | 7.1 | 6.6 | 5.5 | 5.5 |
| LnGrp Delay(d),s/veh | 41.3 | 25.8 | 9.6 | 62.3 | 0.0 | 27.5 | 44.5 | 49.3 | 23.1 | 132.1 | 42.0 | 42.8 |
| LnGrp LOS | D | C | A | E | | C | D | D | C | F | D | D |
| Approach Vol, veh/h | | 738 | | | 393 | | | 1137 | | | 550 | |
| Approach Delay, s/veh | | 22.7 | | | 40.5 | | | 39.9 | | | 64.4 | |
| Approach LOS | | C | | | D | | | D | | | E | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | 11.0 | 32.0 | 13.5 | 38.5 | 23.9 | 19.1 | 17.0 | 35.0 |
| Change Period (Y+Rc), s | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | 7.0 | 30.0 | 11.0 | 31.0 | 11.0 | 26.0 | 11.0 | 31.0 |
| Max Q Clear Time (g_c+I1), s | 9.0 | 26.4 | 9.7 | 14.9 | 16.3 | 13.1 | 8.9 | 12.6 |
| Green Ext Time (p_c), s | 0.0 | 1.6 | 0.0 | 2.7 | 0.0 | 2.0 | 0.1 | 1.3 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 40.2 |
| HCM 2010 LOS | D |

| Movement | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 10 | 55 | 160 | 5 | 25 | 390 | 115 | 722 | 35 | 170 | 500 | 45 |
| Future Volume (veh/h) | 10 | 55 | 160 | 5 | 25 | 390 | 115 | 722 | 35 | 170 | 500 | 45 |
| Number | 1 | 6 | 16 | 5 | 2 | 12 | 7 | 4 | 14 | 3 | 8 | 18 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1900 | 1863 | 1900 | 1900 | 1863 | 1900 | 1863 | 1863 | 1900 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 12 | 65 | 190 | 6 | 30 | 476 | 119 | 744 | 36 | 181 | 532 | 48 |
| Adj No. of Lanes | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 |
| Peak Hour Factor | 0.84 | 0.84 | 0.84 | 0.82 | 0.82 | 0.82 | 0.97 | 0.97 | 0.97 | 0.94 | 0.94 | 0.94 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 71 | 123 | 325 | 62 | 28 | 396 | 152 | 718 | 35 | 224 | 754 | 68 |
| Arrive On Green | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.09 | 0.41 | 0.41 | 0.13 | 0.45 | 0.45 |
| Sat Flow, veh/h | 32 | 462 | 1219 | 6 | 107 | 1485 | 1774 | 1762 | 85 | 1774 | 1684 | 152 |
| Grp Volume(v), veh/h | 267 | 0 | 0 | 512 | 0 | 0 | 119 | 0 | 780 | 181 | 0 | 580 |
| Grp Sat Flow(s),veh/h/ln | 1713 | 0 | 0 | 1597 | 0 | 0 | 1774 | 0 | 1848 | 1774 | 0 | 1836 |
| Q Serve(g_s), s | 0.0 | 0.0 | 0.0 | 4.9 | 0.0 | 0.0 | 3.9 | 0.0 | 24.4 | 6.0 | 0.0 | 15.3 |
| Cycle Q Clear(g_c), s | 8.5 | 0.0 | 0.0 | 16.0 | 0.0 | 0.0 | 3.9 | 0.0 | 24.4 | 6.0 | 0.0 | 15.3 |
| Prop In Lane | 0.04 | | 0.71 | 0.01 | | 0.93 | 1.00 | | 0.05 | 1.00 | | 0.08 |
| Lane Grp Cap(c), veh/h | 520 | 0 | 0 | 487 | 0 | 0 | 152 | 0 | 752 | 224 | 0 | 822 |
| V/C Ratio(X) | 0.51 | 0.00 | 0.00 | 1.05 | 0.00 | 0.00 | 0.78 | 0.00 | 1.04 | 0.81 | 0.00 | 0.71 |
| Avail Cap(c_a), veh/h | 520 | 0 | 0 | 487 | 0 | 0 | 177 | 0 | 752 | 237 | 0 | 822 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.54 | 0.00 | 0.54 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 19.2 | 0.0 | 0.0 | 23.0 | 0.0 | 0.0 | 26.9 | 0.0 | 17.8 | 25.5 | 0.0 | 13.4 |
| Incr Delay (d2), s/veh | 0.9 | 0.0 | 0.0 | 55.2 | 0.0 | 0.0 | 10.3 | 0.0 | 34.3 | 17.8 | 0.0 | 5.0 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 4.0 | 0.0 | 0.0 | 15.4 | 0.0 | 0.0 | 2.4 | 0.0 | 19.5 | 4.0 | 0.0 | 8.9 |
| LnGrp Delay(d),s/veh | 20.1 | 0.0 | 0.0 | 78.2 | 0.0 | 0.0 | 37.2 | 0.0 | 52.1 | 43.3 | 0.0 | 18.4 |
| LnGrp LOS | C | | | F | | | D | | F | D | | B |
| Approach Vol, veh/h | | 267 | | | 512 | | | 899 | | | 761 | |
| Approach Delay, s/veh | | 20.1 | | | 78.2 | | | 50.1 | | | 24.3 | |
| Approach LOS | | C | | | E | | | D | | | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | 3 | 4 | | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | | 20.0 | 11.6 | 28.4 | | 20.0 | 9.1 | 30.9 |
| Change Period (Y+Rc), s | | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | | 16.0 | 8.0 | 24.0 | | 16.0 | 6.0 | 26.0 |
| Max Q Clear Time (g_c+I1), s | | 18.0 | 8.0 | 26.4 | | 10.5 | 5.9 | 17.3 |
| Green Ext Time (p_c), s | | 0.0 | 0.0 | 0.0 | | 0.7 | 0.0 | 2.5 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 44.7 |
| HCM 2010 LOS | D |

| Movement | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 15 | 25 | 25 | 190 | 10 | 356 | 25 | 557 | 140 | 222 | 468 | 10 |
| Future Volume (veh/h) | 15 | 25 | 25 | 190 | 10 | 356 | 25 | 557 | 140 | 222 | 468 | 10 |
| Number | 1 | 6 | 16 | 5 | 2 | 12 | 7 | 4 | 14 | 3 | 8 | 18 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1900 | 1863 | 1900 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 19 | 32 | 32 | 207 | 11 | 387 | 28 | 619 | 156 | 255 | 538 | 11 |
| Adj No. of Lanes | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| Peak Hour Factor | 0.77 | 0.77 | 0.77 | 0.92 | 0.92 | 0.92 | 0.90 | 0.90 | 0.90 | 0.87 | 0.87 | 0.87 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 25 | 42 | 42 | 338 | 18 | 581 | 41 | 689 | 586 | 296 | 934 | 19 |
| Arrive On Green | 0.06 | 0.06 | 0.06 | 0.20 | 0.20 | 0.20 | 0.02 | 0.37 | 0.37 | 0.17 | 0.51 | 0.51 |
| Sat Flow, veh/h | 395 | 665 | 665 | 1689 | 90 | 1583 | 1774 | 1863 | 1583 | 1774 | 1819 | 37 |
| Grp Volume(v), veh/h | 83 | 0 | 0 | 218 | 0 | 387 | 28 | 619 | 156 | 255 | 0 | 549 |
| Grp Sat Flow(s),veh/h/ln | 1726 | 0 | 0 | 1778 | 0 | 1583 | 1774 | 1863 | 1583 | 1774 | 0 | 1856 |
| Q Serve(g_s), s | 3.8 | 0.0 | 0.0 | 8.9 | 0.0 | 16.0 | 1.3 | 25.1 | 5.5 | 11.2 | 0.0 | 16.3 |
| Cycle Q Clear(g_c), s | 3.8 | 0.0 | 0.0 | 8.9 | 0.0 | 16.0 | 1.3 | 25.1 | 5.5 | 11.2 | 0.0 | 16.3 |
| Prop In Lane | 0.23 | | 0.39 | 0.95 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.02 |
| Lane Grp Cap(c), veh/h | 109 | 0 | 0 | 356 | 0 | 581 | 41 | 689 | 586 | 296 | 0 | 953 |
| V/C Ratio(X) | 0.76 | 0.00 | 0.00 | 0.61 | 0.00 | 0.67 | 0.68 | 0.90 | 0.27 | 0.86 | 0.00 | 0.58 |
| Avail Cap(c_a), veh/h | 345 | 0 | 0 | 356 | 0 | 581 | 89 | 689 | 586 | 355 | 0 | 953 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.74 | 0.00 | 0.74 |
| Uniform Delay (d), s/veh | 36.9 | 0.0 | 0.0 | 29.2 | 0.0 | 21.2 | 38.8 | 23.8 | 17.6 | 32.4 | 0.0 | 13.4 |
| Incr Delay (d2), s/veh | 10.3 | 0.0 | 0.0 | 3.1 | 0.0 | 2.9 | 18.0 | 16.9 | 1.1 | 13.0 | 0.0 | 1.9 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 2.1 | 0.0 | 0.0 | 4.7 | 0.0 | 7.6 | 0.8 | 16.1 | 2.6 | 6.5 | 0.0 | 8.7 |
| LnGrp Delay(d),s/veh | 47.2 | 0.0 | 0.0 | 32.3 | 0.0 | 24.1 | 56.8 | 40.7 | 18.7 | 45.4 | 0.0 | 15.3 |
| LnGrp LOS | D | | | C | | C | E | D | B | D | | B |
| Approach Vol, veh/h | | 83 | | | 605 | | | 803 | | | 804 | |
| Approach Delay, s/veh | | 47.2 | | | 27.1 | | | 37.0 | | | 24.9 | |
| Approach LOS | | D | | | C | | | D | | | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | 3 | 4 | | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | | 20.0 | 17.4 | 33.6 | | 9.1 | 5.9 | 45.1 |
| Change Period (Y+Rc), s | | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | | 16.0 | 16.0 | 16.0 | | 16.0 | 4.0 | 28.0 |
| Max Q Clear Time (g_c+I1), s | | 18.0 | 13.2 | 27.1 | | 5.8 | 3.3 | 18.3 |
| Green Ext Time (p_c), s | | 0.0 | 0.2 | 0.0 | | 0.2 | 0.0 | 2.5 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 30.5 |
| HCM 2010 LOS | C |

# TECHNICAL APPENDIX 3 of 3

**FOR**

**UNITED AUBURN INDIAN COMMUNITY SCHOOL PROJECT**
**TRAFFIC IMPACT ANALYSIS**
Placer County, CA

Prepared For:

**RANEY PLANNING & MANAGEMENT**
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Prepared By:

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June 25, 2018

5765-21

| Lane Group | EBL | EBT | WBT | NBL | NBT | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 188 | 268 | 219 | 156 | 250 | 12 | 594 | 381 |
| v/c Ratio | 0.56 | 0.43 | 0.83 | 0.78 | 0.25 | 0.09 | 0.83 | 0.45 |
| Control Delay | 24.0 | 5.2 | 45.1 | 56.7 | 8.9 | 27.7 | 29.3 | 3.8 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 24.0 | 5.2 | 45.1 | 56.7 | 8.9 | 27.7 | 29.3 | 3.8 |
| Queue Length 50th (ft) | 53 | 3 | 64 | 52 | 34 | 4 | 170 | 0 |
| Queue Length 95th (ft) | 90 | 32 | #121 | #127 | 89 | 16 | #298 | 30 |
| Internal Link Dist (ft) | | 824 | 534 | | 328 | | 282 | |
| Turn Bay Length (ft) | | | | 125 | | 120 | | |
| Base Capacity (vph) | 457 | 762 | 356 | 200 | 1003 | 133 | 774 | 880 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.41 | 0.35 | 0.62 | 0.78 | 0.25 | 0.09 | 0.77 | 0.43 |

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (veh/h) | 150 | 10 | 205 | 115 | 40 | 20 | 125 | 175 | 25 | 10 | 475 | 305 |
| Number | 7 | 4 | 14 | 3 | 8 | 18 | 5 | 2 | 12 | 1 | 6 | 16 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1900 | 1900 | 1863 | 1900 | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 188 | 12 | 194 | 144 | 50 | 25 | 156 | 219 | 31 | 12 | 594 | 381 |
| Adj No. of Lanes | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 |
| Peak Hour Factor | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 512 | 28 | 449 | 279 | 90 | 33 | 196 | 747 | 106 | 22 | 689 | 586 |
| Arrive On Green | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.11 | 0.47 | 0.47 | 0.01 | 0.37 | 0.37 |
| Sat Flow, veh/h | 1319 | 93 | 1504 | 568 | 301 | 112 | 1774 | 1597 | 226 | 1774 | 1863 | 1583 |
| Grp Volume(v), veh/h | 188 | 0 | 206 | 219 | 0 | 0 | 156 | 0 | 250 | 12 | 594 | 381 |
| Grp Sat Flow(s),veh/h/ln | 1319 | 0 | 1597 | 980 | 0 | 0 | 1774 | 0 | 1823 | 1774 | 1863 | 1583 |
| Q Serve(g_s), s | 0.0 | 0.0 | 5.6 | 7.0 | 0.0 | 0.0 | 4.7 | 0.0 | 4.6 | 0.4 | 16.0 | 10.8 |
| Cycle Q Clear(g_c), s | 6.7 | 0.0 | 5.6 | 12.6 | 0.0 | 0.0 | 4.7 | 0.0 | 4.6 | 0.4 | 16.0 | 10.8 |
| Prop In Lane | 1.00 | | 0.94 | 0.66 | | 0.11 | 1.00 | | 0.12 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 512 | 0 | 477 | 403 | 0 | 0 | 196 | 0 | 853 | 22 | 689 | 586 |
| V/C Ratio(X) | 0.37 | 0.00 | 0.43 | 0.54 | 0.00 | 0.00 | 0.80 | 0.00 | 0.29 | 0.55 | 0.86 | 0.65 |
| Avail Cap(c_a), veh/h | 603 | 0 | 588 | 494 | 0 | 0 | 196 | 0 | 853 | 131 | 754 | 641 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 15.7 | 0.0 | 15.3 | 19.0 | 0.0 | 0.0 | 23.6 | 0.0 | 8.9 | 26.7 | 15.8 | 14.2 |
| Incr Delay (d2), s/veh | 0.4 | 0.0 | 0.6 | 1.1 | 0.0 | 0.0 | 20.0 | 0.0 | 0.2 | 20.3 | 9.5 | 2.1 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 2.4 | 0.0 | 2.5 | 3.2 | 0.0 | 0.0 | 3.3 | 0.0 | 2.3 | 0.3 | 9.9 | 5.0 |
| LnGrp Delay(d),s/veh | 16.2 | 0.0 | 15.9 | 20.2 | 0.0 | 0.0 | 43.6 | 0.0 | 9.1 | 47.0 | 25.3 | 16.3 |
| LnGrp LOS | B | | B | C | | | D | | A | D | C | B |
| Approach Vol, veh/h | | 394 | | | 219 | | | 406 | | | 987 | |
| Approach Delay, s/veh | | 16.0 | | | 20.2 | | | 22.4 | | | 22.1 | |
| Approach LOS | | B | | | C | | | C | | | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | 4.7 | 29.4 | | 20.2 | 10.0 | 24.1 | | 20.2 |
| Change Period (Y+Rc), s | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 |
| Max Green Setting (Gmax), s | 4.0 | 24.0 | | 20.0 | 6.0 | 22.0 | | 20.0 |
| Max Q Clear Time (g_c+I1), s | 2.4 | 6.6 | | 8.7 | 6.7 | 18.0 | | 14.6 |
| Green Ext Time (p_c), s | 0.0 | 6.7 | | 2.6 | 0.0 | 2.1 | | 1.6 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 20.7 |
| HCM 2010 LOS | C |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.7 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Vol, veh/h | 10 | 60 | 30 | 295 | 720 | 30 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | 45 | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 60 | 60 | 60 | 60 | 60 | 60 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 17 | 100 | 50 | 492 | 1200 | 50 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1817 | 1225 | 1250 | 0 | - | 0 |
| Stage 1 | 1225 | - | - | - | - | - |
| Stage 2 | 592 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 86 | 218 | 557 | - | - | - |
| Stage 1 | 278 | - | - | - | - | - |
| Stage 2 | 553 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 75 | 218 | 557 | - | - | - |
| Mov Cap-2 Maneuver | 75 | - | - | - | - | - |
| Stage 1 | 278 | - | - | - | - | - |
| Stage 2 | 484 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 39.3 | 1.1 | 0 |
| HCM LOS | E | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 557 | - | 75 | 218 | - | - |
| HCM Lane V/C Ratio | 0.09 | - | 0.222 | 0.459 | - | - |
| HCM Control Delay (s) | 12.1 | 0 | 66.2 | 34.8 | - | - |
| HCM Lane LOS | B | A | F | D | - | - |
| HCM 95th %tile Q(veh) | 0.3 | - | 0.8 | 2.2 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 123 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Vol, veh/h | 40 | 70 | 410 | 120 | 200 | 525 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | 45 | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 58 | 58 | 58 | 58 | 58 | 58 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 69 | 121 | 707 | 207 | 345 | 905 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 2405 | 810 | 0 | 0 | 914 | 0 |
| Stage 1 | 810 | - | - | - | - | - |
| Stage 2 | 1595 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | ~ 36 | 380 | - | - | 746 | - |
| Stage 1 | 438 | - | - | - | - | - |
| Stage 2 | 183 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | ~ 19 | 380 | - | - | 746 | - |
| Mov Cap-2 Maneuver | ~ 19 | - | - | - | - | - |
| Stage 1 | 438 | - | - | - | - | - |
| Stage 2 | 98 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | $ 1501.8 | 0 | 3.8 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 48 | 746 | - |
| HCM Lane V/C Ratio | - | - | 3.951 | 0.462 | - |
| HCM Control Delay (s) | - | - | $ 1501.8 | 13.9 | - |
| HCM Lane LOS | - | - | F | B | - |
| HCM 95th %tile Q(veh) | - | - | 21.1 | 2.5 | - |

**Notes**

~: Volume exceeds capacity  $: Delay exceeds 300s  +: Computation Not Defined  *: All major volume in platoon

| Intersection | |
|---|---|
| Int Delay, s/veh | 254.9 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vol, veh/h | 0 | 0 | 5 | 120 | 0 | 120 | 5 | 410 | 135 | 140 | 420 | 5 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | 100 | - | - | 70 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 7 | 179 | 0 | 179 | 7 | 612 | 201 | 209 | 627 | 7 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1866 | 1877 | 631 | 1780 | 1780 | 713 | 634 | 0 | 0 | 813 | 0 | 0 |
| Stage 1 | 1049 | 1049 | - | 728 | 728 | - | - | - | - | - | - | - |
| Stage 2 | 817 | 828 | - | 1052 | 1052 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 | 4.12 | - | - | 4.12 | - | - |
| Critical Hdwy Stg 1 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.218 | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver | 56 | 71 | 481 | ~ 64 | 82 | 432 | 949 | - | - | 814 | - | - |
| Stage 1 | 275 | 304 | - | 415 | 429 | - | - | - | - | - | - | - |
| Stage 2 | 370 | 386 | - | 274 | 303 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 26 | 52 | 481 | ~ 50 | 60 | 432 | 949 | - | - | 814 | - | - |
| Mov Cap-2 Maneuver | 26 | 52 | - | ~ 50 | 60 | - | - | - | - | - | - | - |
| Stage 1 | 273 | 226 | - | 412 | 426 | - | - | - | - | - | - | - |
| Stage 2 | 215 | 383 | - | 200 | 225 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 12.6 | $ 1437.5 | 0.1 | 2.7 |
| HCM LOS | B | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 949 | - | - | 481 | 90 | 814 | - | - |
| HCM Lane V/C Ratio | 0.008 | - | - | 0.016 | 3.98 | 0.257 | - | - |
| HCM Control Delay (s) | 8.8 | - | - | 12.8 | $ 1437.5 | 10.9 | - | - |
| HCM Lane LOS | A | - | - | B | F | B | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0 | 37.1 | 1 | - | - |

Notes

~: Volume exceeds capacity  $: Delay exceeds 300s  +: Computation Not Defined  *: All major volume in platoon

| Intersection | |
|---|---|
| Int Delay, s/veh | 35.2 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Vol, veh/h | 130 | 75 | 475 | 380 | 70 | 410 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 60 | 0 | - | - | 100 | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 77 | 77 | 77 | 77 | 77 | 77 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 169 | 97 | 617 | 494 | 91 | 532 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1578 | 864 | 0 | 0 | 1110 | 0 |
| Stage 1 | 864 | - | - | - | - | - |
| Stage 2 | 714 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | ~ 120 | 354 | - | - | 629 | - |
| Stage 1 | 413 | - | - | - | - | - |
| Stage 2 | 485 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | ~ 103 | 354 | - | - | 629 | - |
| Mov Cap-2 Maneuver | ~ 103 | - | - | - | - | - |
| Stage 1 | 413 | - | - | - | - | - |
| Stage 2 | 415 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 260.2 | 0 | 1.7 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | WBLn2 | SBL | SBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 103 | 354 | 629 | - |
| HCM Lane V/C Ratio | - | - | 1.639 | 0.275 | 0.145 | - |
| HCM Control Delay (s) | - | - | $ 399.3 | 19 | 11.7 | - |
| HCM Lane LOS | - | - | F | C | B | - |
| HCM 95th %tile Q(veh) | - | - | 13.1 | 1.1 | 0.5 | - |

Notes

~: Volume exceeds capacity  $: Delay exceeds 300s  +: Computation Not Defined  *: All major volume in platoon

| Lane Group | EBL | EBT | WBT | NBL | NBT | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 340 | 247 | 105 | 167 | 555 | 31 | 302 | 210 |
| v/c Ratio | 0.71 | 0.42 | 0.41 | 0.73 | 0.75 | 0.27 | 0.65 | 0.38 |
| Control Delay | 32.4 | 8.5 | 29.6 | 54.1 | 30.3 | 40.1 | 31.6 | 6.2 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 32.4 | 8.5 | 29.6 | 54.1 | 30.3 | 40.1 | 31.6 | 6.2 |
| Queue Length 50th (ft) | 131 | 16 | 36 | 73 | 190 | 13 | 118 | 0 |
| Queue Length 95th (ft) | 205 | 55 | 71 | #163 | #392 | 37 | 185 | 35 |
| Internal Link Dist (ft) | | 824 | 534 | | 328 | | 282 | |
| Turn Bay Length (ft) | | | | 125 | | 120 | | |
| Base Capacity (vph) | 601 | 687 | 610 | 229 | 736 | 114 | 573 | 632 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.57 | 0.36 | 0.17 | 0.73 | 0.75 | 0.27 | 0.53 | 0.33 |

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (veh/h) | 275 | 40 | 160 | 40 | 25 | 20 | 135 | 385 | 65 | 25 | 245 | 170 |
| Number | 7 | 4 | 14 | 3 | 8 | 18 | 5 | 2 | 12 | 1 | 6 | 16 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1900 | 1900 | 1863 | 1900 | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 340 | 49 | 198 | 49 | 31 | 25 | 167 | 475 | 80 | 31 | 302 | 210 |
| Adj No. of Lanes | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 |
| Peak Hour Factor | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 437 | 80 | 322 | 67 | 42 | 34 | 210 | 565 | 95 | 48 | 507 | 431 |
| Arrive On Green | 0.25 | 0.25 | 0.25 | 0.08 | 0.08 | 0.08 | 0.12 | 0.36 | 0.36 | 0.03 | 0.27 | 0.27 |
| Sat Flow, veh/h | 1774 | 324 | 1308 | 816 | 516 | 416 | 1774 | 1555 | 262 | 1774 | 1863 | 1583 |
| Grp Volume(v), veh/h | 340 | 0 | 247 | 105 | 0 | 0 | 167 | 0 | 555 | 31 | 302 | 210 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 0 | 1632 | 1748 | 0 | 0 | 1774 | 0 | 1817 | 1774 | 1863 | 1583 |
| Q Serve(g_s), s | 10.2 | 0.0 | 7.6 | 3.3 | 0.0 | 0.0 | 5.2 | 0.0 | 15.9 | 1.0 | 8.0 | 6.3 |
| Cycle Q Clear(g_c), s | 10.2 | 0.0 | 7.6 | 3.3 | 0.0 | 0.0 | 5.2 | 0.0 | 15.9 | 1.0 | 8.0 | 6.3 |
| Prop In Lane | 1.00 | | 0.80 | 0.47 | | 0.24 | 1.00 | | 0.14 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 437 | 0 | 402 | 143 | 0 | 0 | 210 | 0 | 660 | 48 | 507 | 431 |
| V/C Ratio(X) | 0.78 | 0.00 | 0.61 | 0.73 | 0.00 | 0.00 | 0.80 | 0.00 | 0.84 | 0.64 | 0.60 | 0.49 |
| Avail Cap(c_a), veh/h | 655 | 0 | 603 | 646 | 0 | 0 | 250 | 0 | 735 | 125 | 623 | 529 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 20.0 | 0.0 | 19.0 | 25.5 | 0.0 | 0.0 | 24.4 | 0.0 | 16.6 | 27.4 | 18.0 | 17.4 |
| Incr Delay (d2), s/veh | 3.4 | 0.0 | 1.5 | 7.1 | 0.0 | 0.0 | 13.9 | 0.0 | 8.0 | 13.3 | 1.1 | 0.9 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 5.3 | 0.0 | 3.6 | 1.9 | 0.0 | 0.0 | 3.4 | 0.0 | 9.3 | 0.7 | 4.3 | 2.8 |
| LnGrp Delay(d),s/veh | 23.4 | 0.0 | 20.6 | 32.6 | 0.0 | 0.0 | 38.3 | 0.0 | 24.6 | 40.7 | 19.1 | 18.2 |
| LnGrp LOS | C | | C | C | | | D | | C | D | B | B |
| Approach Vol, veh/h | | 587 | | | 105 | | | 722 | | | 543 | |
| Approach Delay, s/veh | | 22.2 | | | 32.6 | | | 27.8 | | | 20.0 | |
| Approach LOS | | C | | | C | | | C | | | B | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | 5.5 | 24.6 | | 18.0 | 10.7 | 19.5 | | 8.7 |
| Change Period (Y+Rc), s | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 |
| Max Green Setting (Gmax), s | 4.0 | 23.0 | | 21.0 | 8.0 | 19.0 | | 21.0 |
| Max Q Clear Time (g_c+I1), s | 3.0 | 17.9 | | 12.2 | 7.2 | 10.0 | | 5.3 |
| Green Ext Time (p_c), s | 0.0 | 2.7 | | 1.8 | 0.0 | 4.2 | | 0.4 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 24.2 |
| HCM 2010 LOS | C |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.3 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Vol, veh/h | 5 | 20 | 80 | 605 | 340 | 10 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | 45 | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 60 | 60 | 60 | 60 | 60 | 60 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 8 | 33 | 133 | 1008 | 567 | 17 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1850 | 575 | 583 | 0 | - | 0 |
| Stage 1 | 575 | - | - | - | - | - |
| Stage 2 | 1275 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 82 | 518 | 991 | - | - | - |
| Stage 1 | 563 | - | - | - | - | - |
| Stage 2 | 263 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 57 | 518 | 991 | - | - | - |
| Mov Cap-2 Maneuver | 57 | - | - | - | - | - |
| Stage 1 | 563 | - | - | - | - | - |
| Stage 2 | 183 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 25.7 | 1.1 | 0 |
| HCM LOS | D | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 991 | - | 57 | 518 | - | - |
| HCM Lane V/C Ratio | 0.135 | - | 0.146 | 0.064 | - | - |
| HCM Control Delay (s) | 9.2 | 0 | 78.7 | 12.4 | - | - |
| HCM Lane LOS | A | A | F | B | - | - |
| HCM 95th %tile Q(veh) | 0.5 | - | 0.5 | 0.2 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 46.3 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Vol, veh/h | 80 | 120 | 535 | 50 | 35 | 430 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | 45 | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 68 | 68 | 68 | 68 | 68 | 68 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 118 | 176 | 787 | 74 | 51 | 632 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1559 | 824 | 0 | 0 | 860 | 0 |
| Stage 1 | 824 | - | - | - | - | - |
| Stage 2 | 735 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | 124 | 373 | - | - | 781 | - |
| Stage 1 | 431 | - | - | - | - | - |
| Stage 2 | 474 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | ~ 116 | 373 | - | - | 781 | - |
| Mov Cap-2 Maneuver | ~ 116 | - | - | - | - | - |
| Stage 1 | 431 | - | - | - | - | - |
| Stage 2 | 443 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 287.6 | 0 | 0.7 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 198 | 781 | - |
| HCM Lane V/C Ratio | - | - | 1.485 | 0.066 | - |
| HCM Control Delay (s) | - | - | 287.6 | 9.9 | - |
| HCM Lane LOS | - | - | F | A | - |
| HCM 95th %tile Q(veh) | - | - | 18.1 | 0.2 | - |

Notes

~: Volume exceeds capacity  $: Delay exceeds 300s  +: Computation Not Defined  *: All major volume in platoon

| Intersection | |
|---|---|
| Int Delay, s/veh | 24.1 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vol, veh/h | 10 | 0 | 95 | 25 | 0 | 90 | 25 | 585 | 20 | 15 | 480 | 15 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | 100 | - | - | 70 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 15 | 0 | 140 | 37 | 0 | 132 | 37 | 860 | 29 | 22 | 706 | 22 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1776 | 1724 | 717 | 1780 | 1721 | 875 | 728 | 0 | 0 | 890 | 0 | 0 |
| Stage 1 | 761 | 761 | - | 949 | 949 | - | - | - | - | - | - | - |
| Stage 2 | 1015 | 963 | - | 831 | 772 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 | 4.12 | - | - | 4.12 | - | - |
| Critical Hdwy Stg 1 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.218 | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver | 64 | 89 | 430 | 64 | 89 | 349 | 876 | - | - | 761 | - | - |
| Stage 1 | 398 | 414 | - | 313 | 339 | - | - | - | - | - | - | - |
| Stage 2 | 287 | 334 | - | 364 | 409 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 38 | 83 | 430 | 41 | 83 | 349 | 876 | - | - | 761 | - | - |
| Mov Cap-2 Maneuver | 38 | 83 | - | 41 | 83 | - | - | - | - | - | - | - |
| Stage 1 | 381 | 402 | - | 300 | 325 | - | - | - | - | - | - | - |
| Stage 2 | 171 | 320 | - | 239 | 397 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 54.3 | 231.8 | 0.4 | 0.3 |
| HCM LOS | F | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 876 | - | - | 217 | 133 | 761 | - | - |
| HCM Lane V/C Ratio | 0.042 | - | - | 0.712 | 1.272 | 0.029 | - | - |
| HCM Control Delay (s) | 9.3 | - | - | 54.3 | 231.8 | 9.9 | - | - |
| HCM Lane LOS | A | - | - | F | F | A | - | - |
| HCM 95th %tile Q(veh) | 0.1 | - | - | 4.6 | 10.5 | 0.1 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 26.1 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Vol, veh/h | 90 | 210 | 470 | 160 | 70 | 530 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 60 | 0 | - | - | 100 | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 71 | 71 | 71 | 71 | 71 | 71 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 127 | 296 | 662 | 225 | 99 | 746 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1719 | 775 | 0 | 0 | 887 | 0 |
| Stage 1 | 775 | - | - | - | - | - |
| Stage 2 | 944 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | ~ 99 | 398 | - | - | 763 | - |
| Stage 1 | 454 | - | - | - | - | - |
| Stage 2 | 378 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | ~ 86 | 398 | - | - | 763 | - |
| Mov Cap-2 Maneuver | ~ 86 | - | - | - | - | - |
| Stage 1 | 454 | - | - | - | - | - |
| Stage 2 | 329 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 130.6 | 0 | 1.2 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | WBLn2 | SBL | SBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 86 | 398 | 763 | - |
| HCM Lane V/C Ratio | - | - | 1.474 | 0.743 | 0.129 | - |
| HCM Control Delay (s) | - | - | $ 351.3 | 36 | 10.4 | - |
| HCM Lane LOS | - | - | F | E | B | - |
| HCM 95th %tile Q(veh) | - | - | 9.9 | 5.9 | 0.4 | - |

Notes

~: Volume exceeds capacity  $: Delay exceeds 300s  +: Computation Not Defined  *: All major volume in platoon

| Lane Group | EBL | EBT | WBT | NBL | NBT | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 432 | 240 | 111 | 142 | 562 | 37 | 241 | 210 |
| v/c Ratio | 0.92 | 0.47 | 0.45 | 0.62 | 0.75 | 0.36 | 0.46 | 0.35 |
| Control Delay | 59.8 | 22.0 | 34.9 | 49.4 | 26.9 | 49.3 | 24.5 | 5.0 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 0.0 | 0.0 | 0.0 |
| Total Delay | 59.8 | 22.0 | 34.9 | 49.4 | 27.1 | 49.3 | 24.5 | 5.0 |
| Queue Length 50th (ft) | ~231 | 64 | 44 | 67 | 230 | 18 | 90 | 0 |
| Queue Length 95th (ft) | #405 | 130 | 87 | #147 | 323 | #48 | 141 | 31 |
| Internal Link Dist (ft) | | 824 | 534 | | 328 | | 282 | |
| Turn Bay Length (ft) | | | | 125 | | 120 | | |
| Base Capacity (vph) | 468 | 507 | 554 | 234 | 966 | 104 | 848 | 835 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 81 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.92 | 0.47 | 0.20 | 0.61 | 0.64 | 0.36 | 0.28 | 0.25 |

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (veh/h) | 350 | 70 | 125 | 40 | 30 | 20 | 115 | 380 | 75 | 30 | 195 | 170 |
| Number | 7 | 4 | 14 | 3 | 8 | 18 | 5 | 2 | 12 | 1 | 6 | 16 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1900 | 1900 | 1863 | 1900 | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 432 | 86 | 154 | 49 | 37 | 25 | 142 | 469 | 93 | 37 | 241 | 210 |
| Adj No. of Lanes | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 |
| Peak Hour Factor | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 469 | 159 | 284 | 66 | 50 | 34 | 179 | 582 | 115 | 52 | 585 | 497 |
| Arrive On Green | 0.26 | 0.26 | 0.26 | 0.09 | 0.09 | 0.09 | 0.10 | 0.39 | 0.39 | 0.03 | 0.31 | 0.31 |
| Sat Flow, veh/h | 1774 | 600 | 1074 | 774 | 585 | 395 | 1774 | 1510 | 300 | 1774 | 1863 | 1583 |
| Grp Volume(v), veh/h | 432 | 0 | 240 | 111 | 0 | 0 | 142 | 0 | 562 | 37 | 241 | 210 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 0 | 1673 | 1754 | 0 | 0 | 1774 | 0 | 1810 | 1774 | 1863 | 1583 |
| Q Serve(g_s), s | 16.1 | 0.0 | 8.4 | 4.2 | 0.0 | 0.0 | 5.3 | 0.0 | 18.8 | 1.4 | 6.9 | 7.1 |
| Cycle Q Clear(g_c), s | 16.1 | 0.0 | 8.4 | 4.2 | 0.0 | 0.0 | 5.3 | 0.0 | 18.8 | 1.4 | 6.9 | 7.1 |
| Prop In Lane | 1.00 | | 0.64 | 0.44 | | 0.23 | 1.00 | | 0.17 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 469 | 0 | 443 | 150 | 0 | 0 | 179 | 0 | 697 | 52 | 585 | 497 |
| V/C Ratio(X) | 0.92 | 0.00 | 0.54 | 0.74 | 0.00 | 0.00 | 0.79 | 0.00 | 0.81 | 0.71 | 0.41 | 0.42 |
| Avail Cap(c_a), veh/h | 469 | 0 | 443 | 541 | 0 | 0 | 235 | 0 | 957 | 104 | 849 | 721 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 24.3 | 0.0 | 21.5 | 30.4 | 0.0 | 0.0 | 29.9 | 0.0 | 18.6 | 32.7 | 18.4 | 18.5 |
| Incr Delay (d2), s/veh | 23.5 | 0.0 | 1.4 | 7.0 | 0.0 | 0.0 | 12.8 | 0.0 | 3.6 | 15.8 | 0.5 | 0.6 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 10.9 | 0.0 | 4.0 | 2.3 | 0.0 | 0.0 | 3.2 | 0.0 | 10.1 | 0.9 | 3.6 | 3.2 |
| LnGrp Delay(d),s/veh | 47.8 | 0.0 | 22.8 | 37.3 | 0.0 | 0.0 | 42.7 | 0.0 | 22.3 | 48.6 | 18.9 | 19.0 |
| LnGrp LOS | D | | C | D | | | D | | C | D | B | B |
| Approach Vol, veh/h | | 672 | | | 111 | | | 704 | | | 488 | |
| Approach Delay, s/veh | | 38.9 | | | 37.3 | | | 26.4 | | | 21.2 | |
| Approach LOS | | D | | | D | | | C | | | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | 6.0 | 30.2 | | 22.0 | 10.9 | 25.4 | | 9.8 |
| Change Period (Y+Rc), s | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 |
| Max Green Setting (Gmax), s | 4.0 | 36.0 | | 18.0 | 9.0 | 31.0 | | 21.0 |
| Max Q Clear Time (g_c+I1), s | 3.4 | 20.8 | | 18.1 | 7.3 | 9.1 | | 6.2 |
| Green Ext Time (p_c), s | 0.0 | 5.4 | | 0.0 | 0.1 | 6.3 | | 0.4 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 30.0 |
| HCM 2010 LOS | C |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Vol, veh/h | 0 | 0 | 715 | 0 | 0 | 205 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 81 | 81 | 81 | 81 | 81 | 81 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 883 | 0 | 0 | 253 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1136 | 883 | 0 | 0 | 883 | 0 |
| Stage 1 | 883 | - | - | - | - | - |
| Stage 2 | 253 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | 223 | 345 | - | - | 766 | - |
| Stage 1 | 404 | - | - | - | - | - |
| Stage 2 | 789 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 223 | 345 | - | - | 766 | - |
| Mov Cap-2 Maneuver | 223 | - | - | - | - | - |
| Stage 1 | 404 | - | - | - | - | - |
| Stage 2 | 789 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 0 |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | - | 766 | - |
| HCM Lane V/C Ratio | - | - | - | - | - |
| HCM Control Delay (s) | - | - | 0 | 0 | - |
| HCM Lane LOS | - | - | A | A | - |
| HCM 95th %tile Q(veh) | - | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.5 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Vol, veh/h | 10 | 10 | 15 | 705 | 200 | 5 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | 45 | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 81 | 81 | 81 | 81 | 81 | 81 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 12 | 12 | 19 | 870 | 247 | 6 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1157 | 250 | 253 | 0 | - | 0 |
| Stage 1 | 250 | - | - | - | - | - |
| Stage 2 | 907 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 217 | 789 | 1312 | - | - | - |
| Stage 1 | 792 | - | - | - | - | - |
| Stage 2 | 394 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 211 | 789 | 1312 | - | - | - |
| Mov Cap-2 Maneuver | 211 | - | - | - | - | - |
| Stage 1 | 792 | - | - | - | - | - |
| Stage 2 | 383 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 16.4 | 0.2 | 0 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1312 | - | 211 | 789 | - | - |
| HCM Lane V/C Ratio | 0.014 | - | 0.059 | 0.016 | - | - |
| HCM Control Delay (s) | 7.8 | 0 | 23.1 | 9.6 | - | - |
| HCM Lane LOS | A | A | C | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 0.2 | 0 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Vol, veh/h | 0 | 0 | 720 | 0 | 0 | 210 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | 45 | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 68 | 68 | 68 | 68 | 68 | 68 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 1059 | 0 | 0 | 309 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1368 | 1059 | 0 | 0 | 1059 | 0 |
| Stage 1 | 1059 | - | - | - | - | - |
| Stage 2 | 309 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | 162 | 273 | - | - | 658 | - |
| Stage 1 | 333 | - | - | - | - | - |
| Stage 2 | 745 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 162 | 273 | - | - | 658 | - |
| Mov Cap-2 Maneuver | 162 | - | - | - | - | - |
| Stage 1 | 333 | - | - | - | - | - |
| Stage 2 | 745 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 0 |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | - | 658 | - |
| HCM Lane V/C Ratio | - | - | - | - | - |
| HCM Control Delay (s) | - | - | 0 | 0 | - |
| HCM Lane LOS | - | - | A | A | - |
| HCM 95th %tile Q(veh) | - | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vol, veh/h | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 720 | 0 | 0 | 210 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | 100 | - | - | 70 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1059 | 0 | 0 | 309 | 0 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1368 | 1368 | 309 | 1368 | 1368 | 1059 | 309 | 0 | 0 | 1059 | 0 | 0 |
| Stage 1 | 309 | 309 | - | 1059 | 1059 | - | - | - | - | - | - | - |
| Stage 2 | 1059 | 1059 | - | 309 | 309 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 | 4.12 | - | - | 4.12 | - | - |
| Critical Hdwy Stg 1 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.218 | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver | 124 | 147 | 731 | 124 | 147 | 273 | 1252 | - | - | 658 | - | - |
| Stage 1 | 701 | 660 | - | 271 | 301 | - | - | - | - | - | - | - |
| Stage 2 | 271 | 301 | - | 701 | 660 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 124 | 147 | 731 | 124 | 147 | 273 | 1252 | - | - | 658 | - | - |
| Mov Cap-2 Maneuver | 124 | 147 | - | 124 | 147 | - | - | - | - | - | - | - |
| Stage 1 | 701 | 660 | - | 271 | 301 | - | - | - | - | - | - | - |
| Stage 2 | 271 | 301 | - | 701 | 660 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 0 | 0 |
| HCM LOS | A | A | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1252 | - | - | - | - | 658 | - | - |
| HCM Lane V/C Ratio | - | - | - | - | - | - | - | - |
| HCM Control Delay (s) | 0 | - | - | 0 | 0 | 0 | - | - |
| HCM Lane LOS | A | - | - | A | A | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | - | - | 0 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Vol, veh/h | 0 | 0 | 720 | 0 | 0 | 210 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 60 | 0 | - | - | 100 | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 71 | 71 | 71 | 71 | 71 | 71 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 1014 | 0 | 0 | 296 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1310 | 1014 | 0 | 0 | 1014 | 0 |
| Stage 1 | 1014 | - | - | - | - | - |
| Stage 2 | 296 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | 175 | 290 | - | - | 684 | - |
| Stage 1 | 350 | - | - | - | - | - |
| Stage 2 | 755 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 175 | 290 | - | - | 684 | - |
| Mov Cap-2 Maneuver | 175 | - | - | - | - | - |
| Stage 1 | 350 | - | - | - | - | - |
| Stage 2 | 755 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 0 |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | WBLn2 | SBL | SBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | - | - | 684 | - |
| HCM Lane V/C Ratio | - | - | - | - | - | - |
| HCM Control Delay (s) | - | - | 0 | 0 | 0 | - |
| HCM Lane LOS | - | - | A | A | A | - |
| HCM 95th %tile Q(veh) | - | - | - | - | 0 | - |

| Lane Group | EBL | EBT | WBT | NBL | NBT | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 188 | 280 | 219 | 158 | 250 | 12 | 595 | 381 |
| v/c Ratio | 0.56 | 0.44 | 0.85 | 0.79 | 0.25 | 0.09 | 0.84 | 0.45 |
| Control Delay | 23.7 | 5.1 | 48.8 | 58.6 | 8.9 | 27.7 | 29.8 | 3.8 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 23.7 | 5.1 | 48.8 | 58.6 | 8.9 | 27.7 | 29.8 | 3.8 |
| Queue Length 50th (ft) | 53 | 3 | 64 | 54 | 35 | 4 | 174 | 0 |
| Queue Length 95th (ft) | 90 | 32 | #133 | #129 | 89 | 16 | #299 | 30 |
| Internal Link Dist (ft) | | 824 | 534 | | 328 | | 282 | |
| Turn Bay Length (ft) | | | | 125 | | 120 | | |
| Base Capacity (vph) | 453 | 766 | 341 | 199 | 998 | 133 | 770 | 878 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.42 | 0.37 | 0.64 | 0.79 | 0.25 | 0.09 | 0.77 | 0.43 |

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (veh/h) | 150 | 10 | 214 | 115 | 40 | 20 | 126 | 175 | 25 | 10 | 476 | 305 |
| Number | 7 | 4 | 14 | 3 | 8 | 18 | 5 | 2 | 12 | 1 | 6 | 16 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1900 | 1900 | 1863 | 1900 | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 188 | 12 | 206 | 144 | 50 | 25 | 158 | 219 | 31 | 12 | 595 | 381 |
| Adj No. of Lanes | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 |
| Peak Hour Factor | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 516 | 27 | 459 | 276 | 89 | 33 | 194 | 742 | 105 | 22 | 685 | 582 |
| Arrive On Green | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.11 | 0.46 | 0.46 | 0.01 | 0.37 | 0.37 |
| Sat Flow, veh/h | 1319 | 88 | 1509 | 551 | 292 | 109 | 1774 | 1597 | 226 | 1774 | 1863 | 1583 |
| Grp Volume(v), veh/h | 188 | 0 | 218 | 219 | 0 | 0 | 158 | 0 | 250 | 12 | 595 | 381 |
| Grp Sat Flow(s),veh/h/ln | 1319 | 0 | 1597 | 951 | 0 | 0 | 1774 | 0 | 1823 | 1774 | 1863 | 1583 |
| Q Serve(g_s), s | 0.0 | 0.0 | 6.0 | 7.1 | 0.0 | 0.0 | 4.8 | 0.0 | 4.7 | 0.4 | 16.3 | 11.0 |
| Cycle Q Clear(g_c), s | 6.8 | 0.0 | 6.0 | 13.2 | 0.0 | 0.0 | 4.8 | 0.0 | 4.7 | 0.4 | 16.3 | 11.0 |
| Prop In Lane | 1.00 | | 0.94 | 0.66 | | 0.11 | 1.00 | | 0.12 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 516 | 0 | 486 | 398 | 0 | 0 | 194 | 0 | 848 | 22 | 685 | 582 |
| V/C Ratio(X) | 0.36 | 0.00 | 0.45 | 0.55 | 0.00 | 0.00 | 0.82 | 0.00 | 0.29 | 0.56 | 0.87 | 0.65 |
| Avail Cap(c_a), veh/h | 595 | 0 | 582 | 477 | 0 | 0 | 194 | 0 | 848 | 129 | 746 | 634 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 15.6 | 0.0 | 15.4 | 19.3 | 0.0 | 0.0 | 23.9 | 0.0 | 9.1 | 27.0 | 16.1 | 14.4 |
| Incr Delay (d2), s/veh | 0.4 | 0.0 | 0.6 | 1.2 | 0.0 | 0.0 | 22.8 | 0.0 | 0.2 | 20.4 | 10.1 | 2.2 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 2.4 | 0.0 | 2.8 | 3.2 | 0.0 | 0.0 | 3.6 | 0.0 | 2.3 | 0.3 | 10.2 | 5.1 |
| LnGrp Delay(d),s/veh | 16.1 | 0.0 | 16.0 | 20.4 | 0.0 | 0.0 | 46.7 | 0.0 | 9.3 | 47.4 | 26.2 | 16.6 |
| LnGrp LOS | B | | B | C | | | D | | A | D | C | B |
| Approach Vol, veh/h | | 406 | | | 219 | | | 408 | | | 988 | |
| Approach Delay, s/veh | | 16.1 | | | 20.4 | | | 23.8 | | | 22.8 | |
| Approach LOS | | B | | | C | | | C | | | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | 4.7 | 29.5 | | 20.7 | 10.0 | 24.2 | | 20.7 |
| Change Period (Y+Rc), s | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 |
| Max Green Setting (Gmax), s | 4.0 | 24.0 | | 20.0 | 6.0 | 22.0 | | 20.0 |
| Max Q Clear Time (g_c+I1), s | 2.4 | 6.7 | | 8.8 | 6.8 | 18.3 | | 15.2 |
| Green Ext Time (p_c), s | 0.0 | 6.7 | | 2.7 | 0.0 | 1.9 | | 1.5 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 21.4 |
| HCM 2010 LOS | C |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.7 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Vol, veh/h | 10 | 60 | 30 | 320 | 722 | 30 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | 45 | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 60 | 60 | 60 | 60 | 60 | 60 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 17 | 100 | 50 | 533 | 1203 | 50 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1861 | 1228 | 1253 | 0 | - | 0 |
| Stage 1 | 1228 | - | - | - | - | - |
| Stage 2 | 633 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 80 | 217 | 555 | - | - | - |
| Stage 1 | 277 | - | - | - | - | - |
| Stage 2 | 529 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 70 | 217 | 555 | - | - | - |
| Mov Cap-2 Maneuver | 70 | - | - | - | - | - |
| Stage 1 | 277 | - | - | - | - | - |
| Stage 2 | 461 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 40.3 | 1 | 0 |
| HCM LOS | E | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 555 | - | 70 | 217 | - | - |
| HCM Lane V/C Ratio | 0.09 | - | 0.238 | 0.461 | - | - |
| HCM Control Delay (s) | 12.1 | 0 | 71.8 | 35 | - | - |
| HCM Lane LOS | B | A | F | E | - | - |
| HCM 95th %tile Q(veh) | 0.3 | - | 0.8 | 2.2 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 127.4 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Vol, veh/h | 40 | 70 | 435 | 120 | 200 | 527 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | 45 | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 58 | 58 | 58 | 58 | 58 | 58 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 69 | 121 | 750 | 207 | 345 | 909 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 2451 | 853 | 0 | 0 | 957 | 0 |
| Stage 1 | 853 | - | - | - | - | - |
| Stage 2 | 1598 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | ~ 34 | 359 | - | - | 719 | - |
| Stage 1 | 418 | - | - | - | - | - |
| Stage 2 | 182 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | ~ 18 | 359 | - | - | 719 | - |
| Mov Cap-2 Maneuver | ~ 18 | - | - | - | - | - |
| Stage 1 | 418 | - | - | - | - | - |
| Stage 2 | 95 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | $ 1585.3 | 0 | 4 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 46 | 719 | - |
| HCM Lane V/C Ratio | - | - | 4.123 | 0.48 | - |
| HCM Control Delay (s) | - | | $ 1585.3 | 14.5 | - |
| HCM Lane LOS | - | - | F | B | - |
| HCM 95th %tile Q(veh) | - | - | 21.3 | 2.6 | - |

Notes

~: Volume exceeds capacity  $: Delay exceeds 300s  +: Computation Not Defined  *: All major volume in platoon

| Intersection | |
|---|---|
| Int Delay, s/veh | 273 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vol, veh/h | 0 | 0 | 5 | 120 | 0 | 120 | 5 | 435 | 135 | 140 | 422 | 5 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | 100 | - | - | 70 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 7 | 179 | 0 | 179 | 7 | 649 | 201 | 209 | 630 | 7 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1905 | 1917 | 634 | 1820 | 1820 | 750 | 637 | 0 | 0 | 851 | 0 | 0 |
| Stage 1 | 1051 | 1051 | - | 765 | 765 | - | - | - | - | - | - | - |
| Stage 2 | 854 | 866 | - | 1055 | 1055 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 | 4.12 | - | - | 4.12 | - | - |
| Critical Hdwy Stg 1 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.218 | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver | 52 | 67 | 479 | ~ 60 | 78 | 411 | 947 | - | - | 788 | - | - |
| Stage 1 | 274 | 304 | - | 396 | 412 | - | - | - | - | - | - | - |
| Stage 2 | 353 | 370 | - | 273 | 302 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 23 | 49 | 479 | ~ 47 | 57 | 411 | 947 | - | - | 788 | - | - |
| Mov Cap-2 Maneuver | 23 | 49 | - | ~ 47 | 57 | - | - | - | - | - | - | - |
| Stage 1 | 272 | 223 | - | 393 | 409 | - | - | - | - | - | - | - |
| Stage 2 | 198 | 367 | - | 197 | 222 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 12.6 | $ 1570.8 | 0.1 | 2.8 |
| HCM LOS | B | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 947 | - | - | 479 | 84 | 788 | - | - |
| HCM Lane V/C Ratio | 0.008 | - | - | 0.016 | 4.264 | 0.265 | - | - |
| HCM Control Delay (s) | 8.8 | - | - | 12.8 | $ 1570.8 | 11.2 | - | - |
| HCM Lane LOS | A | - | - | B | F | B | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0 | 37.8 | 1.1 | - | - |

Notes

~: Volume exceeds capacity  $: Delay exceeds 300s  +: Computation Not Defined  *: All major volume in platoon

| Intersection | |
|---|---|
| Int Delay, s/veh | 37.9 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Vol, veh/h | 130 | 75 | 500 | 380 | 70 | 412 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 60 | 0 | - | - | 100 | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 77 | 77 | 77 | 77 | 77 | 77 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 169 | 97 | 649 | 494 | 91 | 535 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1613 | 896 | 0 | 0 | 1143 | 0 |
| Stage 1 | 896 | - | - | - | - | - |
| Stage 2 | 717 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | ~ 115 | 339 | - | - | 611 | - |
| Stage 1 | 399 | - | - | - | - | - |
| Stage 2 | 484 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | ~ 98 | 339 | - | - | 611 | - |
| Mov Cap-2 Maneuver | ~ 98 | - | - | - | - | - |
| Stage 1 | 399 | - | - | - | - | - |
| Stage 2 | 412 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 285.4 | 0 | 1.7 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | WBLn2 | SBL | SBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 98 | 339 | 611 | - |
| HCM Lane V/C Ratio | - | - | 1.723 | 0.287 | 0.149 | - |
| HCM Control Delay (s) | - | - | $ 438.7 | 19.8 | 11.9 | - |
| HCM Lane LOS | - | - | F | C | B | - |
| HCM 95th %tile Q(veh) | - | - | 13.5 | 1.2 | 0.5 | - |

Notes

~: Volume exceeds capacity  $: Delay exceeds 300s  +: Computation Not Defined  *: All major volume in platoon

| Lane Group | EBL | EBT | WBT | NBL | NBT | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 340 | 248 | 105 | 170 | 555 | 31 | 302 | 210 |
| v/c Ratio | 0.72 | 0.43 | 0.43 | 0.72 | 0.71 | 0.30 | 0.60 | 0.36 |
| Control Delay | 39.1 | 11.0 | 33.3 | 54.6 | 24.1 | 45.5 | 27.8 | 5.0 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 0.0 | 0.0 | 0.0 |
| Total Delay | 39.1 | 11.0 | 33.3 | 54.6 | 24.5 | 45.5 | 27.8 | 5.0 |
| Queue Length 50th (ft) | 133 | 19 | 36 | 71 | 182 | 13 | 117 | 0 |
| Queue Length 95th (ft) | #293 | 71 | 82 | #184 | 316 | 41 | 176 | 31 |
| Internal Link Dist (ft) | | 824 | 534 | | 328 | | 282 | |
| Turn Bay Length (ft) | | | | 125 | | 120 | | |
| Base Capacity (vph) | 471 | 575 | 557 | 235 | 974 | 104 | 853 | 839 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 95 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.72 | 0.43 | 0.19 | 0.72 | 0.63 | 0.30 | 0.35 | 0.25 |

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (veh/h) | 275 | 40 | 161 | 40 | 25 | 20 | 138 | 385 | 65 | 25 | 245 | 170 |
| Number | 7 | 4 | 14 | 3 | 8 | 18 | 5 | 2 | 12 | 1 | 6 | 16 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1900 | 1900 | 1863 | 1900 | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 340 | 49 | 199 | 49 | 31 | 25 | 170 | 475 | 80 | 31 | 302 | 210 |
| Adj No. of Lanes | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 |
| Peak Hour Factor | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 415 | 75 | 307 | 67 | 42 | 34 | 212 | 618 | 104 | 47 | 567 | 482 |
| Arrive On Green | 0.23 | 0.23 | 0.23 | 0.08 | 0.08 | 0.08 | 0.12 | 0.40 | 0.40 | 0.03 | 0.30 | 0.30 |
| Sat Flow, veh/h | 1774 | 322 | 1309 | 816 | 516 | 416 | 1774 | 1555 | 262 | 1774 | 1863 | 1583 |
| Grp Volume(v), veh/h | 340 | 0 | 248 | 105 | 0 | 0 | 170 | 0 | 555 | 31 | 302 | 210 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 0 | 1632 | 1748 | 0 | 0 | 1774 | 0 | 1817 | 1774 | 1863 | 1583 |
| Q Serve(g_s), s | 11.2 | 0.0 | 8.4 | 3.6 | 0.0 | 0.0 | 5.7 | 0.0 | 16.3 | 1.1 | 8.3 | 6.5 |
| Cycle Q Clear(g_c), s | 11.2 | 0.0 | 8.4 | 3.6 | 0.0 | 0.0 | 5.7 | 0.0 | 16.3 | 1.1 | 8.3 | 6.5 |
| Prop In Lane | 1.00 | | 0.80 | 0.47 | | 0.24 | 1.00 | | 0.14 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 415 | 0 | 382 | 143 | 0 | 0 | 212 | 0 | 722 | 47 | 567 | 482 |
| V/C Ratio(X) | 0.82 | 0.00 | 0.65 | 0.74 | 0.00 | 0.00 | 0.80 | 0.00 | 0.77 | 0.65 | 0.53 | 0.44 |
| Avail Cap(c_a), veh/h | 520 | 0 | 478 | 597 | 0 | 0 | 260 | 0 | 1064 | 115 | 939 | 799 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 22.3 | 0.0 | 21.3 | 27.6 | 0.0 | 0.0 | 26.3 | 0.0 | 16.1 | 29.6 | 17.8 | 17.2 |
| Incr Delay (d2), s/veh | 8.1 | 0.0 | 2.1 | 7.2 | 0.0 | 0.0 | 13.5 | 0.0 | 2.0 | 14.2 | 0.8 | 0.6 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 6.4 | 0.0 | 4.0 | 2.0 | 0.0 | 0.0 | 3.6 | 0.0 | 8.4 | 0.7 | 4.3 | 2.9 |
| LnGrp Delay(d),s/veh | 30.4 | 0.0 | 23.4 | 34.8 | 0.0 | 0.0 | 39.8 | 0.0 | 18.1 | 43.8 | 18.5 | 17.8 |
| LnGrp LOS | C | | C | C | | | D | | B | D | B | B |
| Approach Vol, veh/h | | 588 | | | 105 | | | 725 | | | 543 | |
| Approach Delay, s/veh | | 27.5 | | | 34.8 | | | 23.2 | | | 19.7 | |
| Approach LOS | | C | | | C | | | C | | | B | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | 5.6 | 28.4 | | 18.4 | 11.4 | 22.7 | | 9.0 |
| Change Period (Y+Rc), s | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 |
| Max Green Setting (Gmax), s | 4.0 | 36.0 | | 18.0 | 9.0 | 31.0 | | 21.0 |
| Max Q Clear Time (g_c+I1), s | 3.1 | 18.3 | | 13.2 | 7.7 | 10.3 | | 5.6 |
| Green Ext Time (p_c), s | 0.0 | 6.1 | | 1.2 | 0.1 | 6.5 | | 0.4 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 24.1 |
| HCM 2010 LOS | C |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.6 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Vol, veh/h | 9 | 19 | 650 | 1 | 12 | 345 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 81 | 81 | 81 | 81 | 81 | 81 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 11 | 23 | 802 | 1 | 15 | 426 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1259 | 803 | 0 | 0 | 804 | 0 |
| Stage 1 | 803 | - | - | - | - | - |
| Stage 2 | 456 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | 188 | 383 | - | - | 820 | - |
| Stage 1 | 441 | - | - | - | - | - |
| Stage 2 | 638 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 183 | 383 | - | - | 820 | - |
| Mov Cap-2 Maneuver | 183 | - | - | - | - | - |
| Stage 1 | 441 | - | - | - | - | - |
| Stage 2 | 623 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 19.5 | 0 | 0.3 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 283 | 820 | - |
| HCM Lane V/C Ratio | - | - | 0.122 | 0.018 | - |
| HCM Control Delay (s) | - | - | 19.5 | 9.5 | 0 |
| HCM Lane LOS | - | - | C | A | A |
| HCM 95th %tile Q(veh) | - | - | 0.4 | 0.1 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.3 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Vol, veh/h | 5 | 20 | 80 | 606 | 349 | 10 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | 45 | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 60 | 60 | 60 | 60 | 60 | 60 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 8 | 33 | 133 | 1010 | 582 | 17 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1867 | 590 | 598 | 0 | - | 0 |
| Stage 1 | 590 | - | - | - | - | - |
| Stage 2 | 1277 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 80 | 508 | 979 | - | - | - |
| Stage 1 | 554 | - | - | - | - | - |
| Stage 2 | 262 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 55 | 508 | 979 | - | - | - |
| Mov Cap-2 Maneuver | 55 | - | - | - | - | - |
| Stage 1 | 554 | - | - | - | - | - |
| Stage 2 | 181 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 26.4 | 1.1 | 0 |
| HCM LOS | D | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 979 | - | 55 | 508 | - | - |
| HCM Lane V/C Ratio | 0.136 | - | 0.152 | 0.066 | - | - |
| HCM Control Delay (s) | 9.3 | 0 | 81.8 | 12.6 | - | - |
| HCM Lane LOS | A | A | F | B | - | - |
| HCM 95th %tile Q(veh) | 0.5 | - | 0.5 | 0.2 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 48.1 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Vol, veh/h | 80 | 120 | 536 | 50 | 35 | 439 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | 45 | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 68 | 68 | 68 | 68 | 68 | 68 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 118 | 176 | 788 | 74 | 51 | 646 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1574 | 825 | 0 | 0 | 862 | 0 |
| Stage 1 | 825 | - | - | - | - | - |
| Stage 2 | 749 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | 121 | 372 | - | - | 780 | - |
| Stage 1 | 430 | - | - | - | - | - |
| Stage 2 | 467 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | ~ 113 | 372 | - | - | 780 | - |
| Mov Cap-2 Maneuver | ~ 113 | - | - | - | - | - |
| Stage 1 | 430 | - | - | - | - | - |
| Stage 2 | 436 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | $ 301.4 | 0 | 0.7 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 194 | 780 | - |
| HCM Lane V/C Ratio | - | - | 1.516 | 0.066 | - |
| HCM Control Delay (s) | - | - | $ 301.4 | 9.9 | - |
| HCM Lane LOS | - | - | F | A | - |
| HCM 95th %tile Q(veh) | - | - | 18.5 | 0.2 | - |

Notes

~: Volume exceeds capacity  $: Delay exceeds 300s  +: Computation Not Defined  *: All major volume in platoon

| Intersection | |
|---|---|
| Int Delay, s/veh | 26 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vol, veh/h | 10 | 0 | 95 | 25 | 0 | 90 | 25 | 586 | 20 | 15 | 489 | 15 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | 100 | - | - | 70 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 15 | 0 | 140 | 37 | 0 | 132 | 37 | 862 | 29 | 22 | 719 | 22 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1790 | 1739 | 730 | 1794 | 1735 | 876 | 741 | 0 | 0 | 891 | 0 | 0 |
| Stage 1 | 774 | 774 | - | 950 | 950 | - | - | - | - | - | - | - |
| Stage 2 | 1016 | 965 | - | 844 | 785 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 | 4.12 | - | - | 4.12 | - | - |
| Critical Hdwy Stg 1 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.218 | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver | 63 | 87 | 422 | 62 | 88 | 348 | 866 | - | - | 761 | - | - |
| Stage 1 | 391 | 408 | - | 312 | 339 | - | - | - | - | - | - | - |
| Stage 2 | 287 | 333 | - | 358 | 404 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 37 | 81 | 422 | 39 | 82 | 348 | 866 | - | - | 761 | - | - |
| Mov Cap-2 Maneuver | 37 | 81 | - | 39 | 82 | - | - | - | - | - | - | - |
| Stage 1 | 374 | 396 | - | 299 | 325 | - | - | - | - | - | - | - |
| Stage 2 | 170 | 319 | - | 233 | 392 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 57.3 | 253.5 | 0.4 | 0.3 |
| HCM LOS | F | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 866 | - | - | 212 | 128 | 761 | - | - |
| HCM Lane V/C Ratio | 0.042 | - | - | 0.728 | 1.321 | 0.029 | - | - |
| HCM Control Delay (s) | 9.3 | - | - | 57.3 | 253.5 | 9.9 | - | - |
| HCM Lane LOS | A | - | - | F | F | A | - | - |
| HCM 95th %tile Q(veh) | 0.1 | - | - | 4.8 | 10.9 | 0.1 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 26.9 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Vol, veh/h | 90 | 210 | 471 | 160 | 70 | 539 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 60 | 0 | - | - | 100 | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 71 | 71 | 71 | 71 | 71 | 71 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 127 | 296 | 663 | 225 | 99 | 759 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1732 | 776 | 0 | 0 | 889 | 0 |
| Stage 1 | 776 | - | - | - | - | - |
| Stage 2 | 956 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | ~ 97 | 397 | - | - | 762 | - |
| Stage 1 | 454 | - | - | - | - | - |
| Stage 2 | 373 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | ~ 84 | 397 | - | - | 762 | - |
| Mov Cap-2 Maneuver | ~ 84 | - | - | - | - | - |
| Stage 1 | 454 | - | - | - | - | - |
| Stage 2 | 325 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 135.8 | 0 | 1.2 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | WBLn2 | SBL | SBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 84 | 397 | 762 | - |
| HCM Lane V/C Ratio | - | - | 1.509 | 0.745 | 0.129 | - |
| HCM Control Delay (s) | - | - | $ 367.9 | 36.3 | 10.4 | - |
| HCM Lane LOS | - | - | F | E | B | - |
| HCM 95th %tile Q(veh) | - | - | 10.1 | 6 | 0.4 | - |

Notes

~: Volume exceeds capacity  $: Delay exceeds 300s  +: Computation Not Defined  *: All major volume in platoon

| Lane Group | EBL | EBT | WBT | NBL | NBT | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 432 | 240 | 111 | 151 | 563 | 37 | 241 | 210 |
| v/c Ratio | 0.93 | 0.48 | 0.45 | 0.65 | 0.75 | 0.36 | 0.46 | 0.35 |
| Control Delay | 60.7 | 22.0 | 35.0 | 50.7 | 26.7 | 49.4 | 24.5 | 5.0 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 0.0 | 0.0 | 0.0 |
| Total Delay | 60.7 | 22.0 | 35.0 | 50.7 | 27.0 | 49.4 | 24.5 | 5.0 |
| Queue Length 50th (ft) | ~231 | 64 | 44 | 72 | 231 | 18 | 90 | 0 |
| Queue Length 95th (ft) | #405 | 130 | 87 | #160 | 324 | #48 | 141 | 31 |
| Internal Link Dist (ft) | | 824 | 534 | | 328 | | 282 | |
| Turn Bay Length (ft) | | | | 125 | | 120 | | |
| Base Capacity (vph) | 465 | 504 | 552 | 232 | 961 | 103 | 844 | 832 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 83 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.93 | 0.48 | 0.20 | 0.65 | 0.64 | 0.36 | 0.29 | 0.25 |

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (veh/h) | 350 | 70 | 125 | 40 | 30 | 20 | 122 | 381 | 75 | 30 | 195 | 170 |
| Number | 7 | 4 | 14 | 3 | 8 | 18 | 5 | 2 | 12 | 1 | 6 | 16 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1900 | 1900 | 1863 | 1900 | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 432 | 86 | 154 | 49 | 37 | 25 | 151 | 470 | 93 | 37 | 241 | 210 |
| Adj No. of Lanes | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 |
| Peak Hour Factor | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 469 | 158 | 284 | 66 | 50 | 34 | 189 | 583 | 115 | 52 | 575 | 489 |
| Arrive On Green | 0.26 | 0.26 | 0.26 | 0.09 | 0.09 | 0.09 | 0.11 | 0.39 | 0.39 | 0.03 | 0.31 | 0.31 |
| Sat Flow, veh/h | 1774 | 600 | 1074 | 774 | 585 | 395 | 1774 | 1511 | 299 | 1774 | 1863 | 1583 |
| Grp Volume(v), veh/h | 432 | 0 | 240 | 111 | 0 | 0 | 151 | 0 | 563 | 37 | 241 | 210 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 0 | 1673 | 1754 | 0 | 0 | 1774 | 0 | 1810 | 1774 | 1863 | 1583 |
| Q Serve(g_s), s | 16.1 | 0.0 | 8.4 | 4.2 | 0.0 | 0.0 | 5.7 | 0.0 | 18.9 | 1.4 | 7.0 | 7.2 |
| Cycle Q Clear(g_c), s | 16.1 | 0.0 | 8.4 | 4.2 | 0.0 | 0.0 | 5.7 | 0.0 | 18.9 | 1.4 | 7.0 | 7.2 |
| Prop In Lane | 1.00 | | 0.64 | 0.44 | | 0.23 | 1.00 | | 0.17 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 469 | 0 | 442 | 150 | 0 | 0 | 189 | 0 | 698 | 52 | 575 | 489 |
| V/C Ratio(X) | 0.92 | 0.00 | 0.54 | 0.74 | 0.00 | 0.00 | 0.80 | 0.00 | 0.81 | 0.71 | 0.42 | 0.43 |
| Avail Cap(c_a), veh/h | 469 | 0 | 442 | 541 | 0 | 0 | 234 | 0 | 957 | 104 | 848 | 721 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 24.4 | 0.0 | 21.5 | 30.4 | 0.0 | 0.0 | 29.7 | 0.0 | 18.7 | 32.8 | 18.7 | 18.8 |
| Incr Delay (d2), s/veh | 23.6 | 0.0 | 1.4 | 7.0 | 0.0 | 0.0 | 14.3 | 0.0 | 3.7 | 15.9 | 0.5 | 0.6 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 11.0 | 0.0 | 4.0 | 2.3 | 0.0 | 0.0 | 3.5 | 0.0 | 10.1 | 0.9 | 3.6 | 3.2 |
| LnGrp Delay(d),s/veh | 48.0 | 0.0 | 22.9 | 37.4 | 0.0 | 0.0 | 44.0 | 0.0 | 22.3 | 48.6 | 19.2 | 19.4 |
| LnGrp LOS | D | | C | D | | | D | | C | D | B | B |
| Approach Vol, veh/h | | 672 | | | 111 | | | 714 | | | 488 | |
| Approach Delay, s/veh | | 39.0 | | | 37.4 | | | 26.9 | | | 21.5 | |
| Approach LOS | | D | | | D | | | C | | | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | 6.0 | 30.3 | | 22.0 | 11.3 | 25.0 | | 9.8 |
| Change Period (Y+Rc), s | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 |
| Max Green Setting (Gmax), s | 4.0 | 36.0 | | 18.0 | 9.0 | 31.0 | | 21.0 |
| Max Q Clear Time (g_c+I1), s | 3.4 | 20.9 | | 18.1 | 7.7 | 9.2 | | 6.2 |
| Green Ext Time (p_c), s | 0.0 | 5.4 | | 0.0 | 0.0 | 6.3 | | 0.4 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 30.3 |
| HCM 2010 LOS | C |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.2 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Vol, veh/h | 18 | 33 | 715 | 1 | 11 | 205 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 81 | 81 | 81 | 81 | 81 | 81 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 22 | 41 | 883 | 1 | 14 | 253 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1163 | 883 | 0 | 0 | 884 | 0 |
| Stage 1 | 883 | - | - | - | - | - |
| Stage 2 | 280 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | 215 | 345 | - | - | 765 | - |
| Stage 1 | 404 | - | - | - | - | - |
| Stage 2 | 767 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 210 | 345 | - | - | 765 | - |
| Mov Cap-2 Maneuver | 210 | - | - | - | - | - |
| Stage 1 | 404 | - | - | - | - | - |
| Stage 2 | 751 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 21.5 | 0 | 0.5 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 281 | 765 | - |
| HCM Lane V/C Ratio | - | - | 0.224 | 0.018 | - |
| HCM Control Delay (s) | - | - | 21.5 | 9.8 | 0 |
| HCM Lane LOS | - | - | C | A | A |
| HCM 95th %tile Q(veh) | - | - | 0.8 | 0.1 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.5 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Vol, veh/h | 10 | 10 | 15 | 706 | 218 | 5 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | 45 | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 81 | 81 | 81 | 81 | 81 | 81 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 12 | 12 | 19 | 872 | 269 | 6 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1181 | 272 | 275 | 0 | - | 0 |
| Stage 1 | 272 | - | - | - | - | - |
| Stage 2 | 909 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 210 | 767 | 1288 | - | - | - |
| Stage 1 | 774 | - | - | - | - | - |
| Stage 2 | 393 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 204 | 767 | 1288 | - | - | - |
| Mov Cap-2 Maneuver | 204 | - | - | - | - | - |
| Stage 1 | 774 | - | - | - | - | - |
| Stage 2 | 382 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 16.8 | 0.2 | 0 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1288 | - | 204 | 767 | - | - |
| HCM Lane V/C Ratio | 0.014 | - | 0.061 | 0.016 | - | - |
| HCM Control Delay (s) | 7.8 | 0 | 23.8 | 9.8 | - | - |
| HCM Lane LOS | A | A | C | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 0.2 | 0 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Vol, veh/h | 0 | 0 | 721 | 0 | 0 | 228 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | 45 | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 68 | 68 | 68 | 68 | 68 | 68 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 1060 | 0 | 0 | 335 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1395 | 1060 | 0 | 0 | 1060 | 0 |
| Stage 1 | 1060 | - | - | - | - | - |
| Stage 2 | 335 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | 156 | 272 | - | - | 657 | - |
| Stage 1 | 333 | - | - | - | - | - |
| Stage 2 | 725 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 156 | 272 | - | - | 657 | - |
| Mov Cap-2 Maneuver | 156 | - | - | - | - | - |
| Stage 1 | 333 | - | - | - | - | - |
| Stage 2 | 725 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 0 |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | - | 657 | - |
| HCM Lane V/C Ratio | - | - | - | - | - |
| HCM Control Delay (s) | - | - | 0 | 0 | - |
| HCM Lane LOS | - | - | A | A | - |
| HCM 95th %tile Q(veh) | - | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vol, veh/h | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 721 | 0 | 0 | 228 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | 100 | - | - | 70 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1060 | 0 | 0 | 335 | 0 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1395 | 1395 | 335 | 1395 | 1395 | 1060 | 335 | 0 | 0 | 1060 | 0 | 0 |
| Stage 1 | 335 | 335 | - | 1060 | 1060 | - | - | - | - | - | - | - |
| Stage 2 | 1060 | 1060 | - | 335 | 335 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 | 4.12 | - | - | 4.12 | - | - |
| Critical Hdwy Stg 1 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.218 | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver | 119 | 141 | 707 | 119 | 141 | 272 | 1224 | - | - | 657 | - | - |
| Stage 1 | 679 | 643 | - | 271 | 301 | - | - | - | - | - | - | - |
| Stage 2 | 271 | 301 | - | 679 | 643 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 119 | 141 | 707 | 119 | 141 | 272 | 1224 | - | - | 657 | - | - |
| Mov Cap-2 Maneuver | 119 | 141 | - | 119 | 141 | - | - | - | - | - | - | - |
| Stage 1 | 679 | 643 | - | 271 | 301 | - | - | - | - | - | - | - |
| Stage 2 | 271 | 301 | - | 679 | 643 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 0 | 0 |
| HCM LOS | A | A | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1224 | - | - | - | - | 657 | - | - |
| HCM Lane V/C Ratio | - | - | - | - | - | - | - | - |
| HCM Control Delay (s) | 0 | - | - | 0 | 0 | 0 | - | - |
| HCM Lane LOS | A | - | - | A | A | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | - | - | 0 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Vol, veh/h | 0 | 0 | 721 | 0 | 0 | 228 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 60 | 0 | - | - | 100 | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 71 | 71 | 71 | 71 | 71 | 71 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 1015 | 0 | 0 | 321 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1336 | 1015 | 0 | 0 | 1015 | 0 |
| Stage 1 | 1015 | - | - | - | - | - |
| Stage 2 | 321 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | 169 | 289 | - | - | 683 | - |
| Stage 1 | 350 | - | - | - | - | - |
| Stage 2 | 735 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 169 | 289 | - | - | 683 | - |
| Mov Cap-2 Maneuver | 169 | - | - | - | - | - |
| Stage 1 | 350 | - | - | - | - | - |
| Stage 2 | 735 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 0 |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | WBLn2 | SBL | SBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | - | - | 683 | - |
| HCM Lane V/C Ratio | - | - | - | - | - | - |
| HCM Control Delay (s) | - | - | 0 | 0 | 0 | - |
| HCM Lane LOS | - | - | A | A | A | - |
| HCM 95th %tile Q(veh) | - | - | - | - | 0 | - |

| Lane Group | EBL | EBT | WBT | NBL | NBT | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 432 | 259 | 111 | 151 | 563 | 37 | 244 | 210 |
| v/c Ratio | 0.93 | 0.51 | 0.45 | 0.65 | 0.75 | 0.36 | 0.47 | 0.35 |
| Control Delay | 60.8 | 22.1 | 35.0 | 50.7 | 26.7 | 49.4 | 24.6 | 5.0 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 0.0 | 0.0 | 0.0 |
| Total Delay | 60.8 | 22.1 | 35.0 | 50.7 | 27.0 | 49.4 | 24.6 | 5.0 |
| Queue Length 50th (ft) | ~231 | 68 | 44 | 72 | 231 | 18 | 91 | 0 |
| Queue Length 95th (ft) | #405 | 137 | 87 | #160 | 324 | #48 | 143 | 31 |
| Internal Link Dist (ft) | | 824 | 534 | | 328 | | 282 | |
| Turn Bay Length (ft) | | | | 125 | | 120 | | |
| Base Capacity (vph) | 465 | 510 | 552 | 232 | 961 | 103 | 843 | 832 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 83 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.93 | 0.51 | 0.20 | 0.65 | 0.64 | 0.36 | 0.29 | 0.25 |

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (veh/h) | 350 | 70 | 140 | 40 | 30 | 20 | 122 | 381 | 75 | 30 | 198 | 170 |
| Number | 7 | 4 | 14 | 3 | 8 | 18 | 5 | 2 | 12 | 1 | 6 | 16 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1900 | 1900 | 1863 | 1900 | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 432 | 86 | 173 | 49 | 37 | 25 | 151 | 470 | 93 | 37 | 244 | 210 |
| Adj No. of Lanes | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 |
| Peak Hour Factor | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 469 | 146 | 294 | 66 | 50 | 34 | 189 | 583 | 115 | 52 | 575 | 489 |
| Arrive On Green | 0.26 | 0.26 | 0.26 | 0.09 | 0.09 | 0.09 | 0.11 | 0.39 | 0.39 | 0.03 | 0.31 | 0.31 |
| Sat Flow, veh/h | 1774 | 553 | 1113 | 774 | 585 | 395 | 1774 | 1511 | 299 | 1774 | 1863 | 1583 |
| Grp Volume(v), veh/h | 432 | 0 | 259 | 111 | 0 | 0 | 151 | 0 | 563 | 37 | 244 | 210 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 0 | 1666 | 1754 | 0 | 0 | 1774 | 0 | 1810 | 1774 | 1863 | 1583 |
| Q Serve(g_s), s | 16.1 | 0.0 | 9.2 | 4.2 | 0.0 | 0.0 | 5.7 | 0.0 | 18.9 | 1.4 | 7.1 | 7.2 |
| Cycle Q Clear(g_c), s | 16.1 | 0.0 | 9.2 | 4.2 | 0.0 | 0.0 | 5.7 | 0.0 | 18.9 | 1.4 | 7.1 | 7.2 |
| Prop In Lane | 1.00 | | 0.67 | 0.44 | | 0.23 | 1.00 | | 0.17 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 469 | 0 | 440 | 150 | 0 | 0 | 189 | 0 | 698 | 52 | 575 | 489 |
| V/C Ratio(X) | 0.92 | 0.00 | 0.59 | 0.74 | 0.00 | 0.00 | 0.80 | 0.00 | 0.81 | 0.71 | 0.42 | 0.43 |
| Avail Cap(c_a), veh/h | 469 | 0 | 440 | 541 | 0 | 0 | 234 | 0 | 956 | 104 | 848 | 720 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 24.4 | 0.0 | 21.8 | 30.4 | 0.0 | 0.0 | 29.7 | 0.0 | 18.6 | 32.8 | 18.7 | 18.8 |
| Incr Delay (d2), s/veh | 23.7 | 0.0 | 2.0 | 7.0 | 0.0 | 0.0 | 14.3 | 0.0 | 3.7 | 15.9 | 0.5 | 0.6 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 11.0 | 0.0 | 4.5 | 2.3 | 0.0 | 0.0 | 3.5 | 0.0 | 10.1 | 0.9 | 3.7 | 3.2 |
| LnGrp Delay(d),s/veh | 48.1 | 0.0 | 23.9 | 37.4 | 0.0 | 0.0 | 44.1 | 0.0 | 22.3 | 48.6 | 19.2 | 19.4 |
| LnGrp LOS | D | | C | D | | | D | | C | D | B | B |
| Approach Vol, veh/h | | 691 | | | 111 | | | 714 | | | 491 | |
| Approach Delay, s/veh | | 39.0 | | | 37.4 | | | 26.9 | | | 21.5 | |
| Approach LOS | | D | | | D | | | C | | | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | 6.0 | 30.3 | | 22.0 | 11.3 | 25.0 | | 9.8 |
| Change Period (Y+Rc), s | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 |
| Max Green Setting (Gmax), s | 4.0 | 36.0 | | 18.0 | 9.0 | 31.0 | | 21.0 |
| Max Q Clear Time (g_c+I1), s | 3.4 | 20.9 | | 18.1 | 7.7 | 9.2 | | 6.2 |
| Green Ext Time (p_c), s | 0.0 | 5.4 | | 0.0 | 0.0 | 6.3 | | 0.4 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 30.3 |
| HCM 2010 LOS | C |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.7 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Vol, veh/h | 17 | 34 | 715 | 41 | 51 | 205 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 81 | 81 | 81 | 81 | 81 | 81 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 21 | 42 | 883 | 51 | 63 | 253 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1287 | 908 | 0 | 0 | 933 | 0 |
| Stage 1 | 908 | - | - | - | - | - |
| Stage 2 | 379 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | 181 | 334 | - | - | 734 | - |
| Stage 1 | 393 | - | - | - | - | - |
| Stage 2 | 692 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 163 | 334 | - | - | 734 | - |
| Mov Cap-2 Maneuver | 163 | - | - | - | - | - |
| Stage 1 | 393 | - | - | - | - | - |
| Stage 2 | 623 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 24.5 | 0 | 2.1 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 247 | 734 | - |
| HCM Lane V/C Ratio | - | - | 0.255 | 0.086 | - |
| HCM Control Delay (s) | - | - | 24.5 | 10.4 | 0 |
| HCM Lane LOS | - | - | C | B | A |
| HCM 95th %tile Q(veh) | - | - | 1 | 0.3 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.5 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Vol, veh/h | 10 | 10 | 15 | 746 | 217 | 5 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | 45 | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 81 | 81 | 81 | 81 | 81 | 81 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 12 | 12 | 19 | 921 | 268 | 6 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1229 | 271 | 274 | 0 | - | 0 |
| Stage 1 | 271 | - | - | - | - | - |
| Stage 2 | 958 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 196 | 768 | 1289 | - | - | - |
| Stage 1 | 775 | - | - | - | - | - |
| Stage 2 | 373 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 190 | 768 | 1289 | - | - | - |
| Mov Cap-2 Maneuver | 190 | - | - | - | - | - |
| Stage 1 | 775 | - | - | - | - | - |
| Stage 2 | 362 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 17.6 | 0.2 | 0 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1289 | - | 190 | 768 | - | - |
| HCM Lane V/C Ratio | 0.014 | - | 0.065 | 0.016 | - | - |
| HCM Control Delay (s) | 7.8 | 0 | 25.3 | 9.8 | - | - |
| HCM Lane LOS | A | A | D | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 0.2 | 0 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Vol, veh/h | 0 | 0 | 761 | 0 | 0 | 227 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | 45 | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 68 | 68 | 68 | 68 | 68 | 68 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 1119 | 0 | 0 | 334 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1453 | 1119 | 0 | 0 | 1119 | 0 |
| Stage 1 | 1119 | - | - | - | - | - |
| Stage 2 | 334 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | 144 | 252 | - | - | 624 | - |
| Stage 1 | 312 | - | - | - | - | - |
| Stage 2 | 725 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 144 | 252 | - | - | 624 | - |
| Mov Cap-2 Maneuver | 144 | - | - | - | - | - |
| Stage 1 | 312 | - | - | - | - | - |
| Stage 2 | 725 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 0 |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | - | 624 | - |
| HCM Lane V/C Ratio | - | - | - | - | - |
| HCM Control Delay (s) | - | - | 0 | 0 | - |
| HCM Lane LOS | - | - | A | A | - |
| HCM 95th %tile Q(veh) | - | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vol, veh/h | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 761 | 0 | 0 | 227 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | 100 | - | - | 70 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1119 | 0 | 0 | 334 | 0 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1453 | 1453 | 334 | 1453 | 1453 | 1119 | 334 | 0 | 0 | 1119 | 0 | 0 |
| Stage 1 | 334 | 334 | - | 1119 | 1119 | - | - | - | - | - | - | - |
| Stage 2 | 1119 | 1119 | - | 334 | 334 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 | 4.12 | - | - | 4.12 | - | - |
| Critical Hdwy Stg 1 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.218 | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver | 108 | 130 | 708 | 108 | 130 | 252 | 1225 | - | - | 624 | - | - |
| Stage 1 | 680 | 643 | - | 251 | 282 | - | - | - | - | - | - | - |
| Stage 2 | 251 | 282 | - | 680 | 643 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 108 | 130 | 708 | 108 | 130 | 252 | 1225 | - | - | 624 | - | - |
| Mov Cap-2 Maneuver | 108 | 130 | - | 108 | 130 | - | - | - | - | - | - | - |
| Stage 1 | 680 | 643 | - | 251 | 282 | - | - | - | - | - | - | - |
| Stage 2 | 251 | 282 | - | 680 | 643 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 0 | 0 |
| HCM LOS | A | A | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1225 | - | - | - | - | 624 | - | - |
| HCM Lane V/C Ratio | - | - | - | - | - | - | - | - |
| HCM Control Delay (s) | 0 | - | - | 0 | 0 | 0 | - | - |
| HCM Lane LOS | A | - | - | A | A | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | - | - | 0 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Vol, veh/h | 0 | 0 | 761 | 0 | 0 | 227 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 60 | 0 | - | - | 100 | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 71 | 71 | 71 | 71 | 71 | 71 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 1072 | 0 | 0 | 320 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1392 | 1072 | 0 | 0 | 1072 | 0 |
| Stage 1 | 1072 | - | - | - | - | - |
| Stage 2 | 320 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | 156 | 268 | - | - | 650 | - |
| Stage 1 | 329 | - | - | - | - | - |
| Stage 2 | 736 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 156 | 268 | - | - | 650 | - |
| Mov Cap-2 Maneuver | 156 | - | - | - | - | - |
| Stage 1 | 329 | - | - | - | - | - |
| Stage 2 | 736 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 0 |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | WBLn2 | SBL | SBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | - | - | 650 | - |
| HCM Lane V/C Ratio | - | - | - | - | - | - |
| HCM Control Delay (s) | - | - | 0 | 0 | 0 | - |
| HCM Lane LOS | - | - | A | A | A | - |
| HCM 95th %tile Q(veh) | - | - | - | - | 0 | - |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 175 | 115 | 195 | 155 | 160 | 200 | 165 | 355 | 95 | 70 | 470 | 170 |
| Future Volume (veh/h) | 175 | 115 | 195 | 155 | 160 | 200 | 165 | 355 | 95 | 70 | 470 | 170 |
| Number | 7 | 4 | 14 | 3 | 8 | 18 | 5 | 2 | 12 | 1 | 6 | 16 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 199 | 131 | 222 | 207 | 213 | 267 | 199 | 428 | 114 | 83 | 560 | 202 |
| Adj No. of Lanes | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 2 | 0 |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.75 | 0.75 | 0.75 | 0.83 | 0.83 | 0.83 | 0.84 | 0.84 | 0.84 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 236 | 703 | 597 | 158 | 251 | 315 | 177 | 486 | 413 | 169 | 654 | 235 |
| Arrive On Green | 0.13 | 0.38 | 0.38 | 0.09 | 0.33 | 0.33 | 0.10 | 0.26 | 0.26 | 0.10 | 0.26 | 0.26 |
| Sat Flow, veh/h | 1774 | 1863 | 1583 | 1774 | 753 | 944 | 1774 | 1863 | 1583 | 1774 | 2552 | 918 |
| Grp Volume(v), veh/h | 199 | 131 | 222 | 207 | 0 | 480 | 199 | 428 | 114 | 83 | 388 | 374 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1863 | 1583 | 1774 | 0 | 1696 | 1774 | 1863 | 1583 | 1774 | 1770 | 1701 |
| Q Serve(g_s), s | 9.9 | 4.2 | 6.4 | 8.0 | 0.0 | 23.7 | 9.0 | 19.9 | 3.9 | 4.0 | 18.8 | 18.9 |
| Cycle Q Clear(g_c), s | 9.9 | 4.2 | 6.4 | 8.0 | 0.0 | 23.7 | 9.0 | 19.9 | 3.9 | 4.0 | 18.8 | 18.9 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.56 | 1.00 | | 1.00 | 1.00 | | 0.54 |
| Lane Grp Cap(c), veh/h | 236 | 703 | 597 | 158 | 0 | 565 | 177 | 486 | 413 | 169 | 453 | 436 |
| V/C Ratio(X) | 0.84 | 0.19 | 0.37 | 1.31 | 0.00 | 0.85 | 1.12 | 0.88 | 0.28 | 0.49 | 0.86 | 0.86 |
| Avail Cap(c_a), veh/h | 236 | 703 | 597 | 158 | 0 | 565 | 177 | 580 | 493 | 169 | 511 | 491 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 38.1 | 18.8 | 9.9 | 41.0 | 0.0 | 27.9 | 40.5 | 31.9 | 15.3 | 38.6 | 31.9 | 31.9 |
| Incr Delay (d2), s/veh | 23.5 | 0.6 | 1.8 | 178.5 | 0.0 | 14.7 | 104.0 | 13.1 | 0.4 | 2.2 | 12.3 | 13.1 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 6.3 | 2.3 | 3.1 | 11.7 | 0.0 | 13.4 | 9.5 | 12.0 | 1.7 | 2.1 | 10.7 | 10.4 |
| LnGrp Delay(d),s/veh | 61.7 | 19.4 | 11.6 | 219.5 | 0.0 | 42.6 | 144.5 | 45.0 | 15.7 | 40.8 | 44.2 | 45.0 |
| LnGrp LOS | E | B | B | F | | D | F | D | B | D | D | D |
| Approach Vol, veh/h | | 552 | | | 687 | | | 741 | | | 845 | |
| Approach Delay, s/veh | | 31.5 | | | 95.9 | | | 67.2 | | | 44.2 | |
| Approach LOS | | C | | | F | | | E | | | D | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | 12.6 | 27.5 | 12.0 | 37.9 | 13.0 | 27.1 | 15.9 | 34.0 |
| Change Period (Y+Rc), s | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | 7.0 | 28.0 | 8.0 | 31.0 | 9.0 | 26.0 | 9.0 | 30.0 |
| Max Q Clear Time (g_c+I1), s | 6.0 | 21.9 | 10.0 | 8.4 | 11.0 | 20.9 | 11.9 | 25.7 |
| Green Ext Time (p_c), s | 0.0 | 1.6 | 0.0 | 1.5 | 0.0 | 2.2 | 0.0 | 1.3 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 60.3 |
| HCM 2010 LOS | E |

| Intersection | |
|---|---|
| Int Delay, s/veh | 102.5 |

| Movement | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 10 | 65 | 10 | 65 | 205 | 640 | 30 | 5 | 845 | 20 |
| Future Vol, veh/h | 0 | 0 | 10 | 65 | 10 | 65 | 205 | 640 | 30 | 5 | 845 | 20 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | 1 | - | - | 1 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 88 | 88 | 88 | 80 | 80 | 80 | 94 | 94 | 94 | 91 | 91 | 91 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 11 | 81 | 13 | 81 | 218 | 681 | 32 | 5 | 929 | 22 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 2130 | 2099 | 940 | 2089 | 2094 | 697 | 951 | 0 | 0 | 713 | 0 | 0 |
| Stage 1 | 950 | 950 | - | 1133 | 1133 | - | - | - | - | - | - | - |
| Stage 2 | 1180 | 1149 | - | 956 | 961 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 | 4.12 | - | - | 4.12 | - | - |
| Critical Hdwy Stg 1 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.218 | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver | 36 | 52 | 320 | ~ 39 | 52 | 441 | 722 | - | - | 887 | - | - |
| Stage 1 | 312 | 339 | - | 247 | 278 | - | - | - | - | - | - | - |
| Stage 2 | 232 | 273 | - | 310 | 335 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 17 | 36 | 320 | ~ 29 | 36 | 441 | 722 | - | - | 887 | - | - |
| Mov Cap-2 Maneuver | 17 | 36 | - | ~ 29 | 36 | - | - | - | - | - | - | - |
| Stage 1 | 218 | 337 | - | 172 | 194 | - | - | - | - | - | - | - |
| Stage 2 | 124 | 191 | - | 297 | 333 | - | - | - | - | - | - | - |

| Approach | SE | NW | NE | SW |
|---|---|---|---|---|
| HCM Control Delay, s | 16.7 | $ 1198.4 | 2.8 | 0.1 |
| HCM LOS | C | F | | |

| Minor Lane/Major Mvmt | NEL | NET | NER | NWLn1 | SELn1 | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 722 | - | - | 53 | 320 | 887 | - | - |
| HCM Lane V/C Ratio | 0.302 | - | - | 3.302 | 0.036 | 0.006 | - | - |
| HCM Control Delay (s) | 12.1 | - | $ | 1198.4 | 16.7 | 9.1 | - | - |
| HCM Lane LOS | B | - | - | F | C | A | - | - |
| HCM 95th %tile Q(veh) | 1.3 | - | - | 18.8 | 0.1 | 0 | - | - |

**Notes**

~: Volume exceeds capacity  $: Delay exceeds 300s  +: Computation Not Defined  *: All major volume in platoon

| Movement | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 5 | 80 | 15 | 150 | 10 | 695 | 5 | 180 | 25 | 420 | 565 | 5 |
| Future Volume (veh/h) | 5 | 80 | 15 | 150 | 10 | 695 | 5 | 180 | 25 | 420 | 565 | 5 |
| Number | 1 | 6 | 16 | 5 | 2 | 12 | 7 | 4 | 14 | 3 | 8 | 18 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1900 | 1863 | 1900 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 8 | 121 | 23 | 158 | 11 | 732 | 6 | 202 | 28 | 457 | 614 | 5 |
| Adj No. of Lanes | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| Peak Hour Factor | 0.66 | 0.66 | 0.66 | 0.95 | 0.95 | 0.95 | 0.89 | 0.89 | 0.89 | 0.92 | 0.92 | 0.92 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 11 | 161 | 31 | 412 | 29 | 785 | 11 | 270 | 230 | 440 | 713 | 6 |
| Arrive On Green | 0.11 | 0.11 | 0.11 | 0.25 | 0.25 | 0.25 | 0.01 | 0.14 | 0.14 | 0.25 | 0.39 | 0.39 |
| Sat Flow, veh/h | 95 | 1441 | 274 | 1664 | 116 | 1583 | 1774 | 1863 | 1583 | 1774 | 1845 | 15 |
| Grp Volume(v), veh/h | 152 | 0 | 0 | 169 | 0 | 732 | 6 | 202 | 28 | 457 | 0 | 619 |
| Grp Sat Flow(s),veh/h/ln | 1810 | 0 | 0 | 1780 | 0 | 1583 | 1774 | 1863 | 1583 | 1774 | 0 | 1860 |
| Q Serve(g_s), s | 5.3 | 0.0 | 0.0 | 5.1 | 0.0 | 16.0 | 0.2 | 6.7 | 1.0 | 16.0 | 0.0 | 19.8 |
| Cycle Q Clear(g_c), s | 5.3 | 0.0 | 0.0 | 5.1 | 0.0 | 16.0 | 0.2 | 6.7 | 1.0 | 16.0 | 0.0 | 19.8 |
| Prop In Lane | 0.05 | | 0.15 | 0.93 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.01 |
| Lane Grp Cap(c), veh/h | 202 | 0 | 0 | 441 | 0 | 785 | 11 | 270 | 230 | 440 | 0 | 719 |
| V/C Ratio(X) | 0.75 | 0.00 | 0.00 | 0.38 | 0.00 | 0.93 | 0.54 | 0.75 | 0.12 | 1.04 | 0.00 | 0.86 |
| Avail Cap(c_a), veh/h | 448 | 0 | 0 | 441 | 0 | 785 | 110 | 462 | 392 | 440 | 0 | 807 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 27.8 | 0.0 | 0.0 | 20.2 | 0.0 | 15.3 | 32.0 | 26.5 | 24.0 | 24.3 | 0.0 | 18.2 |
| Incr Delay (d2), s/veh | 5.6 | 0.0 | 0.0 | 0.5 | 0.0 | 17.9 | 34.3 | 4.1 | 0.2 | 53.6 | 0.0 | 8.7 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 2.9 | 0.0 | 0.0 | 2.6 | 0.0 | 16.0 | 0.2 | 3.7 | 0.5 | 14.2 | 0.0 | 11.9 |
| LnGrp Delay(d),s/veh | 33.4 | 0.0 | 0.0 | 20.7 | 0.0 | 33.2 | 66.3 | 30.6 | 24.3 | 77.9 | 0.0 | 26.9 |
| LnGrp LOS | C | | | C | | C | E | C | C | F | | C |
| Approach Vol, veh/h | | 152 | | | 901 | | | 236 | | | 1076 | |
| Approach Delay, s/veh | | 33.4 | | | 30.8 | | | 30.8 | | | 48.5 | |
| Approach LOS | | C | | | C | | | C | | | D | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | 3 | 4 | | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | | 20.0 | 20.0 | 13.4 | | 11.2 | 4.4 | 29.0 |
| Change Period (Y+Rc), s | | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | | 16.0 | 16.0 | 16.0 | | 16.0 | 4.0 | 28.0 |
| Max Q Clear Time (g_c+I1), s | | 18.0 | 18.0 | 8.7 | | 7.3 | 2.2 | 21.8 |
| Green Ext Time (p_c), s | | 0.0 | 0.0 | 0.6 | | 0.5 | 0.0 | 2.2 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 39.0 |
| HCM 2010 LOS | D |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 120 | 105 | 245 | 205 | 110 | 100 | 260 | 495 | 230 | 105 | 460 | 195 |
| Future Volume (veh/h) | 120 | 105 | 245 | 205 | 110 | 100 | 260 | 495 | 230 | 105 | 460 | 195 |
| Number | 7 | 4 | 14 | 3 | 8 | 18 | 5 | 2 | 12 | 1 | 6 | 16 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 143 | 125 | 292 | 250 | 134 | 122 | 268 | 510 | 237 | 112 | 489 | 207 |
| Adj No. of Lanes | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 2 | 0 |
| Peak Hour Factor | 0.84 | 0.84 | 0.84 | 0.82 | 0.82 | 0.82 | 0.97 | 0.97 | 0.97 | 0.94 | 0.94 | 0.94 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 180 | 349 | 296 | 195 | 176 | 160 | 318 | 631 | 537 | 200 | 661 | 278 |
| Arrive On Green | 0.10 | 0.19 | 0.19 | 0.11 | 0.20 | 0.20 | 0.18 | 0.34 | 0.34 | 0.11 | 0.27 | 0.27 |
| Sat Flow, veh/h | 1774 | 1863 | 1583 | 1774 | 899 | 819 | 1774 | 1863 | 1583 | 1774 | 2429 | 1023 |
| Grp Volume(v), veh/h | 143 | 125 | 292 | 250 | 0 | 256 | 268 | 510 | 237 | 112 | 355 | 341 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1863 | 1583 | 1774 | 0 | 1718 | 1774 | 1863 | 1583 | 1774 | 1770 | 1682 |
| Q Serve(g_s), s | 5.0 | 3.7 | 7.3 | 7.0 | 0.0 | 9.0 | 9.3 | 15.9 | 4.8 | 3.8 | 11.6 | 11.8 |
| Cycle Q Clear(g_c), s | 5.0 | 3.7 | 7.3 | 7.0 | 0.0 | 9.0 | 9.3 | 15.9 | 4.8 | 3.8 | 11.6 | 11.8 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.48 | 1.00 | | 1.00 | 1.00 | | 0.61 |
| Lane Grp Cap(c), veh/h | 180 | 349 | 296 | 195 | 0 | 336 | 318 | 631 | 537 | 200 | 481 | 458 |
| V/C Ratio(X) | 0.79 | 0.36 | 0.99 | 1.28 | 0.00 | 0.76 | 0.84 | 0.81 | 0.44 | 0.56 | 0.74 | 0.74 |
| Avail Cap(c_a), veh/h | 195 | 937 | 796 | 195 | 0 | 864 | 390 | 966 | 821 | 200 | 723 | 687 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 27.9 | 22.5 | 10.1 | 28.3 | 0.0 | 24.2 | 25.2 | 19.1 | 6.8 | 26.8 | 21.1 | 21.1 |
| Incr Delay (d2), s/veh | 18.7 | 0.6 | 21.0 | 159.8 | 0.0 | 3.6 | 13.0 | 3.0 | 0.6 | 3.5 | 2.2 | 2.4 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 3.4 | 2.0 | 5.9 | 12.0 | 0.0 | 4.5 | 5.7 | 8.6 | 2.8 | 2.1 | 5.9 | 5.7 |
| LnGrp Delay(d),s/veh | 46.7 | 23.2 | 31.1 | 188.1 | 0.0 | 27.7 | 38.3 | 22.2 | 7.3 | 30.3 | 23.3 | 23.6 |
| LnGrp LOS | D | C | C | F | | C | D | C | A | C | C | C |
| Approach Vol, veh/h | | 560 | | | 506 | | | 1015 | | | 808 | |
| Approach Delay, s/veh | | 33.3 | | | 107.0 | | | 23.0 | | | 24.4 | |
| Approach LOS | | C | | | F | | | C | | | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | 11.2 | 25.6 | 11.0 | 15.9 | 15.4 | 21.3 | 10.5 | 16.5 |
| Change Period (Y+Rc), s | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | 7.0 | 33.0 | 7.0 | 32.0 | 14.0 | 26.0 | 7.0 | 32.0 |
| Max Q Clear Time (g_c+I1), s | 5.8 | 17.9 | 9.0 | 9.3 | 11.3 | 13.8 | 7.0 | 11.0 |
| Green Ext Time (p_c), s | 0.0 | 3.7 | 0.0 | 1.7 | 0.2 | 3.6 | 0.0 | 1.5 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 40.1 |
| HCM 2010 LOS | D |

| Intersection | |
|---|---|
| Int Delay, s/veh | 115.7 |

| Movement | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 115 | 45 | 5 | 75 | 155 | 815 | 75 | 10 | 895 | 10 |
| Future Vol, veh/h | 0 | 0 | 115 | 45 | 5 | 75 | 155 | 815 | 75 | 10 | 895 | 10 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | 1 | - | - | 1 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 84 | 84 | 84 | 82 | 82 | 82 | 97 | 97 | 97 | 94 | 94 | 94 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 137 | 55 | 6 | 91 | 160 | 840 | 77 | 11 | 952 | 11 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 2227 | 2217 | 958 | 2247 | 2184 | 879 | 963 | 0 | 0 | 917 | 0 | 0 |
| Stage 1 | 980 | 980 | - | 1199 | 1199 | - | - | - | - | - | - | - |
| Stage 2 | 1247 | 1237 | - | 1048 | 985 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 | 4.12 | - | - | 4.12 | - | - |
| Critical Hdwy Stg 1 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.218 | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver | 31 | 44 | 312 | ~ 30 | 46 | 347 | 715 | - | - | 744 | - | - |
| Stage 1 | 301 | 328 | - | 226 | 259 | - | - | - | - | - | - | - |
| Stage 2 | 213 | 248 | - | 275 | 326 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 16 | 34 | 312 | ~ 14 | 35 | 347 | 715 | - | - | 744 | - | - |
| Mov Cap-2 Maneuver | 16 | 34 | - | ~ 14 | 35 | - | - | - | - | - | - | - |
| Stage 1 | 234 | 323 | - | 175 | 201 | - | - | - | - | - | - | - |
| Stage 2 | 118 | 192 | - | 152 | 321 | - | - | - | - | - | - | - |

| Approach | SE | NW | NE | SW |
|---|---|---|---|---|
| HCM Control Delay, s | 25.3 | $ 1741.2 | 1.7 | 0.1 |
| HCM LOS | D | F | | |

| Minor Lane/Major Mvmt | NEL | NET | NER | NWLn1 | SELn1 | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 715 | - | - | 35 | 312 | 744 | - | - |
| HCM Lane V/C Ratio | 0.223 | - | - | 4.355 | 0.439 | 0.014 | - | - |
| HCM Control Delay (s) | 11.5 | - | - | $ 1741.2 | 25.3 | 9.9 | - | - |
| HCM Lane LOS | B | - | - | F | D | A | - | - |
| HCM 95th %tile Q(veh) | 0.9 | - | - | 17.9 | 2.1 | 0 | - | - |

**Notes**

~: Volume exceeds capacity  $: Delay exceeds 300s  +: Computation Not Defined  *: All major volume in platoon

| Movement | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 10 | 70 | 20 | 140 | 15 | 625 | 10 | 445 | 100 | 535 | 510 | 10 |
| Future Volume (veh/h) | 10 | 70 | 20 | 140 | 15 | 625 | 10 | 445 | 100 | 535 | 510 | 10 |
| Number | 1 | 6 | 16 | 5 | 2 | 12 | 7 | 4 | 14 | 3 | 8 | 18 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1900 | 1863 | 1900 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 13 | 91 | 26 | 152 | 16 | 679 | 11 | 494 | 111 | 615 | 586 | 11 |
| Adj No. of Lanes | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| Peak Hour Factor | 0.77 | 0.77 | 0.77 | 0.92 | 0.92 | 0.92 | 0.90 | 0.90 | 0.90 | 0.87 | 0.87 | 0.87 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 16 | 112 | 32 | 226 | 24 | 778 | 18 | 520 | 442 | 622 | 1129 | 21 |
| Arrive On Green | 0.09 | 0.09 | 0.09 | 0.14 | 0.14 | 0.14 | 0.01 | 0.28 | 0.28 | 0.35 | 0.62 | 0.62 |
| Sat Flow, veh/h | 179 | 1253 | 358 | 1612 | 170 | 1583 | 1774 | 1863 | 1583 | 1774 | 1822 | 34 |
| Grp Volume(v), veh/h | 130 | 0 | 0 | 168 | 0 | 679 | 11 | 494 | 111 | 615 | 0 | 597 |
| Grp Sat Flow(s),veh/h/ln | 1791 | 0 | 0 | 1782 | 0 | 1583 | 1774 | 1863 | 1583 | 1774 | 0 | 1857 |
| Q Serve(g_s), s | 8.1 | 0.0 | 0.0 | 10.2 | 0.0 | 16.0 | 0.7 | 29.7 | 6.2 | 39.3 | 0.0 | 20.6 |
| Cycle Q Clear(g_c), s | 8.1 | 0.0 | 0.0 | 10.2 | 0.0 | 16.0 | 0.7 | 29.7 | 6.2 | 39.3 | 0.0 | 20.6 |
| Prop In Lane | 0.10 | | 0.20 | 0.90 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.02 |
| Lane Grp Cap(c), veh/h | 161 | 0 | 0 | 250 | 0 | 778 | 18 | 520 | 442 | 622 | 0 | 1150 |
| V/C Ratio(X) | 0.81 | 0.00 | 0.00 | 0.67 | 0.00 | 0.87 | 0.60 | 0.95 | 0.25 | 0.99 | 0.00 | 0.52 |
| Avail Cap(c_a), veh/h | 251 | 0 | 0 | 250 | 0 | 778 | 62 | 523 | 444 | 622 | 0 | 1150 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 50.9 | 0.0 | 0.0 | 46.5 | 0.0 | 25.9 | 56.2 | 40.3 | 31.9 | 36.8 | 0.0 | 12.2 |
| Incr Delay (d2), s/veh | 10.3 | 0.0 | 0.0 | 6.8 | 0.0 | 10.8 | 27.7 | 27.4 | 0.3 | 33.0 | 0.0 | 0.4 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 4.5 | 0.0 | 0.0 | 5.5 | 0.0 | 21.2 | 0.5 | 19.2 | 2.7 | 24.8 | 0.0 | 10.6 |
| LnGrp Delay(d),s/veh | 61.3 | 0.0 | 0.0 | 53.4 | 0.0 | 36.6 | 83.9 | 67.7 | 32.2 | 69.8 | 0.0 | 12.6 |
| LnGrp LOS | E | | | D | | D | F | E | C | E | | B |
| Approach Vol, veh/h | | 130 | | | 847 | | | 616 | | | 1212 | |
| Approach Delay, s/veh | | 61.3 | | | 39.9 | | | 61.6 | | | 41.6 | |
| Approach LOS | | E | | | D | | | E | | | D | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | 3 | 4 | | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | | 20.0 | 44.0 | 35.8 | | 14.2 | 5.2 | 74.6 |
| Change Period (Y+Rc), s | | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | | 16.0 | 40.0 | 32.0 | | 16.0 | 4.0 | 68.0 |
| Max Q Clear Time (g_c+I1), s | | 18.0 | 41.3 | 31.7 | | 10.1 | 2.7 | 22.6 |
| Green Ext Time (p_c), s | | 0.0 | 0.0 | 0.1 | | 0.3 | 0.0 | 4.7 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 46.4 |
| HCM 2010 LOS | D |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 115 | 270 | 260 | 130 | 120 | 75 | 280 | 440 | 330 | 115 | 280 | 105 |
| Future Volume (veh/h) | 115 | 270 | 260 | 130 | 120 | 75 | 280 | 440 | 330 | 115 | 280 | 105 |
| Number | 7 | 4 | 14 | 3 | 8 | 18 | 5 | 2 | 12 | 1 | 6 | 16 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 137 | 321 | 310 | 159 | 146 | 91 | 289 | 454 | 340 | 122 | 298 | 112 |
| Adj No. of Lanes | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 2 | 0 |
| Peak Hour Factor | 0.84 | 0.84 | 0.84 | 0.82 | 0.82 | 0.82 | 0.97 | 0.97 | 0.97 | 0.94 | 0.94 | 0.94 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 275 | 696 | 592 | 191 | 351 | 219 | 343 | 515 | 438 | 131 | 398 | 147 |
| Arrive On Green | 0.15 | 0.37 | 0.37 | 0.11 | 0.33 | 0.33 | 0.19 | 0.28 | 0.28 | 0.07 | 0.16 | 0.16 |
| Sat Flow, veh/h | 1774 | 1863 | 1583 | 1774 | 1075 | 670 | 1774 | 1863 | 1583 | 1774 | 2535 | 933 |
| Grp Volume(v), veh/h | 137 | 321 | 310 | 159 | 0 | 237 | 289 | 454 | 340 | 122 | 206 | 204 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1863 | 1583 | 1774 | 0 | 1745 | 1774 | 1863 | 1583 | 1774 | 1770 | 1698 |
| Q Serve(g_s), s | 6.7 | 12.4 | 8.1 | 8.3 | 0.0 | 10.1 | 14.9 | 22.1 | 13.8 | 6.5 | 10.6 | 10.9 |
| Cycle Q Clear(g_c), s | 6.7 | 12.4 | 8.1 | 8.3 | 0.0 | 10.1 | 14.9 | 22.1 | 13.8 | 6.5 | 10.6 | 10.9 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.38 | 1.00 | | 1.00 | 1.00 | | 0.55 |
| Lane Grp Cap(c), veh/h | 275 | 696 | 592 | 191 | 0 | 569 | 343 | 515 | 438 | 131 | 278 | 267 |
| V/C Ratio(X) | 0.50 | 0.46 | 0.52 | 0.83 | 0.00 | 0.42 | 0.84 | 0.88 | 0.78 | 0.93 | 0.74 | 0.76 |
| Avail Cap(c_a), veh/h | 275 | 696 | 592 | 205 | 0 | 569 | 343 | 588 | 500 | 131 | 484 | 465 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 36.8 | 22.5 | 7.2 | 41.6 | 0.0 | 24.9 | 36.9 | 32.9 | 17.1 | 43.8 | 38.2 | 38.4 |
| Incr Delay (d2), s/veh | 1.4 | 2.2 | 3.3 | 23.3 | 0.0 | 2.2 | 17.1 | 13.3 | 6.7 | 58.5 | 3.9 | 4.5 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 3.4 | 6.8 | 4.0 | 5.3 | 0.0 | 5.2 | 8.9 | 13.3 | 6.8 | 5.3 | 5.5 | 5.4 |
| LnGrp Delay(d),s/veh | 38.2 | 24.7 | 10.5 | 64.8 | 0.0 | 27.2 | 54.1 | 46.2 | 23.8 | 102.3 | 42.1 | 42.9 |
| LnGrp LOS | D | C | B | E | | C | D | D | C | F | D | D |
| Approach Vol, veh/h | | 768 | | | 396 | | | 1083 | | | 532 | |
| Approach Delay, s/veh | | 21.4 | | | 42.3 | | | 41.2 | | | 56.2 | |
| Approach LOS | | C | | | D | | | D | | | E | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | 11.0 | 30.3 | 14.2 | 39.5 | 22.4 | 18.9 | 18.7 | 35.0 |
| Change Period (Y+Rc), s | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | 7.0 | 30.0 | 11.0 | 31.0 | 11.0 | 26.0 | 11.0 | 31.0 |
| Max Q Clear Time (g_c+I1), s | 8.5 | 24.1 | 10.3 | 14.4 | 16.9 | 12.9 | 8.7 | 12.1 |
| Green Ext Time (p_c), s | 0.0 | 2.1 | 0.0 | 2.8 | 0.0 | 2.0 | 0.1 | 1.3 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 38.8 |
| HCM 2010 LOS | D |

| Intersection | |
|---|---|
| Int Delay, s/veh | 185.9 |

| Movement | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 170 | 40 | 5 | 100 | 150 | 980 | 50 | 10 | 815 | 5 |
| Future Vol, veh/h | 0 | 0 | 170 | 40 | 5 | 100 | 150 | 980 | 50 | 10 | 815 | 5 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | 1 | - | - | 1 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 84 | 84 | 84 | 82 | 82 | 82 | 97 | 97 | 97 | 94 | 94 | 94 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 202 | 49 | 6 | 122 | 155 | 1010 | 52 | 11 | 867 | 5 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 2302 | 2264 | 870 | 2339 | 2240 | 1036 | 872 | 0 | 0 | 1062 | 0 | 0 |
| Stage 1 | 892 | 892 | - | 1346 | 1346 | - | - | - | - | - | - | - |
| Stage 2 | 1410 | 1372 | - | 993 | 894 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 | 4.12 | - | - | 4.12 | - | - |
| Critical Hdwy Stg 1 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.218 | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver | 27 | 41 | 351 | ~ 26 | 42 | 281 | 773 | - | - | 656 | - | - |
| Stage 1 | 337 | 360 | - | 187 | 220 | - | - | - | - | - | - | - |
| Stage 2 | 172 | 214 | - | 296 | 360 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 11 | 32 | 351 | ~ 9 | 33 | 281 | 773 | - | - | 656 | - | - |
| Mov Cap-2 Maneuver | 11 | 32 | - | ~ 9 | 33 | - | - | - | - | - | - | - |
| Stage 1 | 269 | 354 | - | 149 | 176 | - | - | - | - | - | - | - |
| Stage 2 | 75 | 171 | - | 123 | 354 | - | - | - | - | - | - | - |

| Approach | SE | NW | NE | SW |
|---|---|---|---|---|
| HCM Control Delay, s | 28.3 | $ 2563 | 1.4 | 0.1 |
| HCM LOS | D | F | | |

| Minor Lane/Major Mvmt | NEL | NET | NER | NWLn1 | SELn1 | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 773 | - | - | 29 | 351 | 656 | - | - |
| HCM Lane V/C Ratio | 0.2 | - | - | 6.098 | 0.577 | 0.016 | - | - |
| HCM Control Delay (s) | 10.8 | - | - | $ 2563 | 28.3 | 10.6 | - | - |
| HCM Lane LOS | B | - | - | F | D | B | - | - |
| HCM 95th %tile Q(veh) | 0.7 | - | - | 21.6 | 3.4 | 0 | - | - |

**Notes**

~: Volume exceeds capacity  $: Delay exceeds 300s  +: Computation Not Defined  *: All major volume in platoon

| Movement | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 15 | 30 | 15 | 185 | 15 | 665 | 20 | 555 | 135 | 445 | 495 | 10 |
| Future Volume (veh/h) | 15 | 30 | 15 | 185 | 15 | 665 | 20 | 555 | 135 | 445 | 495 | 10 |
| Number | 1 | 6 | 16 | 5 | 2 | 12 | 7 | 4 | 14 | 3 | 8 | 18 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1900 | 1863 | 1900 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 19 | 39 | 19 | 201 | 16 | 723 | 22 | 617 | 150 | 511 | 569 | 11 |
| Adj No. of Lanes | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| Peak Hour Factor | 0.77 | 0.77 | 0.77 | 0.92 | 0.92 | 0.92 | 0.90 | 0.90 | 0.90 | 0.87 | 0.87 | 0.87 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 25 | 51 | 25 | 243 | 19 | 713 | 32 | 644 | 548 | 538 | 1149 | 22 |
| Arrive On Green | 0.06 | 0.06 | 0.06 | 0.15 | 0.15 | 0.15 | 0.02 | 0.35 | 0.35 | 0.30 | 0.63 | 0.63 |
| Sat Flow, veh/h | 435 | 894 | 435 | 1649 | 131 | 1583 | 1774 | 1863 | 1583 | 1774 | 1821 | 35 |
| Grp Volume(v), veh/h | 77 | 0 | 0 | 217 | 0 | 723 | 22 | 617 | 150 | 511 | 0 | 580 |
| Grp Sat Flow(s),veh/h/ln | 1764 | 0 | 0 | 1780 | 0 | 1583 | 1774 | 1863 | 1583 | 1774 | 0 | 1857 |
| Q Serve(g_s), s | 4.7 | 0.0 | 0.0 | 12.9 | 0.0 | 16.0 | 1.3 | 35.2 | 7.4 | 30.7 | 0.0 | 18.2 |
| Cycle Q Clear(g_c), s | 4.7 | 0.0 | 0.0 | 12.9 | 0.0 | 16.0 | 1.3 | 35.2 | 7.4 | 30.7 | 0.0 | 18.2 |
| Prop In Lane | 0.25 | | 0.25 | 0.93 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.02 |
| Lane Grp Cap(c), veh/h | 100 | 0 | 0 | 262 | 0 | 713 | 32 | 644 | 548 | 538 | 0 | 1171 |
| V/C Ratio(X) | 0.77 | 0.00 | 0.00 | 0.83 | 0.00 | 1.01 | 0.69 | 0.96 | 0.27 | 0.95 | 0.00 | 0.50 |
| Avail Cap(c_a), veh/h | 260 | 0 | 0 | 262 | 0 | 713 | 82 | 651 | 553 | 555 | 0 | 1171 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 50.6 | 0.0 | 0.0 | 45.1 | 0.0 | 29.9 | 53.1 | 34.8 | 25.7 | 37.1 | 0.0 | 10.8 |
| Incr Delay (d2), s/veh | 11.5 | 0.0 | 0.0 | 19.4 | 0.0 | 37.4 | 23.8 | 25.1 | 0.3 | 26.0 | 0.0 | 0.3 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 2.6 | 0.0 | 0.0 | 7.7 | 0.0 | 28.7 | 0.9 | 22.5 | 3.3 | 18.9 | 0.0 | 9.5 |
| LnGrp Delay(d),s/veh | 62.0 | 0.0 | 0.0 | 64.5 | 0.0 | 67.3 | 76.9 | 59.9 | 26.0 | 63.1 | 0.0 | 11.1 |
| LnGrp LOS | E | | | E | | F | E | E | C | E | | B |
| Approach Vol, veh/h | | 77 | | | 940 | | | 789 | | | 1091 | |
| Approach Delay, s/veh | | 62.0 | | | 66.6 | | | 53.9 | | | 35.5 | |
| Approach LOS | | E | | | E | | | D | | | D | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | 3 | 4 | | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | | 20.0 | 37.0 | 41.6 | | 10.2 | 5.9 | 72.6 |
| Change Period (Y+Rc), s | | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | | 16.0 | 34.0 | 38.0 | | 16.0 | 5.0 | 67.0 |
| Max Q Clear Time (g_c+I1), s | | 18.0 | 32.7 | 37.2 | | 6.7 | 3.3 | 20.2 |
| Green Ext Time (p_c), s | | 0.0 | 0.3 | 0.4 | | 0.2 | 0.0 | 4.5 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 51.3 |
| HCM 2010 LOS | D |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 175 | 115 | 195 | 155 | 160 | 201 | 165 | 378 | 95 | 70 | 472 | 170 |
| Future Volume (veh/h) | 175 | 115 | 195 | 155 | 160 | 201 | 165 | 378 | 95 | 70 | 472 | 170 |
| Number | 7 | 4 | 14 | 3 | 8 | 18 | 5 | 2 | 12 | 1 | 6 | 16 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 199 | 131 | 222 | 207 | 213 | 268 | 199 | 455 | 114 | 83 | 562 | 202 |
| Adj No. of Lanes | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 2 | 0 |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.75 | 0.75 | 0.75 | 0.83 | 0.83 | 0.83 | 0.84 | 0.84 | 0.84 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 235 | 702 | 597 | 158 | 250 | 315 | 177 | 509 | 432 | 148 | 655 | 235 |
| Arrive On Green | 0.13 | 0.38 | 0.38 | 0.09 | 0.33 | 0.33 | 0.10 | 0.27 | 0.27 | 0.08 | 0.26 | 0.26 |
| Sat Flow, veh/h | 1774 | 1863 | 1583 | 1774 | 751 | 945 | 1774 | 1863 | 1583 | 1774 | 2555 | 916 |
| Grp Volume(v), veh/h | 199 | 131 | 222 | 207 | 0 | 481 | 199 | 455 | 114 | 83 | 389 | 375 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1863 | 1583 | 1774 | 0 | 1696 | 1774 | 1863 | 1583 | 1774 | 1770 | 1701 |
| Q Serve(g_s), s | 9.9 | 4.2 | 6.4 | 8.0 | 0.0 | 23.8 | 9.0 | 21.1 | 3.8 | 4.0 | 18.8 | 18.9 |
| Cycle Q Clear(g_c), s | 9.9 | 4.2 | 6.4 | 8.0 | 0.0 | 23.8 | 9.0 | 21.1 | 3.8 | 4.0 | 18.8 | 18.9 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.56 | 1.00 | | 1.00 | 1.00 | | 0.54 |
| Lane Grp Cap(c), veh/h | 235 | 702 | 597 | 158 | 0 | 565 | 177 | 509 | 432 | 148 | 454 | 436 |
| V/C Ratio(X) | 0.85 | 0.19 | 0.37 | 1.31 | 0.00 | 0.85 | 1.12 | 0.89 | 0.26 | 0.56 | 0.86 | 0.86 |
| Avail Cap(c_a), veh/h | 235 | 702 | 597 | 158 | 0 | 565 | 177 | 580 | 493 | 148 | 511 | 491 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 38.2 | 18.8 | 9.9 | 41.0 | 0.0 | 27.9 | 40.5 | 31.5 | 14.6 | 39.7 | 31.9 | 31.9 |
| Incr Delay (d2), s/veh | 24.0 | 0.6 | 1.8 | 178.5 | 0.0 | 14.9 | 104.0 | 15.1 | 0.3 | 4.7 | 12.4 | 13.2 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 6.4 | 2.3 | 3.1 | 11.7 | 0.0 | 13.4 | 9.5 | 13.0 | 1.7 | 2.2 | 10.7 | 10.5 |
| LnGrp Delay(d),s/veh | 62.2 | 19.4 | 11.6 | 219.5 | 0.0 | 42.8 | 144.5 | 46.5 | 14.9 | 44.4 | 44.3 | 45.1 |
| LnGrp LOS | E | B | B | F | | D | F | D | B | D | D | D |
| Approach Vol, veh/h | | 552 | | | 688 | | | 768 | | | 847 | |
| Approach Delay, s/veh | | 31.7 | | | 95.9 | | | 67.2 | | | 44.6 | |
| Approach LOS | | C | | | F | | | E | | | D | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | 11.5 | 28.6 | 12.0 | 37.9 | 13.0 | 27.1 | 15.9 | 34.0 |
| Change Period (Y+Rc), s | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | 7.0 | 28.0 | 8.0 | 31.0 | 9.0 | 26.0 | 9.0 | 30.0 |
| Max Q Clear Time (g_c+I1), s | 6.0 | 23.1 | 10.0 | 8.4 | 11.0 | 20.9 | 11.9 | 25.8 |
| Green Ext Time (p_c), s | 0.0 | 1.4 | 0.0 | 1.5 | 0.0 | 2.2 | 0.0 | 1.2 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 60.6 |
| HCM 2010 LOS | E |

| Intersection | |
|---|---|
| Int Delay, s/veh | 112.2 |

| Movement | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 10 | 65 | 10 | 65 | 205 | 663 | 30 | 5 | 847 | 20 |
| Future Vol, veh/h | 0 | 0 | 10 | 65 | 10 | 65 | 205 | 663 | 30 | 5 | 847 | 20 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | 1 | - | - | 1 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 88 | 88 | 88 | 80 | 80 | 80 | 94 | 94 | 94 | 91 | 91 | 91 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 11 | 81 | 13 | 81 | 218 | 705 | 32 | 5 | 931 | 22 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 2156 | 2125 | 942 | 2115 | 2120 | 721 | 953 | 0 | 0 | 737 | 0 | 0 |
| Stage 1 | 952 | 952 | - | 1157 | 1157 | - | - | - | - | - | - | - |
| Stage 2 | 1204 | 1173 | - | 958 | 963 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 | 4.12 | - | - | 4.12 | - | - |
| Critical Hdwy Stg 1 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.218 | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver | 35 | 50 | 319 | ~ 37 | 50 | 427 | 721 | - | - | 869 | - | - |
| Stage 1 | 312 | 338 | - | 239 | 271 | - | - | - | - | - | - | - |
| Stage 2 | 225 | 266 | - | 309 | 334 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 16 | 35 | 319 | ~ 27 | 35 | 427 | 721 | - | - | 869 | - | - |
| Mov Cap-2 Maneuver | 16 | 35 | - | ~ 27 | 35 | - | - | - | - | - | - | - |
| Stage 1 | 218 | 336 | - | 167 | 189 | - | - | - | - | - | - | - |
| Stage 2 | 119 | 186 | - | 296 | 332 | - | - | - | - | - | - | - |

| Approach | SE | NW | NE | SW |
|---|---|---|---|---|
| HCM Control Delay, s | 16.7 | $ 1330 | 2.8 | 0.1 |
| HCM LOS | C | F | | |

| Minor Lane/Major Mvmt | NEL | NET | NER | NWLn1 | SELn1 | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 721 | - | - | 49 | 319 | 869 | - | - |
| HCM Lane V/C Ratio | 0.302 | - | - | 3.571 | 0.036 | 0.006 | - | - |
| HCM Control Delay (s) | 12.1 | - | - | $ 1330 | 16.7 | 9.2 | - | - |
| HCM Lane LOS | B | - | - | F | C | A | - | - |
| HCM 95th %tile Q(veh) | 1.3 | - | - | 19.2 | 0.1 | 0 | - | - |

**Notes**

~: Volume exceeds capacity  $: Delay exceeds 300s  +: Computation Not Defined  *: All major volume in platoon

| Movement | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 5 | 80 | 15 | 150 | 10 | 712 | 5 | 186 | 25 | 421 | 565 | 5 |
| Future Volume (veh/h) | 5 | 80 | 15 | 150 | 10 | 712 | 5 | 186 | 25 | 421 | 565 | 5 |
| Number | 1 | 6 | 16 | 5 | 2 | 12 | 7 | 4 | 14 | 3 | 8 | 18 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1900 | 1863 | 1900 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 8 | 121 | 23 | 158 | 11 | 749 | 6 | 209 | 28 | 458 | 614 | 5 |
| Adj No. of Lanes | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| Peak Hour Factor | 0.66 | 0.66 | 0.66 | 0.95 | 0.95 | 0.95 | 0.89 | 0.89 | 0.89 | 0.92 | 0.92 | 0.92 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 11 | 161 | 31 | 410 | 29 | 781 | 11 | 277 | 235 | 438 | 717 | 6 |
| Arrive On Green | 0.11 | 0.11 | 0.11 | 0.25 | 0.25 | 0.25 | 0.01 | 0.15 | 0.15 | 0.25 | 0.39 | 0.39 |
| Sat Flow, veh/h | 95 | 1441 | 274 | 1664 | 116 | 1583 | 1774 | 1863 | 1583 | 1774 | 1845 | 15 |
| Grp Volume(v), veh/h | 152 | 0 | 0 | 169 | 0 | 749 | 6 | 209 | 28 | 458 | 0 | 619 |
| Grp Sat Flow(s),veh/h/ln | 1810 | 0 | 0 | 1780 | 0 | 1583 | 1774 | 1863 | 1583 | 1774 | 0 | 1860 |
| Q Serve(g_s), s | 5.3 | 0.0 | 0.0 | 5.1 | 0.0 | 16.0 | 0.2 | 7.0 | 1.0 | 16.0 | 0.0 | 19.8 |
| Cycle Q Clear(g_c), s | 5.3 | 0.0 | 0.0 | 5.1 | 0.0 | 16.0 | 0.2 | 7.0 | 1.0 | 16.0 | 0.0 | 19.8 |
| Prop In Lane | 0.05 | | 0.15 | 0.93 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.01 |
| Lane Grp Cap(c), veh/h | 202 | 0 | 0 | 439 | 0 | 781 | 11 | 277 | 235 | 438 | 0 | 723 |
| V/C Ratio(X) | 0.75 | 0.00 | 0.00 | 0.39 | 0.00 | 0.96 | 0.54 | 0.76 | 0.12 | 1.05 | 0.00 | 0.86 |
| Avail Cap(c_a), veh/h | 446 | 0 | 0 | 439 | 0 | 781 | 109 | 459 | 390 | 438 | 0 | 803 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 28.0 | 0.0 | 0.0 | 20.3 | 0.0 | 15.8 | 32.1 | 26.5 | 23.9 | 24.4 | 0.0 | 18.2 |
| Incr Delay (d2), s/veh | 5.6 | 0.0 | 0.0 | 0.6 | 0.0 | 22.7 | 34.3 | 4.2 | 0.2 | 55.8 | 0.0 | 8.4 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 2.9 | 0.0 | 0.0 | 2.6 | 0.0 | 17.6 | 0.2 | 3.9 | 0.5 | 14.4 | 0.0 | 11.8 |
| LnGrp Delay(d),s/veh | 33.5 | 0.0 | 0.0 | 20.9 | 0.0 | 38.5 | 66.5 | 30.7 | 24.2 | 80.2 | 0.0 | 26.5 |
| LnGrp LOS | C | | | C | | D | E | C | C | F | | C |
| Approach Vol, veh/h | | 152 | | | 918 | | | 243 | | | 1077 | |
| Approach Delay, s/veh | | 33.5 | | | 35.2 | | | 30.8 | | | 49.4 | |
| Approach LOS | | C | | | D | | | C | | | D | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | 3 | 4 | | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | | 20.0 | 20.0 | 13.6 | | 11.2 | 4.4 | 29.2 |
| Change Period (Y+Rc), s | | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | | 16.0 | 16.0 | 16.0 | | 16.0 | 4.0 | 28.0 |
| Max Q Clear Time (g_c+I1), s | | 18.0 | 18.0 | 9.0 | | 7.3 | 2.2 | 21.8 |
| Green Ext Time (p_c), s | | 0.0 | 0.0 | 0.7 | | 0.5 | 0.0 | 2.1 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 41.0 |
| HCM 2010 LOS | D |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 120 | 105 | 245 | 205 | 110 | 100 | 260 | 496 | 230 | 106 | 469 | 195 |
| Future Volume (veh/h) | 120 | 105 | 245 | 205 | 110 | 100 | 260 | 496 | 230 | 106 | 469 | 195 |
| Number | 7 | 4 | 14 | 3 | 8 | 18 | 5 | 2 | 12 | 1 | 6 | 16 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 143 | 125 | 292 | 250 | 134 | 122 | 268 | 511 | 237 | 113 | 499 | 207 |
| Adj No. of Lanes | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 2 | 0 |
| Peak Hour Factor | 0.84 | 0.84 | 0.84 | 0.82 | 0.82 | 0.82 | 0.97 | 0.97 | 0.97 | 0.94 | 0.94 | 0.94 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 180 | 349 | 297 | 194 | 176 | 160 | 318 | 631 | 537 | 203 | 671 | 277 |
| Arrive On Green | 0.10 | 0.19 | 0.19 | 0.11 | 0.20 | 0.20 | 0.18 | 0.34 | 0.34 | 0.11 | 0.27 | 0.27 |
| Sat Flow, veh/h | 1774 | 1863 | 1583 | 1774 | 899 | 819 | 1774 | 1863 | 1583 | 1774 | 2445 | 1009 |
| Grp Volume(v), veh/h | 143 | 125 | 292 | 250 | 0 | 256 | 268 | 511 | 237 | 113 | 360 | 346 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1863 | 1583 | 1774 | 0 | 1718 | 1774 | 1863 | 1583 | 1774 | 1770 | 1685 |
| Q Serve(g_s), s | 5.0 | 3.7 | 7.4 | 7.0 | 0.0 | 9.0 | 9.4 | 16.0 | 4.8 | 3.9 | 11.9 | 12.0 |
| Cycle Q Clear(g_c), s | 5.0 | 3.7 | 7.4 | 7.0 | 0.0 | 9.0 | 9.4 | 16.0 | 4.8 | 3.9 | 11.9 | 12.0 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.48 | 1.00 | | 1.00 | 1.00 | | 0.60 |
| Lane Grp Cap(c), veh/h | 180 | 349 | 297 | 194 | 0 | 336 | 318 | 631 | 537 | 203 | 485 | 462 |
| V/C Ratio(X) | 0.80 | 0.36 | 0.98 | 1.29 | 0.00 | 0.76 | 0.84 | 0.81 | 0.44 | 0.56 | 0.74 | 0.75 |
| Avail Cap(c_a), veh/h | 194 | 931 | 791 | 194 | 0 | 858 | 388 | 960 | 816 | 203 | 718 | 684 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 28.1 | 22.7 | 10.2 | 28.5 | 0.0 | 24.4 | 25.4 | 19.3 | 6.9 | 26.8 | 21.2 | 21.2 |
| Incr Delay (d2), s/veh | 19.0 | 0.6 | 20.6 | 163.3 | 0.0 | 3.6 | 13.3 | 3.1 | 0.6 | 3.3 | 2.3 | 2.5 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 3.4 | 2.0 | 5.8 | 12.2 | 0.0 | 4.6 | 5.7 | 8.8 | 2.8 | 2.1 | 6.1 | 5.9 |
| LnGrp Delay(d),s/veh | 47.1 | 23.3 | 30.8 | 191.9 | 0.0 | 28.0 | 38.7 | 22.4 | 7.4 | 30.1 | 23.5 | 23.8 |
| LnGrp LOS | D | C | C | F | | C | D | C | A | C | C | C |
| Approach Vol, veh/h | | 560 | | | 506 | | | 1016 | | | 819 | |
| Approach Delay, s/veh | | 33.3 | | | 108.9 | | | 23.2 | | | 24.5 | |
| Approach LOS | | C | | | F | | | C | | | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | 11.3 | 25.7 | 11.0 | 16.0 | 15.5 | 21.6 | 10.5 | 16.5 |
| Change Period (Y+Rc), s | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | 7.0 | 33.0 | 7.0 | 32.0 | 14.0 | 26.0 | 7.0 | 32.0 |
| Max Q Clear Time (g_c+I1), s | 5.9 | 18.0 | 9.0 | 9.4 | 11.4 | 14.0 | 7.0 | 11.0 |
| Green Ext Time (p_c), s | 0.0 | 3.7 | 0.0 | 1.7 | 0.2 | 3.6 | 0.0 | 1.5 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 40.5 |
| HCM 2010 LOS | D |

| Intersection | |
|---|---|
| Int Delay, s/veh | 123.7 |

| Movement | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 115 | 45 | 5 | 75 | 155 | 816 | 75 | 10 | 904 | 10 |
| Future Vol, veh/h | 0 | 0 | 115 | 45 | 5 | 75 | 155 | 816 | 75 | 10 | 904 | 10 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | 1 | - | - | 1 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 84 | 84 | 84 | 82 | 82 | 82 | 97 | 97 | 97 | 94 | 94 | 94 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 137 | 55 | 6 | 91 | 160 | 841 | 77 | 11 | 962 | 11 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 2238 | 2228 | 968 | 2258 | 2195 | 880 | 973 | 0 | 0 | 918 | 0 | 0 |
| Stage 1 | 990 | 990 | - | 1200 | 1200 | - | - | - | - | - | - | - |
| Stage 2 | 1248 | 1238 | - | 1058 | 995 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 | 4.12 | - | - | 4.12 | - | - |
| Critical Hdwy Stg 1 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.218 | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver | 30 | 43 | 308 | ~ 29 | 45 | 346 | 709 | - | - | 743 | - | - |
| Stage 1 | 297 | 324 | - | 226 | 258 | - | - | - | - | - | - | - |
| Stage 2 | 212 | 248 | - | 272 | 323 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 16 | 33 | 308 | ~ 13 | 34 | 346 | 709 | - | - | 743 | - | - |
| Mov Cap-2 Maneuver | 16 | 33 | - | ~ 13 | 34 | - | - | - | - | - | - | - |
| Stage 1 | 230 | 319 | - | 175 | 200 | - | - | - | - | - | - | - |
| Stage 2 | 117 | 192 | - | 149 | 318 | - | - | - | - | - | - | - |

| Approach | SE | NW | NE | SW |
|---|---|---|---|---|
| HCM Control Delay, s | 25.7 | $ 1871.8 | 1.7 | 0.1 |
| HCM LOS | D | F | | |

| Minor Lane/Major Mvmt | NEL | NET | NER | NWLn1 | SELn1 | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 709 | - | - | 33 | 308 | 743 | - | - |
| HCM Lane V/C Ratio | 0.225 | - | - | 4.619 | 0.444 | 0.014 | - | - |
| HCM Control Delay (s) | 11.5 | - | $ | 1871.8 | 25.7 | 9.9 | - | - |
| HCM Lane LOS | B | - | - | F | D | A | - | - |
| HCM 95th %tile Q(veh) | 0.9 | - | - | 18.1 | 2.2 | 0 | - | - |

**Notes**

~: Volume exceeds capacity  $: Delay exceeds 300s  +: Computation Not Defined  *: All major volume in platoon

| Movement | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 10 | 70 | 20 | 140 | 15 | 626 | 10 | 445 | 100 | 541 | 512 | 10 |
| Future Volume (veh/h) | 10 | 70 | 20 | 140 | 15 | 626 | 10 | 445 | 100 | 541 | 512 | 10 |
| Number | 1 | 6 | 16 | 5 | 2 | 12 | 7 | 4 | 14 | 3 | 8 | 18 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1900 | 1863 | 1900 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 13 | 91 | 26 | 152 | 16 | 680 | 11 | 494 | 111 | 622 | 589 | 11 |
| Adj No. of Lanes | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| Peak Hour Factor | 0.77 | 0.77 | 0.77 | 0.92 | 0.92 | 0.92 | 0.90 | 0.90 | 0.90 | 0.87 | 0.87 | 0.87 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 16 | 112 | 32 | 226 | 24 | 790 | 18 | 505 | 430 | 637 | 1130 | 21 |
| Arrive On Green | 0.09 | 0.09 | 0.09 | 0.14 | 0.14 | 0.14 | 0.01 | 0.27 | 0.27 | 0.36 | 0.62 | 0.62 |
| Sat Flow, veh/h | 179 | 1253 | 358 | 1612 | 170 | 1583 | 1774 | 1863 | 1583 | 1774 | 1823 | 34 |
| Grp Volume(v), veh/h | 130 | 0 | 0 | 168 | 0 | 680 | 11 | 494 | 111 | 622 | 0 | 600 |
| Grp Sat Flow(s),veh/h/ln | 1791 | 0 | 0 | 1782 | 0 | 1583 | 1774 | 1863 | 1583 | 1774 | 0 | 1857 |
| Q Serve(g_s), s | 8.1 | 0.0 | 0.0 | 10.2 | 0.0 | 16.0 | 0.7 | 30.0 | 6.3 | 39.5 | 0.0 | 20.7 |
| Cycle Q Clear(g_c), s | 8.1 | 0.0 | 0.0 | 10.2 | 0.0 | 16.0 | 0.7 | 30.0 | 6.3 | 39.5 | 0.0 | 20.7 |
| Prop In Lane | 0.10 | | 0.20 | 0.90 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.02 |
| Lane Grp Cap(c), veh/h | 161 | 0 | 0 | 250 | 0 | 790 | 18 | 505 | 430 | 637 | 0 | 1151 |
| V/C Ratio(X) | 0.81 | 0.00 | 0.00 | 0.67 | 0.00 | 0.86 | 0.60 | 0.98 | 0.26 | 0.98 | 0.00 | 0.52 |
| Avail Cap(c_a), veh/h | 251 | 0 | 0 | 250 | 0 | 790 | 62 | 505 | 430 | 637 | 0 | 1151 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 51.0 | 0.0 | 0.0 | 46.6 | 0.0 | 25.1 | 56.3 | 41.3 | 32.6 | 36.2 | 0.0 | 12.2 |
| Incr Delay (d2), s/veh | 10.4 | 0.0 | 0.0 | 6.9 | 0.0 | 9.6 | 27.7 | 34.1 | 0.3 | 29.8 | 0.0 | 0.4 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 4.5 | 0.0 | 0.0 | 5.5 | 0.0 | 20.8 | 0.5 | 20.3 | 2.8 | 24.6 | 0.0 | 10.6 |
| LnGrp Delay(d),s/veh | 61.5 | 0.0 | 0.0 | 53.6 | 0.0 | 34.7 | 84.0 | 75.4 | 32.9 | 66.0 | 0.0 | 12.6 |
| LnGrp LOS | E | | | D | | C | F | E | C | E | | B |
| Approach Vol, veh/h | | 130 | | | 848 | | | 616 | | | 1222 | |
| Approach Delay, s/veh | | 61.5 | | | 38.4 | | | 67.9 | | | 39.8 | |
| Approach LOS | | E | | | D | | | E | | | D | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | 3 | 4 | | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | | 20.0 | 45.0 | 35.0 | | 14.2 | 5.2 | 74.8 |
| Change Period (Y+Rc), s | | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | | 16.0 | 41.0 | 31.0 | | 16.0 | 4.0 | 68.0 |
| Max Q Clear Time (g_c+I1), s | | 18.0 | 41.5 | 32.0 | | 10.1 | 2.7 | 22.7 |
| Green Ext Time (p_c), s | | 0.0 | 0.0 | 0.0 | | 0.3 | 0.0 | 4.7 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 46.5 |
| HCM 2010 LOS | D |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 115 | 270 | 260 | 130 | 120 | 75 | 280 | 441 | 330 | 116 | 297 | 105 |
| Future Volume (veh/h) | 115 | 270 | 260 | 130 | 120 | 75 | 280 | 441 | 330 | 116 | 297 | 105 |
| Number | 7 | 4 | 14 | 3 | 8 | 18 | 5 | 2 | 12 | 1 | 6 | 16 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 137 | 321 | 310 | 159 | 146 | 91 | 289 | 455 | 340 | 123 | 316 | 112 |
| Adj No. of Lanes | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 2 | 0 |
| Peak Hour Factor | 0.84 | 0.84 | 0.84 | 0.82 | 0.82 | 0.82 | 0.97 | 0.97 | 0.97 | 0.94 | 0.94 | 0.94 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 274 | 695 | 591 | 191 | 351 | 219 | 334 | 516 | 439 | 131 | 418 | 146 |
| Arrive On Green | 0.15 | 0.37 | 0.37 | 0.11 | 0.33 | 0.33 | 0.19 | 0.28 | 0.28 | 0.07 | 0.16 | 0.16 |
| Sat Flow, veh/h | 1774 | 1863 | 1583 | 1774 | 1075 | 670 | 1774 | 1863 | 1583 | 1774 | 2577 | 897 |
| Grp Volume(v), veh/h | 137 | 321 | 310 | 159 | 0 | 237 | 289 | 455 | 340 | 123 | 215 | 213 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1863 | 1583 | 1774 | 0 | 1745 | 1774 | 1863 | 1583 | 1774 | 1770 | 1704 |
| Q Serve(g_s), s | 6.7 | 12.4 | 8.2 | 8.3 | 0.0 | 10.1 | 15.0 | 22.2 | 13.8 | 6.6 | 11.0 | 11.4 |
| Cycle Q Clear(g_c), s | 6.7 | 12.4 | 8.2 | 8.3 | 0.0 | 10.1 | 15.0 | 22.2 | 13.8 | 6.6 | 11.0 | 11.4 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.38 | 1.00 | | 1.00 | 1.00 | | 0.53 |
| Lane Grp Cap(c), veh/h | 274 | 695 | 591 | 191 | 0 | 569 | 334 | 516 | 439 | 131 | 287 | 277 |
| V/C Ratio(X) | 0.50 | 0.46 | 0.52 | 0.83 | 0.00 | 0.42 | 0.86 | 0.88 | 0.78 | 0.94 | 0.75 | 0.77 |
| Avail Cap(c_a), veh/h | 274 | 695 | 591 | 205 | 0 | 569 | 334 | 588 | 500 | 131 | 484 | 466 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 36.8 | 22.5 | 7.4 | 41.6 | 0.0 | 24.9 | 37.4 | 32.8 | 17.1 | 43.8 | 37.9 | 38.1 |
| Incr Delay (d2), s/veh | 1.4 | 2.2 | 3.3 | 23.3 | 0.0 | 2.2 | 20.3 | 13.4 | 6.6 | 60.7 | 3.9 | 4.5 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 3.4 | 6.8 | 4.0 | 5.3 | 0.0 | 5.2 | 9.3 | 13.3 | 6.8 | 5.4 | 5.7 | 5.7 |
| LnGrp Delay(d),s/veh | 38.2 | 24.7 | 10.7 | 64.8 | 0.0 | 27.2 | 57.7 | 46.2 | 23.7 | 104.4 | 41.8 | 42.6 |
| LnGrp LOS | D | C | B | E | | C | E | D | C | F | D | D |
| Approach Vol, veh/h | | 768 | | | 396 | | | 1084 | | | 551 | |
| Approach Delay, s/veh | | 21.5 | | | 42.3 | | | 42.2 | | | 56.1 | |
| Approach LOS | | C | | | D | | | D | | | E | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | 11.0 | 30.3 | 14.2 | 39.5 | 21.9 | 19.4 | 18.7 | 35.0 |
| Change Period (Y+Rc), s | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | 7.0 | 30.0 | 11.0 | 31.0 | 11.0 | 26.0 | 11.0 | 31.0 |
| Max Q Clear Time (g_c+I1), s | 8.6 | 24.2 | 10.3 | 14.4 | 17.0 | 13.4 | 8.7 | 12.1 |
| Green Ext Time (p_c), s | 0.0 | 2.1 | 0.0 | 2.8 | 0.0 | 2.1 | 0.1 | 1.3 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 39.3 |
| HCM 2010 LOS | D |

| Intersection | |
|---|---|
| Int Delay, s/veh | 208.5 |

| Movement | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 170 | 40 | 5 | 100 | 150 | 981 | 50 | 10 | 837 | 5 |
| Future Vol, veh/h | 0 | 0 | 170 | 40 | 5 | 100 | 150 | 981 | 50 | 10 | 837 | 5 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | 1 | - | - | 1 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 84 | 84 | 84 | 82 | 82 | 82 | 97 | 97 | 97 | 94 | 94 | 94 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 202 | 49 | 6 | 122 | 155 | 1011 | 52 | 11 | 890 | 5 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 2326 | 2288 | 893 | 2363 | 2264 | 1037 | 895 | 0 | 0 | 1063 | 0 | 0 |
| Stage 1 | 915 | 915 | - | 1347 | 1347 | - | - | - | - | - | - | - |
| Stage 2 | 1411 | 1373 | - | 1016 | 917 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 | 4.12 | - | - | 4.12 | - | - |
| Critical Hdwy Stg 1 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.218 | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver | 26 | 39 | 340 | ~ 25 | 41 | 281 | 758 | - | - | 655 | - | - |
| Stage 1 | 327 | 352 | - | 186 | 220 | - | - | - | - | - | - | - |
| Stage 2 | 171 | 213 | - | 287 | 351 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 11 | 30 | 340 | ~ 8 | 32 | 281 | 758 | - | - | 655 | - | - |
| Mov Cap-2 Maneuver | 11 | 30 | - | ~ 8 | 32 | - | - | - | - | - | - | - |
| Stage 1 | 260 | 346 | - | 148 | 175 | - | - | - | - | - | - | - |
| Stage 2 | 74 | 170 | - | 114 | 345 | - | - | - | - | - | - | - |

| Approach | SE | NW | NE | SW |
|---|---|---|---|---|
| HCM Control Delay, s | 30 | $ 2907.3 | 1.4 | 0.1 |
| HCM LOS | D | F | | |

| Minor Lane/Major Mvmt | NEL | NET | NER | NWLn1 | SELn1 | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 758 | - | - | 26 | 340 | 655 | - | - |
| HCM Lane V/C Ratio | 0.204 | - | - | 6.801 | 0.595 | 0.016 | - | - |
| HCM Control Delay (s) | 11 | - | $ 2907.3 | 30 | 10.6 | - | - | |
| HCM Lane LOS | B | - | - | F | D | B | - | - |
| HCM 95th %tile Q(veh) | 0.8 | - | - | 21.9 | 3.6 | 0 | - | - |

**Notes**

~: Volume exceeds capacity  $: Delay exceeds 300s  +: Computation Not Defined  *: All major volume in platoon

| Movement | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 15 | 30 | 15 | 185 | 15 | 665 | 20 | 555 | 135 | 457 | 499 | 10 |
| Future Volume (veh/h) | 15 | 30 | 15 | 185 | 15 | 665 | 20 | 555 | 135 | 457 | 499 | 10 |
| Number | 1 | 6 | 16 | 5 | 2 | 12 | 7 | 4 | 14 | 3 | 8 | 18 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1900 | 1863 | 1900 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 19 | 39 | 19 | 201 | 16 | 723 | 22 | 617 | 150 | 525 | 574 | 11 |
| Adj No. of Lanes | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| Peak Hour Factor | 0.77 | 0.77 | 0.77 | 0.92 | 0.92 | 0.92 | 0.90 | 0.90 | 0.90 | 0.87 | 0.87 | 0.87 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 25 | 51 | 25 | 239 | 19 | 719 | 32 | 641 | 545 | 548 | 1156 | 22 |
| Arrive On Green | 0.06 | 0.06 | 0.06 | 0.15 | 0.15 | 0.15 | 0.02 | 0.34 | 0.34 | 0.31 | 0.63 | 0.63 |
| Sat Flow, veh/h | 435 | 894 | 435 | 1649 | 131 | 1583 | 1774 | 1863 | 1583 | 1774 | 1822 | 35 |
| Grp Volume(v), veh/h | 77 | 0 | 0 | 217 | 0 | 723 | 22 | 617 | 150 | 525 | 0 | 585 |
| Grp Sat Flow(s),veh/h/ln | 1764 | 0 | 0 | 1780 | 0 | 1583 | 1774 | 1863 | 1583 | 1774 | 0 | 1857 |
| Q Serve(g_s), s | 4.7 | 0.0 | 0.0 | 13.1 | 0.0 | 16.0 | 1.4 | 35.8 | 7.6 | 32.0 | 0.0 | 18.5 |
| Cycle Q Clear(g_c), s | 4.7 | 0.0 | 0.0 | 13.1 | 0.0 | 16.0 | 1.4 | 35.8 | 7.6 | 32.0 | 0.0 | 18.5 |
| Prop In Lane | 0.25 | | 0.25 | 0.93 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.02 |
| Lane Grp Cap(c), veh/h | 100 | 0 | 0 | 259 | 0 | 719 | 32 | 641 | 545 | 548 | 0 | 1179 |
| V/C Ratio(X) | 0.77 | 0.00 | 0.00 | 0.84 | 0.00 | 1.01 | 0.70 | 0.96 | 0.28 | 0.96 | 0.00 | 0.50 |
| Avail Cap(c_a), veh/h | 256 | 0 | 0 | 259 | 0 | 719 | 81 | 643 | 546 | 548 | 0 | 1179 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 51.2 | 0.0 | 0.0 | 45.8 | 0.0 | 30.1 | 53.8 | 35.4 | 26.2 | 37.4 | 0.0 | 10.7 |
| Incr Delay (d2), s/veh | 11.5 | 0.0 | 0.0 | 21.1 | 0.0 | 35.1 | 24.1 | 26.4 | 0.3 | 28.3 | 0.0 | 0.3 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 2.6 | 0.0 | 0.0 | 8.0 | 0.0 | 28.8 | 0.9 | 23.0 | 3.3 | 19.9 | 0.0 | 9.5 |
| LnGrp Delay(d),s/veh | 62.7 | 0.0 | 0.0 | 66.9 | 0.0 | 65.2 | 77.9 | 61.9 | 26.5 | 65.7 | 0.0 | 11.0 |
| LnGrp LOS | E | | | E | | F | E | E | C | E | | B |
| Approach Vol, veh/h | | 77 | | | 940 | | | 789 | | | 1110 | |
| Approach Delay, s/veh | | 62.7 | | | 65.6 | | | 55.6 | | | 36.9 | |
| Approach LOS | | E | | | E | | | E | | | D | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | 3 | 4 | | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | | 20.0 | 38.0 | 41.9 | | 10.3 | 6.0 | 73.9 |
| Change Period (Y+Rc), s | | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | | 16.0 | 34.0 | 38.0 | | 16.0 | 5.0 | 67.0 |
| Max Q Clear Time (g_c+I1), s | | 18.0 | 34.0 | 37.8 | | 6.7 | 3.4 | 20.5 |
| Green Ext Time (p_c), s | | 0.0 | 0.0 | 0.1 | | 0.2 | 0.0 | 4.6 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 51.9 |
| HCM 2010 LOS | D |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 115 | 270 | 260 | 130 | 120 | 78 | 280 | 477 | 330 | 117 | 295 | 105 |
| Future Volume (veh/h) | 115 | 270 | 260 | 130 | 120 | 78 | 280 | 477 | 330 | 117 | 295 | 105 |
| Number | 7 | 4 | 14 | 3 | 8 | 18 | 5 | 2 | 12 | 1 | 6 | 16 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 137 | 321 | 310 | 159 | 146 | 95 | 289 | 492 | 340 | 124 | 314 | 112 |
| Adj No. of Lanes | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 2 | 0 |
| Peak Hour Factor | 0.84 | 0.84 | 0.84 | 0.82 | 0.82 | 0.82 | 0.97 | 0.97 | 0.97 | 0.94 | 0.94 | 0.94 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 247 | 667 | 567 | 191 | 344 | 224 | 362 | 545 | 463 | 131 | 416 | 146 |
| Arrive On Green | 0.14 | 0.36 | 0.36 | 0.11 | 0.33 | 0.33 | 0.20 | 0.29 | 0.29 | 0.07 | 0.16 | 0.16 |
| Sat Flow, veh/h | 1774 | 1863 | 1583 | 1774 | 1055 | 687 | 1774 | 1863 | 1583 | 1774 | 2573 | 901 |
| Grp Volume(v), veh/h | 137 | 321 | 310 | 159 | 0 | 241 | 289 | 492 | 340 | 124 | 214 | 212 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1863 | 1583 | 1774 | 0 | 1742 | 1774 | 1863 | 1583 | 1774 | 1770 | 1704 |
| Q Serve(g_s), s | 6.8 | 12.7 | 8.2 | 8.3 | 0.0 | 10.3 | 14.7 | 24.1 | 13.4 | 6.6 | 11.0 | 11.3 |
| Cycle Q Clear(g_c), s | 6.8 | 12.7 | 8.2 | 8.3 | 0.0 | 10.3 | 14.7 | 24.1 | 13.4 | 6.6 | 11.0 | 11.3 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.39 | 1.00 | | 1.00 | 1.00 | | 0.53 |
| Lane Grp Cap(c), veh/h | 247 | 667 | 567 | 191 | 0 | 568 | 362 | 545 | 463 | 131 | 286 | 276 |
| V/C Ratio(X) | 0.55 | 0.48 | 0.55 | 0.83 | 0.00 | 0.42 | 0.80 | 0.90 | 0.73 | 0.95 | 0.75 | 0.77 |
| Avail Cap(c_a), veh/h | 247 | 667 | 567 | 205 | 0 | 568 | 362 | 588 | 500 | 131 | 484 | 466 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 38.1 | 23.7 | 7.4 | 41.6 | 0.0 | 25.0 | 35.9 | 32.3 | 16.1 | 43.8 | 38.0 | 38.1 |
| Incr Delay (d2), s/veh | 2.7 | 2.5 | 3.8 | 23.3 | 0.0 | 2.3 | 11.8 | 16.6 | 5.1 | 62.9 | 3.9 | 4.5 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 3.5 | 7.0 | 4.1 | 5.3 | 0.0 | 5.3 | 8.4 | 15.0 | 6.5 | 5.5 | 5.7 | 5.6 |
| LnGrp Delay(d),s/veh | 40.8 | 26.1 | 11.1 | 64.8 | 0.0 | 27.3 | 47.8 | 49.0 | 21.2 | 106.7 | 41.9 | 42.6 |
| LnGrp LOS | D | C | B | E | | C | D | D | C | F | D | D |
| Approach Vol, veh/h | | 768 | | | 400 | | | 1121 | | | 550 | |
| Approach Delay, s/veh | | 22.7 | | | 42.2 | | | 40.2 | | | 56.8 | |
| Approach LOS | | C | | | D | | | D | | | E | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | 11.0 | 31.8 | 14.2 | 38.0 | 23.4 | 19.4 | 17.2 | 35.0 |
| Change Period (Y+Rc), s | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | 7.0 | 30.0 | 11.0 | 31.0 | 11.0 | 26.0 | 11.0 | 31.0 |
| Max Q Clear Time (g_c+I1), s | 8.6 | 26.1 | 10.3 | 14.7 | 16.7 | 13.3 | 8.8 | 12.3 |
| Green Ext Time (p_c), s | 0.0 | 1.6 | 0.0 | 2.8 | 0.0 | 2.1 | 0.1 | 1.3 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 39.0 |
| HCM 2010 LOS | D |

| Intersection | |
|---|---|
| Int Delay, s/veh | 205.3 |

| Movement | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 170 | 40 | 5 | 100 | 150 | 1017 | 50 | 10 | 840 | 5 |
| Future Vol, veh/h | 0 | 0 | 170 | 40 | 5 | 100 | 150 | 1017 | 50 | 10 | 840 | 5 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | 1 | - | - | 1 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 84 | 84 | 84 | 82 | 82 | 82 | 97 | 97 | 97 | 94 | 94 | 94 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 202 | 49 | 6 | 122 | 155 | 1048 | 52 | 11 | 894 | 5 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 2367 | 2329 | 897 | 2404 | 2305 | 1074 | 899 | 0 | 0 | 1100 | 0 | 0 |
| Stage 1 | 919 | 919 | - | 1384 | 1384 | - | - | - | - | - | - | - |
| Stage 2 | 1448 | 1410 | - | 1020 | 921 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 | 4.12 | - | - | 4.12 | - | - |
| Critical Hdwy Stg 1 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.218 | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver | 24 | 37 | 339 | ~ 23 | 38 | 267 | 756 | - | - | 635 | - | - |
| Stage 1 | 325 | 350 | - | 178 | 211 | - | - | - | - | - | - | - |
| Stage 2 | 163 | 205 | - | 285 | 349 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 9 | 29 | 339 | ~ 8 | 30 | 267 | 756 | - | - | 635 | - | - |
| Mov Cap-2 Maneuver | 9 | 29 | - | ~ 8 | 30 | - | - | - | - | - | - | - |
| Stage 1 | 258 | 344 | - | 142 | 168 | - | - | - | - | - | - | - |
| Stage 2 | 68 | 163 | - | 113 | 343 | - | - | - | - | - | - | - |

| Approach | SE | NW | NE | SW |
|---|---|---|---|---|
| HCM Control Delay, s | 30.2 | $ 2907.3 | 1.4 | 0.1 |
| HCM LOS | D | F | | |

| Minor Lane/Major Mvmt | NEL | NET | NER | NWLn1 | SELn1 | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 756 | - | - | 26 | 339 | 635 | - | - |
| HCM Lane V/C Ratio | 0.205 | - | - | 6.801 | 0.597 | 0.017 | - | - |
| HCM Control Delay (s) | 11 | - | $ 2907.3 | 30.2 | 10.8 | - | - | |
| HCM Lane LOS | B | - | - | F | D | B | - | - |
| HCM 95th %tile Q(veh) | 0.8 | - | - | 21.9 | 3.7 | 0.1 | - | - |

**Notes**

~: Volume exceeds capacity  $: Delay exceeds 300s  +: Computation Not Defined  *: All major volume in platoon

| Movement | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 15 | 30 | 15 | 185 | 15 | 696 | 20 | 562 | 135 | 457 | 498 | 10 |
| Future Volume (veh/h) | 15 | 30 | 15 | 185 | 15 | 696 | 20 | 562 | 135 | 457 | 498 | 10 |
| Number | 1 | 6 | 16 | 5 | 2 | 12 | 7 | 4 | 14 | 3 | 8 | 18 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj Sat Flow, veh/h/ln | 1900 | 1863 | 1900 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 19 | 39 | 19 | 201 | 16 | 757 | 22 | 624 | 150 | 525 | 572 | 11 |
| Adj No. of Lanes | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| Peak Hour Factor | 0.77 | 0.77 | 0.77 | 0.92 | 0.92 | 0.92 | 0.90 | 0.90 | 0.90 | 0.87 | 0.87 | 0.87 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 25 | 51 | 25 | 241 | 19 | 707 | 32 | 653 | 555 | 534 | 1154 | 22 |
| Arrive On Green | 0.06 | 0.06 | 0.06 | 0.15 | 0.15 | 0.15 | 0.02 | 0.35 | 0.35 | 0.30 | 0.63 | 0.63 |
| Sat Flow, veh/h | 435 | 894 | 435 | 1649 | 131 | 1583 | 1774 | 1863 | 1583 | 1774 | 1822 | 35 |
| Grp Volume(v), veh/h | 77 | 0 | 0 | 217 | 0 | 757 | 22 | 624 | 150 | 525 | 0 | 583 |
| Grp Sat Flow(s),veh/h/ln | 1764 | 0 | 0 | 1780 | 0 | 1583 | 1774 | 1863 | 1583 | 1774 | 0 | 1857 |
| Q Serve(g_s), s | 4.7 | 0.0 | 0.0 | 13.0 | 0.0 | 16.0 | 1.4 | 35.9 | 7.5 | 32.2 | 0.0 | 18.4 |
| Cycle Q Clear(g_c), s | 4.7 | 0.0 | 0.0 | 13.0 | 0.0 | 16.0 | 1.4 | 35.9 | 7.5 | 32.2 | 0.0 | 18.4 |
| Prop In Lane | 0.25 | | 0.25 | 0.93 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.02 |
| Lane Grp Cap(c), veh/h | 100 | 0 | 0 | 260 | 0 | 707 | 32 | 653 | 555 | 534 | 0 | 1176 |
| V/C Ratio(X) | 0.77 | 0.00 | 0.00 | 0.84 | 0.00 | 1.07 | 0.70 | 0.96 | 0.27 | 0.98 | 0.00 | 0.50 |
| Avail Cap(c_a), veh/h | 257 | 0 | 0 | 260 | 0 | 707 | 81 | 662 | 563 | 534 | 0 | 1176 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 51.0 | 0.0 | 0.0 | 45.6 | 0.0 | 30.3 | 53.6 | 34.8 | 25.6 | 38.1 | 0.0 | 10.7 |
| Incr Delay (d2), s/veh | 11.5 | 0.0 | 0.0 | 20.5 | 0.0 | 54.2 | 24.0 | 24.4 | 0.3 | 34.6 | 0.0 | 0.3 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 2.6 | 0.0 | 0.0 | 7.9 | 0.0 | 32.0 | 0.9 | 22.8 | 3.3 | 20.9 | 0.0 | 9.5 |
| LnGrp Delay(d),s/veh | 62.5 | 0.0 | 0.0 | 66.0 | 0.0 | 84.5 | 77.6 | 59.2 | 25.8 | 72.7 | 0.0 | 11.1 |
| LnGrp LOS | E | | | E | | F | E | E | C | E | | B |
| Approach Vol, veh/h | | 77 | | | 974 | | | 796 | | | 1108 | |
| Approach Delay, s/veh | | 62.5 | | | 80.4 | | | 53.4 | | | 40.3 | |
| Approach LOS | | E | | | F | | | D | | | D | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | 3 | 4 | | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | | 20.0 | 37.0 | 42.4 | | 10.2 | 6.0 | 73.5 |
| Change Period (Y+Rc), s | | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | | 16.0 | 33.0 | 39.0 | | 16.0 | 5.0 | 67.0 |
| Max Q Clear Time (g_c+I1), s | | 18.0 | 34.2 | 37.9 | | 6.7 | 3.4 | 20.4 |
| Green Ext Time (p_c), s | | 0.0 | 0.0 | 0.6 | | 0.2 | 0.0 | 4.5 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 57.6 |
| HCM 2010 LOS | E |

## 1: Taylor Road & Penryn Road Performance by approach

| Approach | EB | WB | NB | SB | All |
|---|---|---|---|---|---|
| Denied Delay (hr) | 0.0 | 0.2 | 0.0 | 0.0 | 0.2 |
| Total Delay (hr) | 0.0 | 1.9 | 1.4 | 4.4 | 7.8 |

## 2: Taylor Road & N. Penryn Road Performance by approach

| Approach | EB | NB | SB | All |
|---|---|---|---|---|
| Denied Delay (hr) | 0.0 | 0.0 | 0.2 | 0.2 |
| Total Delay (hr) | 0.6 | 0.5 | 10.0 | 11.1 |

## Total Network Performance

| | |
|---|---|
| Denied Delay (hr) | 0.4 |
| Total Delay (hr) | 19.9 |

## 1: Taylor Road & Penryn Road Performance by approach

| Approach | EB | WB | NB | SB | All |
|---|---|---|---|---|---|
| Denied Delay (hr) | 0.0 | 0.2 | 0.1 | 0.0 | 0.3 |
| Total Delay (hr) | 0.0 | 1.3 | 11.9 | 2.3 | 15.4 |

## 2: Taylor Road & N. Penryn Road Performance by approach

| Approach | EB | NB | SB | All |
|---|---|---|---|---|
| Denied Delay (hr) | 0.0 | 0.0 | 0.1 | 0.1 |
| Total Delay (hr) | 0.1 | 0.7 | 1.7 | 2.5 |

## Total Network Performance

| | |
|---|---|
| Denied Delay (hr) | 0.4 |
| Total Delay (hr) | 18.7 |

## 1: Taylor Road & Penryn Road Performance by approach

| Approach | EB | WB | NB | SB | All |
|---|---|---|---|---|---|
| Denied Del/Veh (s) | 0.1 | 2.8 | 0.3 | 0.0 | 0.9 |
| Total Del/Veh (s) | 12.3 | 12.4 | 13.3 | 13.4 | 13.1 |

## 2: Taylor Road & N. Penryn Road Performance by approach

| Approach | EB | NB | SB | All |
|---|---|---|---|---|
| Denied Del/Veh (s) | 0.1 | 0.0 | 0.3 | 0.1 |
| Total Del/Veh (s) | 3.9 | 2.9 | 10.8 | 5.5 |

## Total Network Performance

| | |
|---|---|
| Denied Del/Veh (s) | 1.0 |
| Total Del/Veh (s) | 19.6 |

## 1: Taylor Road & Penryn Road Performance by approach

| Approach | EB | WB | NB | SB | All |
|---|---|---|---|---|---|
| Denied Del/Veh (s) | 0.1 | 2.0 | 0.3 | 0.0 | 0.5 |
| Total Del/Veh (s) | 12.5 | 23.3 | 16.3 | 13.7 | 16.4 |

## 2: Taylor Road & N. Penryn Road Performance by approach

| Approach | EB | NB | SB | All |
|---|---|---|---|---|
| Denied Del/Veh (s) | 0.1 | 0.0 | 0.8 | 0.5 |
| Total Del/Veh (s) | 31.5 | 3.7 | 23.2 | 17.6 |

## Total Network Performance

| | |
|---|---|
| Denied Del/Veh (s) | 1.0 |
| Total Del/Veh (s) | 33.0 |

## 1: Taylor Road & Penryn Road Performance by approach

| Approach | EB | WB | NB | SB | All |
|---|---|---|---|---|---|
| Denied Del/Veh (s) | 0.1 | 2.5 | 0.5 | 0.0 | 0.7 |
| Total Del/Veh (s) | 21.1 | 19.0 | 22.6 | 18.7 | 20.6 |

## 2: Taylor Road & N. Penryn Road Performance by approach

| Approach | EB | NB | SB | All |
|---|---|---|---|---|
| Denied Del/Veh (s) | 0.1 | 0.0 | 0.4 | 0.2 |
| Total Del/Veh (s) | 9.1 | 3.9 | 11.1 | 6.9 |

## Total Network Performance

| | |
|---|---|
| Denied Del/Veh (s) | 0.9 |
| Total Del/Veh (s) | 27.7 |

## 1: Taylor Road & Penryn Road Performance by approach

| Approach | EB | WB | NB | SB | All |
|---|---|---|---|---|---|
| Denied Del/Veh (s) | 0.1 | 2.7 | 0.4 | 0.0 | 0.9 |
| Total Del/Veh (s) | 15.6 | 13.9 | 13.6 | 15.1 | 14.2 |

## 2: Taylor Road & N. Penryn Road Performance by approach

| Approach | EB | NB | SB | All |
|---|---|---|---|---|
| Denied Del/Veh (s) | 0.1 | 0.0 | 0.3 | 0.1 |
| Total Del/Veh (s) | 6.3 | 3.1 | 12.2 | 6.3 |

## Total Network Performance

| | |
|---|---|
| Denied Del/Veh (s) | 0.9 |
| Total Del/Veh (s) | 21.2 |

## 1: Taylor Road & Penryn Road Performance by approach

| Approach | EB | WB | NB | SB | All |
|---|---|---|---|---|---|
| Denied Del/Veh (s) | 0.1 | 2.5 | 0.4 | 0.0 | 0.8 |
| Total Del/Veh (s) | 17.5 | 15.3 | 14.3 | 14.7 | 14.7 |

## 2: Taylor Road & N. Penryn Road Performance by approach

| Approach | EB | NB | SB | All |
|---|---|---|---|---|
| Denied Del/Veh (s) | 0.1 | 0.0 | 0.3 | 0.1 |
| Total Del/Veh (s) | 6.4 | 3.0 | 10.8 | 5.8 |

## Total Network Performance

| | |
|---|---|
| Denied Del/Veh (s) | 0.9 |
| Total Del/Veh (s) | 21.2 |

KD Anderson & Associates, Inc.
Transportation Engineers

July 25, 2018

Mr. Nick Pappani
**RANEY PLANNING AND MANAGEMENT**
1501 Sports Drive
Sacramento, CA 95834

**RE: UNITED AUBURN INDIAN COMMUNITY (UAIC) MASTER PLAN & SCHOOL PROJECT EIR, PLACER COUNTY: STAFFING LEVELS.**

Dear Mr. Pappani:

As we have discussed, our firm prepared the June 25, 2018 traffic impact analysis for the **United Auburn Indian Community (UAIC)'s Master Plan & School Project EIR**. We have subsequently learned that there may be a discrepancy between the number of staff for the Tribal Education Center (TEC) and Cultural Center. The analysis assumes a total of 6 employees, along with 35 education staff. It is now anticipated that here would be 6 staff for the TEC and 2 for the Cultural Center.

The addition of two employees would result in a small amount of traffic but would not change the traffic impact analysis' conclusions regarding traffic impacts or mitigation requirements. Using the trip generation rates presented in the analysis, another 4 daily trips may result with two trips in the a.m. peak hour and 2 trips in the p.m. peak hour. Total daily site trip generation could increase from 254 to 258 daily trips. These increases would be too small to have an appreciable quantifiable effect on the Levels of Service projected by the analysis, and as a result mitigation requirements would be unchanged.

Thank you for your attention to this information. Please don't hesitate to contact me if you have any questions.

Sincerely,

**KD Anderson & Associates, Inc.**

Kenneth D. Anderson, P.E.
President

UAIC School Staffing.ltr

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# APPENDIX N

# UNITED AUBURN INDIAN COMMUNITY TRIBAL SCHOOL SANITARY SEWER STUDY

Prepared For: UAIC

Prepared: October 4, 2017
Prepared by: RSC Engineering, Inc.

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# I. INTRODUCTION

As part of the proposed UAIC School project a new six inch (6”) sanitary sewer is being proposed to serve the site and connect to the existing South Placer Municipal Utility District Standard sewer system south west of the site.

This report has been prepared to calculate the sanitary sewer flows generated from the proposed UAIC site and to determine if there is sufficient capacity in the existing six inch (6”) South Placer Municipal Utility District sanitary sewer downstream of the UAIC site to serve the subject property

# II. Design Criteria

The design criteria as found in the South Placer Municipal Utility District Standard Specification and Improvement Standards for Sanitary Sewers approved and ordered effected on November 13, 2009 was used to determine flows from the service areas.

# III. Service Areas

The overall service area used for this report showing the sewer system affected by the proposed school site was derived from the SPMUD facility maps. A Copy of the shed map is enclosed with this report (Figure 1)

***Service Area 1: UAIC School Site.***

The proposed school site is planned as an elementary school campus with a community educational and cultural center. The anticipated population of the school is comprised of approximately 100 elementary students and 75 adults/staff.

For the purposes of these calculations a capita of 250 was used to account for the special events and to ensure flows used in the calculations will be higher than normal, daily use.

***Service Area 2: Existing Lemos Ranch Subdivision***

The existing Lemos Ranch Subdivision, located west of the proposed UAIC school site cosists of 55 single family detached residential units and is being served by a six inch (6”) sanitary sewer.

***Service Area 3: Existing Residential South***

There are currently 22 existing residential lots, located south of the proposed UAIC school site served by the existing sanitary sewer downstream of the school site. In accordance with current law each of the residential lots is allowed 2 units. For the purposes of the calculations 2 units per lot were assumed resulting in 44 single family detached residential units. The area is currently being served by a six inch (6”) sanitary sewer.

***Service Area 4: Existing Lot West of Lemos Ranch***

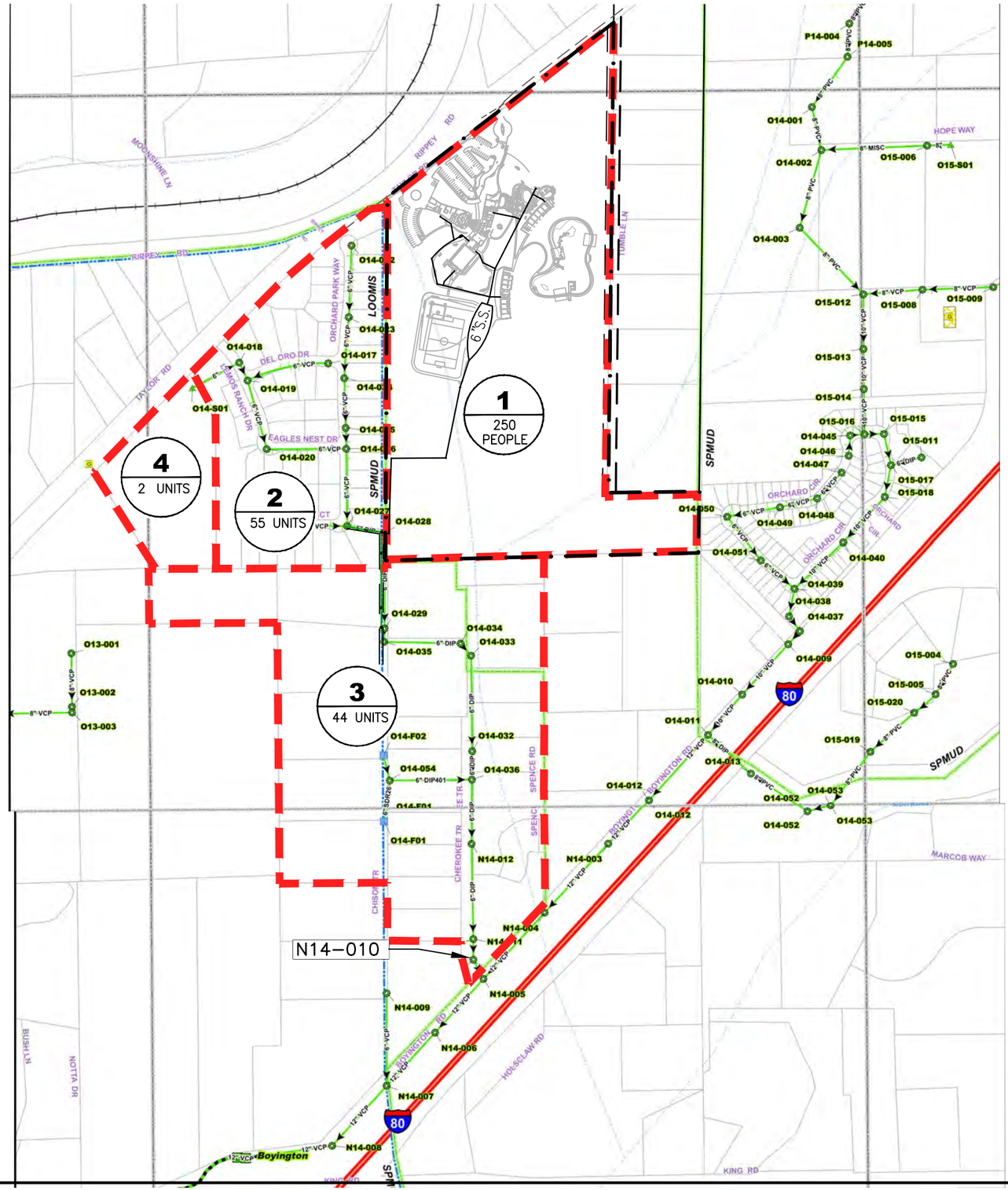
There is a six inch (6”) sewer line stubbed to the North end of the lot thru the Lemos Ranch Subdivision. The 6.3 acre lot is zoned general commercial and there is a single family detached home located on the property with a detached garage and separate structure used for fruit and vegetable sales.

If the 6.3 acre lot were to be developed under the general commercial zoning the existing six inch (6”) sewer line would not be adequate. This is true for almost all of the six inch (6”) in Lemos Ranch Subdivision and all the subsequent sewer lines downstream of Lemos Ranch. As the sewer stub and sewer line in Lemos Ranch subdivision is only six inch (6”) main, it is assumed that the stub to the north end of the lot was only intended for the existing residential home. The calculations within this report assume 2 residential units (one for the main house and 1 for the sales building) from the existing lot West of Lemos Ranch and that an alternate sewer service will have to be developed for the lot should it redevelop as a commercial project.

## IV. Conclusion

The calculations found in Appendix A show that the existing six inch (6”) sanitary sewer downstream of the proposed UAIC school site has adequate capacity to serve the proposed school site.

## Figure 1 – Sanitary Sewer Shed Map




# LEGEND

SEWER SHED BOUNDARY

1
27 Units

SHED AREA # AND APPLICABLE QUANTITY, BASED ON SIZING CRITERIA FOR THAT AREA TYPE

N

250 0 125 250 500

1 inch = 500 ft.

UAIC

| REV NO. | DESCRIPTION | ENG INT. | BY | CITY APPROVED | DATE |
|---|---|---|---|---|---|
| △ | | | | | |
| △ | | | | | |
| △ | | | | | |
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PROJECT NO: 164-001
DRAWN BY: RSC Eng
CHECKED BY: RSC Eng
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UAIC PROPOSED SEWER SHED MAP

SHEET TITLE
SEWER SHED MAP

SHEET NO.
FIGURE 1

DATE: OCTOBER 4, 2017

## APPENDIX A – Sanitary Sewer Capacity Calculations

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# Appendix A
# UAIC Sewer Calculations:

Date: 10/4/2017
RSC Proj. #: 164-001

The following calculation is completed in accordance with Section 3 of the SPMUD Standard Specifications & Improvement Standards for Sanitary Sewer, dated November 13, 2009. Refer to Figure 1 for the layout of the sewer shed area. This map includes SPMUD manhole numbering and locations.

**Average Daily Flow Calculations**

*Area 1 - UAIC*
Per SPUD Standards for an elementary school development, calculate total flow as 25 gal/capita/day.

| | | | | | |
|---|---|---|---|---|---|
| Total Capita= | 250 | People | | | |
| Average Flow =250 peoplex 25 gal/capita/day = | **6,250** | **gal per day** | or | 0.006 | MGD |

*Area 2-Existing Lemos Ranch Subdivision*
Per SPMUD Standards for Single Family Residential, calculate average flow as 100 gal per person per day. Assume 4 people per unit.

| | | | | | |
|---|---|---|---|---|---|
| Total units= | 55 | units | | | |
| Average Flow = 55 Units x 4 People/unit x 100 gal/person/day = | **22,000** | **gal per day** | or | 0.022 | MGD |

*Area 3-Existing Residential South of UAIC*
Per SPMUD Standards for Single Family Residential, calculate average flow as 100 gal per person per day. Assume 4 people per unit. Zoning for the area allows 2 units per lot.

| | | | | | |
|---|---|---|---|---|---|
| Total units=22 lots x 2 units per lot= | 44 | units | | | |
| Average Flow = 44 Units x 4 People/unit x 100 gal/person/day = | **17,600** | **gal per day** | or | 0.018 | MGD |

*Area 4 - Single Family Residence West of Lemos Ranch*
Per SPMUD Standards for Single Family Residential, calculate average flow as 100 gal per person per day. Assume 4 people per unit. There is an existing residence and outbuilding on the lot, assume 2 units per lot.

| | | | | | |
|---|---|---|---|---|---|
| Total units=1 lot x 2 units per lot= | 2 | units | | | |
| Average Flow = 2 Units x 4 People/unit x 100 gal/person/day = | **800** | **gal per day** | or | 0.001 | MGD |

**Peak Flow Calculations**

| | | |
|---|---|---|
| Allowable 6" sanitary sewer pipe capacity per Section 3 of the *SPMUD Standard Specifications & Improvement Standards for Sanitary Sewer*, dated November 13, 2009. | 0.220 | MGD |

*Existing flow in 6" sewer at manhole # N14-010 from existing Areas 2, 3 & 4*

| | | |
|---|---|---|
| Average Flow = | 0.040 | MGD |
| Peaking Factor from SPMUD Std. Dwg. No. 2 = | 3.7 | |
| Existing Peak Flow at manhole # N14-010 (Areas 2 thru 4 only) | **0.149** | **MGD** |

*Proposed flow in 6" sewer leaving project site from project site Area 1 only*

| | | |
|---|---|---|
| Average Flow = | 0.006 | MGD |
| Peaking Factor from SPMUD Std. Dwg. No. 2 = | 4.0 | |
| Proposed Peak Flow leaving project site (Area 1 only) | **0.025** | **MGD** |

*Combined flow (Existing Area 2 thru 4 & project site Area 1) in 6" sewer at manhole # N14-010*

| | | | | | |
|---|---|---|---|---|---|
| Average Flow = | 0.047 | MGD | | | |
| Peaking Factor from SPMUD Std. Dwg. No. 2 = | 3.7 | | | | |
| Combined Peak Flow at manhole # N14-010 (Areas 1 thru 4) | **0.173** | **MGD** | < | 0.22 | MGD |