TECHNICAL NOISE ANALYSIS

Whitehawk I
Granite Bay, California

Prepared For

Meritage Homes
1671 East Monte Vista Avenue, Suite 214
Vacaville, CA 95688

Prepared By

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October 2018

TABLE OF CONTENTS

Page

Executive Summary **1**

Introduction **2**

Noise Analysis **4**

References **17**

FIGURES

1: Tentative Subdivision and Project Location Map **3**
2: Noise Measurement Sites **9**

TABLES

1: Typical Noise Levels **5**
2: Exterior Noise Level Performance Standards for New Projects Affected by or Including Non—Transportation Noise Sources **6**
3: Maximum Allowable Noise Exposure Transportation Noise Sources **7**
4: Placer County Noise Ordinance Sound Level Standards (On-site) **7**
5: Existing Noise Measurements **10**
6: Typical Noise Levels from Construction Equipment **12**
7: Typical Construction Activities Noise Levels **12**

Executive Summary

This report analyzes the existing noise levels and potential noise impacts of the Whitehawk I residential development. The project would consist of the construction and operation of a 24-unit single family residential housing development on an 18-acre parcel. The project is located south of Douglas Boulevard, east of Woodgrove Way in Granite Bay, California. The tentative subdivision map and project location are shown in **Figure 1** (project was previously called Granite Bay 17).

The major source of noise on the project site is traffic noise from Douglas Boulevard. To quantify existing ambient noise levels in the immediate project vicinity, RCH conducted short-term (10-minute) noise measurements at four locations and two long-term (72-hour) measurements of existing noise levels at the project site. The short-term noise measurements were conducted near Douglas Boulevard to measure peak-hour morning traffic noise as well as near the southern boundary of the project site to measure ambient noise levels further from Douglas Boulevard. The long-term noise measurement locations were selected at the location of two future building envelopes nearest to Douglas Boulevard to capture the existing noise levels that would affect the proposed residences.

The 24-hour noise levels measured the site were ranged from 51 to 54 dB Ldn at the location of the building pads closest to Douglas Boulevard. Typical residential construction consistent with the Uniform Building Code (UBC) will provide an exterior-to interior noise level reduction of no less than 25 dB provided that exterior windows and doors are closed. With a 25 dB reduction, interior noise levels at residences closest to Douglas Boulevard would be approximately 26 to 29 dB Ldn, well below the 45 dB Ldn maximum for interior noise levels. Exterior and Interior noise levels at residences on the project site would comply with the Placer County transportation noise source standards, and no mitigation would be required.

Temporary construction activities associated with the construction of the project are required to comply with the hours contained in the Granite Bay Community Plan and Placer County Noise Ordinance. Construction would be limited to Monday through Friday from 6:00 a.m. to 8:00 p.m. during daylight savings and 7:00 a.m. to 8:00 a.m. during standard time, as well as Saturdays between 8:00 a.m. and 6:00 p.m. Although construction activities would comply with the Granite Bay Community Plan and Placer County Noise Ordinance, project construction would result in a substantial periodic increase in ambient noise levels at sensitive receptors in the project vicinity, resulting in a potentially significant impact. The implementation of **Mitigation Measure 2** would reduce noise impacts at nearby sensitive receptors to the maximum extent feasible and reduce temporary construction impacts to less than significant with mitigation.

Blasting could be required during project construction if needed to excavate hard-rock areas. Blasting could generate substantial vibration or ground-borne noise levels, resulting in a potentially significant impact. The implementation of **Mitigation Measure 1** requiring a blasting plan for construction would reduce impacts related to groundborne vibration to less-than-significant with mitigation.

The analysis identified no impacts from airport noise, as there are no airports near the project site.

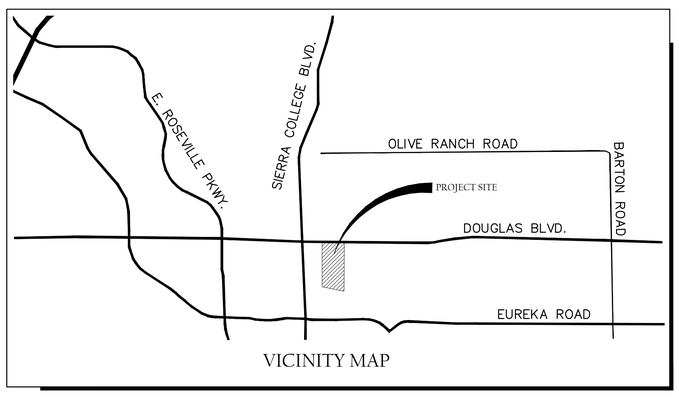
Introduction

RCH Group (RCH) has conducted this environmental noise assessment for the Whitehawk I residential development. The project would consist of construction and operation of a 24-unit single family residential housing development (**Figure 1**). The project is located immediately south of Douglas Boulevard, and east of Woodgrove Way in the community of Granite Bay, California.

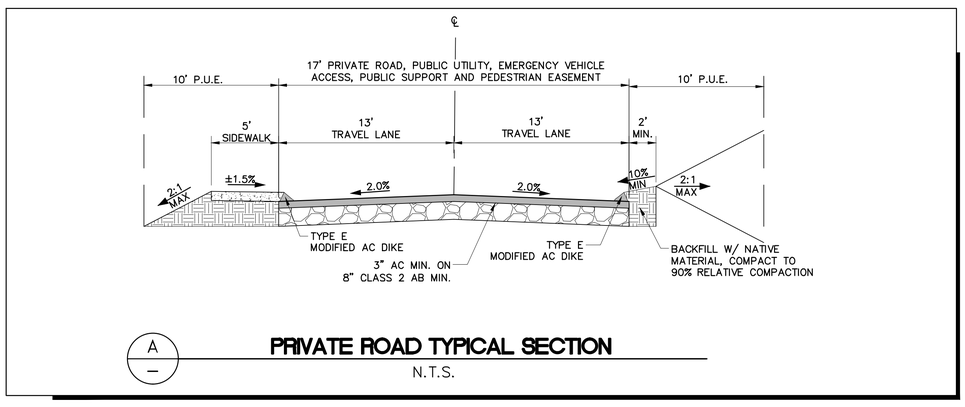
The currently undeveloped project site is approximately 18 acres and consists of one parcel (APN 048-151-001-000). The project site is surrounded completely by residential land uses including rural residential to the south and east, rural low density residential to the west, and medium and low-density residential to the north.

This report analyzes the noise impacts from the project and is prepared in a format to answer the noise questions in the Initial Study Environmental Checklist Form in Appendix G of the State CEQA Guidelines.

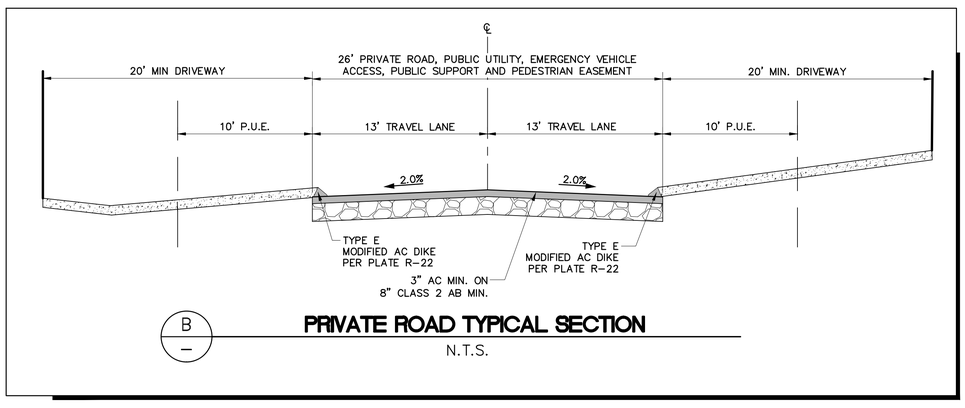
VESTING
TENTATIVE SUBDIVISION MAP
GRANITE BAY 17
PLACER COUNTY, CA



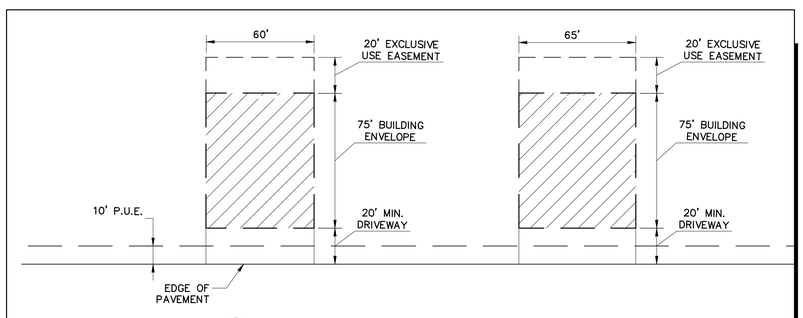
VICINITY MAP



A — PRIVATE ROAD TYPICAL SECTION
N.T.S.



B — PRIVATE ROAD TYPICAL SECTION
N.T.S.



C — TYPICAL LOT CONFIGURATION
N.T.S.

UTILITY PROVIDERS

PARK DISTRICT
FACILITY SERVICES

SCHOOL DISTRICT
PLACER UNION HIGH SCHOOL DISTRICT
LOOMIS ELEMENTARY SCHOOL DISTRICT

WATER
PLACER COUNTY WATER AGENCY

SANITARY SEWER
PLACER COUNTY SEWER MAINTENANCE DISTRICT NO. 2

STORM DRAIN
PRIVATE - MAINTAINED BY HOA

ELECTRIC
PG&E

TELEPHONE
AT&T

CABLE
COMCAST

FIRE
SOUTH PLACER FIRE DISTRICT

PERMITTED DENSITY

BASE ZONE = RA-B-100 PD=0.50

PARCEL SIZE IS 18.08 ACRES LESS EXISTING ROAD EASEMENTS OF 0 ACRES = 18.08 ACRES, FLOODPLAIN AREA AND SLOPES 30% AND GREATER <10% THEREFORE 18.08 ACRES - 0 ACRES = 18.08 ACRES NET BUILDABLE AREA.

STANDARD DEDUCTION FOR SUBDIVISION ROADS = SIX (6) PERCENT OF BUILDABLE AREA = 2.36 ACRES; 39.38 AC - 2.36 AC = 37.02 ACRES.

37.02 AC/20 AC PER UNIT = 1.85 UNITS PERMITTED BY THE BASE ZONING

MAXIMUM UNITS PERMITTED BY - PD DESIGNATION:

NET BUILDABLE AREA FROM ABOVE = 39.38 ACRES

39.38 ACRES x THE PD DESIGNATION OF A MAXIMUM 0.44 DWELLING UNITS PER ACRE = 17.33 UNITS.

NUMBER OF UNITS PROPOSED = 56UNITS.

PROPOSED BUILDING COVERAGE = 40%

REQUIRED OPEN SPACE = 20% (0.20 x 32.97 ACRES) = 6.59 ACRES

PROPOSED OPEN SPACE = __.__ ACRES OR __%

TENTATIVE MAP STATEMENT

"I HEREBY STATE THAT THIS TENTATIVE MAP ACCURATELY DEPICTS THE LOCATION, WIDTH, TYPE AND RECORDING INFORMATION OF ALL RECORD EASEMENTS LISTED IN THE PRELIMINARY TITLE REPORT ISSUED BY _____, ORDER NO. _____ DATED _____. ALL EASEMENTS PROPOSED TO BE ABANDONED OR EXTINGUISHED ARE IDENTIFIED.

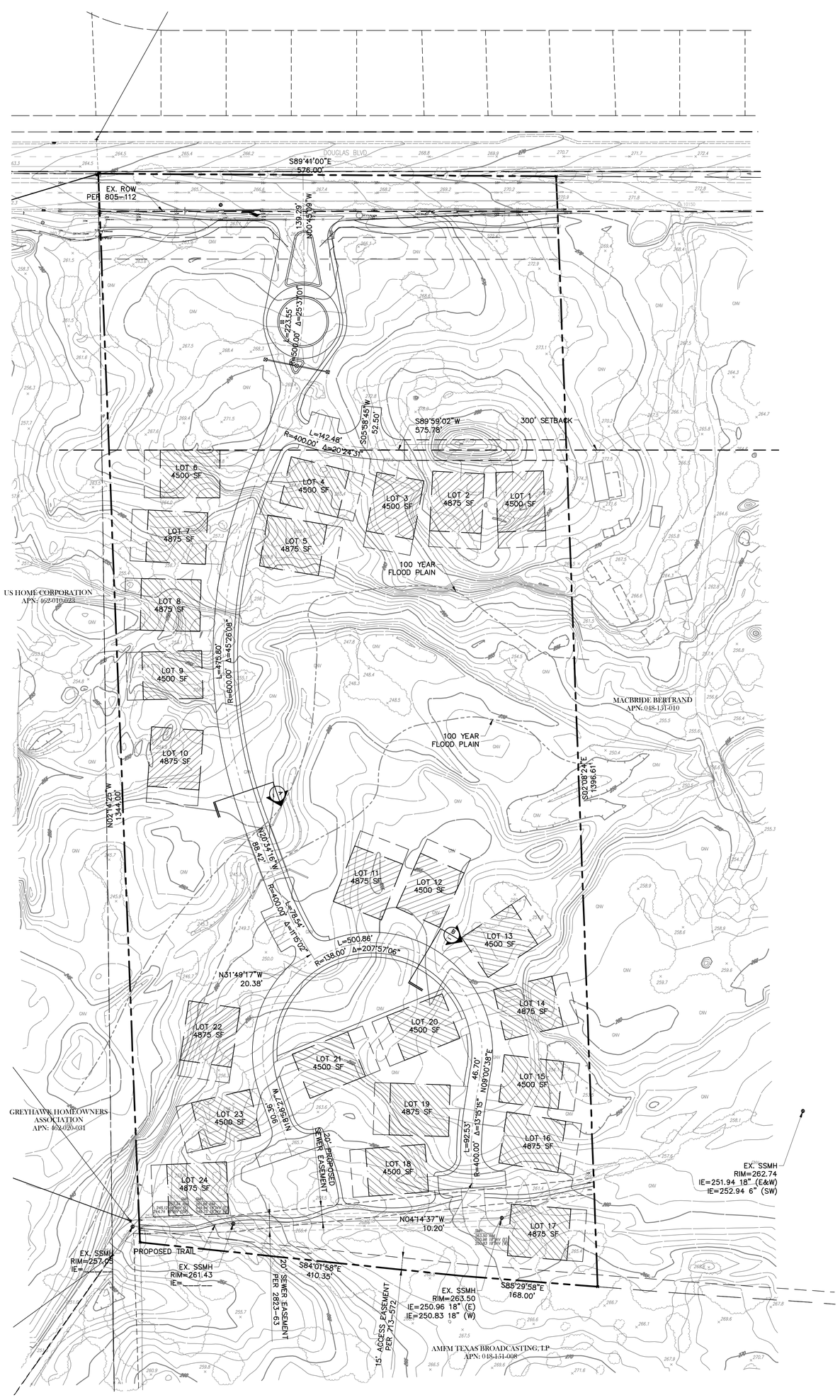
_____ _____ _____
SIGN DATE

COUNTY OF PLACER DATUM BENCHMARK:

△ ELEV.-279.69
(NGVD29) RM145
A PK NAIL WITH A 1-1/2" WASHER STAMPED "101" IN THE TOP OF CURB ON THE WEST SIDE OF THE DROP INLET ON THE NORTH SIDE OF DOUGLAS BLVD., ±200 FEET WEST OF THE INTERSECTION WITH SEENO AVE.

FLOOD ZONE

PROJECT IS LOCATED WITHIN FLOOD ZONES DESIGNATED AS AE, BASE FLOOD ELEVATIONS DETERMINED, AND X, AREAS DETERMINED TO BE OUTSIDE THE 500-YEAR FLOOD PLAIN PER FLOOD INSURANCE PROGRAM COMMUNITY PANEL NO. 06061C0483G DATED NOVEMBER 21, 2001.



PROJECT SUMMARY

ASSESSORS PARCEL NO'S
048-151-001-000

OWNER
FLOSOM OAK TREE
PO BOX 293870
SACRAMENTO, CA 95829
ATTN: DAVE COOK

PLANNER/ENGINEER
TSD ENGINEERING, INC.
31 NATOMA STREET, SUITE 160
FOLSOM, CA 95630
ATTN: CASEY FEICKERT

AREA
±18.08 ACRES

AREA- DISTURBED
±8.50 ACRES

OPEN SPACE

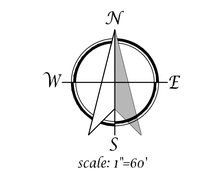
PROPOSED LOT SIZES
MINIMUM - 4,500 SF
MAXIMUM - 4,875 SF
AVERAGE - __ SF

NUMBER OF LOTS
56 SINGLE FAMILY RESIDENTIAL LOTS

EXISTING ZONING & USE
RA-B-100 PD=0.50
UNDEVELOPED

PROPOSED ZONING & USE
RA-B-100
24 RESIDENTIAL HOMESITES AND

PROPOSED BUILDING SETBACKS
FRONT - 10' (MIN)
SIDE - 10' (MIN)
REAR - 20' (MIN)



scale: 1"=60'

60 0 30 60 120

REGISTERED PROFESSIONAL ENGINEER CASEY S. FEICKERT No. 58930 Exp. 6-30-09 CIVIL STATE OF CALIFORNIA

CE #58930
CASEY S. FEICKERT
THIS TENTATIVE SUBDIVISION MAP CONFORMS TO SECTION 16.12.040 OF THE LAND DEVELOPMENT MANUAL.

VESTING
TENTATIVE SUBDIVISION MAP
JUNE 5, 2015

SHEET 1/3

TSD Engineering, Inc.
Total Site Design
31 Natoma Street, Suite #160
Folsom, CA 95630
TEL: 916-608-0707 FAX: 916-608-0701

P:\Projects\333-002\02 DWG\B- Planning\Vtt\333-002 - Tentative Map.dwg, TSD-MARK, 09:10:23, 06-05-15

Source: RCH Group, TSD Engineering, Inc.

Whitehawk I
Figure 1
Tentative Subdivision and Project Location Map

Noise Analysis

Noise impacts are evaluated by estimating noise levels in the area and determining the noise compatibility of the project. The analysis considers existing noise levels at the project site and noise impacts of the project.

	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
XI. NOISE -- Would the project 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?	☐	☐	☐	☒

Background:

Noise Descriptors

To describe noise environments and to assess impacts on noise–sensitive areas, a frequency weighting measure, which simulates human perception, is commonly used. It has been found that A–weighting of sound levels best reflects the human ear's reduced sensitivity to low frequencies, and correlates well with human perceptions of the annoying aspects of noise. The A-weighted decibel scale (dB)[1] is cited in most noise criteria. All references to decibels (dB) in this report will be A-weighted unless noted otherwise. Decibels are logarithmic units that conveniently compare the wide range of sound intensities to which the human ear is sensitive. **Table 1** identifies decibel levels for common sounds heard in the environment.

[1] A decibel (dB) is a unit of sound energy intensity. Sound waves, traveling outward from a source, exert a sound pressure level (commonly called "sound level") measured in dB. An A-weighted decibel (dB) is a decibel corrected for the variation in frequency response to the typical human ear at commonly encountered noise levels.

Table 1: Typical Noise Levels

Noise Level (dB)	Outdoor Activity	Indoor Activity
90+	Gas lawn mower at 3 feet, jet flyover at 1,000 feet	Rock Band
80–90	Diesel truck at 50 feet	Loud television at 3 feet
70–80	Gas lawn mower at 100 feet, noisy urban area	Garbage disposal at 3 feet, vacuum cleaner at 10 feet
60–70	Commercial area	Normal speech at 3 feet
40–60	Quiet urban daytime, traffic at 300 feet	Large business office, dishwasher next room
20–40	Quiet rural, suburban nighttime	Concert hall (background), library, bedroom at night
10–20		Broadcast / recording studio
0	Lowest threshold of human hearing	Lowest threshold of human hearing

Source: (modified from Caltrans Technical Noise Supplement, 1998)

Several time-averaged scales represent noise environments and consequences of human activities. The most commonly used noise descriptors are the equivalent A-weighted sound level over a given time period (Leq);[2] average day-night 24-hour average sound level (Ldn)[3] with a nighttime increase of 10 dB to account for sensitivity to noise during the nighttime; and community noise equivalent level (CNEL),[4] also a 24-hour average that includes both an evening and a nighttime sensitivity weighting.

Noise Attenuation

Stationary point sources of noise, including construction equipment, attenuate (lessen) at a rate of 6 to 7.5 dB per doubling of distance from the source, depending on ground absorption. Soft sites attenuate at 7.5 dB per doubling because they have an absorptive ground surface such as soft dirt, grass, or scattered bushes and trees. Hard sites have reflective surfaces (e.g., parking lots or smooth bodies of water) and therefore have less attenuation (6.0 dB per doubling). A street or roadway with moving vehicles (known as a "line" source), would typically attenuate at a lower rate, approximately 3 to 4.5 dB each time the distance doubles from the source, which also depends on ground absorption (CalTrans, 1998). Physical barriers located between a noise source and the noise receptor, such as berms or sound walls, will increase the attenuation that occurs by distance alone.

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2 The Equivalent Sound Level (L_{eq}) is a single value of a constant sound level for the same measurement period duration, which has sound energy equal to the time–varying sound energy in the measurement period.

3 L_{dn} is the day–night average sound level that is equal to the 24-hour A-weighted equivalent sound level with a 10–decibel penalty applied to night between 10:00 P.M. and 7:00 A.M.

4 CNEL is the average A–weighted noise level during a 24-hour day, obtained by addition of 5 decibels in the evening from 7:00 to 10:00 P.M., and an addition of a 10–decibel penalty in the night between 10:00 P.M. and 7:00 A.M.

Exterior noise levels from onsite stationary noise sources at the Whitehawk I should be attenuated by a minimum of about 7.5 dB for each doubling of the reference distance from the noise source and 4.5 dB for each doubling of the reference distance from the noise source for line sources (traffic). Whitehawk I is surrounded primarily by soft site conditions (oak woodlands and yards of adjacent residences).

Noise Standards

Granite Bay Community Plan

The Noise Element of the Granite Bay Community Plan establishes goals and policies for both transportation and non-transportation noise sources. The allowable noise levels are based upon the standards adopted in the Placer County General Plan Noise Element. Noise level performance standards for new projects affected by or including non-transportation noise sources are shown in **Table 2**. The maximum allowable noise exposure at residential land uses from transportation noise sources is shown in **Table 3**. As shown in **Table 3**, the maximum allowable exposure to transportation noise sources for residential land uses is 60 dB Ldn at outdoor activity areas and 45 dB Ldn in interior spaces.

The Noise Element prohibits noise emanating from construction activity that requires a grading or building permit on Sundays and federal holidays. Construction hours are limited to the hours of 6:00 a.m. to 8:00 p.m. Monday through Friday during daylight savings, 7:00 a.m. to 8:00 p.m. Monday through Friday during standard time, and Saturdays, 8:00 a.m. to 6:00 p.m.

Table 2: Exterior Noise Level Performance Standards for New Projects Affected by or Including Non-Transportation Noise Sources

Zone District of Receptor	Property Line of Receiving Land Use Ldn, dB	Interior Spaces Ldn, dB
Residential Adjacent to Industrial	60	45
Other Residential	50	45
Professional Office	70	45
Neighborhood Commercial	70	45
General Commercial	70	45
Shopping Center	70	45
Farm/Agriculture	See footnote	-

Source: Granite Bay Community Plan

Notes: Normally, agricultural uses are noise insensitive and will be treated this way. However, conflicts with agricultural noise emissions can occur where single-family residences exist within or adjacent to agricultural zone districts. Therefore where effects of agricultural noise upon residences located in these areas is a concern, an Ldn of 70 dBA will be considered acceptable outdoor exposure at a residence. New noise-sensitive uses which may be affected by noise sources associated with agricultural operations shall be responsible for mitigating agricultural operations noise levels consistent with this Table.

Table 3: Maximum Allowable Noise Exposure
Transportation Noise Sources

Land Use	Outdoor Activity Areas[1] Ldn/CNEL, dB	Interior Spaces Ldn/CNEL, dB
Residential	60[2]	45

Source: Granite Bay Community Plan

Notes:

[1]Outdoor Activity Areas are generally considered to be the back yard or patio or the receiving land use. Where the location of the outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use.

[2]Where it is not possible to reduce noise in outdoor activity areas to 60 dB Ldn/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB Ldn/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.

Placer County Noise Ordinance

The Placer County Noise Ordinance sets limits for sensitive receptors and makes it 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 as set forth in **Table 4**, whichever is the greater

Table 4: Placer County Noise Ordinance Sound Level Standards (On-site)

Sound Level Descriptor	Daytime (7 am to 10 pm)	Nighttime (10 pm to 7 am)
Hourly Leq, dB	55	45
Maximum level, (Lmax) dB	70	65

Source: Placer County Noise Ordinance

The Placer County Noise Ordinance exempts construction 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 that all construction equipment is fitted with factory installed muffling devices and that all construction equipment is maintained in good working order.

Significance Criteria

Based on these criteria, operational noise impacts of the residential development would be significant if they result in exceedance of noise standards contained in the Placer County Noise Ordinance at nearby residential land uses. Operation of the development would also result in a significant impact if it would result in an increase in ambient noise levels of 5 dB or more (Ldn, CNEL, or hourly Leq) at nearby sensitive

receptors[5]. A significant impact would also occur if residents at the project site are exposed to transportation noise sources in excess of the Placer County maximum allowable noise exposure from transportation noise sources contained in the Granite Bay Community Plan. Temporary construction noise impacts would be significant if construction conflicts with the Granite Bay Community Plan or Placer County Noise Ordinance.

Existing Noise Sources and Levels

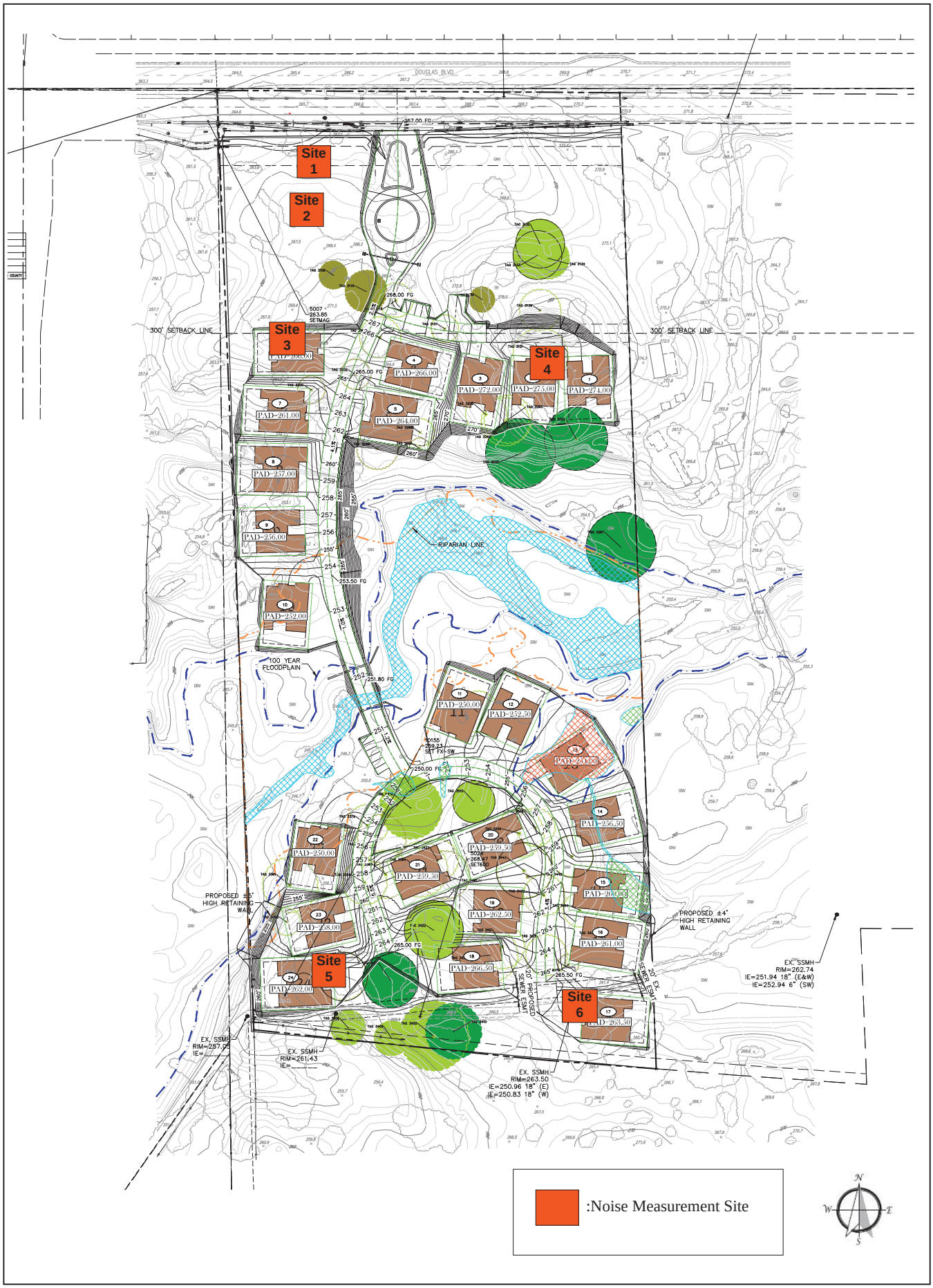
To quantify existing ambient noise levels in the immediate project vicinity, RCH conducted several short-term (10-minute) measurements and two long-term (72-hour) measurements at the project site. Noise measurements were made using Metrosonics db308 Sound Level Meters calibrated before and after the measurements. Noise measurement locations were selected to capture existing noise levels that would affect the proposed residences, mainly traffic noise from Douglas Boulevard. The long-term noise measurements were conducted at the locations of two planned building pads closest to Douglas Boulevard. Two short-term measurements were conducted 60 and 120 feet from Douglas Boulevard during the peak morning traffic hour, and two short-term measurements were conducted near the southern end of the project site. The noise measurement sites are shown in **Figure 2** below. The noise measurements are summarized in **Table 5** below and 24-hour noise plots and sound level data are provided in the Noise Appendix. The dominant source of noise during the measurements was traffic from Douglas Boulevard at the northern project boundary. At the southern end of the project site, noise consisted mostly of neighborhood and nature noise.

As shown in **Table 5**, short-term noise measurements at the site were conducted on Monday June 22, and Tuesday June 23, 2015. The average noise level (Leq) for the 5-minute periods measured near Douglas Boulevard during peak-hour morning traffic was 64 to 65 dB 60 feet from the road (Site 1) and 60-61 dB 120 feet from the edge of Douglas Boulevard (Site 2). The average 5-minute noise levels measured near the southern end of the project site (Sites 5 and 6) ranged from 43 to 45 dB. The long-term sound level measurements were conducted from Tuesday June 22 through Thursday June 25, 2015 at the location of future building pads closest to Douglas Boulevard. The 24-hour noise level (Ldn) was 53 to 54 dB at Site 3 and 51 to 53 dB at Site 4.

Existing Sensitive Receptors

Noise sensitive land uses typically include residences, schools, child care centers, hospitals, long-term health care facilities, convalescent centers, retirement homes and recreation areas. The closest sensitive receptor to the project is a residence located 30 feet east of the project boundary. There are also residences located 150 to 160 feet west of the project site. Residences to the south of the site are more than 300 feet from the project boundary, and residences north of Douglas Boulevard are approximately 140 feet from the northern project boundary.

[5] The Federal Interagency Committee on Noise (FICON) developed noise guidance to be used for the assessment of Project-generated increases in noise levels that take into account the ambient noise level. An increase of 5 dB or greater would typically be considered to result in increased levels of annoyance where existing noise levels are less than 60 dB. Within areas where the ambient noise level ranges from 60 to 65 dB, increased levels of annoyance would be anticipated at increases of 3 dB or greater (FICON, 2000).



Source: RCH Group, TSD Engineering, Inc.

Whitehawk I
Figure 2
Noise Measurement Sites

Table 5: Existing Noise Measurements

Location	Time Period	Noise Levels (dB)	Noise Sources
Site 1. Northwest corner of project site, 60 feet south of the edge of Douglas Boulevard	Tuesday June 23, 2015 7:41 – 7:51 a.m.	5-minute Leqs: 64, 65 5-minute Lmaxs: 71, 71	Traffic on Douglas Boulevard is the main source of noise. Traffic in westbound ranges from 55-56 dB and traffic in eastbound lanes is 66-70 dB. Passing pickup truck is 71 dB and pickup pulling trailer is 67 dB.
Site 2. Northwest corner of project site, 120 feet south of the edge of Douglas Boulevard	Tuesday June 23, 2015 7:55 – 8:05 a.m.	5-minute Leqs: 60 ,61 5-Minute Lmaxs: 66, 66	Traffic from Douglas Boulevard is the main source of noise. Van pulling trailer is 65 dB, medium truck is 64 dB and large van is 66 dB, all in eastbound lanes. Birds chirping don't register on noise meter.
Site 3. Site of building pad 6 near western project boundary, approximately 320 feet south from the edge Douglas Boulevard.	June 23, 12:00 a.m. through Thursday June 25, 11:59 p.m., 2015 72-hour measurement	24-hour Ldns: 54, 53, 54 Hourly Leqs ranged from: 43-52	Unattended noise measurements do not specifically identify noise sources.
Site 4. Site of building pad 2 on the eastern side of the project site, approximately 350 feet south from the edge Douglas Boulevard.	June 23, 12:00 a.m. through Thursday June 25, 11:59 p.m., 2015 72-hour measurement	24-hour Ldns: 52, 51, 53 Hourly Leqs ranged from: 43-51	Unattended noise measurements do not specifically identify noise sources.
Site 5. Southwest corner of project site	Monday June 22, 2015 8:35- 8:45 a.m.	5-minute Leqs: 43 ,43 5-Minute Lmaxs: 48, 45	Noise sources include wild birds and roosters as well as distant traffic noise. Loud bird is 44 dB. Traffic from nearby roads is 45 dB. Motor in the distance is 46 dB.
Site 6. Southeast corner of project site	Monday June 22, 2015 8:10-8:20 a.m.	5-minute Leqs: 45 ,44 5-Minute Lmaxs: 48, 47	Noise sources include birds, roosters and distant traffic noise. Rooster is 43-45 dB. Birds chirping is 44-45 dB. Distant traffic noise does not register on noise meter.

Source: RCH Group, 2015

Impacts

Potential noise impacts associated with the project would be related to noise from the construction of the residences and/or long-term noise from the residences. After construction, the impacts would include the effect of the environmental noise (including traffic) on the residences and any noise generated by the residences that would affect surrounding land uses. In general, residences are one of the quietest land uses (other than open space), and noise from the residences would be considered compatible with the surrounding residences. This analysis will not further assess impacts from noise generated by the residences.

a) 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? **Less than Significant.**

Potential Traffic Noise Impacts on Residences

Exterior Noise Levels

As shown in **Table 5**, the 24-hour noise levels measured at the location of two planned building pads closest to Douglas Boulevard ranged from 51 to 54 dB Ldn. The project design includes a 300-foot open-space buffer between Douglas Boulevard and the proposed residences that would retain the natural topography and vegetation between Douglas Boulevard and the residences. After construction is complete, traffic noise would attenuate at the same rate and noise levels at the project site would remain relatively the same. RCH did follow-up noise modeling of traffic data by Fehr & Peers (September, 2018) to analyze the potential impact from project and cumulative traffic. The analysis showed that at the nearest receptor there would be a less than 1 dB increase[6]. Noise from transportation sources would not exceed the Placer County standard of 60 dB Ldn at the outdoor activity areas of the residences, therefore exposure from transportation noise sources would be less than significant.

Interior Noise Levels

Typical residential construction consistent with the Uniform Building Code (UBC) will provide an exterior-to interior noise level reduction of no less than 25 dB provided that exterior windows and doors are closed (Bollard, 2005, Burn, 1994). As discussed above, exterior noise levels at the building pads closest to Douglas Boulevard ranges from 51 to 54 dB, and with a 25 dB reduction interior noise levels would be 26 to 29 dB, Ldn. Interior noise levels would not exceed the Placer County interior standard of 45 dB Ldn and would result in a less-than significant impact.

Temporary Construction Noise

The project includes the construction of 24 residential units as well as roads and paths on the project site. Construction activities would require the use of numerous pieces of noise-generating equipment, such as excavating machinery (e.g., backhoes, bulldozers, excavators, front loaders, etc.) and other construction equipment (e.g., compactors, scrapers, graders, etc.). Construction worker traffic and construction-related material haul trips would raise ambient noise levels along local haul routes, depending on the number of haul trips made and types of vehicles used. Construction activities and associated traffic would occur primarily during the daytime.

The noise levels generated by construction equipment would vary greatly depending upon factors such as the type and specific model of the equipment, the operation being performed, the condition of the equipment and the prevailing wind direction. As shown in **Table 6**, maximum noise levels generated by various types

[6] RCH Group. Technical Memorandum - *Whitehawk I and II Noise Analysis Updates*, Prepared for Cook Development Consulting Services, LLC. October, 2018.

of construction equipment can range from 76 to 89 dB at 50 feet. Blasting may be required during site preparation to excavate hard rock, which generates a maximum noise level of 94 dB at a distance of 50 feet (FHWA 2006). The highest noise levels associated with construction activities typically occur during ground excavation and finishing (**See Table 7**). **Table 7** gives average typical construction activities noise levels at 50 feet.

Table 6: Typical Noise Levels from Construction Equipment

Construction Equipment	Noise Level (dB, Lmax at 50 feet)
Dump Truck	76
Air Compressor	78
Concrete Mixer (Truck)	79
Jackhammers	89
Blasting	94
Scraper	84
Dozer	82
Paver	77
Generator	81
Auger Drill Rig	84
Front End Loader	79
Grader	85
Backhoe	78

Source: Federal Highway Administration (FHWA) *Roadway Construction Noise Model User's Guide*, 2006.

Table 7: Typical Construction Activities Noise Levels

Construction Phase	Noise Level (dB Leq at 50 feet)
Ground Clearing	83
Excavation	88
Foundations	81
Erection	81
Finishing	88

Notes: Average noise levels correspond to a distance of 50 feet from the noisiest piece of equipment associated with a given phase of construction and 200 feet from the rest of the equipment associated with that phase.
Leq = equivalent sound level
Source: U.S. Environmental Protection Agency, *Legal Compilation*, 1973

Project construction is required to comply with the Placer County Noise Ordinance and the construction hours contained in the Granite Bay Community Plan Noise Element. To comply with both the Placer County

Noise Ordinance and Granite Bay Community Plan, construction shall only occur Monday through Friday 6:00 a.m. to 8:00 p.m. (during daylight savings time) and 7:00 a.m. to 8:00 p.m. (during standard time), and Saturdays 8:00 a.m. to 6:00 p.m. The Noise Ordinance also requires that all construction equipment be properly muffled and maintained. Compliance with the Placer County Noise Ordinance and Granite Bay Community Plan Noise Element would result in a less than significant impact.

b) Would the project exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?
Less than Significant

Construction operations have the potential to result in varying degrees of temporary ground vibration depending on the specific construction equipment used and operations involved. Depending on the construction or operational equipment used, ground-borne vibrations can be perceptible within 30 to 100 feet of a source. There are several residences south of the project site, located within 100 feet of construction. Project construction could involve blasting in hard rock areas that could generate substantial vibration or ground-borne noise levels. Without mitigation, this blasting could result in a potentially significant impact. As **Table 6** shows, noise levels from blasting have the potential to reach 94 dB at a distance of 50 feet from the source, but that would be prior to standard practices and mitigation at construction sites. Typically the explosive would be placed into drilled rock and the hole would be covered with a blasting mat to reduce dust, noise and fly rock. The character of blasting noise would be impulsive (sudden rise and rapid decay). Blasting noise also has a low frequency (below 20 Hz) and is not easily detected by the human ear. For this project, if blasting is needed, the blasting plan should reduce impacts so that blasts would not be detected by people off the project site. The implementation of **Mitigation Measure 1** would reduce vibrational impacts from blasting to less than significant.

Mitigation Measure 1: A blasting plan for construction shall be prepared and followed that includes the following:

1. The Blasting Plan shall be consistent with the County General Plan Noise Element's policy 9.A.4, which states:

   Impulsive noise produced by blasting should not be subject to the criteria listed in Table [2]. Single event impulsive noise levels produced by gunshots or blasting shall not exceed a peak linear overpressure of 122 dB, or a C-weighted Sound Exposure Level (SEL) of 98 dBC. The cumulative noise level from impulsive sounds such as gunshots and blasting shall not exceed 60 dB L_{Cdn} or $CNEL_C$ on any given day. These standards shall be applied at the property line of a receiving land use.
2. The Blasting Plan shall meet the approval of the appropriate County department with jurisdiction over the project and blasting.
3. Primary components of the Blasting Plan shall include:

   a.) Identification of blast officer;
   b.) Scaled drawings of blast locations, and neighboring buildings, streets, or other locations which could be inhabited;
   c.) Blasting notification procedures, lead times, and list of those notified. Public notification to potentially affected vibration receptors describing the expected extent and duration of the blasting;
   d.) Description of means for transportation and on-site storage and security of explosives in accordance with local, state and federal regulations;

e.) Minimum acceptable weather conditions for blasting and safety provisions for potential stray current (if electric detonation);
f.) Traffic control standards and traffic safety measures (if applicable);
g.) Require personal protective equipment;
h.) Minimum standoff distances and description of blast impact zones and procedures for clearing and controlling access to blast danger;
i.) Procedures for handling, setting, wiring, and firing explosives. Also procedures for handling misfires per Federal code;
j.) Type and quantity of explosives and description of detonation device. Sequence and schedule of blasting rounds, including general method of excavation, lift heights, etc.;
k.) Methods of matting or covering of blast area to prevent flyrock and excessive air blast pressure;
l.) Description of blast vibration and air blast monitoring programs;
m.) Dust control measures in compliance with applicable air pollution control regulations (to interface with general construction dust control plan);
n.) Emergency Action Plan to provide emergency telephone numbers and directions to medical facilities. Procedures for action in the event of injury;
o.) Material Safety Data Sheets for each explosive or other hazardous materials to be used;
p.) Evidence of licensing, experience, and qualifications of blasters; and
q.) Description of insurance for the blasting work.

4. A Blast Survey Workplan shall be prepared by the blaster. The Plan shall establish vibration limits in order to protect structures from blasting activities and identify specific monitoring points. At a minimum, a pre-blast survey shall be conducted of any potentially affected structures and underground utilities within 500 feet of a blast area, as well as the nearest commercial or residential structure, prior to blasting.

5. The survey shall include visual inspection of the structures, documentation of structures by means of photographs, video, and a level survey of the ground floor of structures or the crown of major and critical utility lines, and these shall be submitted to the County. This documentation shall be reviewed with the individual owners prior to any blasting operations. The County and impacted property owners would be notified at least 48 hours prior to the visual inspections.

6. Vibration and settlement threshold criteria (for example peak particle velocity of 0.5 inches per second) shall be submitted by the blaster to the County for review and approval during the design process. If the settlement or vibration criteria are exceeded at any time or if damage is observed at any of the structures or utilities, then blasting shall immediately cease and the County immediately notified. The stability of segmental retaining walls, existing slopes, creek canals, etc. shall be monitored and any evidence of instability due to blasting operations shall result in immediate termination of blasting. The blaster shall modify the blasting procedures or use alternative means of excavating in order to reduce the vibrations to below the threshold values, prevent further settlement, slope instability, and prevent further damage.

7. Air blast overpressure limits shall be set and monitoring shall be conducted at the property line closest to the blast and at other above ground structures identified in the Plan for vibration monitoring. Air blast overpressure limits shall be in accordance with applicable law and shall be established to prevent damage to adjacent properties, new construction, and to prevent injuries to persons on-site and off-site.

8. Prior to full-scale production blasting, the blaster shall conduct a series of test blasts at the sites where blasting is to occur. The tests shall start with reduced charge weights and shall increase incrementally to that of a full-scale production round. Monitoring shall be conducted as described in the Plan.

9. Post-construction monitoring of structures to identify (and repair if necessary) all damage, if any, from blasting vibrations. Any damage shall documented by photograph, video, etc. This documentation shall be review with the individual property owners.

10. Reports of the results of the blast monitoring shall be provided to the County, the local fire department, and owners of any buried utilities on or adjacent to the site within 24 hours following blasting. Reports documenting damage, excessive vibrations, etc. shall be provided to the County and impacted property owners.

c) Would the project result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?
Less than Significant

Residential Noise

Long-term noise from the residences will take place at the project site upon completion of the project. Residences are one of the quietest land uses (other than open space), and noise from the residences would be considered compatible with the surrounding residences. Any permanent increase in ambient noise levels in the project vicinity would not be substantially greater than existing levels without the project. Therefore this change would be a less than significant increase.

Traffic Noise

At full occupancy, the project would generate no more than approximately 240 daily trips. With about 10 percent of these trips during peak hour there would be less than 1 trip per minute during peak hour distributed over the streets entering and exiting the site. This would have a minimal effect upon ambient noise levels and would be a less-than-significant noise impact.

d) 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?
Less than Significant with Mitigation Incorporated

As discussed in a) above, construction activities associated with the project would result in a temporary increase in noise levels in the project vicinity during the construction period. Although construction noise would comply with the Placer County Noise Ordinance and the Granite Bay Community Plan Noise Element, the project would result in an increase in ambient noise levels in at sensitive receptors near the

project site, resulting in a potentially significant impact. The implementation of **Mitigation Measure 2** would reduce temporary construction noise impacts to less than significant.

Mitigation Measure 2: To reduce noise impacts due to construction at nearby sensitive receptors to the maximum extent feasible, the applicant shall employ the following mitigation measures:

1. Fixed Construction equipment, including compressors and generators shall be located as far as possible from sensitive receptors, as feasible. In addition, impact tools shall be shielded or shrouded. Intake and exhaust ports of powered construction equipment shall also be muffled or shielded.
2. Designate a "construction noise coordinator" who would be responsible for responding to any local complaints about construction noise. The construction noise coordinator shall determine the cause of the complaint and shall require that reasonable measures warranted to correct the problem be implemented. The telephone for the construction noise coordinator shall be conspicuously posted at the construction site and included in the notice sent in the neighbors regarding the construction schedule.

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?
No Impact.

The project site would not be located within an area covered by an airport land use plan or within two miles of a public or public use airport. Development on the site would not expose people working or residing in the project area to excessive airport noise levels and no impact would occur.

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?
No Impact.

There are no private airstrips located near the project site, therefore the project would not expose future residents to excessive aircraft noise levels. The project would not increase onsite exposure to aircraft noise. Thus, no impact would occur.

References

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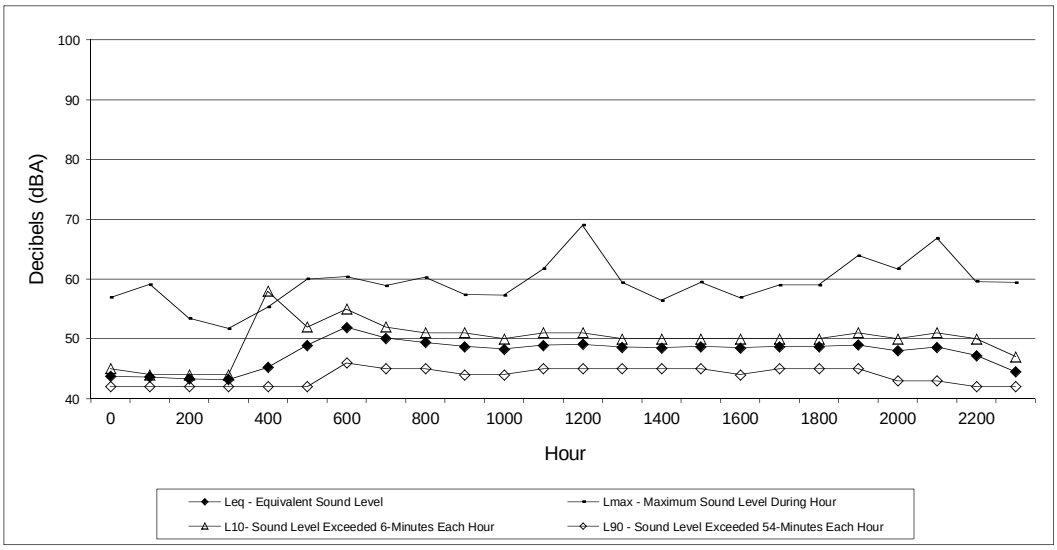
Whitehawk I

Noise Appendix

Site 3-Location of building pad 6: 24-Hour Noise Plots (3 pages)

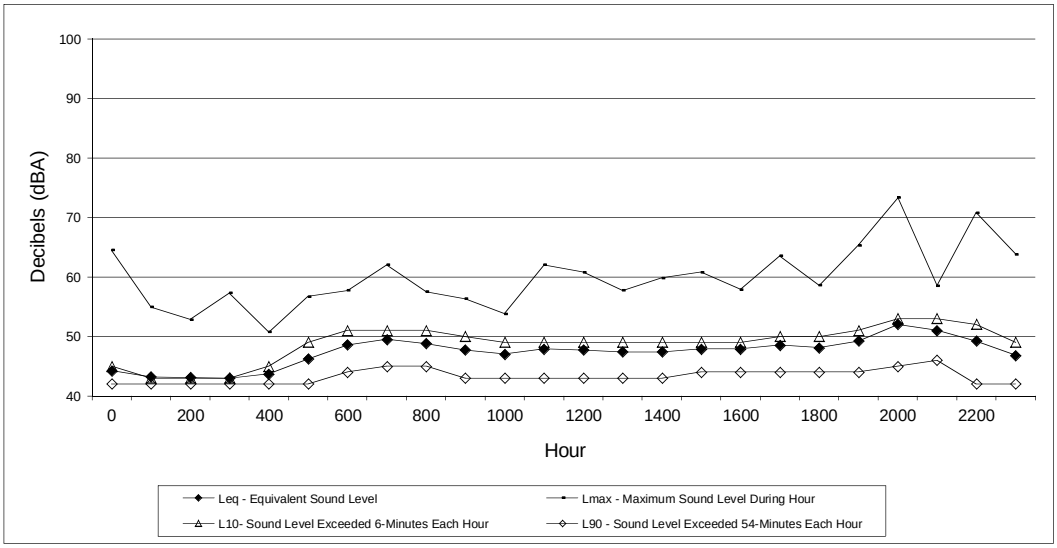
Site 4- Location of building pad 2: 24-Hour Noise Plots (3pages)



Site 3. Building Pad 6 (2542)
Tuesday, June 23, 2015

Hour	Leq - Equivalent Sound Level	Lmax - Maximum Sound Level During Hour	L10- Sound Level Exceeded 6-Minutes Each Hour	L90 - Sound Level Exceeded 54-Minutes Each Hour
0	44	57	45	42
100	44	59	44	42
200	43	53	44	42
300	43	52	44	42
400	45	55	58	42
500	49	60	52	42
600	52	60	55	46
700	50	59	52	45
800	49	60	51	45
900	49	57	51	44
1000	48	57	50	44
1100	49	62	51	45
1200	49	69	51	45
1300	49	59	50	45
1400	49	56	50	45
1500	49	60	50	45
1600	49	57	50	44
1700	49	59	50	45
1800	49	59	50	45
1900	49	64	51	45
2000	48	62	50	43
2100	49	67	51	43
2200	47	60	50	42
2300	45	59	47	42

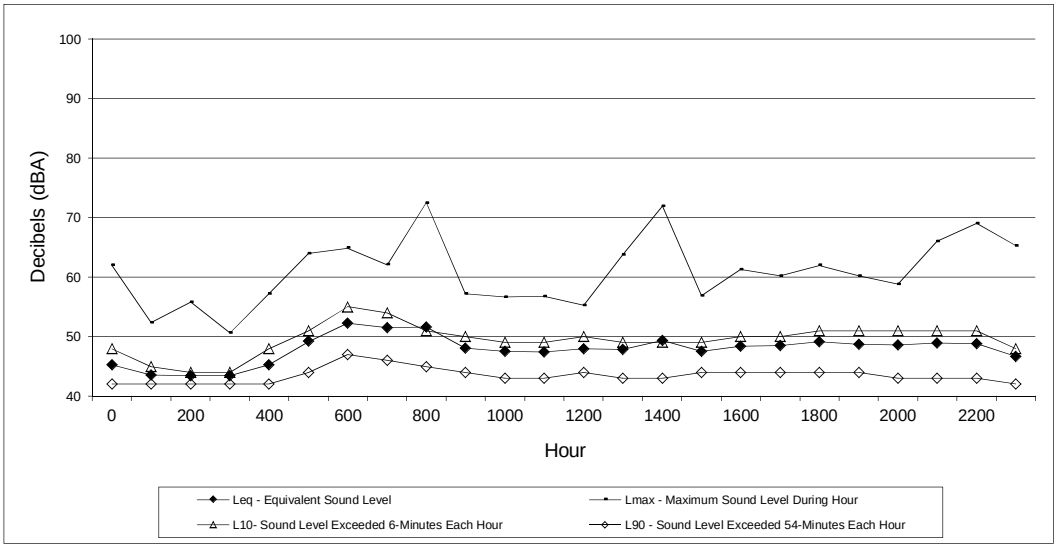
Ldn: 54



Site 3. Building Pad 6 (2542)
Wednesday, June 24, 2015

Hour	Leq - Equivalent Sound Level	Lmax - Maximum Sound Level During Hour	L10- Sound Level Exceeded 6-Minutes Each Hour	L90 - Sound Level Exceeded 54-Minutes Each Hour
0	44	65	45	42
100	43	55	43	42
200	43	53	43	42
300	43	57	43	42
400	44	51	45	42
500	46	57	49	42
600	49	58	51	44
700	50	62	51	45
800	49	58	51	45
900	48	56	50	43
1000	47	54	49	43
1100	48	62	49	43
1200	48	61	49	43
1300	47	58	49	43
1400	47	60	49	43
1500	48	61	49	44
1600	48	58	49	44
1700	49	64	50	44
1800	48	59	50	44
1900	49	65	51	44
2000	52	73	53	45
2100	51	59	53	46
2200	49	71	52	42
2300	47	64	49	42

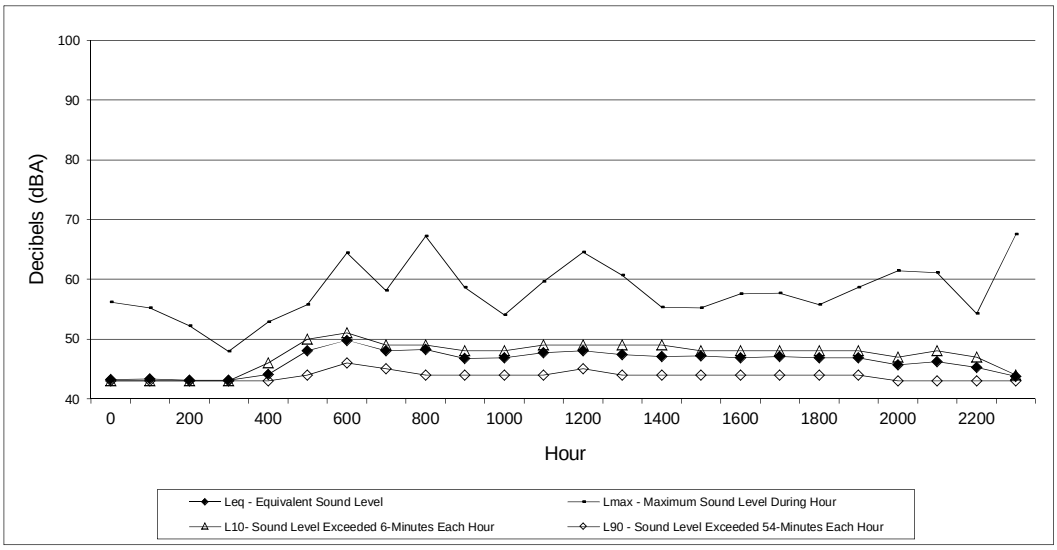
Ldn: 53



Site 3. Building Pad 6 (2542)
Thursday, June 25, 2015

Hour	Leq - Equivalent Sound Level	Lmax - Maximum Sound Level During Hour	L10- Sound Level Exceeded 6-Minutes Each Hour	L90 - Sound Level Exceeded 54-Minutes Each Hour
0	45	62	48	42
100	44	52	45	42
200	43	56	44	42
300	43	51	44	42
400	45	57	48	42
500	49	64	51	44
600	52	65	55	47
700	52	62	54	46
800	52	73	51	45
900	48	57	50	44
1000	48	57	49	43
1100	47	57	49	43
1200	48	55	50	44
1300	48	64	49	43
1400	49	72	49	43
1500	48	57	49	44
1600	48	61	50	44
1700	49	60	50	44
1800	49	62	51	44
1900	49	60	51	44
2000	49	59	51	43
2100	49	66	51	43
2200	49	69	51	43
2300	47	65	48	42

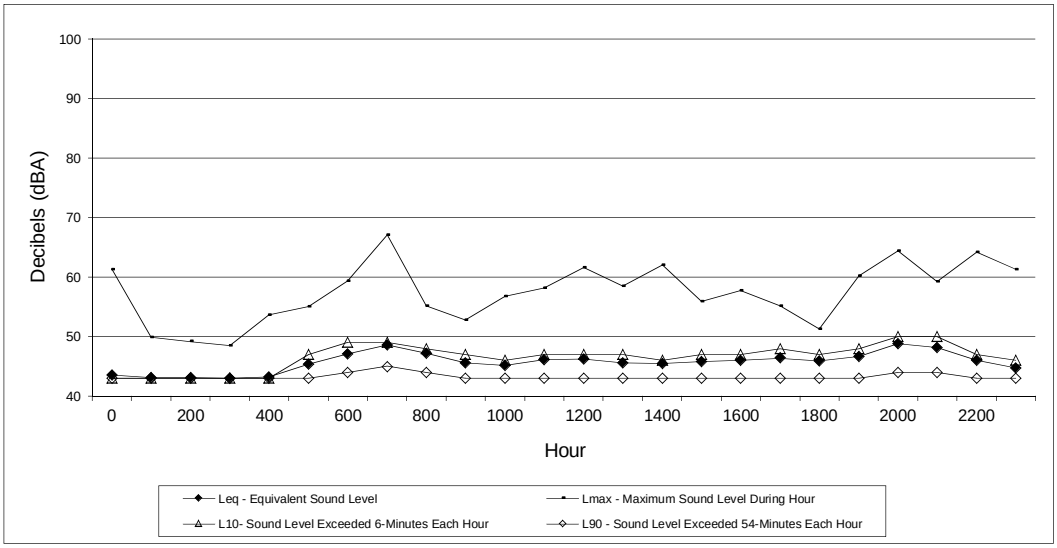
Ldn: 54



Site 4. Building Pad 2 (2671)
Tuesday, June 23, 2015

Hour	Leq - Equivalent Sound Level	Lmax - Maximum Sound Level During Hour	L10- Sound Level Exceeded 6-Minutes Each Hour	L90 - Sound Level Exceeded 54-Minutes Each Hour
0	43	56	43	43
100	43	55	43	43
200	43	52	43	43
300	43	48	43	43
400	44	53	46	43
500	48	56	50	44
600	50	64	51	46
700	48	58	49	45
800	48	67	49	44
900	47	59	48	44
1000	47	54	48	44
1100	48	60	49	44
1200	48	65	49	45
1300	47	61	49	44
1400	47	55	49	44
1500	47	55	48	44
1600	47	58	48	44
1700	47	58	48	44
1800	47	56	48	44
1900	47	59	48	44
2000	46	61	47	43
2100	46	61	48	43
2200	45	54	47	43
2300	44	68	44	43

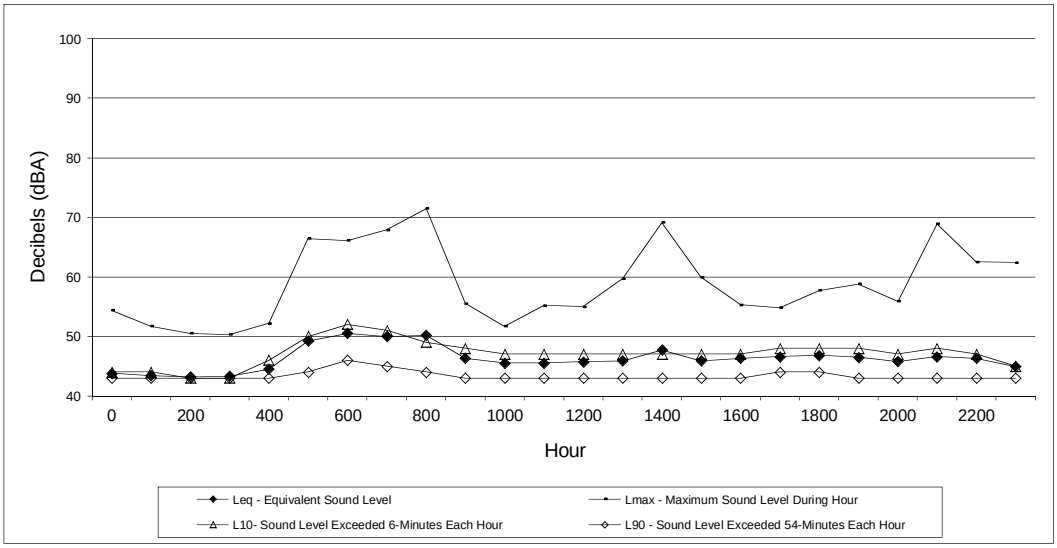
Ldn: 52



Site 4. Building Pad 2 (2671)
Wednesday, June 24, 2015

Hour	Leq - Equivalent Sound Level	Lmax - Maximum Sound Level During Hour	L10- Sound Level Exceeded 6-Minutes Each Hour	L90 - Sound Level Exceeded 54-Minutes Each Hour
0	44	61	43	43
100	43	50	43	43
200	43	49	43	43
300	43	49	43	43
400	43	54	43	43
500	45	55	47	43
600	47	59	49	44
700	49	67	49	45
800	47	55	48	44
900	46	53	47	43
1000	45	57	46	43
1100	46	58	47	43
1200	46	62	47	43
1300	46	59	47	43
1400	46	62	46	43
1500	46	56	47	43
1600	46	58	47	43
1700	46	55	48	43
1800	46	51	47	43
1900	47	60	48	43
2000	49	64	50	44
2100	48	59	50	44
2200	46	64	47	43
2300	45	61	46	43

Ldn: 51



Site 4. Building Pad 2 (2671)
Thursday, June 25, 2015

Hour	Leq - Equivalent Sound Level	Lmax - Maximum Sound Level During Hour	L10- Sound Level Exceeded 6-Minutes Each Hour	L90 - Sound Level Exceeded 54-Minutes Each Hour
0	44	54	44	43
100	43	52	44	43
200	43	51	43	43
300	43	50	43	43
400	45	52	46	43
500	49	66	50	44
600	51	66	52	46
700	50	68	51	45
800	50	72	49	44
900	46	56	48	43
1000	46	52	47	43
1100	46	55	47	43
1200	46	55	47	43
1300	46	60	47	43
1400	48	69	47	43
1500	46	60	47	43
1600	46	55	47	43
1700	47	55	48	44
1800	47	58	48	44
1900	47	59	48	43
2000	46	56	47	43
2100	47	69	48	43
2200	46	63	47	43
2300	45	62	45	43

Ldn: 53

TECHNICAL NOISE ANALYSIS

Whitehawk II
Granite Bay, California

Prepared For

Meritage Homes
1671 East Monte Vista Avenue, Suite 214
Vacaville, CA 95688

Prepared By

RCH Group
11060 White Rock Road Suite 150-A
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October 2018

TABLE OF CONTENTS

Page

Executive Summary **1**

Introduction **2**

Noise Analysis **4**

References **17**

FIGURES

1: Tentative Subdivision Map **3**
2: Noise Measurement Sites **9**

TABLES

1: Typical Noise Levels **5**
2: Exterior Noise Level Performance Standards for New Projects Affected by or Including Non—Transportation Noise Sources **6**
3: Maximum Allowable Noise Exposure Transportation Noise Sources **7**
4: Placer County Noise Ordinance Sound Level Standards (On-site) **7**
5: Existing Noise Measurements **10**
6: Typical Noise Levels from Construction Equipment **12**
7: Typical Construction Activities Noise Levels **12**

Executive Summary

This report analyzes the existing noise levels and potential noise impacts of the Whitehawk II residential development. The project consists of the construction and operation of a 56-unit single family housing development on a 33-acre parcel. The project is located south of Douglas Boulevard near the intersection of Douglas Boulevard and Seeno Avenue in Granite Bay, California. The tentative subdivision map and project location are shown in **Figure 1** (project was previously called Granite Bay 33).

The major source of noise on the project site is traffic noise from Douglas Boulevard. To quantify existing ambient noise levels in the immediate project vicinity, RCH Group (RCH) conducted short-term (10-minute) noise measurements at three locations and two long-term (72-hour) measurements of existing noise levels at the project site. The short-term noise measurements were conducted near Douglas Boulevard to measure peak-hour morning traffic noise and one short term measurement was conducted near the southern boundary of the project site to measure ambient noise levels further from Douglas Boulevard. The long-term noise measurement locations were selected at the location of two future building pads nearest to Douglas Boulevard to capture the existing noise levels that would affect the proposed residences.

The 24-hour noise levels measured at the site ranged from 52 to 56 dB Ldn at the location of the building pads closest to Douglas Boulevard. Typical residential construction consistent with the Uniform Building Code (UBC) will provide an exterior-to interior noise level reduction of no less than 25 dB provided that exterior windows and doors are closed. With a 25 dB reduction, interior noise levels at residences closest to Douglas Boulevard would be approximately 27 to 31 dB Ldn, well below the 45 dB Ldn maximum for interior noise levels. Exterior and interior noise levels at residences on the project site would comply with the Placer County transportation noise source standards, and no mitigation would be required.

Temporary construction activities associated with the construction of the project are required to comply with the hours contained in the Granite Bay Community Plan and Placer County Noise Ordinance. Construction would be limited to Monday through Friday from 6:00 a.m. to 8:00 p.m. during daylight savings and 7:00 a.m. to 8:00 a.m. during standard time, as well as Saturdays between 8:00 a.m. and 6:00 p.m. Although construction activities would comply with the Granite Bay Community Plan and Placer County Noise Ordinance, project construction would result in a substantial periodic increase in ambient noise levels at sensitive receptors in the project vicinity, resulting in a potentially significant impact. The implementation of **Mitigation Measure 2** would reduce noise impacts at nearby sensitive receptors to the maximum extent feasible and reduce temporary construction impacts to less than significant with mitigation.

Blasting could be required during project construction if needed to excavate hard-rock areas. Blasting could generate substantial vibration or ground-borne noise levels, resulting in a potentially significant impact. The implementation of **Mitigation Measure 1** requiring a blasting plan for construction would reduce impacts related to groundborne vibration to less-than-significant with mitigation.

The analysis identified no impacts from airport noise, as there are no airports near the project site.

Introduction

RCH Group (RCH) has conducted this noise analysis for the Whitehawk II residential development. The project consists of the construction and operation of a 56-unit single-family residential housing development (**Figure 1**) on an undeveloped parcel. The project is located immediately south of Douglas Boulevard, near the intersection of Douglas Boulevard and Seeno Avenue in the community of Granite Bay, California.

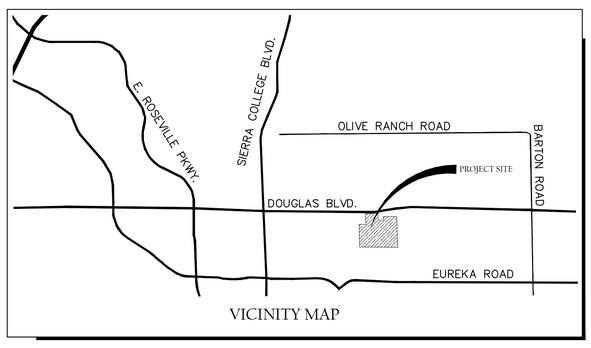
The project site is approximately 33 acres and consists of one parcel (APN 048-151-061-0000). Surrounding land uses include rural residential to the south and east and west, and medium and low-density residential to the north across Douglas Boulevard.

This report analyzes the noise impacts from the project and is prepared in a format to answer the noise questions in the Initial Study Environmental Checklist Form in Appendix G of the State CEQA Guidelines.

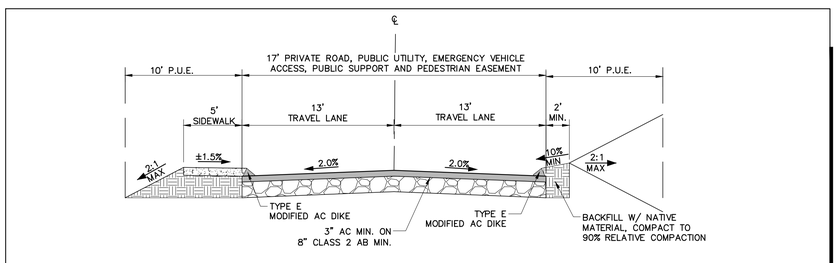
VESTING TENTATIVE SUBDIVISION MAP

GRANITE BAY 33

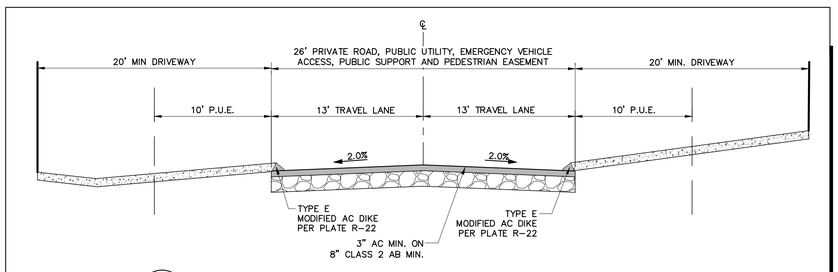
PLACER COUNTY, CA



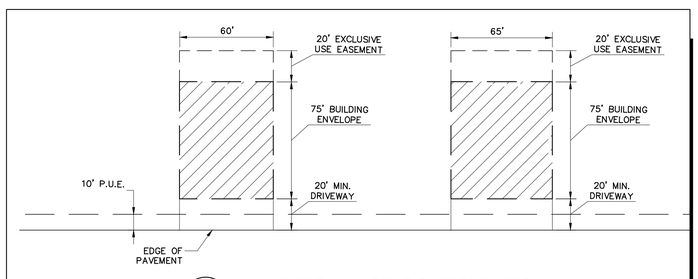
VICINITY MAP



A — **PRIVATE ROAD TYPICAL SECTION**
N.T.S.



B — **PRIVATE ROAD TYPICAL SECTION**
N.T.S.



C — **TYPICAL LOT CONFIGURATION**
N.T.S.

UTILITY PROVIDERS

PARK DISTRICT
FACILITY SERVICES

SCHOOL DISTRICT
PLACER UNION HIGH SCHOOL DISTRICT
LOOMIS ELEMENTARY SCHOOL DISTRICT

WATER
PLACER COUNTY WATER AGENCY

SANITARY SEWER
PLACER COUNTY SEWER MAINTENANCE DISTRICT NO. 2

STORM DRAIN
PRIVATE - MAINTAINED BY HOA

ELECTRIC
PG&E

TELEPHONE
AT&T

CABLE
COMCAST

FIRE
SOUTH PLACER FIRE DISTRICT

PERMITTED DENSITY

BASE ZONE = RA-B-100

PARCEL SIZE IS 32.97 ACRES LESS EXISTING ROAD EASEMENTS OF 0 ACRES = 32.97 ACRES, FLOODPLAIN AREA AND SLOPES 30% AND GREATER <10% THERFORE 32.97 ACRES - 0 ACRES = 39.38 ACRES NET BUILDABLE AREA.

STANDARD DEDUCTION FOR SUBDIVISION ROADS = SIX (6) PERCENT OF BUILDABLE AREA = 2.36 ACRES; 39.38 AC - 2.36 AC = 37.02 ACRES.

37.02 AC/20 AC PER UNIT = 1.85 UNITS PERMITTED BY THE BASE ZONING

MAXIMUM UNITS PERMITTED BY - PD DESIGNATION:

NET BUILDABLE AREA FROM ABOVE = 39.38 ACRES

39.38 ACRES x THE PD DESIGNATION OF A MAXIMUM 0.44 DWELLING UNITS PER ACRE = 17.33 UNITS.

NUMBER OF UNITS PROPOSED = 56UNITS.

PROPOSED BUILDING COVERAGE = 40%

REQUIRED OPEN SPACE = 20% (0.20 x 32.97 ACRES) = 6.59 ACRES

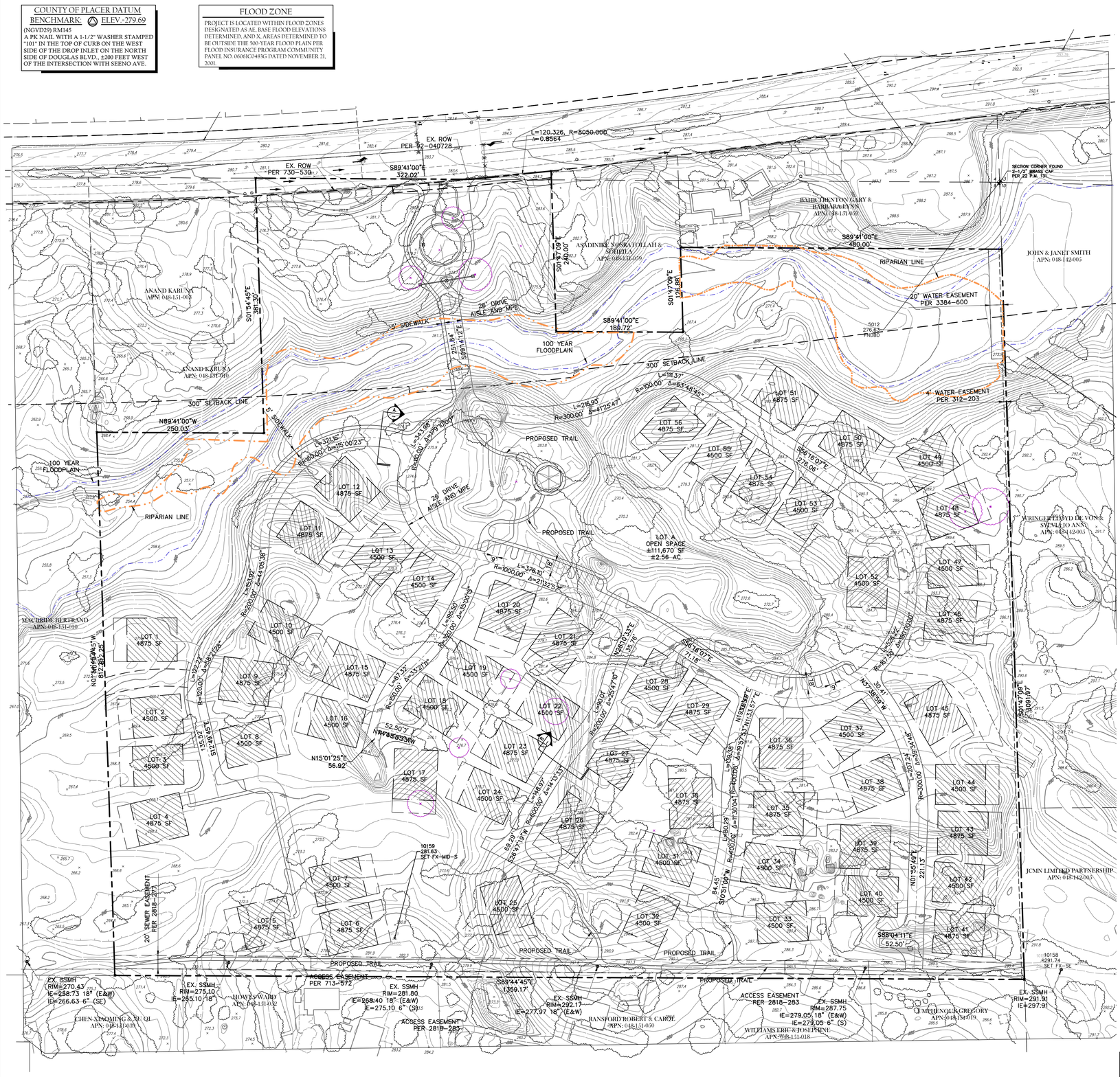
PROPOSED OPEN SPACE = __.__ ACRES OR __%

TENTATIVE MAP STATEMENT
"I HEREBY STATE THAT THIS TENTATIVE MAP ACCURATELY DEPICTS THE LOCATION, WIDTH, TYPE AND RECORDING INFORMATION OF ALL RECORD EASEMENTS LISTED IN THE PRELIMINARY TITLE REPORT ISSUED BY _____, ORDER NO. _____ DATED _____. ALL EASEMENTS PROPOSED TO BE ABANDONED OR EXTINGUISHED ARE IDENTIFIED."

SIGN DATE

COUNTY OF PLACER DATUM
BENCHMARK: ELEV.=279.69
(NGVD29) RM145
A PK NAIL WITH A 1-1/2" WASHER STAMPED "101" IN THE TOP OF CURB ON THE WEST SIDE OF THE DROP INLET ON THE NORTH SIDE OF DOUGLAS BLVD., ±200 FEET WEST OF THE INTERSECTION WITH SEENO AVE.

FLOOD ZONE
PROJECT IS LOCATED WITHIN FLOOD ZONES DESIGNATED AS AE, BASE FLOOD ELEVATIONS DETERMINED, AND X, AREAS DETERMINED TO BE OUTSIDE THE 500-YEAR FLOOD PLAIN PER FLOOD INSURANCE PROGRAM COMMUNITY PANEL NO. 06061C0483G DATED NOVEMBER 21, 2001.



PROJECT SUMMARY

ASSESSORS PARCEL NO'S
048-151-061-000

OWNER
CREEKSIDE OAKS, LLC
2140 SUTTERVILLE ROAD #B
SACRAMENTO, CA 95822
ATTN: DAVE COOK

PLANNER/ENGINEER
TSD ENGINEERING, INC
31 NATOMA STREET, SUITE 160
FOLSOM, CA 95630
ATTN: CASEY FEICKERT

AREA
±32.97 ACRES

AREA- DISTURBED
±20.8 ACRES

OPEN SPACE
LOT A ±2.56 AC

PROPOSED LOT SIZES
MINIMUM - 4,500 SF
MAXIMUM - 4,875 SF
AVERAGE : __ SF

NUMBER OF LOTS
56 SINGLE FAMILY RESIDENTIAL LOTS

EXISTING ZONING & USE
RA B-100
UNDEVELOPED

PROPOSED ZONING & USE
RA B-100
56 RESIDENTIAL HOMESITES AND

PROPOSED BUILDING SETBACKS
FRONT - 10' (MIN)
SIDE - 10' (MIN)
REAR - 20' (MIN)

N W E S
scale: 1"=60'
60 0 30 60 120

REGISTERED PROFESSIONAL ENGINEER CASEY S. FEICKERT No. 58930 Exp. 6-30-09 CIVIL STATE OF CALIFORNIA

CE #58930
CASEY S. FEICKERT
THIS TENTATIVE SUBDIVISION MAP CONFORMS TO SECTION 16.12.040 OF THE LAND DEVELOPMENT MANUAL

VESTING
TENTATIVE SUBDIVISION MAP
JUNE 5, 2015

SHEET 1/3

TSD Engineering, Inc.
Total Site Design
31 Natoma Street, Suite #160
Folsom, CA 95630
TEL: 916-608-0707 FAX: 916-608-0701

P:\Projects\033-001\02 DWG\B- Planning\VSD\Tentative Map.dwg, TSD-MARK, 08:58:17, 06-05-15

Source: RCH Group, TSD Engineering, Inc.

Whitehawk II
Figure 1
Tentative Subdivision Map

Table 1: Typical Noise Levels

Noise Level (dB)	Outdoor Activity	Indoor Activity
90+	Gas lawn mower at 3 feet, jet flyover at 1,000 feet	Rock Band
80–90	Diesel truck at 50 feet	Loud television at 3 feet
70–80	Gas lawn mower at 100 feet, noisy urban area	Garbage disposal at 3 feet, vacuum cleaner at 10 feet
60–70	Commercial area	Normal speech at 3 feet
40–60	Quiet urban daytime, traffic at 300 feet	Large business office, dishwasher next room
20–40	Quiet rural, suburban nighttime	Concert hall (background), library, bedroom at night
10–20		Broadcast / recording studio
0	Lowest threshold of human hearing	Lowest threshold of human hearing

Source: (modified from Caltrans Technical Noise Supplement, 1998)

Several time-averaged scales represent noise environments and consequences of human activities. The most commonly used noise descriptors are the equivalent A-weighted sound level over a given time period (Leq);[2] average day-night 24-hour average sound level (Ldn)[3] with a nighttime increase of 10 dB to account for sensitivity to noise during the nighttime; and community noise equivalent level (CNEL),[4] also a 24-hour average that includes both an evening and a nighttime sensitivity weighting.

Noise Attenuation

Stationary point sources of noise, including construction equipment, attenuate (lessen) at a rate of 6 to 7.5 dB per doubling of distance from the source, depending on ground absorption. Soft sites attenuate at 7.5 dB per doubling because they have an absorptive ground surface such as soft dirt, grass, or scattered bushes and trees. Hard sites have reflective surfaces (e.g., parking lots or smooth bodies of water) and therefore have less attenuation (6.0 dB per doubling). A street or roadway with moving vehicles (known as a "line" source), would typically attenuate at a lower rate, approximately 3 to 4.5 dB each time the distance doubles from the source, which also depends on ground absorption (CalTrans, 1998). Physical barriers located between a noise source and the noise receptor, such as berms or sound walls, will increase the attenuation

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2 The Equivalent Sound Level (L_{eq}) is a single value of a constant sound level for the same measurement period duration, which has sound energy equal to the time–varying sound energy in the measurement period.

3 L_{dn} is the day–night average sound level that is equal to the 24-hour A-weighted equivalent sound level with a 10–decibel penalty applied to night between 10:00 P.M. and 7:00 A.M.

4 CNEL is the average A–weighted noise level during a 24-hour day, obtained by addition of 5 decibels in the evening from 7:00 to 10:00 P.M., and an addition of a 10–decibel penalty in the night between 10:00 P.M. and 7:00 A.M.

that occurs by distance alone.

Exterior noise levels from onsite stationary noise sources at the Whitehawk II should be attenuated by a minimum of about 7.5 dB for each doubling of the reference distance from the noise source and 4.5 dB for each doubling of the reference distance from the noise source for line sources (traffic). Whitehawk II is surrounded primarily by soft site conditions (oak woodlands and yards of adjacent residences).

Noise Standards

Granite Bay Community Plan

The Noise Element of the Granite Bay Community Plan establishes goals and policies for both transportation and non-transportation noise sources. The allowable noise levels are based upon the standards adopted in the Placer County General Plan Noise Element. Noise level performance standards for new projects affected by or including non-transportation noise sources are shown in **Table 2**. The maximum allowable noise exposure at residential land uses from transportation noise sources is shown in **Table 3**. As shown in **Table 3**, the maximum allowable exposure to transportation noise sources for residential land uses is 60 dB Ldn at outdoor activity areas and 45 dB Ldn in interior spaces.

The Noise Element prohibits noise emanating from construction activity that requires a grading or building permit on Sundays and federal holidays. Construction hours are limited to the hours of 6:00 a.m. to 8:00 p.m. Monday through Friday during daylight savings, 7:00 a.m. to 8:00 p.m. Monday through Friday during standard time, and Saturdays, 8:00 a.m. to 6:00 p.m.

Table 2: Exterior Noise Level Performance Standards for New Projects Affected by or Including Non-Transportation Noise Sources

Zone District of Receptor	Property Line of Receiving Land Use Ldn, dB	Interior Spaces Ldn, dB
Residential Adjacent to Industrial	60	45
Other Residential	50	45
Professional Office	70	45
Neighborhood Commercial	70	45
General Commercial	70	45
Shopping Center	70	45
Farm/Agriculture	See footnote	-

Source: Granite Bay Community Plan

Notes: Normally, agricultural uses are noise insensitive and will be treated this way. However, conflicts with agricultural noise emissions can occur where single-family residences exist within or adjacent to agricultural zone districts. Therefore where effects of agricultural noise upon residences located in these areas is a concern, an Ldn of 70 dBA will be considered acceptable outdoor exposure at a residence. New noise-sensitive uses which may be affected by noise sources associated with agricultural operations shall be responsible for mitigating agricultural operations noise levels consistent with this Table.

Table 3: Maximum Allowable Noise Exposure

Transportation Noise Sources

Land Use	Outdoor Activity Areas[1] Ldn/CNEL, dB	Interior Spaces Ldn/CNEL, dB
Residential	60[2]	45

Source: Granite Bay Community Plan

Notes:

[1]Outdoor Activity Areas are generally considered to be the back yard or patio or the receiving land use. Where the location of the outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use.

[2]Where it is not possible to reduce noise in outdoor activity areas to 60 dB Ldn/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB Ldn/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.

Placer County Noise Ordinance

The Placer County Noise Ordinance sets limits for sensitive receptors and makes it 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 as set forth in **Table 4**, whichever is the greater

Table 4: Placer County Noise Ordinance Sound Level Standards (On-site)

Sound Level Descriptor	Daytime (7 am to 10 pm)	Nighttime (10 pm to 7 am)
Hourly Leq, dB	55	45
Maximum level, (Lmax) dB	70	65

Source: Placer County Noise Ordinance

The Placer County Noise Ordinance exempts construction 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 that all construction equipment is fitted with factory installed muffling devices and that all construction equipment is maintained in good working order.

Significance Criteria

Based on these criteria, operational noise impacts of the residential development would be significant if they result in exceedance of noise standards contained in the Placer County Noise Ordinance at nearby residential land uses. Operation of the development would also result in a significant impact if it would result in an increase in ambient noise levels of 5 dB or more (Ldn, CNEL, or hourly Leq) at nearby sensitive

receptors[5]. A significant impact would also occur if residents at the project site are exposed to transportation noise sources in excess of the Placer County maximum allowable noise exposure from transportation noise sources contained in the Granite Bay Community Plan. Temporary construction noise impacts would be significant if construction conflicts with the Granite Bay Community Plan or Placer County Noise Ordinance.

Existing Noise Sources and Levels

To quantify existing ambient noise levels in the immediate project vicinity, RCH conducted several short-term (10-minute) measurements and two long-term (72-hour) measurements at the project site. Noise measurements were made using Metrosonics db308 Sound Level Meters calibrated before and after the measurements. Noise measurement locations were selected to capture existing noise levels that would affect the proposed residences, mainly traffic noise from Douglas Boulevard. The long-term noise measurements were conducted at the locations of two planned building pads closest to Douglas Boulevard. Two short-term measurements were conducted 50 and 100 feet from Douglas Boulevard during the peak morning traffic hour, and one short term measurement was conducted near the southern end of the project site. The noise measurement sites are shown in **Figure 2** below. The noise measurements are summarized in **Table 5** below, and 24-hour noise plots and sound level data are provided in the Noise Appendix. The dominant source of noise during the measurements was traffic from Douglas Boulevard at the northern project boundary. At the southern end of the project site, noise consisted mostly of neighborhood and nature noise.

As shown in **Table 5**, short-term sound level measurements at the site were conducted on Monday June 22, and Tuesday June 23, 2015. The average noise level (Leq) for the 5-minute periods measured near Douglas Boulevard during peak-hour morning traffic was 61 to 62 dB 50 feet from the road (Site 1) and 56 dB 100 feet from the edge of Douglas Boulevard (Site 2). The average 5-minute Leq measured near the southern end of the project site (Site 5) was 44 dB. The long-term sound level measurements were conducted from Tuesday June 22 through Thursday June 25, 2015 at the location of future building pads closest to Douglas Boulevard. The 24-hour noise level (Ldn) was 52 to 53 dB at Site 3 and 55 to 56 dB at site 4.

Existing Sensitive Receptors

Noise sensitive land uses typically include residences, schools, child care centers, hospitals, long-term health care facilities, convalescent centers, retirement homes and recreation areas. The nearest sensitive receptors to the project site include a residence immediately north of the project boundary and residences located 40 to 200 feet south of the project boundary. There are also residences located 140 to 340 feet to the east, and one residence more than 500 feet west of the project site. In addition, there are residences located across Douglas Boulevard approximately 130 feet north of the project boundary.

[5] The Federal Interagency Committee on Noise (FICON) developed noise guidance to be used for the assessment of Project-generated increases in noise levels that take into account the ambient noise level. An increase of 5 dB or greater would typically be considered to result in increased levels of annoyance where existing noise levels are less than 60 dB. Within areas where the ambient noise level ranges from 60 to 65 dB, increased levels of annoyance would be anticipated at increases of 3 dB or greater (FICON, 2000).

: Noise Measurement Site

Source: RCH Group, TSD Engineering, Inc.

Whitehawk II
Figure 2
Noise Measurement Sites

Table 5: Existing Noise Measurements

Source: RCH Group, 2015

Location	Time Period	Noise Levels (dB)	Noise Sources
Site 1. Northern edge of project site near stoplight, 50 feet south of the edge of Douglas Boulevard	Tuesday June 23, 2015 8:19-8:29 a.m.	5-minute Leqs: 61,62 5-minute Lmaxs: 70,75	Traffic on Douglas Boulevard is the main source of noise. The noise level is 64 dB when there is steady traffic in both directions. Motorcycle accelerating from stoplight in westbound lane is 75 dB. Motorcycle in eastbound land is 73 dB.
Site 2. Northern edge of project site near stoplight, 100 feet south of the edge of Douglas Boulevard	Tuesday June 23, 2015 8:30 to 8:40 a.m.	5-minute Leqs: 56,56 5-Minute Lmaxs: 62,62	Traffic on Douglas Boulevard is the main source of noise. Medium truck idling at stoplight is 64 dB. Traffic in westbound land is 54 dB and when traffic is passing in both directions it is 60 dB. Motor scooter is 57 dB.
Site 3. Location of building pad 12 on western side of project site, 430 feet south of the edge of Douglas Boulevard.	June 23, 12:00 a.m. through Thursday June 25, 11:59 p.m., 2015 72-hour measurement	24-hour Ldns: 52, 52, 53 Hourly average Leqs ranged from: 43 - 51	Unattended noise measurements do not specifically identify noise sources.
Site 4. Location of building pad 51 on eastern side of project site, 340 feet south of the edge of Douglas Boulevard	June 23, 12:00 a.m. through Thursday June 25, 11:59 p.m., 2015 72-hour measurement	24-hour Ldns: 55, 55, 56 Hourly averaged Leqs ranged from: 42-55	Unattended noise measurements do not specifically identify noise sources.
Site 5. Middle of project site, 200 feet north of southern property line	Monday June 22, 2015 2:54- 3:02 p.m.	5-minute Leqs: 44 ,44 5-Minute Lmaxs: 47, 48	Noise sources include kids playing is a yard to the south, dogs barking, birds, and wind in the trees. Ambient noise level is 44 dB. Distant traffic noise is audible but does not register on noise meter.

Impacts

Potential noise impacts associated with the project would be related to noise from the construction of the residences and/or long-term noise from the residences. After construction, the impacts would include the effect of the environmental noise (including traffic) on the residences and any noise generated by the residences that would affect surrounding land uses. In general, residences are one of the quietest land uses (other than open space), and noise from the residences would be considered compatible with the surrounding residences. This analysis will not further assess impacts from noise generated by the residences.

a) 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? **Less than Significant.**

Potential Traffic Noise Impacts on Residences

Exterior Noise Levels

As shown in **Table 5**, the 24-hour noise levels measured at the location of two planned building pads closest to Douglas Boulevard ranged from 52 to 56 dB Ldn. The project design includes a 300-foot open-space buffer between Douglas Boulevard and the proposed residences that would retain the natural topography and vegetation between Douglas Boulevard and the residences. After construction is complete, traffic noise would attenuate at the same rate and noise levels at the project site would remain relatively the same. RCH did follow-up noise modeling of traffic data by Fehr & Peers (September, 2018) to analyze the potential impact from project and cumulative traffic. The analysis showed that at the nearest receptor there would be a less than 1 dB increase[6]. Noise from transportation sources would not exceed the Placer County standard of 60 dB Ldn at the outdoor activity areas of the residences, therefore exposure from transportation noise sources would be less than significant.

Interior Noise Levels

Typical residential construction consistent with the Uniform Building Code (UBC) will provide an exterior-to interior noise level reduction of no less than 25 dB provided that exterior windows and doors are closed (Bollard, 2005, Burn, 1994). As discussed above, exterior noise levels at the building pads closest to Douglas Boulevard ranges from 52 to 56 dB, and with a 25 dB reduction interior noise levels would be 27 to 31 dB, Ldn. Interior noise levels would not exceed the Placer County interior standard of 45 dB Ldn and would result in a less-than significant impact.

Temporary Construction Noise

The project includes the construction of 56 residential units as well as roads and paths on the project site. Construction activities would require the use of numerous pieces of noise-generating equipment, such as excavating machinery (e.g., backhoes, bulldozers, excavators, front loaders, etc.) and other construction equipment (e.g., compactors, scrapers, graders, etc.). Construction worker traffic and construction-related material haul trips would raise ambient noise levels along local haul routes, depending on the number of haul trips made and types of vehicles used. Construction activities and associated traffic would occur primarily during the daytime.

The noise levels generated by construction equipment would vary greatly depending upon factors such as the type and specific model of the equipment, the operation being performed, the condition of the equipment

[6] RCH Group. Technical Memorandum -. *Whitehawk I and II Noise Analysis Updates*, Prepared for Cook Development Consulting Services, LLC. October, 2018.

and the prevailing wind direction. As shown in **Table 6**, maximum noise levels generated by various types of construction equipment can range from 76 to 89 dB at 50 feet. Blasting may be required during site preparation to excavate hard rock, which generates a maximum noise level of 94 dB at a distance of 50 feet (FHWA 2006). The highest noise levels associated with construction activities typically occur during ground excavation and finishing (**See Table 7**). **Table 7** gives average typical construction activities noise levels at 50 feet.

Table 6: Typical Noise Levels from Construction Equipment

Construction Equipment	Noise Level (dB, Lmax at 50 feet)
Dump Truck	76
Air Compressor	78
Concrete Mixer (Truck)	79
Jackhammers	89
Blasting	94
Scraper	84
Dozer	82
Paver	77
Generator	81
Auger Drill Rig	84
Front End Loader	79
Grader	85
Backhoe	78

Source: *Federal Highway Administration (FHWA) Roadway Construction Noise Model User's Guide, 2006.*

Table 7: Typical Construction Activities Noise Levels

Construction Phase	Noise Level (dB Leq at 50 feet)
Ground Clearing	83
Excavation	88
Foundations	81
Erection	81
Finishing	88

Notes: Average noise levels correspond to a distance of 50 feet from the noisiest piece of equipment associated with a given phase of construction and 200 feet from the rest of the equipment associated with that phase.
Leq = equivalent sound level
Source: U.S. Environmental Protection Agency, Legal Compilation, 1973

Project construction is required to comply with the Placer County Noise Ordinance and the construction hours contained in the Granite Bay Community Plan Noise Element. To comply with both the Placer County Noise Ordinance and Granite Bay Community Plan, construction shall only occur Monday through Friday 6:00 a.m. to 8:00 p.m. (during daylight savings time) and 7:00 a.m. to 8:00 p.m. (during standard time), and Saturdays 8:00 a.m. to 6:00 p.m. The Noise Ordinance also requires that all construction equipment be properly muffled and maintained. Compliance with the Placer County Noise Ordinance and Granite Bay Community Plan Noise Element would result in a less than significant impact.

b) Would the project exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?
Less than Significant

Construction operations have the potential to result in varying degrees of temporary ground vibration depending on the specific construction equipment used and operations involved. Depending on the construction or operational equipment used, ground-borne vibrations can be perceptible within 30 to 100 feet of a source. There are several residences south of the project site, located within 100 feet of construction. Project construction could involve blasting in hard rock areas that could generate substantial vibration or ground-borne noise levels. Without mitigation, this blasting could result in a potentially significant impact. As **Table 6** shows, noise levels from blasting have the potential to reach 94 dB at a distance of 50 feet from the source, but that would be prior to standard practices and mitigation at construction sites. Typically the explosive would be placed into drilled rock and the hole would be covered with a blasting mat to reduce dust, noise and fly rock. The character of blasting noise would be impulsive (sudden rise and rapid decay). Blasting noise also has a low frequency (below 20 Hz) and is not easily detected by the human ear. For this project, if blasting is needed, the blasting plan should reduce impacts so that blasts would not be detected by people off the project site. The implementation of **Mitigation Measure 1** would reduce vibrational impacts from blasting to less than significant.

Mitigation Measure 1: A blasting plan for construction shall be prepared and followed that includes the following:

1. The Blasting Plan shall be consistent with the County General Plan Noise Element's policy 9.A.4, which states:

   Impulsive noise produced by blasting should not be subject to the criteria listed in Table [2]. Single event impulsive noise levels produced by gunshots or blasting shall not exceed a peak linear overpressure of 122 dB, or a C-weighted Sound Exposure Level (SEL) of 98 dBC. The cumulative noise level from impulsive sounds such as gunshots and blasting shall not exceed 60 dB L_{Cdn} or $CNEL_C$ on any given day. These standards shall be applied at the property line of a receiving land use.
2. The Blasting Plan shall meet the approval of the appropriate County department with jurisdiction over the project and blasting.
3. Primary components of the Blasting Plan shall include:

   a.) Identification of blast officer;
   b.) Scaled drawings of blast locations, and neighboring buildings, streets, or other locations which could be inhabited;
   c.) Blasting notification procedures, lead times, and list of those notified. Public notification to potentially affected vibration receptors describing the expected extent and duration of the blasting;

d.) Description of means for transportation and on-site storage and security of explosives in accordance with local, state and federal regulations;
e.) Minimum acceptable weather conditions for blasting and safety provisions for potential stray current (if electric detonation);
f.) Traffic control standards and traffic safety measures (if applicable);
g.) Require personal protective equipment;
h.) Minimum standoff distances and description of blast impact zones and procedures for clearing and controlling access to blast danger;
i.) Procedures for handling, setting, wiring, and firing explosives. Also procedures for handling misfires per Federal code;
j.) Type and quantity of explosives and description of detonation device. Sequence and schedule of blasting rounds, including general method of excavation, lift heights, etc.;
k.) Methods of matting or covering of blast area to prevent flyrock and excessive air blast pressure;
l.) Description of blast vibration and air blast monitoring programs;
m.) Dust control measures in compliance with applicable air pollution control regulations (to interface with general construction dust control plan);
n.) Emergency Action Plan to provide emergency telephone numbers and directions to medical facilities. Procedures for action in the event of injury;
o.) Material Safety Data Sheets for each explosive or other hazardous materials to be used;
p.) Evidence of licensing, experience, and qualifications of blasters; and
q.) Description of insurance for the blasting work.

4. A Blast Survey Workplan shall be prepared by the blaster. The Plan shall establish vibration limits in order to protect structures from blasting activities and identify specific monitoring points. At a minimum, a pre-blast survey shall be conducted of any potentially affected structures and underground utilities within 500 feet of a blast area, as well as the nearest commercial or residential structure, prior to blasting.

5. The survey shall include visual inspection of the structures, documentation of structures by means of photographs, video, and a level survey of the ground floor of structures or the crown of major and critical utility lines, and these shall be submitted to the County. This documentation shall be reviewed with the individual owners prior to any blasting operations. The County and impacted property owners would be notified at least 48 hours prior to the visual inspections.

6. Vibration and settlement threshold criteria (for example peak particle velocity of 0.5 inches per second) shall be submitted by the blaster to the County for review and approval during the design process. If the settlement or vibration criteria are exceeded at any time or if damage is observed at any of the structures or utilities, then blasting shall immediately cease and the County immediately notified. The stability of segmental retaining walls, existing slopes, creek canals, etc. shall be monitored and any evidence of instability due to blasting operations shall result in immediate termination of blasting. The blaster shall modify the blasting procedures or use alternative means of excavating in order to reduce

the vibrations to below the threshold values, prevent further settlement, slope instability, and prevent further damage.

7. Air blast overpressure limits shall be set and monitoring shall be conducted at the property line closest to the blast and at other above ground structures identified in the Plan for vibration monitoring. Air blast overpressure limits shall be in accordance with applicable law and shall be established to prevent damage to adjacent properties, new construction, and to prevent injuries to persons on-site and off-site.

8. Prior to full-scale production blasting, the blaster shall conduct a series of test blasts at the sites where blasting is to occur. The tests shall start with reduced charge weights and shall increase incrementally to that of a full-scale production round. Monitoring shall be conducted as described in the Plan.

9. Post-construction monitoring of structures to identify (and repair if necessary) all damage, if any, from blasting vibrations. Any damage shall documented by photograph, video, etc. This documentation shall be review with the individual property owners.

10. Reports of the results of the blast monitoring shall be provided to the County, the local fire department, and owners of any buried utilities on or adjacent to the site within 24 hours following blasting. Reports documenting damage, excessive vibrations, etc. shall be provided to the County and impacted property owners.

c) Would the project result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?
Less than Significant

Residential Noise

Long-term noise from the residences will take place at the project site upon completion of the project. Residences are one of the quietest land uses (other than open space), and noise from the residences would be considered compatible with the surrounding residences. Any permanent increase in ambient noise levels in the project vicinity would not be substantially greater than existing levels without the project. Therefore this change would be a less than significant increase.

Traffic Noise

At full occupancy, the project would generate no more than approximately 560 daily trips. With about 10 percent of these trips during peak hour there would be less than 1 trip per minute during peak hour distributed over the streets entering and exiting the site. This would have a minimal effect upon ambient noise levels and would be a less-than-significant noise impact.

d) 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?
Less than Significant with Mitigation Incorporated

As discussed in a) above, construction activities associated with the project would result in a temporary increase in noise levels in the project vicinity during the construction period. Although construction noise

would comply with the Placer County Noise Ordinance and the Granite Bay Community Plan Noise Element, the project would result in an increase in ambient noise levels in at sensitive receptors near the project site, resulting in a potentially significant impact. The implementation of **Mitigation Measure 2** would reduce temporary construction noise impacts to less than significant.

Mitigation Measure 2: To reduce noise impacts due to construction at nearby sensitive receptors to the maximum extent feasible, the applicant shall employ the following mitigation measures:

1. Fixed Construction equipment, including compressors and generators shall be located as far as possible from sensitive receptors, as feasible. In addition, impact tools shall be shielded or shrouded. Intake and exhaust ports of powered construction equipment shall also be muffled or shielded.
2. Designate a "construction noise coordinator" who would be responsible for responding to any local complaints about construction noise. The construction noise coordinator shall determine the cause of the complaint and shall require that reasonable measures warranted to correct the problem be implemented. The telephone for the construction noise coordinator shall be conspicuously posted at the construction site and included in the notice sent in the neighbors regarding the construction schedule.

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?
No Impact.

The project site would not be located within an area covered by an airport land use plan or within two miles of a public or public use airport. Development on the site would not expose people working or residing in the project area to excessive airport noise levels and no impact would occur.

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?
No Impact.

There are no private airstrips located near the project site, therefore the project would not expose future residents to excessive aircraft noise levels. The project would not increase onsite exposure to aircraft noise. Thus, no impact would occur.

References

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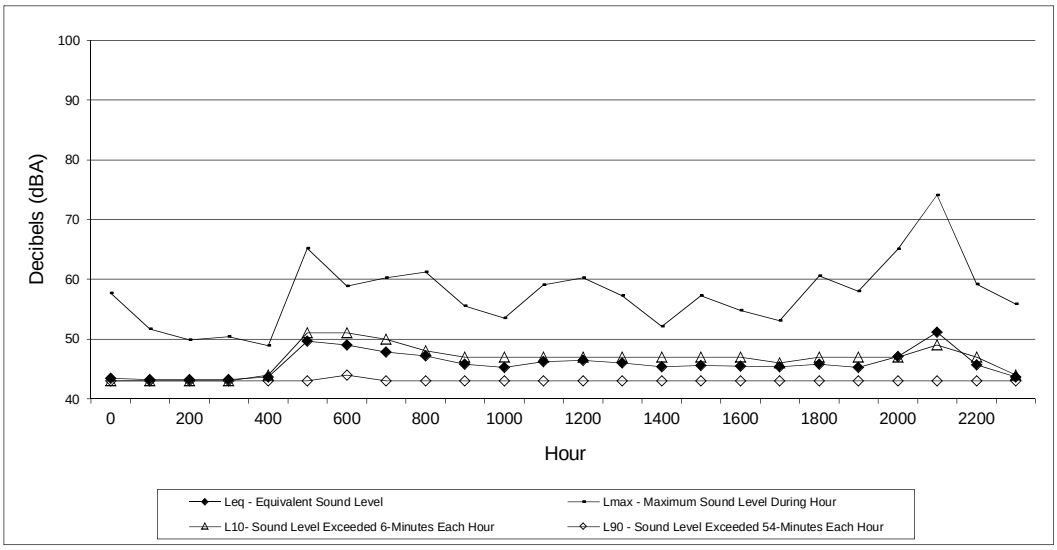
Whitehawk II

Noise Appendix

Site 3-Location of building pad 12: 24-Hour Noise Plots (3 pages)

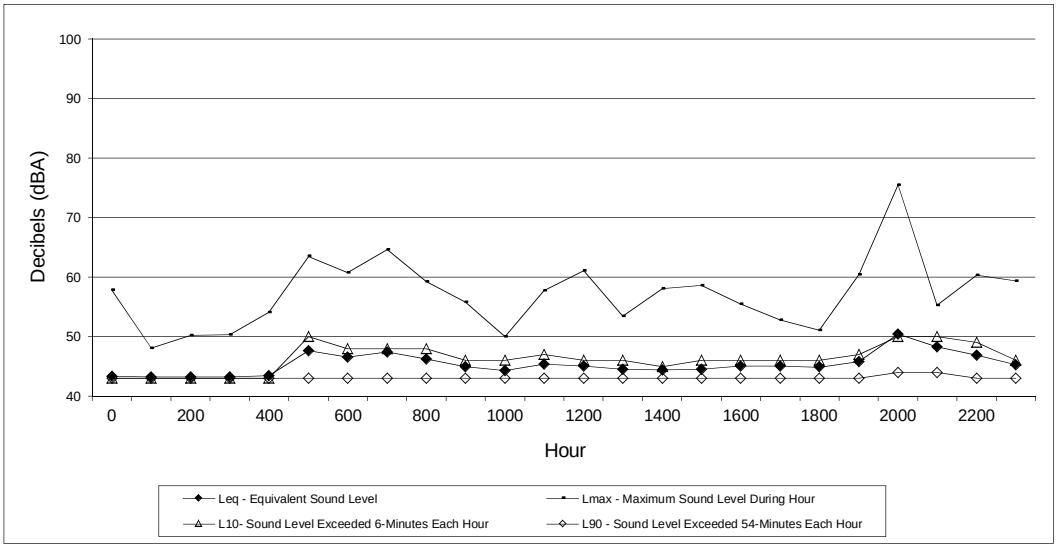
Site 4- Location of building pad 51: 24-Hour Noise Plots (3pages)



Site 3. Location of building pad 12 (2036)
Tuesday, June 23, 2015

Hour	Leq - Equivalent Sound Level	Lmax - Maximum Sound Level During Hour	L10- Sound Level Exceeded 6-Minutes Each Hour	L90 - Sound Level Exceeded 54-Minutes Each Hour
0	43	58	43	43
100	43	52	43	43
200	43	50	43	43
300	43	50	43	43
400	44	49	44	43
500	50	65	51	43
600	49	59	51	44
700	48	60	50	43
800	47	61	48	43
900	46	56	47	43
1000	45	54	47	43
1100	46	59	47	43
1200	46	60	47	43
1300	46	57	47	43
1400	45	52	47	43
1500	46	57	47	43
1600	46	55	47	43
1700	45	53	46	43
1800	46	61	47	43
1900	45	58	47	43
2000	47	65	47	43
2100	51	74	49	43
2200	46	59	47	43
2300	44	56	44	43

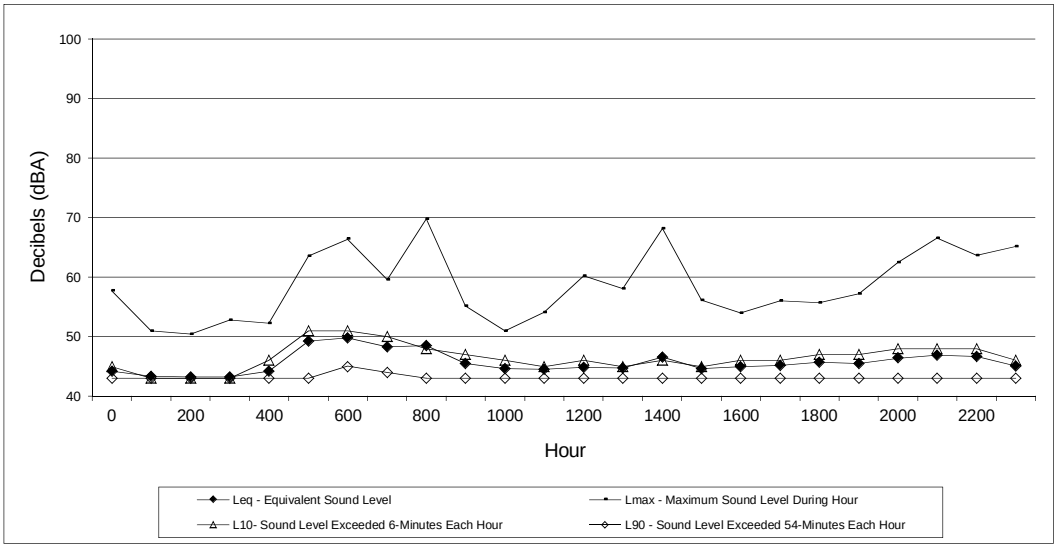
Ldn: 52



Site 3. Location of building pad 12 (2036)
Wednesday, June 24, 2015

Hour	Leq - Equivalent Sound Level	Lmax - Maximum Sound Level During Hour	L10- Sound Level Exceeded 6-Minutes Each Hour	L90 - Sound Level Exceeded 54-Minutes Each Hour
0	43	58	43	43
100	43	48	43	43
200	43	50	43	43
300	43	50	43	43
400	43	54	43	43
500	48	64	50	43
600	47	61	48	43
700	47	65	48	43
800	46	59	48	43
900	45	56	46	43
1000	44	50	46	43
1100	45	58	47	43
1200	45	61	46	43
1300	45	53	46	43
1400	44	58	45	43
1500	45	59	46	43
1600	45	56	46	43
1700	45	53	46	43
1800	45	51	46	43
1900	46	60	47	43
2000	50	76	50	44
2100	48	55	50	44
2200	47	60	49	43
2300	45	59	46	43

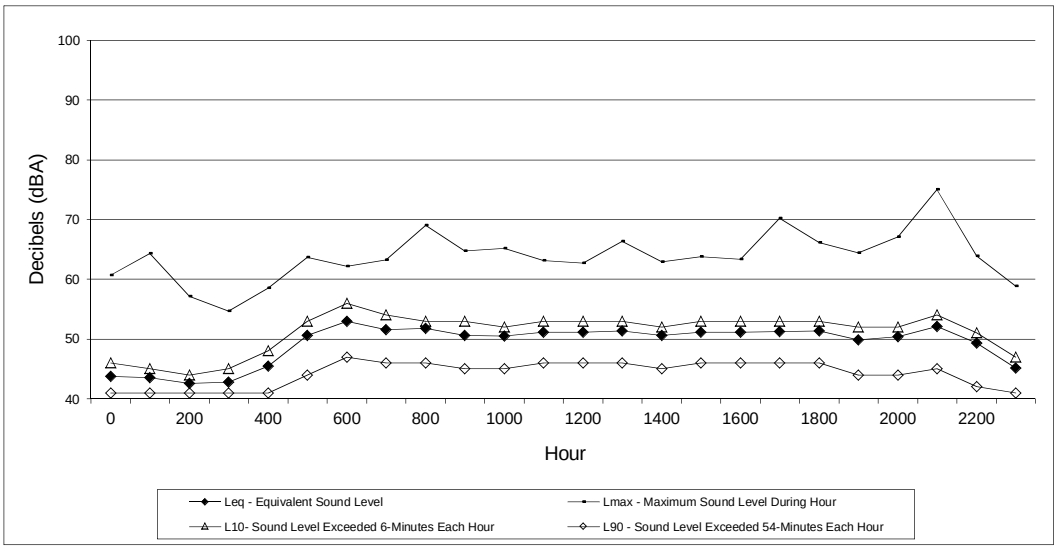
Ldn: 52



Site 3. Location of building pad 12 (2036)
Thursday, June 25, 2015

Hour	Leq - Equivalent Sound Level	Lmax - Maximum Sound Level During Hour	L10- Sound Level Exceeded 6-Minutes Each Hour	L90 - Sound Level Exceeded 54-Minutes Each Hour
0	44	58	45	43
100	43	51	43	43
200	43	50	43	43
300	43	53	43	43
400	44	52	46	43
500	49	64	51	43
600	50	66	51	45
700	48	60	50	44
800	49	70	48	43
900	46	55	47	43
1000	45	51	46	43
1100	45	54	45	43
1200	45	60	46	43
1300	45	58	45	43
1400	47	68	46	43
1500	45	56	45	43
1600	45	54	46	43
1700	45	56	46	43
1800	46	56	47	43
1900	46	57	47	43
2000	46	63	48	43
2100	47	67	48	43
2200	47	64	48	43
2300	45	65	46	43

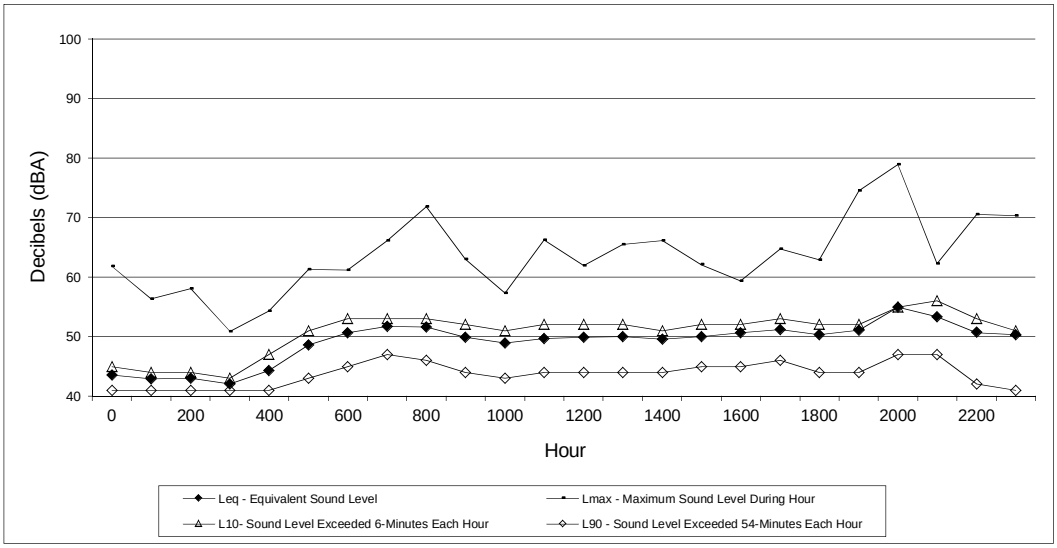
Ldn: 53



Site 4- Location of building pad 51 (2939)
Tuesday, June 23, 2015

Hour	Leq - Equivalent Sound Level	Lmax - Maximum Sound Level During Hour	L10- Sound Level Exceeded 6-Minutes Each Hour	L90 - Sound Level Exceeded 54-Minutes Each Hour
0	44	61	46	41
100	44	64	45	41
200	43	57	44	41
300	43	55	45	41
400	46	59	48	41
500	51	64	53	44
600	53	62	56	47
700	52	63	54	46
800	52	69	53	46
900	51	65	53	45
1000	51	65	52	45
1100	51	63	53	46
1200	51	63	53	46
1300	51	66	53	46
1400	51	63	52	45
1500	51	64	53	46
1600	51	63	53	46
1700	51	70	53	46
1800	51	66	53	46
1900	50	64	52	44
2000	50	67	52	44
2100	52	75	54	45
2200	49	64	51	42
2300	45	59	47	41

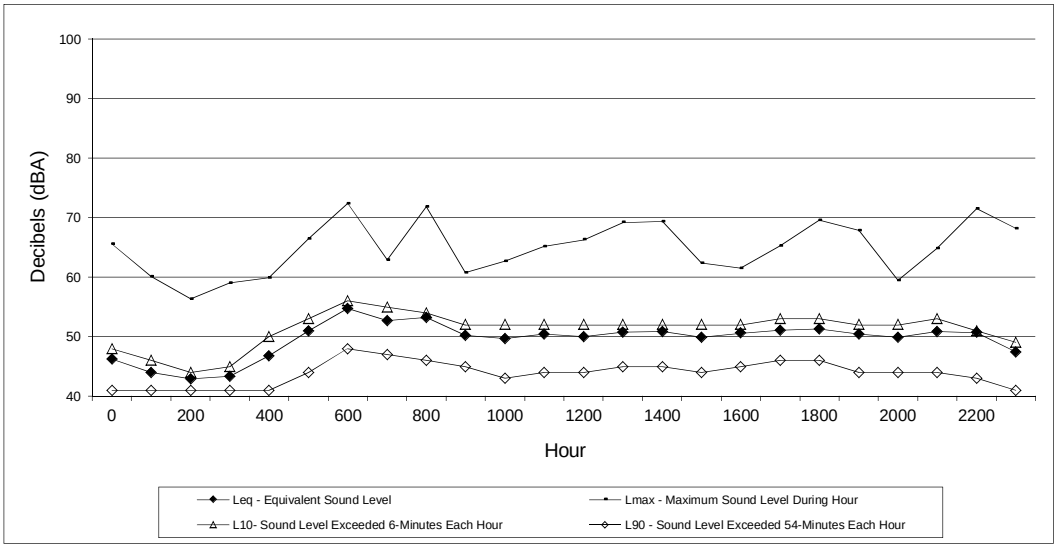
Ldn: 55



Site 4- Location of building pad 51 (2939)
Wednesday, June 24, 2015

Hour	Leq - Equivalent Sound Level	Lmax - Maximum Sound Level During Hour	L10- Sound Level Exceeded 6-Minutes Each Hour	L90 - Sound Level Exceeded 54-Minutes Each Hour
0	44	62	45	41
100	43	56	44	41
200	43	58	44	41
300	42	51	43	41
400	44	54	47	41
500	49	61	51	43
600	51	61	53	45
700	52	66	53	47
800	52	72	53	46
900	50	63	52	44
1000	49	57	51	43
1100	50	66	52	44
1200	50	62	52	44
1300	50	66	52	44
1400	50	66	51	44
1500	50	62	52	45
1600	51	59	52	45
1700	51	65	53	46
1800	50	63	52	44
1900	51	75	52	44
2000	55	79	55	47
2100	53	62	56	47
2200	51	71	53	42
2300	50	70	51	41

Ldn: 55



Site 4- Location of building pad 51 (2939)
Thursday, June 25, 2015

Hour	Leq - Equivalent Sound Level	Lmax - Maximum Sound Level During Hour	L10- Sound Level Exceeded 6-Minutes Each Hour	L90 - Sound Level Exceeded 54-Minutes Each Hour
0	46	66	48	41
100	44	60	46	41
200	43	56	44	41
300	43	59	45	41
400	47	60	50	41
500	51	67	53	44
600	55	72	56	48
700	53	63	55	47
800	53	72	54	46
900	50	61	52	45
1000	50	63	52	43
1100	50	65	52	44
1200	50	66	52	44
1300	51	69	52	45
1400	51	69	52	45
1500	50	62	52	44
1600	51	62	52	45
1700	51	65	53	46
1800	51	70	53	46
1900	50	68	52	44
2000	50	60	52	44
2100	51	65	53	44
2200	51	72	51	43
2300	47	68	49	41

Ldn: 56

TECHNICAL MEMORANDUM

TO: Dave Cook

FROM: **Paul Miller, Senior Noise Reviewer & Erin Reddy, Noise Analyst**
RCH Group

DATE: 10/2/2018

SUBJECT: Whitehawk I and II Noise Analysis Updates

Overview

In July of 2015, RCH Group submitted Technical Noise Analyses (TNAs) for the Whitehawk I and Whitehawk II projects. The TNAs included on-site 24-hour noise measurements and determined that the proposed residences would have acceptable noise environments without the need for noise barriers. The TNAs did not include traffic-related noise modeling because the size and location of the projects indicated that any noise increase from the project would be minimal and not require any mitigation.

Fehr & Peers provided updated average daily traffic (ADT) volumes for nearby roadway segments under various scenarios in a Transportation Impact Report[1]. Raney Planning & Management, Inc. requested that RCH Group use these updated values to model traffic noise impacts under each scenario.

The additional analyses found that none of the scenarios (including cumulative scenarios) would increase noise levels at residences adjacent to the roadway segments analyzed by more than 1.0 dB Ldn. Almost all of the future noise increase would be attributable to cumulative (no project) traffic. This change would not be perceptible by the average healthy ear, which is generally accepted to barely perceive a noise level change of 3 dBA (*Technical Noise Supplement*, Caltrans 2013). Traffic-related noise from the Whitehawk I and II projects would only increase noise levels by up to 0.1 dB Ldn (a non-perceptible increase).

These results reaffirm the earlier conclusion that no noise barriers would be needed to attenuate the impact of traffic noise from Douglas Boulevard on the proposed residences. Therefore, no additional mitigation would be necessary for traffic-related noise.

Traffic-Related Noise Modeling Results

As described in the TNAs, according to the Granite Bay Community Plan, the maximum allowable exposure to transportation noise sources for outdoor activity areas at residential land uses is 60 dB Ldn. Noise measurements in the TNAs indicated that the existing noise levels in the areas of the proposed residences would be approximately 53-54 dB Ldn at the closest residence to Douglas

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[1] Fehr & Peers. *Final Transportation Impact Study for Whitehawk I and II*, Prepared for Raney Planning & Placer County, September 2018.

Boulevard at Whitehawk I and 55-56 dB Ldn at the closest residence to Douglas Boulevard at Whitehawk II.

To assess traffic noise impacts on structures adjacent to nearby roadway segments, RCH Group entered the ADT values provided by Fehr & Peers into the Federal Highway Administration Highway Traffic Noise Prediction Model (FHWA RD-77-108). Noise level values were calculated for nine roadway segments under eight scenarios. The predicted traffic noise levels are shown on the following page of this memo (Table 1). Traffic volumes that were used in this analysis are shown in Table 2. Based on fairly large difference between measured noise levels and initial model runs, an offset of minus six decibels was used to calibrate the modeled traffic ADT to the actual 72-hour measured levels at sites 3w and 4w. The accuracy of prediction models appears to decrease as the distance from the roadway increases and sites 3w and 4w are 98 and 105 meters from the roadway (*Technical Noise Supplement*, Caltrans, 1998). Measurement data is used to calibrate model results.

The future values were based on a conservative estimate of 10 percent of all ADT in the peak hour. The peak hour was then used as an estimate of the 24-hour future Ldn. It is a fairly typical case, that Ldn is approximately equal to the peak hour Leq. The rule of thumb is that Ldn is within +/- 2 dBA of the peak hour Leq under normal conditions. For the 12 days of measurements for Whitehawk I and II projects, the most frequent offset was Ldn +2 from the peak hour Leq (*Technical. Noise Supplement*, Caltrans, 1998). The range was +1 to +5 for the Ldn compared to the peak hour Leq.

The Cumulative No Project scenario (CNP) would raise traffic-related noise levels by up to one dB (0.3 – 1.0 dB) in the future along the roadways. Traffic-related noise from the Whitehawk I and Whitehawk II projects would increase noise levels only 0 to 0.1 dB in all the scenarios modeled and presumably be affected by cumulative traffic by no more than 1 dB. These changes would not be perceptible by the average healthy ear, which is generally accepted to barely perceive a noise level change of 3 dBA (*Technical Noise Supplement*, Caltrans 2013). Measured Ldn's at Whitehawk I were 53, 54, 55 at the nearest location to Douglas Blvd. (320 feet) and 55, 55, and 56 at the nearest measurement location to Douglas Blvd. (340 feet) at Whitehawk II.

Figure 1 is a map of the Whitehawk I and Whitehawk II project sites and surrounding vicinity. The Whitehawk I site is adjacent to roadway segment 3 (Douglas Boulevard between Woodgrove Way and Seeno Avenue), and the Whitehawk II site is adjacent to roadway segment 4 (Douglas Boulevard between Seeno Avenue and Barton Road) as well as segment 3. Predictions of traffic noise levels at the nearest proposed residences for the Whitehawk I and II project sites (off of segments 3 and 4) are shown in Table 1.

Noise levels were modeled at the property line of the nearest proposed residence at each project site (along segments 3 and 4) and calibrated using 24-hour noise measurement data from the sites. Our analysis of traffic noise levels shows that the maximum traffic scenario noise impact (cumulative + project) would not exceed the Community Plan standard (60 dB, Ldn) at the project sites, and no mitigation is needed for traffic-related noise. These results are shown in Table 1 for rows labeled 3w and 4w.

Table 3 includes the inputs to and results of the FHWA Traffic Noise Prediction Model. Inputs include traffic volumes, vehicle type percentages, vehicle speeds, and distances to the receivers for each roadway segment and each scenario. Peak hour volumes were estimated as 10% of the ADT volume, in accordance with standard practice. The ADT volumes for the segments shown in Table 2 were provided by Fehr & Peers based on AM/PM blended percentages.

Table 1. Traffic-Related Noise Modeling Results for Whitehawk I and II

	Noise Level (dBA, Ldn)													
Segment	Distance to Receiver (meters)	Existing Conditions	Existing Plus Whitehawk I	Existing Plus Whitehawk II	Existing Plus Whitehawk I & II	Difference from Existing	Cumulative No Project	Difference from Existing	Cumulative Plus Whitehawk I	Difference from Cumul No Proj	Cumulative Plus Whitehawk II	Difference from Cumul No Proj	Cumulative Plus Whitehawk I & II	Difference from Cumul No Proj
1	220	63.8	63.8	63.8	63.8	0.0	64.3	0.6	64.3	0.0	64.3	0.0	**64.4**	0.0
2	37	73.6	73.6	73.6	**73.7**	0.1	74.0	0.4	74.0	0.0	**74.1**	0.0	**74.1**	0.0
3	18	74.8	74.8	74.8	74.8	0.1	75.2	0.5	75.2	0.0	**75.3**	0.0	**75.3**	0.1
3w	98	57.3	**57.4**	**57.4**	**57.4**	0.1	57.8	0.5	57.8	0.0	57.8	0.0	57.8	0.1
4	29	72.7	72.7	72.7	72.7	0.0	73.2	0.5	73.2	0.0	73.2	0.0	73.2	0.0
4w	105	56.8	**56.9**	**56.9**	**56.9**	0.0	57.3	0.5	57.3	0.0	57.3	0.0	57.3	0.0
5	28	73.4	73.4	73.4	73.4	0.0	73.9	0.6	**74.0**	0.0	**74.0**	0.1	**74.0**	0.0
6	39	68.8	68.8	68.8	68.8	0.0	69.8	1.0	69.8	0.0	69.8	0.0	69.8	0.0
7	48	69.0	69.0	69.0	69.0	0.0	69.9	1.0	69.9	0.0	**70.0**	0.1	**70.0**	0.0
8	33	70.3	70.3	70.3	70.3	0.0	71.2	0.9	71.2	0.0	71.2	0.0	71.2	0.0
9	25	72.4	72.4	72.4	72.4	0.0	73.0	0.6	73.0	0.0	73.0	0.0	73.0	0.0

Bold Underlined values indicate where traffic from the Whitehawk I and/or II projects would raise noise levels. In each case the noise level increase is only 0.1 dB compared to the No-Project case. Segments identified as 3w and 4w indicate modeling for the proposed receivers at each project site that would be closest to the centerline of Douglas Boulevard. All differences were calculated using hundredths of a decibels in the modelling but are rounded to tenths in the table (so some differences are 0.1 dB different than expected due simple subtraction of the rounded numbers in Table 1).

Roadway Segment Key		
ID	**Roadway**	**Segment**
1	Douglas Blvd.	Sierra College Blvd. to Cavitt Stallman Rd.
2	Douglas Blvd.	Cavitt Stallman Rd. to Woodgrove Way
3	Douglas Blvd.	Woodgrove Way to Seeno Ave. (near Whitehawk I and II)
4	Douglas Blvd.	Seeno Ave. to Barton Rd. (near Whitehawk II)
5	Douglas Blvd.	Barton Rd. to Auburn Folsom Rd.
6	Sierra College Blvd.	North of Douglas Blvd.
7	Sierra College Blvd.	Douglas Blvd. to Renaissance Creek/Granite Bay Business Park
8	Sierra College Blvd.	Renaissance Creek/Granite Bay Business Park to Eureka Rd.
9	Auburn-Folsom Rd.	Douglas Blvd. to Eureka Rd.

Table 2. Current and Future Traffic Volumes for Whitehawk I and II

Roadway Segment	Daily Project Trip Assignment			Roadway ADT Forecasts			
	WH I	WH II	WH I & II	Existing	Ex+WH I	Ex+WH II	Ex+WH I&II
1	170	364	534	47,560	47,730	47,930	48,100
2	184	394	578	46,830	47,010	47,220	47,400
3	202	433	635	45,230	45,430	45,670	45,870
4	71	152	223	44,800	44,870	44,950	45,020
5	62	133	195	42,620	42,690	42,760	42,820
6	24	52	76	26,950	26,970	27,000	27,020
7	40	85	125	34,450	34,490	34,540	34,580
8	30	64	94	32,330	32,360	32,390	32,420
9	35	76	111	39,670	39,700	39,740	39,780

Roadway Segment	Daily Project Trip Assignment			Roadway ADT Forecasts (Cumulative Scenarios)			
	WH I	WH II	WH I & II	CNP	C+WH I	C+WH II	C+WH I&II
1	170	364	534	54,140	54,310	54,500	54,670
2	184	394	578	51,710	51,890	52,100	52,290
3	202	433	635	50,170	50,370	50,600	50,810
4	71	152	223	49,880	49,950	50,030	50,100
5	62	133	195	48,670	48,730	48,800	48,870
6	24	52	76	33,940	33,960	33,990	34,020
7	40	85	125	43,120	43,160	43,210	43,250
8	30	64	94	39,960	39,990	40,020	40,050
9	35	76	111	45,110	45,150	45,190	45,220

Figure 1. Vicinity Map for Whitehawk I and II