

## **14 GEOLOGY, SOILS, SEISMICITY, AND PALEONTOLOGY**

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This chapter describes the existing geologic, soils, seismic, and paleontological setting of the project site, identifies associated regulatory requirements, evaluates potential impacts, and identifies mitigation measures where necessary, related to implementation of the proposed Placer County Government Center Master Plan Update Project (PCGC Master Plan Update or project). This chapter also evaluates impacts associated with implementation of the first two projects anticipated under the proposed PCGC Master Plan Update—the Health and Human Services building and the Multifamily Residential project located along the east side of 1<sup>st</sup> Street at B Avenue.

Comments received in response to the Notice of Preparation (Appendix A) did not address the project’s potential environmental effects related to geology, soils, and paleontology.

### **14.1 EXISTING CONDITIONS**

The PCGC campus is located in the western foothills of the Sierra Nevada mountain range, at an elevation of about 1,400 feet above mean sea level, in a complex geologic environment. Elevations across the project site range from 1,375 to 1,435 feet (NFA/URS 2002).

#### **Topography**

The topography of the project site is relatively flat, with a gentle slope to the northeast and southwest, as a northwest-trending drainage divide traverses the northeastern portion of the site (Figure 14-1, Site Topography). Slopes within the site generally range from 2% to 15%.

#### **Geology**

Geologic history has been divided into many eras representing chapters of Earth’s past. The three most recent eras are the Cenozoic (65 million years ago to today), Mesozoic (248 to 65 million years ago), and Paleozoic (543 to 248 million years ago). The Jurassic Period represents a portion of the Mesozoic Era and dates between 144 and 206 million years ago. The Quaternary Period covers a portion of the Cenozoic Era and dates from 1.8 million years ago to today. The geologic history of the rocks and soils within the project site can be traced back to their origins in some of these historic time periods.

The western slope of the Sierra Nevada is underlain by a series of metamorphic rock assemblages that trend north-northwest/south-southeast, between the Mesozoic granitics of the Sierra Nevada batholiths on the east and the sediment-filled Sacramento Valley to the west. These metamorphic rocks were developed by convergent plate tectonics in the Early Paleozoic to Late Jurassic (400 to 120 million years ago) and consist of three northerly trending units, bound

by faults and classified on the basis of age and lithology: the Eastern, Central, and Western metamorphic terranes (NFA/URS 2002).

The project site is located in the eastern portion of the Western Metamorphic Terrane, predominantly consisting of Jurassic igneous and sedimentary rocks of island-arc origin. The site is underlain by metavolcanic rocks of the Smartville Complex, composed of mafic/intermediate volcanic and plutonic rocks, which outcrop west of State Route 49 and are controlled by northwest-trending, gently dipping folds that plunge to the southeast (NFA/URS 2002).

## **Soils**

Approximately 95% of the project site is underlain by soil identified as Auburn silt loam with 2% to 15% slopes. The remaining 5% of the site is underlain by Auburn-Rock outcrop complex with 2% to 30% slopes (USDA NRCS 2018). The dominant soil is a shallow, undulating to rolling, well-drained material, underlain by vertically tilted metamorphic rock and formed as a residual deposit due to the weathering of the parent rock. The Auburn-Rock outcrop complex occurs in only two locations: along the extreme western margin of the project site, west of the abandoned wastewater treatment pond; and along Atwood Road, south of the Main Jail (Figure 14-2, Soils). The Auburn-Rock outcrop complex is characterized as approximately 60% Auburn soil and 15% metamorphic rock outcrop exposed on the rocky side slopes. The soil is shallow, well drained, and moderately permeable, with very rapid surface runoff, and formed by the weathering of the underlying vertically tilted metabasic bedrock. Neither the Auburn silt loam nor the Auburn-Rock outcrop falls within the Class I or II capability classes, which are the classes most favorable for agricultural production. Individual characteristics of the soil units are as follows.

### ***Auburn Silt Loam***

Auburn silt loam is the predominant soil type on the project site. It is a shallow, undulating to rolling, well-drained soil, underlain by metamorphic rock. The shallowness leads to moderate permeability and surface runoff. The erosion hazard is slight to moderate. This soil is mainly used for irrigated pasture and rangeland, with some areas used for deciduous orchards. The major limitation to urban use is the depth to rock, which limits the potential for septic systems but does not typically otherwise impede development.

### ***Auburn-Rock Outcrop Complex***

The Auburn-rock outcrop complex is characterized as an undulating to hilly soil and rock outcrop soil type. This soil type occurs along the southern boundary of the project site and in the extreme southwestern portion of the project site. The Auburn soil, which makes up approximately 60% of this complex, is shallow and well drained. Surface runoff is medium-to-

rapid, with erosion hazard ranging from slight-to-high. This soil complex is mostly used for annual rangeland. The major limitations to urban use are rock outcrops, the depth to rock, and the slopes. Cuts and fills generally need to be limited to approximately 6 feet.

### **Mineral Resources**

The best assessment of mineral resources in the study area is the Mineral Land Classification of Placer County, prepared by the California Division of Mines and Geology in 1995 (Open File Report 95 10). A review of this document indicates that there were six mines or prospects, including five gold and one copper, located within 2 miles of the project site. One of these mines or prospects is plotted as occurring on the site, but the accuracy of the mapping is questionable. Open File Report 95 10 identifies the mine/prospect as the Black Ledge, located within 0.5 miles of the project site. However, review of the primary reference cited is confusing. The Black Ledge is not discussed; rather, reference is made to “Black Lead, a former producer,” which lies nearby to the south of the Two Orphans prospect and is within approximately 1 mile of the project site. No details are provided regarding specific location, vein orientation, and production history. No surface evidence has been found concerning this gold mine or prospect. Based on the existing mapping, known mine locations, and the lack of surface evidence of mining on site, it is unlikely that the project site represents a source of known mineral reserves (NFA/URS 2002).

### **Faulting and Seismicity**

The California Geological Survey (CGS) classifies faults as either Holocene-active (past 11,700 years), pre-Holocene (older than 11,700 years), and age-undetermined. The CGS has established Alquist-Priolo Special Study Zones around faults identified by the State Geologist as being active. The Alquist-Priolo Special Studies Zone Act limits development along the surface trace of active faults to reduce the potential for structural damage and/or injury due to fault rupture (CGS 2018).

The project site is not located within an Alquist-Priolo Earthquake Fault Zone. According to the Fault Activity Map of California (CGS 2010) and the Map Index to Alquist-Priolo (Earthquake Hazard) Zones (CGS 2015), active faults are not located on or adjacent to the project site. The closest active fault and associated Alquist-Priolo Fault Zone is the Cleveland Hill Fault, located approximately 40 miles north of the site.

The project site is located within the western portion of the Foothills Fault System, which is bound on the east by the Melones Fault Zone and on the west by the northwest-trending Bear Mountain Fault Zone. The project site is located approximately 15 miles west of the Melones Fault Zone and between two splays (or traces/segments) of the Bear Mountain Fault Zone. An unnamed splay of the Bear Mountain Fault Zone is located approximately 2,000 feet east-northeast of the project site, and the Deadman Fault splay of this fault zone is located

approximately 2,000 feet southwest of the project site (Figure 14-3, Geology). These fault splays are classified by the CGS as having last moved in the Late Quaternary (the last 700,000 years) (CGS 1981; CGS 2010, as cited in NFA/URS 2002).

In addition, segments of the DeWitt Fault Zone have been observed northwest and southeast of the project site, suggesting that this fault zone may pass beneath the site (Figure 14-3). Consultants to the U.S. Bureau of Reclamation Extension conducted geoseismic studies associated with the proposed Auburn Dam, located approximately 4 miles southeast of the project site, after the 1975 Oroville earthquake. One of the geologic structures evaluated was the DeWitt lineament or fault zone, which had been identified by geologic mapping and air photo interpretation. The DeWitt Fault Zone trends in a northwest-southeast direction from the Bear River through Auburn. Woodward-Clyde Consultants excavated and logged three exploratory trenches across this feature as follows:

- Hubbard Road site – located southeast of Big Hill near Dry Creek, approximately 2 miles northwest of the project site;
- Bean Road site – approximately 5 miles due south of the project site; and
- St. Joseph site – approximately 0.6 miles southeast of the project site.

The results of the trenching studies indicated that the DeWitt Fault Zone is a significant zone of deformation generated during episodes of fault movement in the Mesozoic, with evidence of late Quaternary displacement at the Hubbard Road site (NFA/URS 2002).

In addition, geologic studies have been completed of the Foothill Fault System by PG&E, for the Rock Creek Dam just north of Auburn, and by the U.S. Army Corps of Engineers, for the New Hogan Reservoir on the Calaveras River. Trenching of the DeWitt, Deadman, and Highway 49 faults, near Auburn, and the Waters Peak and Ione faults, near the New Hogan Reservoir, shows that each of these faults display evidence of movement characterized by relatively small (less than 2.5 feet) long-term displacement in the past 100,000 years. Assuming this displacement occurred from at least three earthquakes, it was concluded that the maximum net displacement per earthquake event that could occur on any of these faults was 9.6 inches. Although these studies do not clearly quantify the amount of displacement during individual surface faulting earthquakes, as numerous assumptions were made in the analysis, trenches across the DeWitt Fault at a site 6 miles northwest of the Auburn Dam site (about 2 miles northwest of the project site) exposed stratigraphic separation of colluvium younger than 100,000 years, as a single-event displacement of up to 15 inches (USGS 1996).

The California Division of Mines and Geology investigated the DeWitt segment of the Bear Mountain Fault Zone north of Auburn, as part of a 10 year fault evaluation program. This study indicated that deformation along the Bear Mountain Fault Zone is occurring near Auburn.

However, this strain is distributed along several Mesozoic-age shear zones over a several mile wide zone. Holocene (the last 11,000 years) faulting could not be ruled out along the DeWitt Fault Zone, but the zone is not well defined and displacement rates are probably too small to produce significant surface rupture. Therefore, the DeWitt Fault Zone has not been designated as a special study zone under the provisions of the Alquist-Priolo Act (NFA/URS 2002).

In general, the foothills of the Sierra Nevada are characterized by extremely low seismicity. Data compiled between 1808 and 1987 show that only 15 earthquakes between magnitudes 3.0 and 5.7 were recorded along the Foothills Fault System between Mariposa and Oroville. The Foothills Fault System had been considered to have a low level of activity until the occurrence of the 1975 magnitude 5.7 Oroville earthquake, located on the Cleveland Hill Fault, along the northern portion of the Foothills Fault System. Other damaging earthquakes, in the magnitude range 5 to 6, occurred along this fault zone in 1888 and 1909. Studies of past seismic events conclude that the maximum credible earthquake for the Foothills Fault System would be a Richter magnitude 6.5 event (NFA/URS 2002; USGS 1996; CDMG 1978).

### **Liquefaction/Lateral Spreading**

Liquefaction occurs when partially saturated soil enters a liquid state, resulting in the soil's inability to support overlying structures. Liquefaction typically occurs in areas where the groundwater is less than 30 feet from the surface and where the soils are composed of poorly consolidated fine to medium sand. Lateral spreading consists of lateral movement of gently to steeply sloping saturated soil deposits that is caused by earthquake-induced liquefaction.

The Seismic Hazards Mapping Act of 1990 directs the California Department of Conservation, Division of Mines and Geology (now the California Geological Survey), to identify and mitigate seismic hazards. A Seismic Hazards Zone Map, which includes Alquist-Priolo Fault Zones, areas of potential liquefaction, and areas of potential earthquake-induced landslides, has not been completed for the Auburn Quadrangle (CGS 2015). However, based on prior geotechnical investigations completed at the site, surface soils in the project site are generally relatively thin and unsaturated, and the site is underlain at shallow depths by dense, metavolcanic rock (County of Placer 2003). This combination results in a low potential for liquefaction and lateral spreading at the site.

### **Expansive Soil**

Expansive soils are composed largely of clays, which greatly increase in volume when saturated with water and shrink when dried. If expansive soils are present, changes in moisture content cause the clay soils to shrink or expand, which can damage building foundations and cause structural instability. Based on previous geotechnical investigations completed at the project site, expansive soils are locally present. These soils, which exhibited high expansion potential, were generally encountered at a depth of 2 to 3 feet, immediately above weathered metamorphic rock

(County of Placer 2003). However, current engineering techniques and construction methods are available to address different soil constraints such as the presence of expansive soils.

### **Paleontological Setting**

Paleontological resources are tied directly to the geologic units of the project site, which is underlain by metavolcanic rocks of the Smartville Complex. Inherent to the geologic origin of these rocks, it is likely that they do not contain paleontological resources. Fossils are typically found in sedimentary rocks, which are formed by the deposition, burial, and cementation of sediment on the earth's surface. Plutonic rocks crystallize deep within the earth's crust and volcanic rocks, although formed on the earth's surface, are usually deposited at such high temperatures and in such dynamic environments that any potentially fossil-forming material is obliterated during the depositional process.

Databases of known invertebrate, plant, and vertebrate fossil localities maintained by the University of California Museum of Paleontology were searched to see if any localities of fossils were found were in the vicinity of the project site. No known resources were listed in the databases. Although the database of invertebrate fossil localities is not complete, it is considered the most complete resource that is reasonably available (County of Placer 2003).

In light of the geologic origin of the rocks in the area and the results of the database searches, the potential for paleontological resources to exist on the project site is very low.

## **14.2 REGULATORY FRAMEWORK**

### **Federal**

#### ***Federal Earthquake Hazards Reduction Act***

The Earthquake Hazards Reduction Act was passed by Congress in 1977, and is intended to reduce the risks to life and property from future earthquakes. The act established the National Earthquake Hazards Reduction Program. The goals of National Earthquake Hazards Reduction Program are to educate and improve the knowledge base for predicting seismic hazards, improve land use practices and building codes, and to reduce earthquake hazards through improved design and construction techniques.

Installation of underground infrastructure/utility lines must comply with national industry standards specific to the type of utility (e.g., American Water Works Association for water lines), and the discharge of contaminants must be controlled through the National Pollutant Discharge Elimination System permitting program for management of construction and municipal

stormwater runoff. These utility standards contain specifications for installation, design, and maintenance to reflect site-specific geologic and soils conditions.

## **State**

### ***Alquist-Priolo Earthquake Fault Zoning Act***

The 1972 Alquist-Priolo Earthquake Fault Zoning Act was passed to prevent development of buildings and structures for human occupancy on the surface of Holocene-active faults (movement in the past 11,700 years). The Act regulates development near active faults and requires that the state geologist (the head of the CGS) delineate “special study zones” along known active faults in California. Local agencies must regulate certain development projects within the appropriate zones in their jurisdiction. The Act prohibits the development of structures for human occupancy across the traces of active faults.

### ***California Building Code***

The state regulations protecting structures from geo-seismic hazards are contained in the California Building Code (CBC) (24 CCR, Part 2), which is updated on a triennial basis. These regulations apply to public and private buildings in the state. Until January 1, 2008, the CBC was based on the then-current Uniform Building Code and contained additions, amendments, and repeals specific to building conditions and structural requirements of the State of California. The 2016 CBC, effective January 1, 2017, is based on the current (2015) International Building Code and enhances the sections dealing with existing structures. Seismic-resistant construction design is required to meet more stringent technical standards than those set by previous versions of the CBC.

Chapters 16 and 16A of the 2016 CBC include structural design requirements governing seismically resistant construction, including factors and coefficients used to establish seismic site class and seismic occupancy category for the soil/rock at the building location and the proposed building design. Chapters 18 and 18A include (but are not limited to) the requirements for foundation and soil investigations (Sections 1803 and 1803A); excavation, grading, and fill (Sections 1804 and 1804A); damp-proofing and water-proofing (Sections 1805 and 1805A); allowable load-bearing values of soils (Sections 1806 and 1806A); the design of foundation walls, retaining walls, embedded posts and poles (Sections 1807 and 1807A), and foundations (Sections 1808 and 1808A); and design of shallow foundations (Sections 1809 and 1809A) and deep foundations (Sections 1810 and 1810A). Chapter 33 of the 2016 CBC includes (but is not limited to) requirements for safeguards at work sites to ensure stable excavations and cut or fill slopes (Section 3304).

Construction activities are subject to occupational safety standards for excavation and trenching, as specified in the California Safety and Health Administration regulations (Title 8 of the California Code of Regulations) and in Chapter 33 of the CBC. These regulations specify the measures to be used for excavation and trench work where workers could be exposed to unstable soil conditions. The proposed project would be required to employ these safety measures during excavation and trenching.

As indicated previously, the CBC is updated and revised every 3 years. The 2019 version of the CBC will be effective January 1, 2020. It is anticipated that individual projects of the proposed PCGC Master Plan Update would use the most current CBC at the time of specific project building activity.

### ***California Seismic Hazards Mapping Act***

The California Seismic Hazards Mapping Act of 1990 (PRC Sections 1690–2699.6) addresses non-surface rupture earthquake hazards, including liquefaction, earthquake-induced landslides, and subsidence. A mapping program is also established by this Act, which identifies areas within California that have the potential to be affected by non-surface rupture hazards. Such mapping has not been completed for the U.S. Geological Survey 7.5-minute Auburn Quadrangle, within which the project site is located. The act specifies that the lead agency may withhold development permits until geologic or soils investigations are conducted for specific sites and mitigation measures are incorporated into plans to reduce hazards associated with seismicity and unstable soils.

### ***State Earthquake Protection Law***

The State Earthquake Protection Law (California Health and Safety Code Section 19100 et seq.) requires that structures be designed and constructed to resist stresses produced by lateral forces caused by wind and earthquakes, as provided in the CBC. Chapter 16 of the CBC sets forth specific minimum seismic safety and structural design requirements, requires a site-specific geotechnical study to address seismic issues, and identifies seismic factors that must be considered in structural design. Because the project site is not located within an Alquist-Priolo Earthquake Fault Zone, no special provisions would be required for project development related to fault rupture.

### ***Paleontological Resources***

Paleontological resources are afforded protection by environmental legislation set forth under CEQA. Appendix G (part V) of the CEQA Guidelines provides guidance relative to significant impacts on paleontological resources, indicating that a project would have a significant impact on paleontological resources if it would disturb or destroy a unique paleontological resource or

site. The Guidelines for Implementation of CEQA (California Code of Regulations, Title 14, Chapter 3) defines procedures, types of activities, persons, and public agencies required to comply with CEQA, including potential significant effects to paleontological sites. This code requires mitigation of adverse impacts to a paleontological site from development on public land by construction monitoring.

Section 5097.5 of the California Public Resources Code specifies that a person shall not excavate, remove, or destroy any vertebrate paleontological site, including fossilized footprints, on public lands, except with the express permission of the public agency having jurisdiction over the lands. Public lands include lands owned by, or under the jurisdiction of, the state, or any city, county, district, authority, or public corporation, or any agency thereof.

## Local

### *Auburn/Bowman Community Plan*

The Auburn/Bowman Community Plan contains policies governing development in the project vicinity. Following is a list of geology and soils goals and policies in the Environmental Resources Management Element of the Auburn/Bowman Community Plan that are applicable to the proposed project (County of Placer 1999).

#### Goals IV.B.1a

2. Conservation of soils as a valuable natural resource.
3. Minimize soil loss due to accelerated erosion.
4. Minimize the conversion of soils suitable for agricultural purposes to non-agricultural uses.

**IV.B.1.b(1)** Utilize the existing inventory of important resources prior to the project development. In the absence of more detailed site specific studies, determination of soil suitability for particular land uses shall be made according to the Soil Conservation Service's Soil Survey of Placer County.

**IV.B.1.b(4)** Ensure implementation of the Placer County Grading Ordinance to protect against sedimentation and soil erosion.

**IV.B.1.b(6)** Developers shall provide adequate drainage and erosion control during construction as described in the Placer County Land Development Manual.

**Goals IV.B.2.a**

1. Minimize loss of life, injury, damage to property, and impacts to human health resulting from geological hazards.
2. Identify and protect important geological and mineral resources in the plan area.

**Policy B.2.b(2)** Require a soils report on all building permits and grading permits within areas of known slope instability or where significant potential hazard has been identified.

**Policy B.2.b(4)** During project review, consider the development limitations of geologic formations.

**Policy C.2.a** Protect all economically valuable resources, including mineral deposits, soils conducive to agricultural uses, and those open areas which add to the overall attractiveness of the region.

**Policy C.2.f.** In the design and construction of new development, preserve the following types of areas and features as open space to the maximum extent feasible: high erosion hazard areas; areas subject to landslide or with severe slope stability problems; areas with high fire risk; scenic and trail corridors; streams and other areas subject to flooding from a 100-year storm; streamside vegetation; wetlands; significant stands of vegetation; wildlife corridors; and any areas of special ecological significance.

***Placer County General Plan***

The Land Use, Recreation and Cultural Resources, and Health and Safety sections of the Placer County General Plan contain goals and policies that, in part, frame the discussion of project impacts related to geologic hazards. The geology, soils, seismicity, and paleontological goals and policies applicable to the proposed project are listed below (County of Placer 2013a, 2013b, 2013c).

**Goal 1.K:** To protect the visual and scenic resources of Placer County as important quality-of-life amenities for county residents and a principal asset in the promotion of recreation and tourism.

**Policy 1.K.4** The County shall require that new development incorporates sound soil conservation practices and minimizes land alterations. Land alterations should comply with the following guidelines:

- a. Limit cuts and fills;
- b. Limit grading to the smallest practical area of land;
- c. Limit land exposure to the shortest practical amount of time;
- d. Replant graded areas to ensure establishment of plant cover before the next rainy season; and
- e. Create grading contours that blend with the natural contours on site or with contours on property immediately adjacent to the area of development.

**Goal 8.A** To minimize the loss of life, injury, and property damage due to seismic and geological hazards.

**Policy 8.A.1** The County shall require the preparation of a soils engineering and geologic-seismic analysis prior to permitting development in areas prone to geological or seismic hazards (i.e., groundshaking, landslides, liquefaction, critically expansive soils, avalanche).

**Policy 8.A.2** The County shall require submission of a preliminary soils report, prepared by a registered civil engineer and based upon adequate test borings, for every major subdivision and for each individual lot where critically expansive soils exist, unless suitable mitigation measures are incorporated to prevent the potential risks of these conditions.

**Policy 8.A.3** The County shall prohibit the placement of habitable structures or individual sewage disposal systems on or in critically expansive soils unless suitable mitigation measures are incorporate to prevent the potential risks of these conditions.

**Policy 8.A.4** The County shall ensure that areas of slope instability are adequately investigated and that any development in these areas incorporates appropriate design provisions to prevent landsliding.

**Goal 5.D** To identify, protect, and enhance Placer County's important historical, archaeological, paleontological, and cultural sites and their contributing environment.

- Policy 5.D.2.** The County shall solicit the cooperation of the owners of cultural and paleontological resources, encourage those owners to treat these resources as assets rather than liabilities, and encourage the support of the general public for the preservation and enhancement of these resources.
- Policy 5.D.6.** The County shall require that discretionary development projects identify and protect from damage, destruction, and abuse, important historical, archaeological, paleontological, and cultural sites and their contributing environment. Such assessments shall be incorporated into a Countywide cultural resource data base, to be maintained by the Division of Museums.
- Policy 5.D.7.** The County shall require that discretionary development projects are designed to avoid potential impacts to significant paleontological or cultural resources whenever possible. Unavoidable impacts, whenever possible, shall be reduced to a less than significant level and/or shall be mitigated by extracting maximum recoverable data. Determinations of impacts, significance, and mitigation shall be made by qualified archaeological (in consultation with recognized local Native American groups), historical, or paleontological consultants, depending on the type of resource in question.

## **Land Development Manual**

Placer County’s Land Development Manual contains standards for the design and construction of all development projects. These standards apply to the preparation of plans and specifications for all improvements that would be dedicated to the public (e.g., construction of streets, highways, drainage sewer, water supply facilities, etc.) and private projects which involve grading, drainage, trees, and related improvements. The Land Development Manual establishes minimum standards for streets, drainage, sewerage, domestic water supply and erosion control. It also includes the Placer County Design Guidelines Manual and Landscape Design Guidelines.

## **Placer County Code**

The Placer County Grading Ordinance (Placer County 2015) establishes requirements for grading, erosion control, and stormwater management. Development projects must comply with these requirements during grading and construction. The Grading Ordinance is codified in Article 15.48 of the Placer County Code. The primary goals of the Grading Ordinance are to ensure public safety; avoid pollution of watercourses with hazardous materials, nutrients,

and sediments caused by surface runoff; and ensure that the intended use of a site for which a grading permit is sought complies with all applicable County and state codes and regulations, including the CBC.

The Grading Ordinance requires a grading permit for most projects within unincorporated Placer County. Grading permit conditions are detailed in Section 15.48.240 of the Placer County Code. These conditions include requirements for control of dust, erosion, sediment, and noise, and for mitigating adverse environmental impacts identified in any environmental review document. When issuing a grading permit, the County may impose any condition necessary to protect public health and welfare and avoid any hazardous conditions. When Improvement Plans are required, the review and approval of Improvement Plans by the County is equivalent to the issuance of a grading permit.

### **Proposed Development Standards**

The proposed PCGC Master Plan Update would also create project-specific Design Guidelines and Development Standards. These are available for public review at the County’s webpage for this project:

<http://www.placer.ca.gov/pcgc>.

The Development Standards provide specific regulations in regard to grading, lot coverage, parking requirements, setbacks, and lighting.

## **14.3 PROJECT IMPACTS**

### **Significance Criteria**

The significance criteria used to evaluate the project impacts to geology, soils, and paleontology are based on Appendix G of the CEQA Guidelines, which indicate that a significant impact related to geology, seismicity, soils, and paleontology would occur if the project would:

1. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
  - a. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of as known fault. Refer to Division of Mines and Geology Special Publication 42.
  - b. Strong seismic ground shaking.
  - c. Seismic-related ground failure, including liquefaction.

- d. Landslides.
- 2. Result in substantial soil erosion or the loss of topsoil.
- 3. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse.
- 4. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property.
- 5. Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water.
- 6. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

**Impact Analysis**

**Impact 14-1**

	<p><b>Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:</b></p> <p><b>a. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of as known fault.</b></p> <p><b>b. Strong seismic ground shaking</b></p> <p><b>c. Seismic-related ground failure, including liquefaction</b></p> <p><b>d. Landslides?</b></p>		
	<i>PCGC Master Plan Update</i>	<i>Health and Human Services Building</i>	<i>Multifamily Residential Project</i>
<b>Level of Significance:</b>	Less than Significant	Less than Significant	Less than Significant
<b>Mitigation Measures:</b>	None required	None required	None required
<b>Significance after Mitigation:</b>	Less than Significant	Less than Significant	Less than Significant

**PCGC Master Plan Update**

**Earthquake Fault Rupture**

Although all of California is typically regarded as seismically active, the Placer County region does not commonly experience strong ground shaking resulting from earthquakes along known and previously unknown active faults. No faults capable of ground rupture have been identified directly within the PCGC Master Plan Update project site. The site is located within the Foothills Fault System, which has low to moderate seismic activity. Late Quaternary (the last 700,000 years) strands

of this fault system are present within 0.5 miles of both the western and eastern project site boundaries (Figure 14-3). This fault system has been characterized as having the potential to produce maximum earthquakes of magnitude 6.5. Further, strands of the DeWitt Fault Zone have been observed north and south of the project site, suggesting the fault zone may underlie the site. Trenches across the DeWitt Fault at a site 6 miles northwest of the Auburn Dam site (about 2 miles northwest of the project site) exposed stratigraphic separation of colluvium younger than 100,000 years, as a single-event displacement of up to 15 inches. In addition, the California Division of Mines and Geology investigated the DeWitt segment of the Bear Mountain Fault Zone north of Auburn, as part of a 10-year fault evaluation program. This study indicated that deformation along the Bear Mountain Fault Zone is occurring near Auburn. However, this strain is distributed along several Mesozoic-age shear zones over a several mile wide zone. Holocene (the last 11,000 years) faulting could not be ruled out along the DeWitt Fault Zone, but the zone is not well defined and displacement rates are probably too small to produce significant surface rupture. Therefore, the DeWitt Fault Zone has not been designated as a special study zone under the provisions of the Alquist-Priolo Act and impacts are would be **less than significant**.

### **Strong Seismic Shaking**

As in all areas of California, future development could potentially result in exposure of people and property to the hazards of ground shaking associated with earthquake activity. All new construction would be required to conform to Placer County standards and the current version of the CBC at the time that building permits are issued. As detailed in Section 14.2, Regulatory Framework, Placer County standards include geology and soils related policies of the Auburn/Bowman Community Plan (e.g., Goal IV.B.2(a)(b)) and Placer County General Plan (e.g., Goal 8.A); requirements of the Placer County Land Development Manual (e.g., Section 2.05(5), Soils Report); and requirements of the Placer County Code (e.g., Part 5, Geotechnical Investigations and Inspections).

Applicable CBC requirements include measures to minimize the risk of loss, injury, and death from the effects of earthquakes and ground shaking on buildings, with specific provisions for seismic design. As required by CBC Chapters 16, 16A, 18, and 18A for the construction of new buildings and/or structures, engineering design and construction measures specified by a site-specific geotechnical investigation would be implemented to anticipate and mitigate hazards to human life and property caused by potential seismically induced ground failure. Adherence to these standards would ensure that any buildings constructed would be designed to withstand anticipated seismic activities, thereby reducing the risk of personal injury or property damage. Impacts from seismic hazards would be **less than significant** when CBC standards are met.

In addition, seismic and other geologic forces can also contribute to risks of exposure to volcanic activity and ocean effects, such as tsunamis (seismically generated sea waves). The PCGC Master

Plan Update site is geographically removed from these risks. The nearest known active volcanic center is Mount Lassen, located approximately 95 miles north of the project site, and the Pacific Ocean is more than 100 miles to the west. Therefore, the project site is not at risk to exposure to these types of geologic hazards and impacts would be **less than significant**.

### **Seismic Related Ground Failure**

Based on prior geotechnical investigations, the site surface soil is generally relatively thin and unsaturated, and is underlain at shallow depths by dense, metavolcanic rock. Therefore, the potential for seismically-related ground failure, including liquefaction and lateral spreading, is low. In addition, all new construction would be required to conform to Placer County standards and the 2016 CBC, as described previously. Adherence to these standards would ensure that any buildings constructed would be designed to withstand anticipated seismic activities, thereby reducing the risk of personal injury or property damage. Impacts would be **less than significant** for the PCGC Master Plan Update site.

### **Landslides**

The project site is relatively flat to gently sloping; therefore, landslides are not a potential risk in association with construction or demolition. Slopes in the project vicinity predominantly range between 2% and 15%. Therefore, future development would not be at risk from unstable soils or landslides and impacts would be **less than significant**.

### **Health and Human Services Project**

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Seismic and slope stability impacts associated with construction and operation of the new HHS building would be the same as those described for the proposed PCGC Master Plan Update. Impacts would be **less than significant**.

### **Multifamily Residential Project**

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Seismic and slope stability impacts associated with construction and operation of the proposed multifamily residential project would be the same as those described for the proposed PCGC Master Plan Update. Impacts would be **less than significant**.

Impact 14-2	Would the project in substantial soil erosion or the loss of topsoil?		
	<i>PCGC Master Plan Update</i>	<i>Health and Human Services Building</i>	<i>Multifamily Residential Project</i>
<b>Level of Significance:</b>	Potentially Significant	Potentially Significant	Potentially Significant
<b>Mitigation Measures:</b>	Mitigation Measures 14a through 14e	Mitigation Measures 14a through 14e	Mitigation Measures 14a through 14e
<b>Significance after Mitigation:</b>	Less than Significant	Less than Significant	Less than Significant

## PCGC Master Plan Update

### Construction

Demolition and construction activities associated with the proposed project, including vegetation removal, excavations, and grading, would temporarily expose underlying soils, thereby increasing the potential to cause soil erosion or the loss of topsoil. Soil erosion can result in siltation and adverse water quality impacts downstream, which in turn can result in adverse impacts to sensitive biological resources. As a result, potential short-term construction related water quality impacts would be **potentially significant** but would be reduced to **less than significant** levels with implementation of Mitigation Measures 14a through 14e. These measures establish requirements for the preparation of Improvement Plans that show all proposed grading, drainage improvements, vegetation and tree removal, and revegetation of disturbed areas; that all work must conform to the Placer County Grading Ordinance; and that water quality treatment facilities/Best Management Practices must be designed according to the guidance of the California Stormwater Quality Association Stormwater Best Management Practice Handbooks. Also see Chapter 15, Hydrology and Water Quality for additional evaluation of potential erosion induced water quality impacts.

### Operation

Upon completion of project construction, structures, and roadways, landscaping or revegetated areas would eventually cover any soils exposed during construction, thus minimizing the potential for erosion induced siltation of adjacent waterways. As a result, impacts would be **less than significant**.

### Health and Human Services Project

The Health and Human Services building is proposed to be located on a flat site that has been previously graded. A portion of the site supports three existing buildings, while the remainder of the site previously contained buildings. As shown in Figure 14-4, Health and Human Services Grading Plan, grading would include approximately 18,576 cubic yards of cut, 14,197 cubic

yards of fill, and 4,380 cubic yards to be exported off site. Soil erosion related impacts associated with construction and operation of the proposed Health and Human Services building would be the same as those described for the proposed project. Potential short-term construction related water quality impacts would be potentially significant but would be reduced to **less than significant** levels with implementation of Mitigation Measures 14a through 14e.

### Multifamily Residential Project

The Multifamily Residential project at 1<sup>st</sup> Street and B Avenue is proposed to be located on a site that currently supports oak woodland habitat and a segment of the Ophir canal. As shown in Figure 14-5, Multifamily Residential Grading Plan, grading would include approximately 8,868 cubic yards of cut, 7,705 cubic yards of fill, and 1,163 cubic yards to be exported off site. Soil erosion related impacts associated with construction and operation of the proposed multifamily residential project would be the same as those described for the proposed project. Potential short-term construction related water quality impacts would be potentially significant but would be reduced to **less than significant** levels with implementation of Mitigation Measures 14a through 14e.

#### Impact 14-3

	Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?		
	<i>PCGC Master Plan Update</i>	<i>Health and Human Services Building</i>	<i>Multifamily Residential Project</i>
<b>Level of Significance:</b>	Less than Significant	Less than Significant	Less than Significant
<b>Mitigation Measures:</b>	None required	None required	None required
<b>Significance after Mitigation:</b>	Less than Significant	Less than Significant	Less than Significant

### PCGC Master Plan Update

Based on prior geotechnical investigations completed at the site, surface soils in the project area are generally relatively thin and unsaturated, and the site is underlain at shallow depths by dense, metavolcanic rock. This combination results in a low potential for liquefaction and lateral spreading at the site. However, it is anticipated that seepage would be encountered near the surface soil/metamorphic rock contact during and after the rainy season. Additionally, it is expected that into the summer months, the groundwater level may be perched on rock in relatively level or gently sloping areas (County of Placer 2003). Impacts from placing buildings or roads in areas with unstable soils would be largely avoided by ensuring compliance with standard grading, soil conditioning, and building practices. This would avoid exposure of people

and structures to hazards related to unstable soils, including seepage. Extraction of groundwater, oil, or gas from the subsurface of the project site is not proposed; therefore, subsidence, or settling of the land surface, is not expected to occur. As discussed above, slope instability impacts, including landslides and mudflows, would be a less than significant risk due to relatively flat to gently sloping topography at the project site.

As discussed for Impact 14-1, all new construction would be required to conform to Placer County standards and the current version of the CBC at the time building permits are issued. As detailed in Section 14.2, Placer County standards include geology and soils related policies of the Auburn/Bowman Community Plan and Placer County General Plan; requirements of the Placer County Land Development Manual; and requirements of the Placer County Code. Applicable CBC requirements include measures to minimize the risk of loss, injury, and death from the effects of earthquakes and ground shaking on buildings, with specific provisions for seismic design. Chapters 16 and 16A of the 2016 CBC include structural design requirements governing seismically resistant construction. Chapters 18 and 18A include the requirements for foundation and soil investigations; excavation, grading, and fill; damp-proofing and water-proofing; allowable load-bearing values of soils; the design of foundation walls, retaining walls, embedded posts/poles, and foundations; and design of shallow and deep foundations. Chapter 33 of the 2016 CBC includes requirements for safeguards at work sites to ensure stable excavations and cut or fill slopes.

Adherence to these standards would ensure that any buildings constructed would be designed to accommodate potentially unstable geologic materials, including those susceptible to liquefaction, lateral spreading, subsidence, landslides, and collapse. As a result, impacts would be **less than significant**.

### **Health and Human Services Project**

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As shown on Figure 14-4, grading for the Health and Human Services building would include approximately 18,576 cubic yards of cut, 14,197 cubic yards of fill, and 4,380 cubic yards to be exported off site. Grading would result in a gently sloping grade to the southwest, with a small (maximum of 5 feet high) fill slope, at a 4:1 (horizontal: vertical) gradient, between the proposed building and the parking lot. In addition, a bioretention basin would have 4-foot high, 3:1 gradient slopes. Such small slopes and low slope gradients would be constructed in accordance with county and state grading standards and therefore would not be prone to failure. All other impacts would be similar to those described for the proposed PCGC Master Plan Update. Grading and construction would be completed in accordance with a site-specific geotechnical investigation. Adherence to county and state standards related to geology and soils would ensure that any buildings constructed would be designed to accommodate potentially unstable geologic

materials, including those susceptible to liquefaction, lateral spreading, subsidence, landslides, and collapse. As a result, impacts would be **less than significant**.

### **Multifamily Residential Project**

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As shown on Figure 14-5, grading for the Multifamily Residential project located at 1<sup>st</sup> Street and B Avenue would include approximately 8,868 cubic yards of cut, 7,705 cubic yards of fill, and 1,163 cubic yards to be exported off site. Several small cut, fill, and transition slopes, with a maximum height of 4 feet and maximum gradient of 2:1, would be constructed for proposed building pads, parking lot, and bioretention basins. Transition slopes are those with the lower portion being cut slopes and the upper portions being fill slopes. Small retaining walls, up to 3 feet in height, would be constructed in association with slope construction.

One of these fill slopes would be constructed immediately adjacent to a 3:1 slope of an existing stormwater detention basin, located at the southern end of the project site. The proposed fill slope would be constructed to match the topography of the detention basin slope, including an intermediate 2-foot retaining wall. In addition, a new bioretention/detention basin would be constructed at the northern end of the site. The slopes would be transition slopes, with a maximum height of 11 feet and a maximum slope gradient of 3:1. Such low slope gradients of all the proposed engineered slopes would be constructed in accordance with county and state grading standards and therefore would not be prone to failure.

All other impacts would be similar to those described for the proposed PCGC Master Plan Update. Grading and construction would be completed in accordance with a site-specific geotechnical investigation. Adherence to county and state standards related to geology and soils would ensure that any buildings constructed would be designed to accommodate potentially unstable geologic materials, including those susceptible to liquefaction, lateral spreading, subsidence, landslides, and collapse. As a result, impacts would be **less than significant**.

<b>Impact 14-4</b>	<b>Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?</b>		
	<i>PCGC Master Plan Update</i>	<i>Health and Human Services Building</i>	<i>Multifamily Residential Project</i>
<b>Level of Significance:</b>	Potentially Significant	Potentially Significant	Potentially Significant
<b>Mitigation Measures:</b>	Mitigation Measure 14f	Mitigation Measure 14f	Mitigation Measure 14f
<b>Significance after Mitigation:</b>	Less than Significant	Less than Significant	Less than Significant

### PCGC Master Plan Update

Expansive soils are soils that exhibit high expansion potential. Based on previous geotechnical investigations completed at the project site, expansive soils are locally present and are generally encountered at a depth of 2 to 3 feet immediately above weathered metamorphic rock. The presence of expansive soils within the proposed development areas could create substantial risks to life and/or property. Thus this impact is **potentially significant**. However, current engineering techniques and construction methods are available to address different soil constraints such as the presence of expansive soils. Mitigation Measure 14f requires that as each individual construction project proceeds within the proposed PCGC Master Plan Update, a geotechnical evaluation be prepared that includes collection and analysis of soil samples. In the event expansive soils are present, the geotechnical investigation must identify specific remedial actions appropriate to the project site and proposed land uses. Such actions typically include: 1) over-excavation of the upper 0.5 to 1.0 foot of expansive soils, followed by backfilling with nonexpansive sands beneath building footprints, 2) pre-saturation of soil prior to placing concrete, and 3) construction of post-tension slab-on-grade foundations.

In addition, as discussed for Impact 14-1, all new construction would be required to conform to Placer County standards and the current CBC at the time that building permits are issued. As detailed in Section 14.2, Placer County standards include geology and soils related policies of the Auburn/Bowman Community Plan and Placer County General Plan; requirements of the Placer County Land Development Manual; and requirements of the Placer County Code. Chapters 18 and 18A of the CBC include (but are not limited to) the requirements for foundation and soil investigations; excavation, grading, and fill; the design of foundation walls, retaining walls, embedded posts/poles, and foundations; and design of shallow and deep foundations. Adherence to these standards would ensure that any buildings constructed would be designed to accommodate potentially expansive soil. Compliance with the Land Development Manual and implementation of Mitigation Measure 14f would reduce this impact to a **less-than-significant** level.

### Health and Human Services Project

Impacts associated with grading and construction for the Health and Human Services building would be similar to those described for the proposed PCGC Master Plan Update. As required by Mitigation Measure 14f, grading and construction would be completed in accordance with a site-specific geotechnical investigation. Adherence to county and state standards related to geotechnical engineering as well as implementation of Mitigation Measure 14f would ensure that any buildings constructed would be designed to accommodate potentially expansive soils. As a result, impacts would be **less than significant**.

### Multifamily Residential Project

Impacts associated with grading and construction for the Multifamily Residential project located at 1<sup>st</sup> Street and B Avenue would be similar to those described for the proposed PCGC Master Plan Update. As required by Mitigation Measure 14f, grading and construction would be completed in accordance with a site-specific geotechnical investigation. Adherence to county and state standards related to geotechnical engineering as well as implementation of Mitigation Measure 14f. As a result, impacts would be **less than significant**.

#### Impact 14-5

	Would the project have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?		
	<i>PCGC Master Plan Update</i>	<i>Health and Human Services Building</i>	<i>Multifamily Residential Project</i>
<b>Level of Significance:</b>	No Impact	No Impact	No Impact
<b>Mitigation Measures:</b>	None required	None required	None required
<b>Significance after Mitigation:</b>	No Impact	No Impact	No Impact

### PCGC Master Plan Update

Any new buildings proposed for the PCGC Master Plan Update would be served by the Placer County Sewer Maintenance District No. 1, as discussed in Chapter 18, Utilities and Service Systems. No septic tanks or alternative wastewater disposal systems are proposed; therefore, there is **no impact** with respect to the ability of project site soils to support such systems.

### Health and Human Services Project

As described for the proposed PCGC Master Plan Update, there is **no impact** associated with use of septic tanks or alternatively wastewater disposal systems.

**Multifamily Residential Project**

As described for the proposed PCGC Master Plan Update, there is **no impact** associated with use of septic tanks or alternatively wastewater disposal systems.

<b>Impact 14-6</b>	<b>Would the project directly or indirectly destroy a unique paleontological resource or site nor unique geological feature?</b>		
	<i>PCGC Master Plan Update</i>	<i>Health and Human Services Building</i>	<i>Multifamily Residential Project</i>
<b>Level of Significance:</b>	Less than Significant	Less than Significant	Less than Significant
<b>Mitigation Measures:</b>	None required	None required	None required
<b>Significance after Mitigation:</b>	Less than Significant	Less than Significant	Less than Significant

**PCGC Master Plan Update**

The project area is underlain by rocks known as the Smartville Complex, which are composed of mafic/intermediate volcanic and plutonic rocks. Inherent to the geologic origin of these rocks, paleontological resources would likely not occur. Fossils are typically found in sedimentary rocks, which are formed by the deposition, burial, and cementation of sediment on Earth’s surface. In light of the geologic origin of the rocks in the area and the results of a paleontological database search, the potential for paleontological resources to exist on the project site is very low. Impacts would be **less than significant**.

**Health and Human Services Project**

As described for the proposed PCGC Master Plan Update, the potential for paleontological resources on the Health and Human Services building site is very low; therefore, impacts would be **less than significant**.

**Multifamily Residential Project**

As described for the proposed PCGC Master Plan Update, the potential for paleontological resources on the site of the Multifamily Residential project located at 1<sup>st</sup> Street and B Avenue is very low; therefore, impacts would be **less than significant**.

Impact 14-7	Would the project have a substantial contribution to cumulative impacts associated with geology and soils?		
	<i>PCGC Master Plan Update</i>	<i>Health and Human Services Building</i>	<i>Multifamily Residential Project</i>
<b>Level of Significance:</b>	Less than Significant	Less than Significant	Less than Significant
<b>Mitigation Measures:</b>	None required	None required	None required
<b>Significance after Mitigation:</b>	Less than Significant	Less than Significant	Less than Significant

### PCGC Master Plan Update

The geographic context for the analysis of impacts resulting from geologic hazards and potentially unstable soils is generally site-specific, rather than cumulative in nature, because each project site has a different set of geologic considerations that would be subject to uniform site development and construction standards. In this way, potential cumulative impacts resulting from geological, seismic, and soil conditions would be reduced to less than significant on a site-by-site basis by modern construction methods and code requirements. As such, the potential for cumulative geotechnical hazards to affect on-site or off-site areas would be minimal, resulting in **less-than-significant** impacts and there would be no significant cumulative impact to which the PCGC Master Plan Update could contribute.

### Health and Human Services Project

As described for the proposed PCGC Master Plan Update, cumulative impacts related to geology and soils would be reduced to less than significant on a site-by-site basis by modern construction methods and code requirements. As such, the potential for cumulative geologic hazard and soil stability impacts would be **less than significant** and there would be no significant cumulative impact to which the Health and Human Services building could contribute.

### Multifamily Residential Project

As described for the proposed PCGC Master Plan Update, cumulative impacts related to geology and soils would be reduced to less than significant on a site-by-site basis by modern construction methods and code requirements. As such, the potential for cumulative geologic hazard and soil stability impacts would be **less than significant** and there would be no significant cumulative impact to which the Multifamily Residential project could contribute.

## 14.4 MITIGATION MEASURES

**Mitigation Measure 14a** For each individual construction project within the PCGC Master Plan Update planning area, the County or private project applicant shall prepare and submit Improvement Plans, specifications, and cost estimates (per the requirements of Section II of the Land Development Manual that are in effect at the time of submittal) to the County for review and approval of each project phase. The plans shall show all physical improvements as required by the conditions for the project, as well as pertinent topographical features, both on and off site. All existing and proposed utilities and easements, on site and adjacent to the project, which may be affected by planned construction, shall be shown on the plans. All landscaping and irrigation facilities within the public right-of-way (or public easements), or landscaping within sight distance areas at intersections, shall be included in the Improvement Plans. The applicant shall pay plan check and inspection fees and Placer County Fire Department improvement plan review and inspection fees, if applicable, with the first Improvement Plan submittal. (NOTE: Prior to plan approval, all applicable recording and reproduction cost shall be paid.) The cost of the above-noted landscape and irrigation facilities shall be included in the estimates used to determine these fees. It is the applicant's responsibility to obtain all required agency signatures on the plans and to secure department approvals. If the Design/Site Review process and/or Development Review Committee (DRC) review is required as a condition of approval for the project, said review process shall be completed prior to submittal of Improvement Plans. Record drawings shall be prepared and signed by a California Registered Civil Engineer, at the applicant's expense, and shall be submitted to the County in both hard copy and electronic versions in a format to be approved by the County prior to acceptance by the County of site improvements.

Any Building Permits associated with this project shall not be issued until, at a minimum, the Improvement Plans are approved by the County.

**Mitigation Measure 14b** The Improvement Plans shall show all proposed grading, drainage improvements, vegetation and tree removal, and all work shall conform to provisions of the County Grading Ordinance (Ref. Article 15.48, Placer County Code) that are in effect at the time of submittal. No grading, clearing, or tree disturbance shall occur until the Improvement Plans are approved and all temporary construction fencing has been installed and inspected by a member of the Development Review Committee (DRC). All cut/fill slopes shall be at a maximum of 2:1 (horizontal: vertical) unless a soils report supports a steeper slope and the County concurs with said recommendation.

The applicant shall revegetate all disturbed areas. Revegetation, undertaken from April 1 to October 1, shall include regular watering to ensure adequate growth. A winterization plan shall be provided with project Improvement Plans. It is the applicant's responsibility to ensure proper installation and maintenance of erosion control/winterization before, during, and after project construction. Soil stockpiling or borrow areas shall have proper erosion control measures applied for the duration of the construction, as specified in the Improvement Plans. The applicant shall provide erosion control where roadside drainage is off of the pavement, to the satisfaction of the County.

The applicant shall submit to County a letter of credit or cash deposit in the amount of 110% of an approved engineer's estimate for winterization and permanent erosion control work prior to Improvement Plan approval, to guarantee protection against erosion and improper grading practices. One year after the County's acceptance of improvements as complete, if there are no erosion or runoff issues to be corrected, unused portions of said deposit shall be refunded to the project applicant or authorized agent.

If at any time during construction, a field review by County personnel indicates a significant deviation from the proposed grading shown on the Improvement Plans, specifically with regard to slope heights, slope ratios, erosion control, winterization, tree disturbance, and/or pad elevations and configurations, the plans shall be reviewed by the DRC for a determination of substantial conformance to the project approvals prior to any further work proceeding. Failure of the DRC to make a determination of substantial conformance may serve as grounds for the revocation/modification of the project approval by the appropriate hearing body.

**Mitigation Measure 14c** The Improvement Plans shall show water quality treatment facilities/Best Management Practices (BMPs) designed according to the guidance of the California Stormwater Quality Association Stormwater Best Management Practice Handbooks for Construction, for New Development/Redevelopment, and for Industrial and Commercial (or other similar source as approved by the County.

Construction (temporary) BMPs for the proposed project shall include, but are not limited to: hydroseeding, straw mulch, velocity dissipation devices, silt fencing, fiber rolls, storm drain inlet protection, wind erosion control, and stabilized construction entrances.

**Mitigation Measure 14d** Prior to construction commencing, the applicant shall provide evidence to the County of a Waste Discharge Identification (WDID) number

generated from the State Regional Water Quality Control Board’s Stormwater Multiple Application & Reports Tracking System (SMARTS). This serves as the Regional Water Quality Control Board approval or permit under the National Pollutant Discharge Elimination System (NPDES) construction stormwater quality permit.

**Mitigation Measure 14e** The Improvement Plan(s) shall identify the stockpiling and/or vehicle staging areas with locations as far as practical from existing dwellings and protected resources in the area.

**Mitigation Measure 14f** The Improvement Plan submittal for each individual construction project within the PCGC Master Plan Update, shall include a final geotechnical engineering report produced by the project proponent’s qualified California Registered Civil or Geotechnical Engineer for County review and approval. The report shall address and make recommendations on the following: A) Road, pavement, and parking area design; B) Structural foundations, including retaining wall design (if applicable); C) Grading practices; D) Erosion/winterization; E) Special problems discovered on-site (i.e., groundwater, expansive/unstable soils, etc.); Slope stability. The investigation shall include collection and analysis of soil samples to identify the presence of any expansive soils or other soil instability. Where such instabilities are observed to be present, the geotechnical investigation shall provide site-specific recommendations for grading and site construction to ensure that adequate soil stability is provided post-construction.

## 14.5 REFERENCES CITED

- CDMG (California Division of Mines and Geology). 1978. “Seismicity of the Foothills Fault System Between Folsom and Oroville, California.” *California Geology*, August 1978. Accessed March 28, 2018. [http://www.conservation.ca.gov/cgs/geologic\\_hazards/earthquakes/pdfs/Documents/cg\\_aug1978.pdf](http://www.conservation.ca.gov/cgs/geologic_hazards/earthquakes/pdfs/Documents/cg_aug1978.pdf).
- CGS (California Geological Survey). 1981. *Geologic Map of the Sacramento Quadrangle, Regional Geologic Map No. 1A*, 1:250,000 scale. Accessed March 28, 2018. <http://www.quake.ca.gov/gmaps/rgm/sacramento/sacramento.html>.
- CGS. 2010. *Fault Activity Map of California*, Scale 1:750,000. Geologic Data Map No. 6.
- CGS. 2015. CGS Information Warehouse: Regulatory Maps. Accessed March 27, 2018. <http://maps.conservation.ca.gov/cgs/informationwarehouse/index.html?map=regulatorymaps>.

CGS. 2018. *Earthquake Fault Zones, A Guide for Government Agencies, Property Owners/Developers, and Geoscience Practitioners for Assessing Fault Rupture Hazards in California*. Special Publication 42, Revised 2018. Accessed March 27, 2018. [http://www.conservation.ca.gov/cgs/Documents/CGS\\_SP42\\_2018.pdf](http://www.conservation.ca.gov/cgs/Documents/CGS_SP42_2018.pdf).

County of Placer. 1999. Auburn/Bowman Community Plan. Approved 1994; updated 1999. Accessed July 2018. <https://www.placer.ca.gov/departments/communitydevelopment/planning/documentlibrary/commpans/auburn-bowman-cp>.

County of Placer. 2003. DeWitt Government Center Facility Plan EIR. Prepared for Placer County Department of Facility Services. Prepared by North Fork Associates. December 2003.

County of Placer. 2013a. Placer County General Plan, Section 1, Land Use. Updated May 2013. Accessed July 2018. <https://www.placer.ca.gov/departments/communitydevelopment/planning/documentlibrary/commpans/placer-county-gp>.

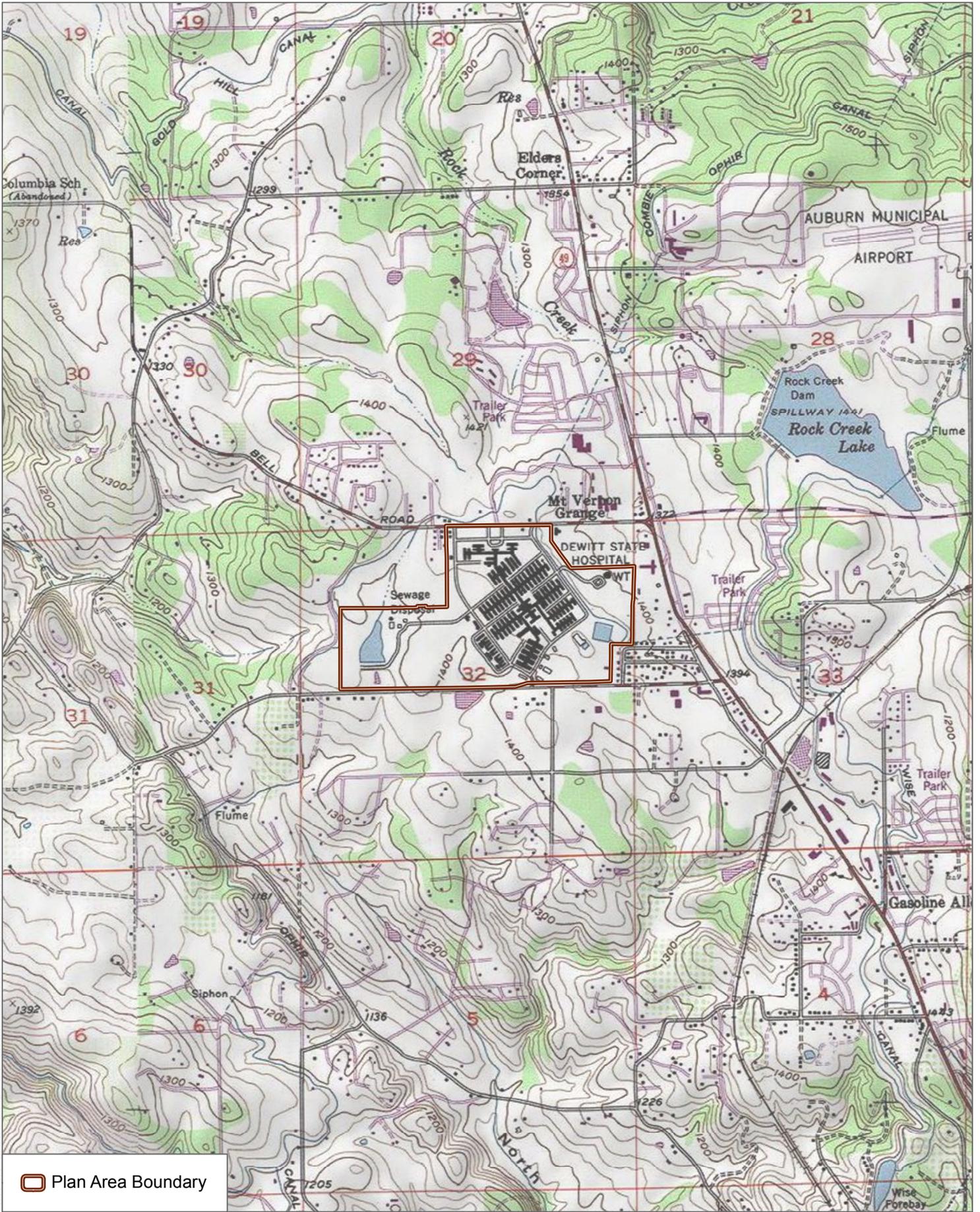
County of Placer. 2013b. Placer County General Plan, Section 5, Recreation and Cultural Resources. Updated May 2013. Accessed July 2018. <https://www.placer.ca.gov/departments/communitydevelopment/planning/documentlibrary/commpans/placer-county-gp>.

County of Placer. 2013c. Placer County General Plan, Section 8, Health and Safety. Updated May 2013. Accessed July 2018. <https://www.placer.ca.gov/departments/communitydevelopment/planning/documentlibrary/commpans/placer-county-gp>.

NFA (North Fork Associates)/URS. 2002. *Dewitt Center Existing Conditions Report*. Prepared for Placer County Department of Facility Services. September 2002.

USDA (United States Department of Agriculture) NRCS (Natural Resources Conservation Service). 2018. "Web Soil Survey." Accessed March 27, 2018. <https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>.

USGS (United States Geological Survey). 1996. Review of Seismic-Hazard Issues Associated with the Auburn Dam Project, Sierra Nevada Foothills, California. U.S. Geological Survey Open File Report 96-011. Accessed March 28, 2018. <https://pubs.usgs.gov/of/1996/of96-011/review.html>.

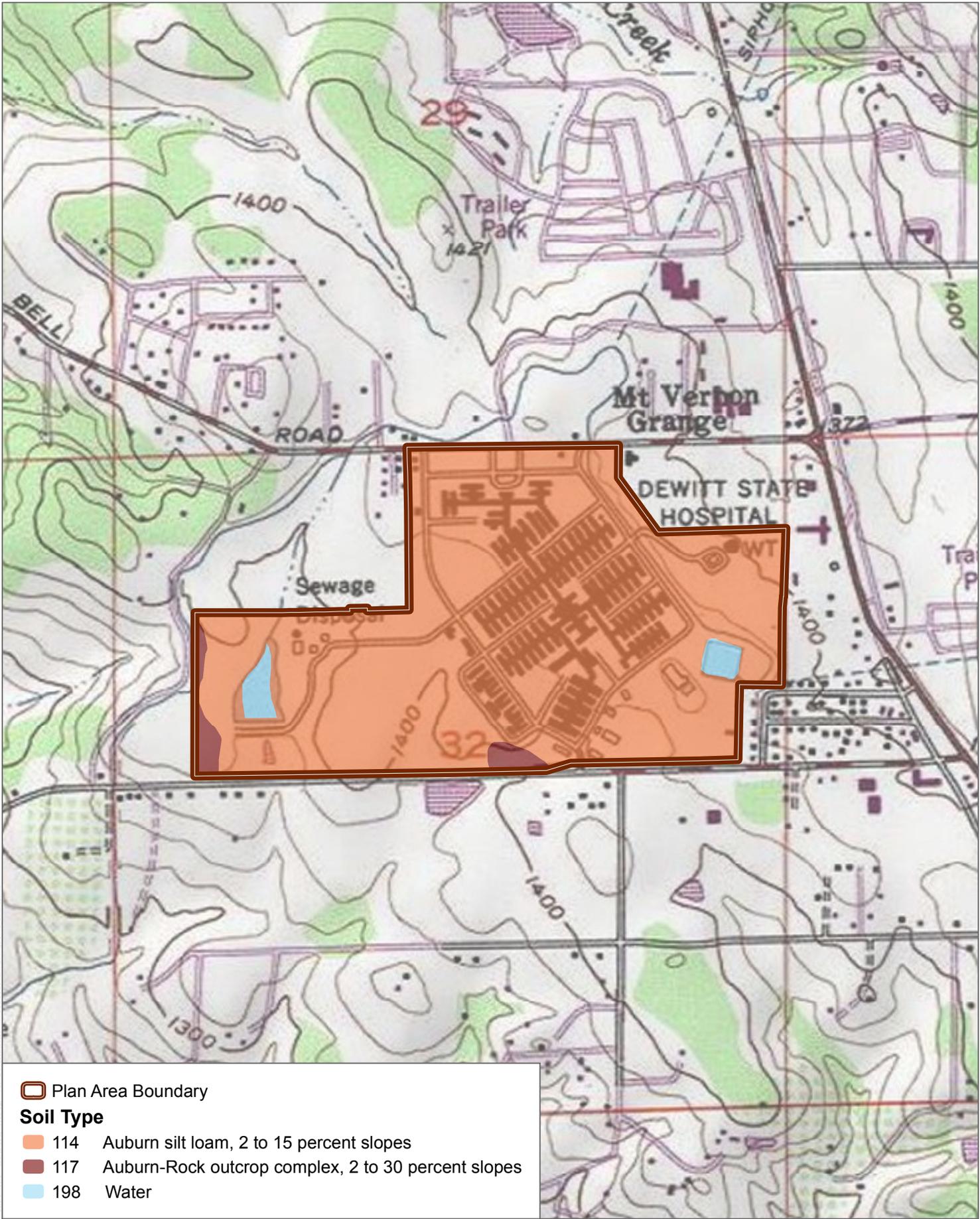


SOURCE: USGS 7.5 Minute Series Auburn Quadrangle

FIGURE 14-1

Site Topography

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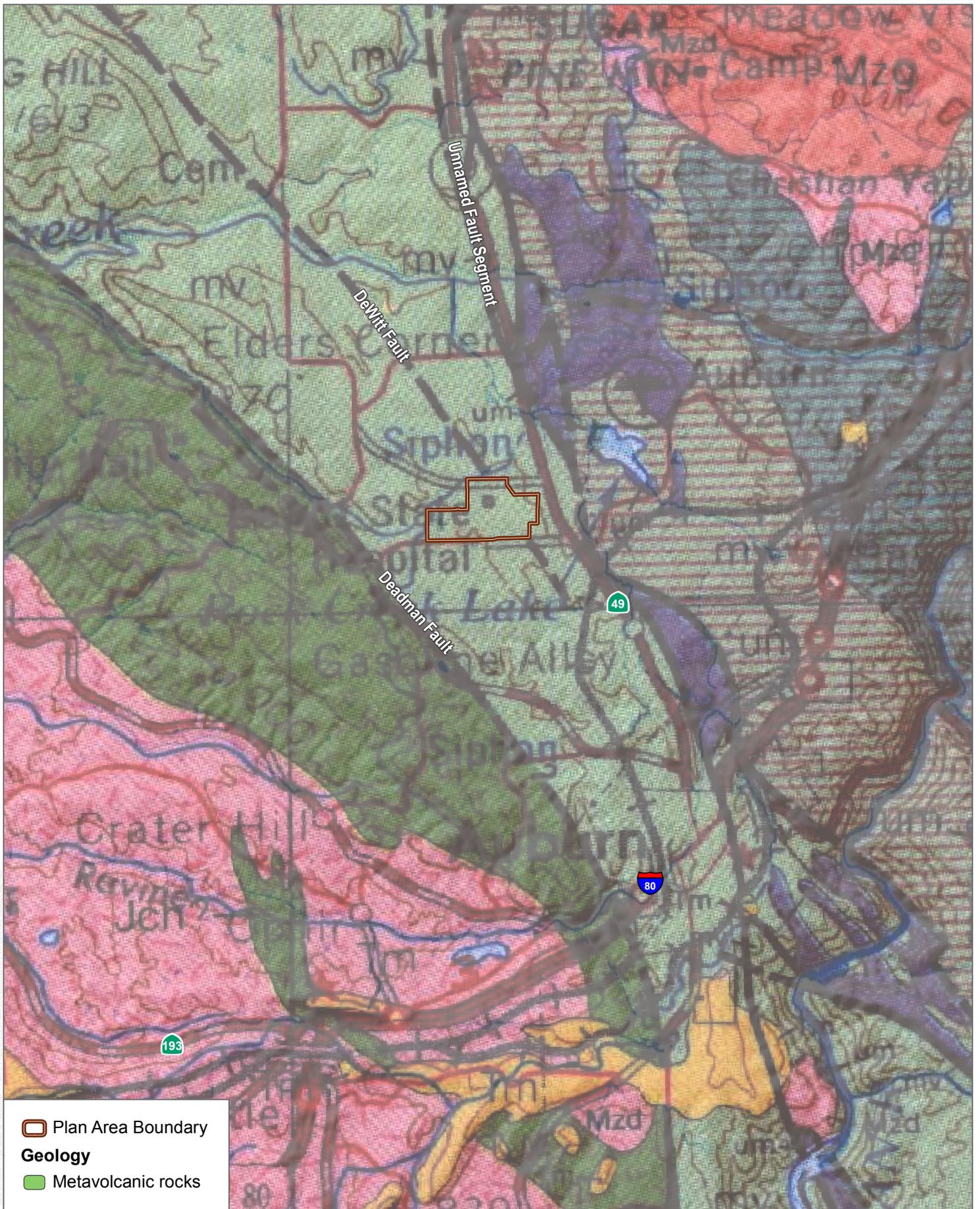


SOURCE: USGS 7.5 Minute Series Auburn Quadrangle; USDA NRCS 2018

FIGURE 14-2

Soils

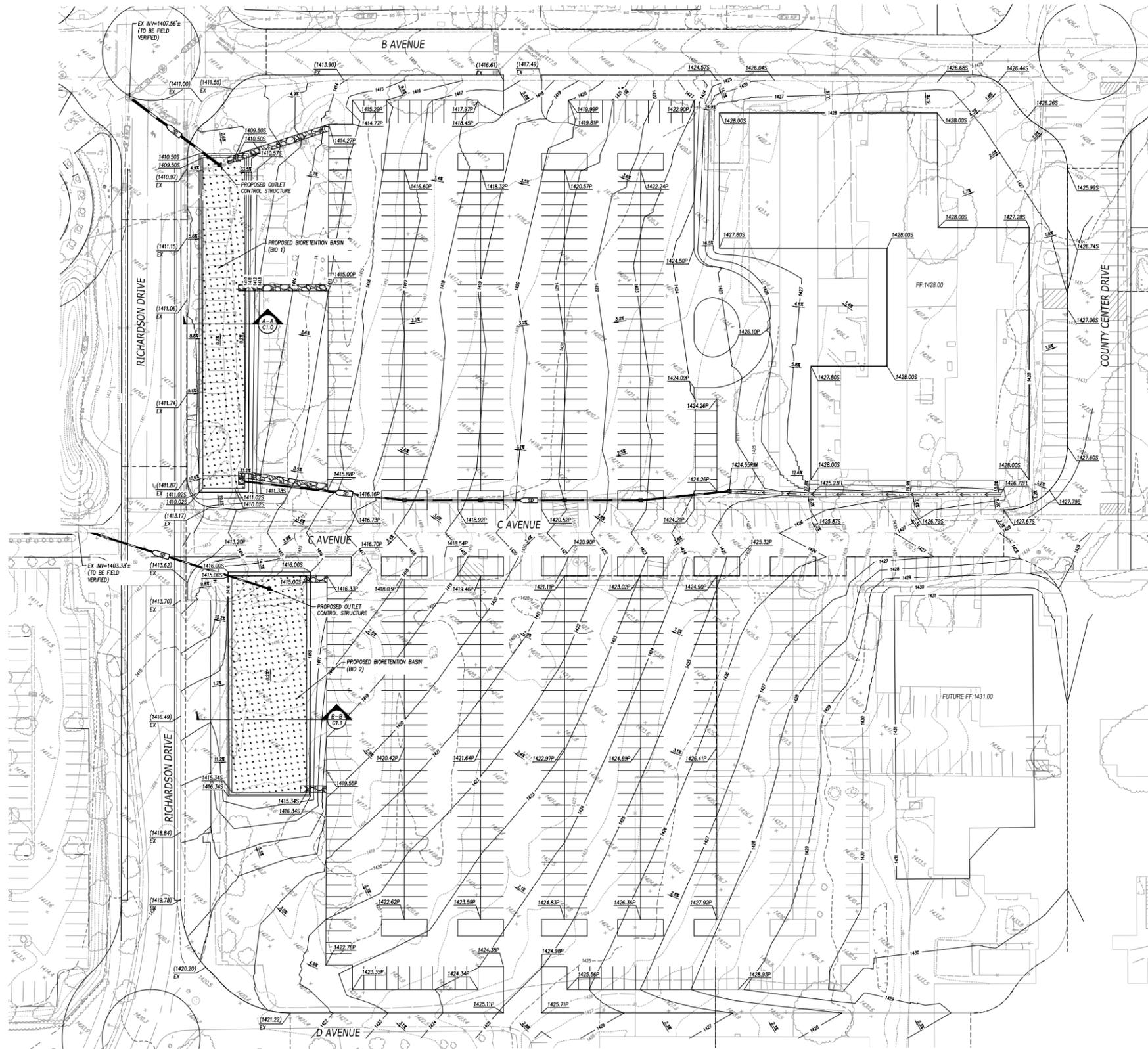
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SOURCE: Modified after CGS 1981 with CGS 2010; USGS 1996; NFA/URS 2002

**FIGURE 14-3**  
Geology

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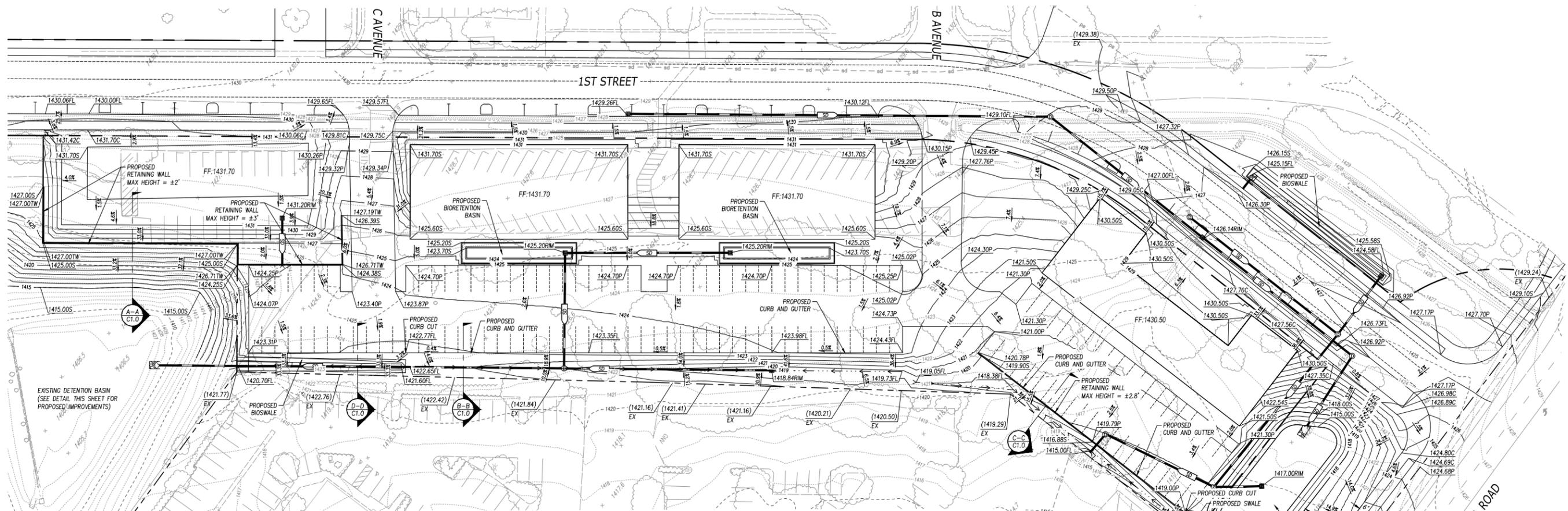


SOURCE: Cartwright Engineers 2018

FIGURE 14-4

Health and Human Services Building Grading Plan  
 Placer County Government Center Master Plan Update

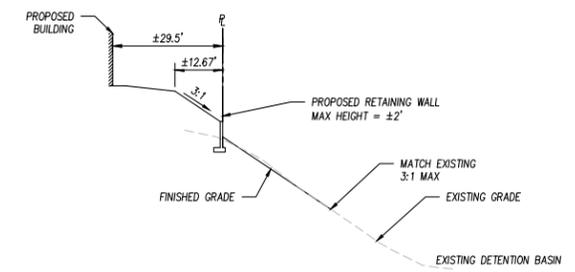
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**GRADING LEGEND:**

- XXXXP PAVEMENT ELEVATION
- XXXXTC TOP OF CURB ELEVATION
- XXXXFL FLOWLINE ELEVATION
- XXXXC CONCRETE ELEVATION
- XXXXS GROUND SPOT ELEVATION
- XXXXRIM RIM ELEVATION
- XXXXGB GRADE BREAK
- XXXXHP HIGH POINT
- XXXXEX EXISTING GRADE
- 251--- PROPOSED 1.0' CONTOUR LINE
- 250--- PROPOSED 5.0' CONTOUR LINE
- 251--- EXISTING 1.0' CONTOUR LINE
- 250--- EXISTING 5.0' CONTOUR LINE
- SD PROPOSED STORM DRAIN LINE
- PROPOSED STORM DRAIN INLET

\* TOP OF CURB (TC) ELEVATION = 0.5' + PAVEMENT (P) AND/OR CONCRETE (C) ELEVATIONS, UNLESS OTHERWISE NOTED.



A-A SECTION A-A  
C1.0 NOT TO SCALE

ARCHITECT: WILLIAMS + PADDON  
CIVIL ENGINEER: CARTWRIGHT ENGINEERS - ROB HEDRICK

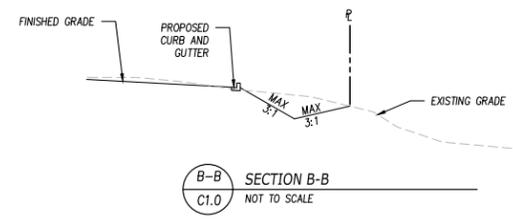
**PRELIMINARY ENGINEERS OPINION OF EARTHWORK**

	CUT (CY)	FILL (CY)	NET (CY)
RAW GRADING	4,333±	7,754±	3,421± (FILL)
SUBGRADE ADJUSTMENTS	3,607±	-	3,607± (CUT)
TOTAL	7,940±	7,754±	186± (CUT/EXPORT)

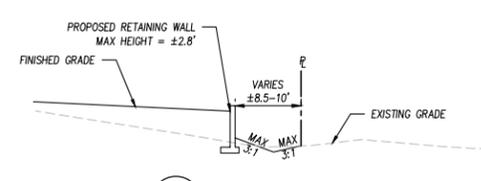
NOTE: ENGINEERS ESTIMATE OF EARTHWORK ARE RAW VOLUMES AND IS BASED ON THE SURFACE AT THE TIME OF THE SURVEY. IT INCLUDES ESTIMATED EXCAVATION FOR NEW PAVEMENT FOR THE PARKING LOT (ASSUMED 11" SECTION), BUILDING PAD (ASSUMED 8" SECTION), AND BIORETENTION AREA (30" SECTION). THE ESTIMATE DOES NOT INCLUDE STREET SECTIONS, TRENCH SPOLS OR SHRINK OR SWELL FACTORS. IT SHALL BE THE RESPONSIBILITY OF THE EARTHWORK CONTRACTOR TO VERIFY ALL EARTHWORK QUANTITIES PRIOR TO BID.

**RETAINING WALL NOTES:**

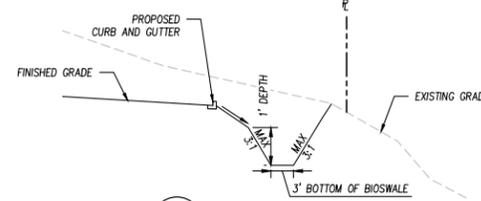
- TOTAL PROPOSED RETAINING WALL LENGTH = 475 LF
- TOTAL PROPOSED RETAINING WALL HEIGHT VARIES FROM ±1' - 3'



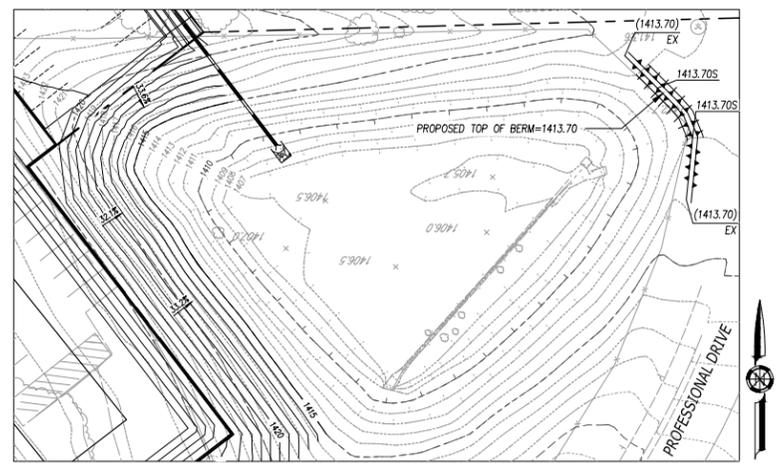
B-B SECTION B-B  
C1.0 NOT TO SCALE



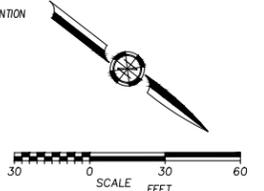
C-C SECTION C-C  
C1.0 NOT TO SCALE



D-D SECTION D-D  
C1.0 NOT TO SCALE



EXISTING DETENTION BASIN  
BASIN 5D (PER MASTER DRAINAGE REPORT)  
INTERIM IMPROVEMENTS



INTENTIONALLY LEFT BLANK