

3.6 GEOLOGY AND SOILS

This section describes applicable regulations and existing environmental conditions relative to geology, soils, and paleontological resources at the Project site. It also includes an analysis of environmental impacts on these resources that would result from implementation of the Project and identifies recommended mitigation measures for any significant or potentially significant impacts. The primary sources of information used for this analysis include Annex B of the Sacramento County Multi-Jurisdictional Local Hazard Mitigation Plan Update (Sacramento County 2021), the City of Elk Grove General Plan (City of Elk Grove 2022), General Plan Update EIR (City of Elk Grove 2018), the Geotechnical Investigation (Geocon Consultants, Inc. 2023), and Phase I Environmental Site Assessment and Limited Phase II Environmental Site Assessment Report (Geocon Consultants, Inc. 2022) prepared for the Project site. No comments related to geology, soils, mineral resources, and paleontological resources were received during the public scoping period for the Project.

3.6.1 Regulatory Setting

FEDERAL

National Earthquake Hazards Reduction Act

In October 1977, the U.S. Congress passed the Earthquake Hazards Reduction Act (42 United States Code Sections 7701–7706) to reduce the risks to life and property from future earthquakes in the United States. To accomplish this reduction in risk, the act established the National Earthquake Hazards Reduction Program (NEHRP). The mission of the NEHRP includes improved understanding, characterization, and prediction of hazards and vulnerabilities; improved building codes and land use practices; risk reduction through post-earthquake investigations and education; development and improvement of design and construction techniques; improved mitigation capacity; and accelerated application of research results. The NEHRP designates the Federal Emergency Management Agency as the lead agency of the program and assigns several planning, coordinating, and reporting responsibilities.

STATE

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act of 1972 (Public Resources Code [PRC] Section 2621-2630) intends to reduce the risk to life and property from surface fault rupture during earthquakes by regulating construction in active fault corridors, and by prohibiting the location of most types of structures intended for human occupancy across the traces of active faults. The act defines criteria for identifying active faults, giving legal support to terms such as active and inactive, and establishes a process for reviewing building proposals in Earthquake Fault Zones. Under the Alquist-Priolo Act, faults are zoned and construction along or across these zones is strictly regulated if they are “sufficiently active” and “well-defined.” A fault is considered sufficiently active if one or more of its segments or strands shows evidence of surface displacement during Holocene time (defined for purposes of the act as within the last 11,000 years). A fault is considered well defined if its trace can be clearly identified by a trained geologist at the ground surface or in the shallow subsurface, using standard professional techniques, criteria, and judgment (Bryant and Hart 2007). Before a project can be permitted in a designated Alquist-Priolo Earthquake Fault Zone, cities and counties must require a geologic investigation to demonstrate that proposed buildings would not be constructed across active faults. The law addresses only the hazard of surface fault rupture and is not directed toward other earthquake hazards.

Seismic Hazards Mapping Act

The intention of the Seismic Hazards Mapping Act of 1990 (PRC Section 2690–2699.6) is to reduce damage resulting from earthquakes. While the Alquist-Priolo Act addresses surface fault rupture, the Seismic Hazards Mapping Act

addresses other earthquake-related hazards, including ground shaking, liquefaction, and seismically induced landslides. The act's provisions are similar in concept to those of the Alquist-Priolo Act: The State is charged with identifying and mapping areas at risk of strong ground shaking, liquefaction, landslides, and other corollary hazards, and cities and counties are required to regulate development within mapped Seismic Hazard Zones. Under the Seismic Hazards Mapping Act, permit review is the primary mechanism for local regulation of development.

California Building Code

The California Building Code (CBC) (California Code of Regulations, Title 24) is based on the International Building Code. The CBC has been modified from the International Building Code for California conditions, with more detailed and/or more stringent regulations. Specific minimum seismic safety and structural design requirements are set forth in Chapter 16 of the CBC. The CBC identifies seismic factors that must be considered in structural design. Chapter 18 of the CBC regulates the excavation of foundations and retaining walls, while Chapter 18A regulates construction on unstable soils, such as expansive soils and areas subject to liquefaction. Appendix J of the CBC regulates grading activities, including drainage and erosion control. The CBC contains a provision that provides for a preliminary soil report to be prepared to identify "...the presence of critically expansive soils or other soil problems which, if not corrected, would lead to structural defects." (CBC Chapter 18 Section 1803.1.1.1).

National Pollutant Discharge Elimination System Permit Program

As a result of the 1972 Federal Water Pollution Control Act, subsequently known as the Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) permit program was established for the purpose of reducing point sources of water pollution, which include eroded sediment from construction sites and disturbed areas. NPDES permits are required for any discharges of pollutants to navigable waters of the United States, including any discharge to surface waters and lakes, rivers, streams, bays, the ocean, dry stream beds, wetlands, and storm sewers that are tributary to any surface water body. The NPDES permit program in California is administered by the State Water Resources Control Board and by the nine Regional Water Quality Control Boards (RWQCBs) that issue NPDES permits and enforce regulations within their respective regions. The following discussion includes a summary of NPDES permits applicable to the Project, as they relate to geology and soils. Section 3.9, "Hydrology and Water Quality," provides additional discussion of the NPDES permit program as it relates to water quality.

NPDES Construction General Permit

Dischargers whose projects disturb one or more acres of soil or whose projects disturb less than one acre but are part of a larger common plan of development that in total disturb one or more acres, are required to obtain coverage under the NPDES General Permit for Discharges of Storm Water Associated with Construction Activity Construction General Permit Order 2009-0009-DWQ (Construction General Permit). Construction activity subject to the Construction General Permit includes clearing, grading, and disturbances to the ground such as stockpiling, or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility.

The Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP), which outlines controls designed to prevent harmful pollutants (including soil erosion) from being washed by stormwater runoff into local water bodies. For projects in the City, the SWPPP must be submitted to the Central Valley RWQCB. Examples of erosion control measures implemented at construction sites include covering disturbed areas with mulch, temporary seeding, soil stabilizers, binders, fiber rolls or blankets, temporary vegetation, and permanent seeding. Sediment control best management practices (BMPs) are a secondary means of preventing storm water contamination and include installing silt fences or placing straw wattles below slopes. All measures must be periodically inspected, maintained, and repaired to ensure that receiving water quality is protected.

NPDES Municipal Separate Storm Sewer Systems Permit and Sacramento Stormwater Quality Partnership New Development Program

In 2008, the Central Valley RWQCB reissued a NPDES Municipal Separate Storm Sewer Systems Permit (MS4 Permit) for members of the Sacramento Stormwater Quality Partnership (SSQP), which consists of the cities of Citrus Heights, Elk Grove, Folsom, Galt, Rancho Cordova, Sacramento, and the County of Sacramento (Order No. R5-2008-0142,

NPDES Permit No. CA082597). The MS4 Permit specifies requirements necessary for the permittees to reduce the discharge of pollutants in urban runoff to the maximum extent practicable and to minimize the potential for runoff from new development to contribute to downstream erosion, excessive sediment discharge, and deposition in stream channels.

To maintain compliance with the MS4 Permit, the SSQP established a New Development Program, which addresses post-construction stormwater quantity and quality from new development and re-development projects. The goal of the program is to protect local creeks and rivers by reducing the discharge of pollutants found in stormwater resulting from new developments to the maximum extent practicable and by mitigating increased flows that can cause erosion and degrade habitat. Projects subject to the New Development Program are required to comply with source control, hydromodification control, treatment control, and low impact development (LID) design standards included in the Sacramento Region Stormwater Quality Design Manual (SSQP 2021) and the SSQP Hydromodification Management Plan (SSQP 2017). Implementation of such design standards are intended, in part, to prevent any increases in peak flow and runoff duration from new development in a manner that artificially accelerates erosion and sedimentation within receiving waters.

State Laws Pertaining to Paleontological Resources

Section 5097.5 of the California Public Resources Code prohibits “knowing and willful” excavation, removal, destruction, injury, and defacement of any “vertebrate paleontological site, including fossilized footprints,” on public lands, except where the agency with jurisdiction has granted express permission. As used in this section, “public lands” means lands owned by, or under the jurisdiction of, the State, or any city, county, district, authority, or public corporation, or any agency thereof.

LOCAL

Sacramento Metropolitan Air Quality Management District Rules and Regulations

As discussed in Section 3.2, “Air Quality,” the Sacramento Metropolitan Air Quality Management District (SMAQMD) has adopted rules and regulations regarding dust control. Although these rules and regulations were adopted for the purpose of reducing air pollutant emissions in the form of fugitive dust, these rules and regulations have the added benefit of stabilizing soils at construction sites in a manner that reduces the potential for wind erosion and sedimentation. The following discussion includes a summary of SMAQMD rules applicable to the Project, as they relate to geology and soils. Section 3.2, “Air Quality,” provides additional discussion of these rules as they relate to air pollution. The following rules and regulations are applicable to the Project:

- ▶ Rule 403: Fugitive Dust. The purpose of this rule is to regulate operations that result in fugitive dust emissions into the atmosphere. Standard 301.1 requires the use of water or chemicals to control dust during construction, excavation, and grading. Standard 301.2 requires the application of asphalt, oil, water, or suitable chemicals on dirt roads, materials stockpiles, and other surfaces that can give rise to airborne dusts.
- ▶ Rule 405: Dust and Condensed Fumes. The purpose of this rule is to limit the discharge of dust and condensed fumes into the atmosphere by establishing emission rates based on process weight. This rule applies to dust-generating activities, which include shoveling, conveying, covering, bagging, and sweeping.

City of Elk Grove General Plan

The Services, Health, and Safety Element of the City of Elk Grove General Plan identifies natural safety hazards, including geologic and seismic hazards, that exist within the City’s planning area and establishes goals and policies to minimize potential risks associated with these hazards (City of Elk Grove 2018). The following policies are applicable to the Project:

- ▶ **Policy ER-3-2:** Support efforts by federal, State, and other local jurisdictions to investigate local seismic and geological hazards and support those programs that effectively mitigate these hazards.
- ▶ **Policy ER-3-2:** Seek to ensure that new structures are protected from damage caused by geologic and/or soil conditions.

City of Elk Grove Municipal Code

As set forth in Section 16.04.010 of the Elk Grove Municipal Code, the City has adopted the most recent edition of the California Building Code (CCR Title 24). The building code regulates the erection, construction, enlargement, alteration, repair, moving, removal, demolition, conversion, occupancy, equipment, wiring, plumbing, use, height, area and maintenance of all buildings and structures within the City.

Chapter 16.44, Land Grading and Erosion Control, of the Elk Grove Municipal Code was enacted for the purpose of minimizing damage to surrounding properties and public rights-of-way, degradation of the water quality of watercourses, and the disruption of natural or City-authorized drainage flows caused by the activities of clearing and grubbing; grading; filling and excavating of land; sediment and pollutant runoff from other construction-related activities; and to comply with the provisions of the City's NPDES Permit Number CA0082597. Chapter 16.44 establishes procedures and standards for controlling erosion, sedimentation, and other pollutant runoff. Section 16.44.050 requires that a grading and erosion control permit be obtained for activities that involve: (1) grading, filling, excavating, storing, or disposing 350 cubic yards or more of soil or earthy material, or (2) clearing and grubbing 1 acre or greater of land within the City. The intent of the Chapter is to minimize damage to surrounding properties and public rights-of-way, minimize degradation of water quality in watercourses, minimize disruption of natural or City-authorized drainage flows caused by construction activities, and make projects comply with the provisions of the City's NPDES Permit Number CA0082597, issued by the RWQCB. The City of Elk Grove is a co-permittee on an NPDES permit, along with Sacramento County and the Cities of Sacramento, Folsom, Galt, and Citrus Heights.

3.6.2 Environmental Setting

GEOLOGIC CONDITIONS

The Project site is within the southern portion of the Sacramento Valley, which is in the northern portion of the Great Valley geomorphic province of California. The Sacramento Valley is a broad depression bounded by the Sierra Nevada and Cascade mountain ranges to the east, the Coast Ranges to the west, and the Sacramento-San Joaquin delta to the south. The valley has been filled with a thick sequence of sediments of marine and continental origins derived from weathering of the adjacent mountain ranges resulting in a stratigraphic section of Cretaceous, Tertiary, and Quaternary deposits. The Project site is underlain by the middle member of the mid-Pleistocene Riverbank Formation, an older alluvium described as semi-consolidated, discontinuous, interbedded layers of clay, silt, sand, and gravel deposited by rivers and streams emanating from the Sierra Nevada (Geocon Consultants, Inc. 2023). No unique geologic features occur on the Project site, which consists of a fallow field that is used as rangeland for cattle.

TOPOGRAPHY AND DRAINAGE

The United States Geological Survey's Bruceville and Florin, California 7.5-minute topographic maps depict the topography of the Project site and vicinity as relatively flat-lying. The Project site is depicted at an elevation of 40 feet above mean sea level (MSL) and elevations in the vicinity of the Project site range from 30 to 40 feet above MSL (Geocon Consultants, Inc. 2022).

An on-site irrigation ditch traverses along the northern and western boundaries of the Project site. An irrigation canal, named the Shed C Channel, is located outside the northern boundary of the Project site and runs parallel to the on-site irrigation canal. A stormwater catchment basin is located east of the Project site across Lotz Parkway (Geocon Consultants, Inc. 2022).

SOILS

The Web Soil Survey, developed by the Natural Resources Conservation Service of the United States Department of Agriculture, indicates that surficial soil on and in the vicinity of the Project site is classified primarily as San Joaquin silt loam. The southern-most portion of the Project site along Kammerer Road and a small area along the eastern

boundary of the Project site is underlain with San Joaquin-Galt complex. The northern-most portion of the Project site is underlain with Galt clay (Geocon Consultants, Inc. 2023). The San Joaquin and Galt soil series consist of moderately deep and well-drained soils that formed in alluvium derived from granite and contain a relatively high percentage of clay minerals (NRCS 1999; NRCS 1997).

Geocon Consultants, Inc. performed exploratory soil borings to a maximum depth of 31.5 feet as part of the Geotechnical Investigation. The results of the investigation indicate that the upper approximately 18 inches of soil throughout the Project site has been tilled and disturbed by past agricultural activities. Alluvium was encountered beneath the tilled soil, consisting of layers of stiff to hard lean clay with varying concentrations of sand, silty clay, and dense to very dense clayey sand, silty sand, and poorly graded sand (Geocon Consultants, Inc. 2023).

GROUNDWATER

Data from the California Department of Water Resources indicates that the depth to groundwater at the Project site ranges from approximately 50 to 60 feet. Geocon Consultants, Inc. did not encounter groundwater in the exploratory borings or test pits performed to a maximum depth explored of 31.5 feet. Fluctuations in the level of groundwater may occur due to variations in rainfall, temperature, and other factors. Depth to groundwater can also vary due to localized pumping, irrigation practices, and seasonal fluctuations. Additionally, perched groundwater may develop seasonally over hardpan. Therefore, it is possible that groundwater may be higher or lower than the levels observed during the investigation (Geocon Consultants, Inc. 2023).

GEOLOGIC HAZARDS

Annex B of the Sacramento County Multi-Jurisdictional Local Hazard Mitigation Plan Update contains a hazard identification assessment for Elk Grove (Sacramento County 2021). The assessment identifies the geographic extent, likelihood of future occurrence, and potential magnitude/severity of various natural and human-caused hazards specific to the City's geographic area. Table 3.6-1 provides a summary of the geology and soils hazards in the City.

Table 3.6-1 City of Elk Grove Hazard Identification Assessment

Hazard	Geographic Extent	Likelihood of Future Occurrences	Magnitude/Severity
Earthquake	Significant	Occasional	Limited
Earthquake Liquefaction	Limited	Unlikely	Negligible
Landslides, Mudslides, and Debris Flow	Limited	Unlikely	Negligible
Subsidence	Limited	Unlikely	Negligible

Geographic Extent

Limited: Less than 10% of City's planning area

Significant: 10-50% of City's planning area

Extensive: 50-100% of City's planning area

Likelihood of Future Occurrences

Highly Likely: Near 100% chance of occurrence in next year, or happens every year.

Likely: Between 10 and 100% chance of occurrence in next year, or has a recurrence interval of 10 years or less.

Occasional: Between 1 and 10% chance of occurrence in the next year, or has a recurrence interval of 11 to 100 years.

Unlikely: Less than 1% chance of occurrence in next 100 years, or has a recurrence interval of greater than every 100 years.

Magnitude/Severity

Catastrophic: More than 50% of property severely damaged; shutdown of facilities for more than 30 days; and/or multiple deaths Critical: 25-50% of property severely damaged; shutdown of facilities for at least two weeks; and/or injuries and/or illnesses result in permanent disability

Limited: 10-25% of property severely damaged; shutdown of facilities for more than a week; and/or injuries/illnesses treatable do not result in permanent disability

Negligible: Less than 10 percent of property severely damaged, shutdown of facilities and services for less than 24 hours; and/or injuries/illnesses treatable with first aid

Source: Sacramento County 2021; Table B-6.

Subsidence

Land subsidence is the gradual settling or sinking of an area with very little horizontal motion. Subsidence can be induced by both natural and human phenomena. Natural phenomena include shifting of tectonic plates and dissolution of limestone resulting in sinkholes. Subsidence related to human activity includes pumping water, oil, and gas from underground reservoirs; collapse of underground mines; drainage of wetlands; and soil compaction.

Groundwater pumping is the primary potential cause of subsidence within the City (City of Elk Grove 2018). As indicated in Table 3.6-2, less than 10 percent of the City's geographic area is susceptible to subsidence and there is less than a 1 percent chance that subsidence would occur in the City in the next 100 years. The magnitude/severity of damage to properties from subsidence within the City is considered negligible (Sacramento County 2021). Therefore, subsidence is not anticipated to be a concern at the Project site.

Expansive Soils

Expansive soils (also known as shrink-swell soils) are soils that contain expansive clay minerals that can absorb significant amounts of water. The presence of these clay minerals makes the soil prone to large changes in volume in response to changes in water content. When an expansive soil becomes wet, water is absorbed and it increases in volume, and as the soil dries it contracts and decreases in volume. This repeated change in volume over time can produce enough force and stress on buildings, underground utilities, and other structures to damage foundations, pipes, and walls. The San Joaquin soil group, which is the main soil series underlying the Project site, has a high shrink-swell potential because this soil group generally contains a high percentage of claypan (City of Elk Grove 2018). The Geotechnical Investigation found that Project site soils have low to moderate plasticity and low to moderate expansion potential when subjected to moisture variations (Geocon Consultants, Inc. 2023). Therefore, expansive soils are a potential concern at the Project site.

Mass Wasting and Landslides

"Mass wasting" refers to the collective group of processes that characterize down slope movement of rock and unconsolidated sediment overlying bedrock. These processes include landslides, slumps, rockfalls, flows, and creeps. Many factors contribute to the potential for mass wasting, including geologic conditions as well as the drainage, slope, and vegetation of the site.

As indicated in Table 3.6-2, less than 10 percent of the City's geographic area is susceptible to landslides and there is less than a 1 percent chance that landslides would occur in the City in the next 100 years. The magnitude/severity of damage to properties from landslides within the City is considered negligible (Sacramento County 2021). The topography of the Project site and vicinity is relatively flat with no major slopes. Therefore, mass wasting and landslides are not anticipated to be a concern at the Project site.

Seismicity

Most earthquakes originate along fault lines. A fault is a fracture in the Earth's crust along which rocks on one side are displaced relative to those on the other side due to shear and compressive crustal stresses. Most faults are the result of repeated displacement that have taken place suddenly or by slow creep (Bryant and Hart 2007). The State of California has a classification system that designates faults as either active, potentially active, or inactive, depending on how recently displacement has occurred along them. Faults that show evidence of movement within the last 11,000 years (the Holocene geologic period) are considered active, and faults that have moved between 11,000 and 1.6 million years ago (comprising the later Pleistocene geologic period) are considered potentially active.

No known active faults have been identified in or adjacent to the City. The nearest faults with activity within the last 200 years are the Green Valley and Concord faults, located approximately 45 miles southwest of the Project site (CGS 2010). Seismic activity has occurred in the City originating from faults in other areas, including the San Francisco Bay and Sierra Nevada. As indicated in Table 3.6-2, up to 100 percent of the City's geographic area is susceptible to earthquakes and earthquakes are expected to occur occasionally throughout the City in the next 100 years. The magnitude/severity of damage to properties from earthquakes within the City is considered negligible because the City is located in an area where few earthquakes of substantial magnitude have historically occurred (Sacramento

County 2021). No occurrences of seismic-related ground failure have been reported in the Sacramento region due to earthquakes (Geocon Consultants, Inc. 2023).

Seismic hazards resulting from earthquakes include surface fault rupture, ground shaking, liquefaction, and lateral spreading. Each of these potential hazards is discussed below.

Surface Fault Rupture

Surface rupture is the surface expression of movement along a fault. Structures built over an active fault can be torn apart if the ground ruptures. The potential for surface rupture is based on the concepts of recency and recurrence. Surface rupture along faults is generally limited to a linear zone a few meters wide. The Alquist-Priolo Act (see the Regulatory Setting discussion, above) was created to prohibit the location of structures designed for human occupancy across, or within 50 feet of, an active fault, thereby reducing the loss of life and property from an earthquake. The Project site is not located within an Alquist-Priolo active fault zone. The nearest Alquist-Priolo active fault zones include the Cordelia and Green Valley fault zones, located over 40 miles west of the Project site (CGS 2021). Therefore, surface fault rupture is not anticipated to be a concern at the Project site.

Ground Shaking

The intensity of seismic shaking, or strong ground motion, during an earthquake is dependent on the distance and direction from the epicenter of the earthquake, the magnitude of the earthquake, and the geologic conditions of the surrounding area. Ground shaking has the potential to result in the damage or collapse of buildings and other structures.

Most of Sacramento County, including Elk Grove, experiences seismic ground shaking of relatively low intensity. While Sacramento County has historically experienced relatively little seismic activity, fault activity in neighboring regions, especially the San Francisco Bay and Sierra Nevada areas, suggests that the Project site would be affected by future ground motion originating elsewhere. The Project site is located on alluvial deposits, which tend to experience greater ground shaking intensities than areas located on hard rock (City of Elk Grove 2018). Therefore, there is the potential to experience ground shaking on the Project site. There are no reported occurrences of seismic-related ground failure in the Sacramento region due to earthquakes (Geocon Consultants, Inc. 2023).

Liquefaction and Lateral Spreading

Liquefaction is a phenomenon in which loose, saturated, granular soil deposits lose a significant portion of their shear strength because of excess pore water pressure buildup. An earthquake typically causes an increase in pore water pressure and subsequent liquefaction. These soils behave like a liquid during seismic shaking and re-solidify when shaking stops. The potential for liquefaction is highest in areas with high groundwater and loose, fine, sandy soils at depths of less than 50 feet.

In Sacramento County, the Sacramento-San Joaquin Delta and downtown Sacramento are the two areas most susceptible to liquefaction in the event of an earthquake (City of Elk Grove 2018). The potential for liquefaction to occur in the City is low because of the relatively dense and stiff soils, depth to groundwater, and anticipated low intensity ground-shaking in the event of an earthquake (City of Elk Grove 2022). As indicated in Table 3.6-2, less than 10 percent of the City's geographic area is susceptible to liquefaction and there is less than a 1 percent chance that liquefaction would occur in the City in the next 100 years. The magnitude/severity of damage to properties from liquefaction within the City is considered negligible (Sacramento County 2021). Based on the subsurface conditions encountered during the Geotechnical Investigation, and the anticipated seismic and groundwater conditions, liquefaction potential is expected to be low at the Project site during seismic events (Geocon Consultants, Inc. 2023).

Liquefaction has potential to result in lateral spreading. Lateral spreading (also known as expansion) is the horizontal movement or spreading of soil toward an "open face," such as a streambank, the open side of fill embankments, or the sides of levees. It often occurs in response to liquefaction of soils in an adjacent area. The potential for failure from lateral spreading is highest in areas where there is a high groundwater table, where there are relatively soft and recent alluvial deposits, and where creek banks are relatively high. Because of the low potential for liquefaction to occur at the Project site, the potential for lateral spreading to occur is also low.

PALEONTOLOGICAL RESOURCES

The value or importance of different fossil groups varies depending on the age and depositional environment of the rock unit that contains the fossils, their rarity, the extent to which they have already been identified and documented, and the ability to recover similar materials under more controlled conditions (such as for a research project). Marine invertebrates are generally common; the fossil record of marine invertebrates is well developed and well documented, and generally they are typically not considered a unique paleontological resource. Identified vertebrate marine and terrestrial fossils are generally considered scientifically important because they are relatively rare. Only qualified paleontologists with specific expertise in the type of fossils being evaluated can determine the scientific significance of paleontological resources.

As discussed in the "Geologic Conditions" section above, the Project site is underlain by the Riverbank formation. The Riverbank formation is known to produce vertebrate fossils dating to the late Pleistocene west of Elk Grove Florin Road in the City. The fossils recovered to date from the Riverbank Formation are typically large, late Pleistocene vertebrates, although fish, frogs, snakes, turtles, and a few plants (prune, sycamore, and willow) are known as well. The typically large, Rancholabrean vertebrates include bison, horse, camel, mammoth, ground sloth, and wolf. These types of fossils suggest a wet grassland environment interspersed with rivers, streams, ponds, and bogs. The Rancholabrean fauna and flora are well known in California, and they typically include many more species than reported from Sacramento County. As a result, Riverbank formation has a high sensitivity rating for paleontological resources (City of Elk Grove 2018).

3.6.3 Environmental Impacts and Mitigation Measures

METHODOLOGY

The examination of geology, soils, and mineral resources is based on information obtained from reviews of:

- ▶ the Project description;
- ▶ available literature, including documents published by federal, State, and local agencies, and published information dealing with geotechnical conditions on the Project site and in the vicinity;
- ▶ Annex B of the Sacramento County Multi-Jurisdictional Local Hazard Mitigation Plan Update (Sacramento County 2021);
- ▶ applicable elements from the City of Elk Grove General Plan (City of Elk Grove 2022) and General Plan Update EIR (City of Elk Grove 2018);
- ▶ the Geotechnical Investigation prepared for the Project site (Geocon Consultants, Inc. 2023); and
- ▶ the Phase I Environmental Site Assessment and Limited Phase II Environmental Site Assessment Report for the Project site (Geocon Consultants, Inc. 2022).

THRESHOLDS OF SIGNIFICANCE

An impact related to geology and soils would be significant if implementation of the Project would:

- ▶ directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving the rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, including liquefaction, or landslides;
- ▶ result in substantial soil erosion or the loss of topsoil;
- ▶ 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;

- ▶ be located on expansive soil, creating substantial direct or indirect risks to life or property;
- ▶ 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; or
- ▶ directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

IMPACTS NOT DISCUSSED FURTHER

Septic Tanks and Alternative Waste Water Disposal Systems

The Project would not involve the installation of septic tanks or alternative wastewater systems. As described in Chapter 2, "Project Description," wastewater service would be provided to the Project by the Sacramento Area Sewer District. Flows from the Project site would be directed to the Southeast Policy Area Sewer Lift Station, located on Bilby Road just east of Bruceville Road. Therefore, implementation of the Project would not have any significant impacts related to soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems. This issue is not discussed further in this Draft EIR.

Landslides

As discussed in Section 3.6.2, "Environmental Setting," landslides are not an existing concern at the Project site because of its relatively flat topography and lack of major slopes. Therefore, implementation of the Project would not expose people or structures to substantial adverse impacts from landslides. This issue is not discussed further in this Draft EIR.

ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Impact 3.6-1: Directly or Indirectly Cause Adverse Effects Related to Strong Seismic Shaking

The Project site is not susceptible to surface fault rupture, and seismic-related ground failure and soil liquefaction are not expected to be a concern on the site. However, the Project site is susceptible to ground shaking from regional fault activity. In addition, Project-related grading would result in the creation of new topographic variation that would be susceptible to failure if they are not properly reinforced. The Project would incorporate all of the recommendations in the site-specific Geotechnical Investigation prepared for the Project and standard engineering practices and specifications, which would minimize risk of adverse effects from seismic hazards. The recommendations in the Geotechnical Investigation account for the unique geotechnical factors affecting the Project site and conform to the requirements of the CBC and Elk Grove Municipal Code. Implementation of the recommendations included in the Geotechnical Investigation and standard engineering practices and specifications would be enforced through the City's development review process. Therefore, impacts related to the potential to expose people or structures to substantial adverse impacts from seismic ground-shaking or related ground failure would be **less than significant**.

The following sections describe the potential for Project implementation to expose people or structures to substantial adverse impacts from seismic hazards, including rupture of a known earthquake fault, strong seismic shaking, seismic-related ground failure, soil liquefaction, and landslides.

It is also important to note that environmental impact analyses under CEQA generally are not required to analyze the impact of existing environmental conditions on a project's future users or residents unless the proposed project might cause or risk exacerbating environmental hazards or conditions that already exist (CCR Section 15126.2[a]). In those specific instances, it is the project's impact on the environment and not the environment's impact on the project that compels an evaluation of how future residents or users may be affected by exacerbated conditions (*California Building Industry Association v. Bay Area Air Quality Management District* [2015] 62 Cal. 4th 369). Project construction and operation would not create new seismic events or exacerbate existing seismic hazards, because the Project improvements would involve limited excavation that would not alter seismic and fault conditions in the region.

Surface Fault Rupture

As discussed in Section 3.6.2, "Environmental Setting," no active faults are located on the Project site or in the vicinity. The nearest Alquist-Priolo active fault zones are the Cordelia and Green Valley Fault Zones, located more than 40 miles west of the Project site (CGS 2021). Therefore, implementation of the Project would not place new development in an active fault zone and would not expose people or structures to substantial adverse impacts from surface fault rupture. **No impact** would occur.

Strong Seismic Shaking

As discussed in Section 3.6.2, "Environmental Setting," seismic ground shaking is expected to occur at the Project site. According to the conclusions and recommendations in the Geotechnical Investigation for the Project, construction activities would be required to meet California Division of Occupational Safety and Health (Cal/OSHA) requirements to protect human life in the event of seismic-ground shaking. Specifically, protective systems would be required for temporary excavations deeper than 4 feet. Cal/OSHA also includes requirements for excavation sloping and benching, the use of trench shields, and the placement of trench spoils to prevent hazards to workers, such as cave-ins (Geocon Consultants, Inc. 2023).

In addition, seismic design of all structures would be performed in accordance with the building and construction standards in Title 16 of the Elk Grove Municipal Code, the CBC, and the American Society of Civil Engineers' (ASCE's) and Structural Engineering Institute's (SEI's) publication ASCE/SEI 7-16, entitled *Minimum Design Loads and Associated Criteria for Buildings and Other Structures*. Based on subsurface conditions, the Project site is classified as "Site Class D – Stiff Soil" and all structures would be engineered according to the seismic design parameters for this site classification identified in ASCE/SEI 7-16 (Geocon Consultants, Inc. 2023). Incorporation of seismic design criteria, in accordance with the Elk Grove Municipal Code, CBC, and ASCE/SEI 7-16, would protect human life, minimize the risk of structural failure during a seismic event, and reduce secondary effects from seismic activity. Implementation of all criteria would be enforced through the City's development review process and would be identified as conditions of Project approval. Therefore, implementation of the Project would not expose people or structures to substantial adverse impacts from seismic ground shaking. This impact would be **less than significant**.

Seismic-Related Ground Failure, Including Liquefaction

As discussed in Section 3.6.2, "Environmental Setting," soil, groundwater, and ground-shaking conditions at the Project site create a low potential for liquefaction. The site-specific Geotechnical Investigation prepared for the Project to assess seismic, geologic, and soils-related hazards confirmed a low potential for seismic-related ground failure on the Project site and indicated that specific design measures with respect to liquefaction are not necessary (Geocon Consultants, Inc. 2023).

Project construction would involve regrading the ground surface to create new slopes and topographic variation in the exhibits that would replicate natural habitats of the zoo animals. Most of the Project site would be graded with slopes of 3:1 or less; however, some areas would be graded with slopes of 1:1. For many exhibits, moats would be constructed in lieu of fences to separate zoo animals from visitors. The steepest slopes would be concentrated in the central portion of the New Zoo at the location of the future lion and wild dog exhibits.

The grading plans for the New Zoo comply with all City standards (i.e., improvement standards, construction specifications, standard drawings, and EGMC) and have been reviewed by the City's Development Engineering Division and Public Works Departments. As noted above, a site-specific Geotechnical Investigation has been prepared for the Project in accordance with CBC and Elk Grove Municipal Code requirements (Geocon Consultants, Inc. 2023). Seismic design of all structures would be performed in accordance with the building and construction standards in Title 16 of the Elk Grove Municipal Code, the CBC, and ASCE's and SEI's publication ASCE/SEI 7-16, entitled *Minimum Design Loads and Associated Criteria for Buildings and Other Structures*. Incorporation of seismic design criteria would be implemented as part of the Project to minimize the risk of structural failure during a seismic event and would reduce the secondary effects that would occur as a result of the seismic event. In addition, retaining walls would be used on the site for all moats and other slopes of 1:1 to prevent slope failures from occurring. Implementation of recommendations included in the Geotechnical Investigation and standard engineering practices and specifications would be enforced through the City's development review process and be identified as conditions of Project approval. Compliance with

recommendations in the Geotechnical Investigation and standard engineering practices and specifications would ensure that the potential effects of seismic-related ground failure related to the Project would be minimized. Therefore, implementation of the Project would not expose people or structures to substantial adverse impacts from seismic-related ground failure. This impact would be **less than significant**.

Summary

Implementation of the Project would have no impact related to surface fault rupture. The potential for seismic-related ground failure and soil liquefaction on the Project site is low. However, the Project site is susceptible to ground shaking from regional fault activity. In addition, Project-related grading would result in the creation of new slopes and topographic variation that would be susceptible to slope failure if they are not properly reinforced. The Project would implement all of the recommendations in the Geotechnical Investigation prepared for the site and would conform to the requirements of the CBC and Elk Grove Municipal Code. Implementation of these recommendations and standard engineering practices and specifications would be enforced through the City's development review process and identified as conditions of Project approval. Therefore, the potential to expose people or structures to substantial adverse impacts from seismic or geologic hazards would be **less than significant**.

Mitigation Measures

No mitigation is required beyond implementation of all recommendations from the Project-specific Geotechnical Investigation.

Impact 3.6-2: Result in Substantial Soil Erosion or the Loss of Topsoil

Project implementation has the potential to result in soil erosion. Because construction activities would disturb more than 1 acre of soil, the Project would be required to comply with a site-specific SWPPP that includes BMPs designed to control stormwater runoff and reduce erosion from the construction site. The Project would also be required to obtain and comply with a grading and erosion control permit from the City. In addition, construction activities would be subject to SMAQMD rules regarding dust control, which would reduce the potential for erosion and sedimentation. Further, the Project design would incorporate postconstruction stormwater management strategies to reduce the potential for erosion during operation. Therefore, the impact related to substantial soil erosion or the loss of topsoil would be **less than significant**.

As discussed in Section 3.6.2, "Environmental Setting," the topography of the Project site is relatively flat with no major slopes. However, Project implementation would involve substantial ground disturbance and earth-moving activities on the vacant site and would result in changes to drainage patterns that would have the potential to result in soil erosion or the loss of topsoil. The following sections describe the potential for the Project to result in substantial soil erosion or the loss of topsoil during construction and operation.

Construction

In compliance with the Clean Water Act, the Project would be required to obtain coverage under the NPDES Construction General Permit because it would disturb more than 1 acre of soil. As described in Section 3.6.1, "Regulatory Setting," the NPDES Construction General Permit requires development and implementation of a SWPPP that identifies BMPs designed to control stormwater runoff and reduce erosion and sedimentation. BMPs include, among others, the use of silt fences, sedimentation ponds, erosion control blankets, vegetative covers, and soil binders. A SWPPP identifies sediment and erosion controls for areas where permanent or postconstruction stormwater controls (e.g., bioretention ponds and swales) would be constructed.

The Project would be required to comply with Chapter 16.44, Land Grading and Erosion Control, of the Elk Grove Municipal Code. As required under Section 16.44.050, the Project would be required to obtain a grading and erosion control permit for activities that involve (1) grading, filling, excavating, storing, or disposing 350 cubic yards or more of soil or earthy material and (2) clearing and grubbing 1 acre or greater of land within the City. This permit would further ensure that the Project is implemented in accordance with NPDES requirements.

Construction activities would also be subject to SMAQMD Rules 403 and 405, governing dust control, as described in Section 3.6.1, "Regulatory Setting." Although these rules were adopted for the purpose of reducing air pollutant emissions in the form of fugitive dust, they have the added benefit of stabilizing soils at construction sites in a manner that reduces the potential for wind erosion and sedimentation. The Project would be required to incorporate dust control measures (e.g., applying water, chemicals, or other stabilizers on surfaces that can give rise to airborne dusts) during dust-generating activities at the construction site.

Because the Project would be required to comply with the Central Valley RWQCB, the Elk Grove Municipal Code, and SMAQMD requirements, which include implementation of a Project-specific SWPPP with BMPs designed to control stormwater runoff and reduce erosion and implementation of dust control measures, substantial soil erosion would not result during construction of the Project.

Operation

Wind erosion is a natural process in which soil is transported and deposited by wind. Unprotected surfaces that have large amounts of exposed, loose, dry, and bare soil are susceptible to wind erosion. Portions of the Project site would be developed with structures and pavement, including the various administration, guest services, and maintenance buildings; animal care facilities and interior exhibits; and roadways and parking lots listed in Table 2-1, "Project Summary." These structures and paved surfaces would cover areas of bare ground and would prevent the erosion of soils by wind. In addition, lawns and landscaping would be included throughout the Project site, such as along the zoo exterior, along guest pathways, and throughout the zoo exhibits, as depicted in Section 2, "Project Description." The lawns and landscaping would cover the soil surface and protect the soil from wind erosion.

As noted above, the Project would introduce new impervious surfaces and alter topographic features on the Project site. The alteration of topographic features would lead to increased erosion by creating unstable rock or soil surfaces, changing the permeability or runoff characteristics of the soil, and modifying or creating new pathways for drainage. In accordance with the requirements of SSQP's New Development Program, the Project would be required to implement source control, hydromodification control, treatment control, and LID design standards included in the Sacramento Region Stormwater Quality Design Manual (SSQP 2021) and the SSQP Hydromodification Management Plan (SSQP 2017). As described in Chapter 2, "Project Description," the Project design includes on-site hydromodifications to collect, store, and treat stormwater runoff before it is discharged into the City's storm drain infrastructure. Features would include bioretention basins, LID principles, and treatment control measures. In accordance with the design standards of the Sacramento Region Stormwater Quality Design Manual and the SSQP Hydromodification Management Plan, these features would be designed to mitigate peak flows and work in concert with the storm drainage infrastructure planned west of the site. Hydromodification features in the New Zoo would increase natural water storage and slow runoff. Implementation of these design standards would prevent any increases in peak flow and runoff duration from new development that would artificially accelerate erosion and sedimentation.

Because the Project would be required to implement design features that would reduce the potential for erosion or loss of topsoil in accordance with the NPDES MS4 permit and SSQP's New Development Program, substantial soil erosion would not result during Project operation.

Summary

Based on the above discussion, compliance with existing regulations and implementation of standards included in the Sacramento Region Stormwater Quality Design Manual would ensure that the construction and operation of the Project would reduce the potential for erosion and loss of topsoil. Therefore, the potential to result in substantial soil erosion or loss of topsoil would be **less than significant**.

Mitigation Measures

No mitigation is required beyond compliance with Central Valley RWQCB, City of Elk Grove, and SMAQMD requirements.

Impact 3.6-3: Locate Project Features on an Unstable Geologic Unit or Soils, or a Geologic Unit or Soil 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

Lateral spreading, subsidence, liquefaction, and collapse are not anticipated on the Project site based on the site's topography and soil characteristics. Regardless, the Project would incorporate all of the recommendations in the site-specific Geotechnical Investigation prepared for the Project and standard engineering practices and specifications, which would minimize potential hazards related to unstable geologic units and soils. The Geotechnical Investigation includes recommendations that account for the unique geotechnical factors affecting the Project site and conform to the requirements of the CBC and Elk Grove Municipal Code. Implementation of the recommendations included in the Geotechnical Investigation and standard engineering practices and specifications would be enforced through the City's development review process. Therefore, the impact related to the potential for these hazards would be **less than significant**.

As discussed in Section 3.6.2, "Environmental Setting," lateral spreading, subsidence, liquefaction, and collapse are not anticipated to occur at the Project site, because of the site's soil characteristics and relatively flat topography. The site-specific Geotechnical Investigation prepared for the Project to assess seismic, geologic, and soils hazards confirmed a low potential for lateral spreading, subsidence, liquefaction, and collapse to occur on the Project site. Accordingly, the Geotechnical Investigation did not identify specific design measures with respect to lateral spreading, subsidence, liquefaction, and collapse (Geocon Consultants, Inc. 2023).

Regardless, as noted under Impact 3.6-1, all Project-specific recommendations contained in the Geotechnical Investigation would be implemented during construction and as part of Project design to minimize potential geologic and soils hazards. For example, Project construction would comply with Cal/OSHA requirements related to temporary excavations to protect human life in the event of cave-ins. In addition, new structures would be designed in conformance with applicable seismic design criteria. These recommendations account for the unique geotechnical factors affecting the Project site and minimize the potential for the Project to exacerbate geologic and soils hazards in conformance with the CBC, and ASCE/SEI 7-16, and Elk Grove Municipal Code, (Geocon Consultants, Inc. 2023). Implementation of all of the recommendations in the Geotechnical Investigation and standard engineering practices and specifications would be enforced through the City's development review process and identified as conditions of Project approval. Compliance with regulatory requirements would ensure that the potential effects of unstable geologic units or soils from Project implementation would be minimized. Therefore, the Project would not locate new development on a geologic unit or soil that is unstable, or that would become unstable as a result of the development, such that lateral spreading, subsidence, liquefaction, or collapse would result. This impact would be **less than significant**.

Mitigation Measures

No mitigation is required beyond implementation of all recommendations from the Project-specific Geotechnical Investigation.

Impact 3.6-4: Locate Project Features on Expansive Soils

Portions of the Project site are underlain with soils that have a high proportion of clay and that would be prone to expansion. The site-specific Geotechnical Investigation prepared for the Project confirmed that expansive clay soils are present on the Project site. All Project-specific recommendations contained in the Geotechnical Investigation would be implemented as part of the Project to conform to the requirements of the CBC and Elk Grove Municipal Code and minimize the risk of structural failure in areas where expansive soils are present (Geocon Consultants, Inc. 2023). Implementation of these recommendations and standard engineering practices and specifications would be enforced through the City's development review process. Therefore, the potential to create substantial direct or indirect risks to life or property from locating Project facilities on expansive soils would be **less than significant**.

As discussed in Section 3.6.2, "Environmental Setting," portions of the Project site are underlain with soils that have a high proportion of clay and that would potentially be prone to expansion. The site-specific Geotechnical Investigation was prepared for the Project to assess seismic, geologic, and soils hazards confirmed that expansive clay soils are

present on the Project site. The Geotechnical Investigation provides recommendations with respect to grading, earthwork, foundation design, and drainage to reduce risks to life or property in areas where expansive soils are present. These recommendations incorporate appropriate standard engineering practices and specifications to conform to the requirements of the CBC and Elk Grove Municipal Code. The following recommendations from the Geotechnical Investigation relevant to expansive soils would be implemented consistent with requirements of the CBC and Elk Grove Municipal Code:

- ▶ Utilizing a layer of low-expansive fill below buildings and concrete flatwork to stabilize soils and reduce caving potential;
- ▶ Periodically watering finished graded pads and subgrades to maintain moist soil conditions and prevent desiccation cracking prior to constructing foundations, slabs-on-grade, and pavement;
- ▶ Using aggregate base underlayment, thickened edges, and adequate construction and control joints to reduce distress to concrete flatwork, including moisture conditioning subgrade soils;
- ▶ Grading the site to direct surface drainage away from structures in accordance with applicable standards and directing surface drainage away from the top of slopes into swales or other controlled drainage devices;
- ▶ Ensuring that underground utilities are leak free, periodically checking utility and irrigation lines for leaks, and immediately repairing leaks;
- ▶ Avoiding the placement of landscaping planters adjacent to paved areas, using area drains to collect excess irrigation water and transmit it to drainage structures or impervious above-grade planter boxes, and constructing a cutoff wall (deepened curb) along the edge of pavement or flatwork that extends at least 4 inches into the soil subgrade below the bottom of the base material where landscaping is planned adjacent to pavement or flatwork;
- ▶ Properly constructing LID devices and lining vegetated swales and stormwater basins with impermeable liners (e.g., high-density polyethylene with a thickness of 12 mil or equivalent polyvinyl chloride liner) to prevent water infiltration into expansive soils;
- ▶ Ensuring that roof drains are directed to lined planter boxes or lined landscaped areas to prevent infiltration of water into expansive soils; and
- ▶ Utilizing drought-tolerant landscaping, drip irrigation or low-output sprinklers, automatic timers for irrigation systems, and appropriately spaced area drains to reduce the potential for irrigation water to infiltrate soils near buildings, flatwork, or pavements (Geocon Consultants, Inc. 2023).

These recommendations incorporate appropriate standard engineering practices and specifications to conform to the requirements of the CBC and Elk Grove Municipal Code. Implementation of all recommendations and standard engineering practices and specifications would be enforced through the City's development review process and identified as conditions of Project approval. Therefore, Project implementation would not create substantial risks to life or property from locating development on expansive soil. This impact would be **less than significant**.

Mitigation Measures

No mitigation is required beyond implementation of all recommendations from the Project-specific Geotechnical Investigation.

Impact 3.6-5: Directly or Indirectly Destroy a Unique Paleontological Resource or Site or Unique Geologic Feature

Project construction would include ground disturbance in previously undisturbed soils in an area with high sensitivity for paleontological resources. If previously undiscovered paleontological resources are encountered during ground-disturbing activities, damage to or destruction of a paleontological resource could occur. Implementation of Mitigation Measure 3.6-5 would reduce this impact to a **less-than-significant** level.

As discussed in Section 3.6.2, "Environmental Setting," the Project site consists of a fallow field that was historically used as rangeland for cattle and does not contain unique geologic features. The Project site is underlain by the Riverbank formation, which is considered to have a high sensitivity rating for paleontological resources (City of Elk Grove 2018). The Project would require ground disturbance to depths of up to 18 feet below mean sea level to install sewer infrastructure. It is anticipated that excavation would be limited primarily to areas of previous ground disturbance, including areas that have been disturbed from past and ongoing agricultural activities. However, Project-related excavation beyond the depth of previous agriculture-related disturbance (3 feet) has the potential to occur in areas of high paleontological sensitivity and in previously undisturbed soils. If previously undiscovered paleontological resources are encountered during ground-disturbing activities, damage to or destruction of a paleontological resource could occur. Implementing Mitigation Measure 3.6-5 (which is based on adopted Mitigation Measure 5.6.5 from the General Plan Amendments and Update of VMT Standards Subsequent EIR) would ensure that excavations are completed in a manner that preserves potential paleontological resources. With implementation of this mitigation measure, the potential for implementation of on-site improvements to directly or indirectly destroy a unique paleontological resource would be reduced to a **less-than-significant** level

Mitigation Measures

Mitigation Measure 3.6-5: Implement Procedures to Protect Paleontological Resources

Before the start of any earthmoving activities, the New Zoo shall retain a qualified scientist (e.g., geologist, biologist, paleontologist) to train all construction personnel involved with earthmoving activities, including the site superintendent, regarding the possibility of encountering fossils, the appearance and types of fossils likely to be seen during construction, and proper notification procedures to follow if fossils are encountered. Training on paleontological resources shall also be provided to all other construction workers, and a video recording of the initial training and/or written materials may be used rather than in-person training.

If any paleontological resources are discovered during grading or construction activities on the Project site, work shall be halted immediately within 50 feet of the discovery, and the City Public Works Department shall be notified immediately. The New Zoo shall retain a qualified paleontologist to evaluate the resource and prepare a recovery plan in accordance with the most current Society of Vertebrate Paleontology guidelines. The recovery plan shall include a field survey, construction monitoring, sampling and data recovery procedures, museum storage coordination for any specimen recovered, and a report of findings. The New Zoo will implement all recommendations in the recovery plan that are determined to be necessary by the City Public Works Department and possible before construction activities resume in the area where the paleontological resources were discovered.

Significance after Mitigation

Less than significant

This page intentionally left blank.