5.9 Paleontological Resources

This section evaluates the potential impacts on paleontological resources of the Amended SSU6 Project. The information presented below is based on the material presented in the original SSU6 AFC, updated to reflect the changes in the Project footprint. The assessment is based on a comprehensive literature review, museum records search, and fieldwork at the plant site and offsite facility locations (e.g., injection well pads, injection pipelines, and borrow area). The evaluation discusses the paleontological sensitivity of the Project area and vicinity, evaluates potential Project-related impacts, and provides recommendations for mitigating potential impacts.

The paleontological assessment for the original SSU6 project was conducted by a qualified paleontological professional in accordance with the professional standards of the Society of Vertebrate Paleontology (SVP). An updated assessment for the Amended Project was also performed by a qualified paleontological professional. The updated assessment included a reconnaissance level pedestrian survey of Project elements that were not previously surveyed for the original project (e.g., revised injection well pad and pipeline locations and new borrow site) and an updated record search to document previously recorded paleontological resources within a one-mile radius of the Amended Project facilities. Additional detail, including personnel qualifications, on the assessment performed for the Amended Project is provided in Appendix H.

The transmission lines that will interconnect the Project with the regional grid are already licensed and the Amended Project does not propose any changes to them. Thus, the transmission lines are not part of the Amendment Petition and are not discussed in this section.

5.9.1 Summary of Differences between Amended Project and Original SSU6

There are no major changes to the affected environmental of paleontological resources for the Amended Project compared with the originally proposed SSU6 project. There are some changes to the Project footprint, including: 1) use of adjacent acreage for the plant site; 2) relocation of production wells to the plant site; 3) relocation of the injection well pads and associated pipelines to different [and somewhat closer to the plant site] areas); and 4) addition of a new borrow area for structural fill. However, the geologic formations underlying these areas are the same as those encountered for the original SSU6 project. The underlying geologic formations are the alluvial deposits of the Lake Cahuilla Beds and the Brawley Formation, both of which are considered to be of high paleontological sensitivity. Thus, there is no change in the level of paleontological sensitivity from the original project, and no change in the impacts to paleontological resources compared to the originally proposed project.

As with the original SSU6 project, significantly adverse impacts could occur during Project construction, but the implementation of planned mitigation measures would reduce impacts to less than significant levels. These mitigation measures include proper plans developed by a qualified Designated Paleontologist; worker education; monitoring during Project excavations; and recovering, preserving, documenting, and properly curating any fossils encountered during construction.

5.9.2 LORS Compliance

As a nonrenewable scientific resource, fossils are protected by various LORS across the country. These LORS are summarized in Table 5.9-1, and the following paragraphs. The Project will comply with the applicable LORS during both construction and operation.

Table 5.9-1 Summary of LORS for Paleontological Resources

LORS	Applicability	Where Discussed in AP
Federal:		
Antiquities Act of 1906 (16 United States Code 431 et seq.)	Requires protection of historic and prehistoric structures, and other objects of historic or scientific interest on Federal lands (no Federal lands are involved in the Amended Project).	Section 5.9.2.1
State:		
California Environmental Quality Act (CEQA) (Public Resources Code [PRC] Section 21000 et seq.)	Addresses project construction that encounters paleontological resources.	Sections 5.9.2, 5.9.3, and 5.9.4
PRC Section 5097.5 - 5097.9	Prohibits unauthorized removal of paleontological resources from sites located on public lands; not applicable unless project lands have been acquired by the State, which is not the case.	Section 5.9.2
Local:		
Imperial County General Plan	The Imperial County General Plan serves as the primary policy statement by the County Board of Supervisors for implementing development policies and land uses. Goals and Objectives, as stated in the Land Use Element of the General Plan, provide direction for private development and guidelines for land use decision making. These Goals and Objectives repeatedly mention preserving natural resources and the natural environment and avoiding adverse environmental impacts. Objective 8.8 specifically states that the siting of future facilities for the transmission of electricity should be compatible with the environment. Goal 9 deals with the protection of environmental resources and states that the County will identify and preserve significant natural, cultural, and community character resources. Objective 9.1 requires the preservation of important natural resources, including prehistoric sites. The SSU6 Project would achieve these objectives with the implementation of the mitigation measures embodied in the Conditions of Certification (Section 5.9.6)	Sections 5.9.2 and 5.9.4, and 5.9.6

Table 5.9-1 Summary of LORS for Paleontological Resources

LORS	Applicability	Where Discussed in AP
Professional Standards:		
Society of Vertebrate Paleontology (1995)	Establishes standards for paleontological assessments and for mitigation of adverse impacts on paleontological resources.	Sections 5.9.3 and 5.9.4

5.9.2.1 Federal LORS

Federal legislative protection for paleontological resources stems from the Antiquities Act of 1906 (PL 59-209; 16 United States Code 431 et seq.; 34 Stat. 225), which calls for the protection of historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest on federally administered lands. Federal protection for significant paleontological resources would apply to the Project if any construction or other related Project impacts occurred on federally owned or managed lands. The Amended Project facilities that are the subject of this Amendment Petition (plant site, offsite injection well pads and associated pipelines) are on private lands.

5.9.2.2 State LORS

The California Energy Commission (CEC) environmental review under the Warren-Alquist Act is legally a CEQA-equivalent process. "Guidelines for the Implementation of CEQA," as amended March 29, 1999 (Title 14, Chapter 3, California Code of Regulations §§ 15000 et seq.), define procedures, types of activities, persons, and public agencies required to comply with CEQA, and include as one of the questions to be answered in the Environmental Checklist (Section 15023, Appendix G, Section XIV, Part a) the following: "Will the proposed project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?"

Other State requirements for paleontological resources management are included in PRC (Chapter 1.7), Sections 5097.5 and 30244. These statutes prohibit the removal of any paleontological site or feature on public lands without permission of the jurisdictional agency, define the removal of paleontological sites or features as a misdemeanor, and require reasonable mitigation of adverse impacts to paleontological resources from developments on public (State) lands. These protections would apply to the Project only if the State were to obtain ownership of Project lands during the term of its license.

5.9.2.3 Local LORS

Imperial County General Plan

The Imperial County General Plan serves as the primary policy statement by the County Board of Supervisors for implementing development policies and land uses. Goals and Objectives, as stated in the Land Use Element of the General Plan, provide direction for private development and guidelines for land use decision making. These Goals and Objectives repeatedly mention preserving natural resources and the natural environment and avoiding adverse environmental impacts. Objective 8.8 specifically states that the siting of future facilities for the transmission of electricity should be compatible with the environment. Goal 9

deals with the protection of environmental resources and states that the County will identify and preserve significant natural, cultural, and community character resources. Objective 9.1 requires the preservation of important natural resources, including prehistoric sites. The SSU6 Project would achieve these objectives with the implementation of the mitigation measures specified in Section 5.9.4.

5.9.2.4 Involved Agencies

Agency contacts for Project paleontological resources issues are shown in Table 5.9-2.

Table 5.9-2 Agencies and Agency Contacts

Agency Contact	Phone/E-mail	Permit/Issue
George Perkins Environmental Specialist/Regional Coordinator Western Area Power Administration P.O. Box 3402 1627 Cole Boulevard, Building 18 Golden, CO 80401-0098	(303) 275-1713	None required (involved in transmission line issues only)
Steven Borchard, District Manager California Desert Division Bureau of Land Management 22835 Calle San Juan De Los Lagos Moreno Valley, CA 92553	(951) 697-5204 steven_j_borchard@ca.blm.gov	None required (involved in transmission line issues only)
Jurg Heuberger Planning and Development Services Director Imperial County Planning and Development Services Department 801 Main Street El Centro, CA 92243-2811	(760) 482-4238 jurgheuberger@co.imperial.ca.us	County General Plan Compliance

5.9.2.5 Required Permits and Permit Schedule

No permits are required in association with paleontological resources.

5.9.3 Affected Environment

Paleontology is a multidisciplinary science that combines elements of geology, biology, chemistry, and physics in an effort to understand the history of life on earth. Paleontological resources, or fossils, are the remains, imprints, or traces of once-living organisms preserved in rocks and sediments. These include mineralized, partially mineralized, or unmineralized bones and teeth, soft tissues, shells, wood, leaf impressions, footprints, burrows, and microscopic remains. Fossils are important scientific and educational resources because of their use in documenting the present and evolutionary history of particular groups of now-extinct organisms; reconstructing the environments in which those organisms lived; and in determining the relative ages of the strata in which they occur and of the geologic events that resulted in the deposition of the sediments that buried them. Fossils are considered a nonrenewable scientific resource because the organisms they represent no longer exist.

The following subsections discuss existing conditions with respect to paleontological resources in the Amended Project area. The Project site is located south of the Salton Sea in a region of the Imperial Valley used mostly for agriculture and geothermal power production. As described in the following subsections, the entire region of the power plant site and all associated facilities are on Pleistocene and Holocene-age alluvial deposits of the fossiliferous Lake Cahuilla Beds and Brawley Formation, both of which have a high potential for paleontological resources. Consequently, the discussion of paleontological resources is presented for the Project as a whole and not by components (e.g., power plant site, pipelines) to reduce redundancy.

5.9.3.1 Summary of Records Search and Field Survey

A baseline paleontological resource inventory was prepared for the original SSU6 project area and an assessment was prepared of the potential paleontological productivity of each stratigraphic unit present. Published as well as available unpublished geological and paleontological literature was reviewed. These results are documented in the Paleontological Resources Technical Report prepared for the original SSU6 project. The methods used for the original investigation are consistent with SVP guidelines for assessing the importance of paleontological resources in areas of potential environmental effect. No subsurface exploration was conducted.

The original SSU6 paleontological investigation evaluated the number and locations of previously-recorded fossil sites from rock units exposed in and near the Project site and the types of fossil remains each rock unit has produced were evaluated. The vertebrate paleontology section of the Department of Earth Sciences at the San Bernardino County Museum (SBCM), and the Museum of Paleontology at the University of California, Berkeley (UCMB) performed a detailed review of museum collections records. This review was performed for the purposes of: 1) determining whether there are any known fossil localities in or near the SSU6 plant site and linear facilities; identifying the geologic units present in the Project area; and determining the paleontological sensitivity ratings of those geologic units in order to assess potential impacts to non-renewable paleontological resources. The original SSU6 study involved field surveys that included a visual inspection of exposures of potentially fossiliferous strata in the Project area and documentation of the presence of sediments suitable for containing fossil remains and of the presence of any previously unrecorded fossil sites. Stratigraphy was observed in the banks of numerous irrigation ditches, dry washes, and stream banks during field surveys.

The museum record search was updated in fall 2008 to also include areas that are part of the Amended Project footprint but that were not part of the original SSU6 project and thus were not studied earlier, e.g. the relocated injection well pads and pipelines and the new borrow area. Museum collections records maintained by the Natural History Museum of Los Angeles County (LACM), the San Diego Museum of Natural History (SDNHM), and the University of California Museum of Paleontology (UCMP) indicate that no previously recorded fossil localities exist within the Amended Project site. At least four significant vertebrate fossil localities have been recorded in the vicinity (but greater than one mile away) and from within the same geologic sediments underlying the Amended Project area. LACM localities 6252, 6253, 6255, and 6256 yielded significant remains of freshwater fish and terrestrial vertebrates and microvertebrates including reptiles, birds, and mammals. Localities 6252, 6253 and 6255 also yielded non-vertebrate fossils including diatoms, land plants, clams, snails, and crustaceans.

During the course of the field survey of the Project area, Project paleontologists did not discover any significant fossil resources or localities. However, numerous modern (non-indigenous) clams were

discovered in the vicinity of a number of irrigation ditches and were noted as non-significant occurrences. Each of the five occurrences yielded several dozen to hundreds of small (dime to quarter sized) Asian clam shells (*Corbicula fluminea*) ranging in color from purple to yellow to brown. All occurrences were discovered littering the ground exclusively adjacent to the multiple irrigation ditches crossing the Project area. According to Foster, et al. (2008), Asian clams were first introduced to the United States in 1938 and have been reported to occur in the vicinity of the Salton Sea. Reportedly, Asian clam populations are known to cause problems in various water systems, including irrigation canals (Foster et al., 2008). Each clam concentration was recorded with photographs and GPS points; however, due to their very young age and lack of fossilization they are not deemed scientifically significant paleontological resources.

5.9.3.2 Paleontological Sensitivity

CEQA and SVP (1995) methodology generally considers all fossil specimens significant, unless demonstrated otherwise, and, therefore, protected by environmental statutes. This position is held because fossils are uncommon and only rarely will a fossil locality yield a statistically significant number of specimens representing the same species. In fact, vertebrate fossils are so uncommon that, in most cases, each fossil specimen found provides additional important information about the characteristics or distribution of the species it represents. Based on SVP standards, a stratigraphic unit (such as a formation or bed) known to contain significant fossils is considered sensitive to adverse impacts if there is a high probability that earth-moving or ground-disturbing activities in that rock unit will either disturb or destroy fossil remains. This definition of sensitivity differs fundamentally from that for archaeological resources. It is very important to make the distinction between archaeologic resource sites and paleontologic resource sites when defining sensitivity. Archaeologic site boundaries define the limit of the extent of the resource. Paleontologic sites, however, serve as indicators that the sedimentary unit or formation in which they are found is fossiliferous. The boundaries of an entire fossiliferous formation, therefore, define the limits of paleontologic sensitivity in a given region (SVP, 1991).

Most archeological sites have a surface expression that allows for their geographic location. Fossils, on the other hand, are an integral component of the rock unit below the ground surface. Therefore, fossils are not observable unless exposed by erosion, human activity or other event. Thus, a paleontologist cannot know either the quality or quantity of fossils present before the rock unit is exposed by a given event. The paleontologist can only make conclusions on sensitivity to impact based on what fossils have been found in the rock unit in the past, along with a judgment on whether the depositional environment of the sediments that compose the rock unit was likely to result in the burial and preservation of fossils. Fossils are seldom uniformly distributed within a rock unit. Most of a rock unit may lack fossils, but at other locations within the same rock unit concentrations of fossils may exist. Even within a fossiliferous portion of the rock unit, fossils may occur in local concentrations. For example, Shipman (1977, 1981) excavated a fossiliferous site using a three-dimensional grid and removed blocks of matrix of a consistent size. The site chosen was known prior to excavation to be richly fossiliferous, yet only 17 percent of the blocks actually contained fossils. These studies demonstrate the physical basis for the difficulty in predicting the location and quantity of fossils in advance of Project-related ground disturbance.

Because it is impossible to determine where fossils are without actually disturbing a rock unit, monitoring of excavation by an experienced paleontologist during construction increases the probability that fossils will be discovered and preserved. Preconstruction mitigation measures such as surface prospecting and collecting will not prevent adverse impacts on fossils because many sites will be unknown in advance because of an absence of fossils at the surface. The non-uniform distribution of fossils within a rock unit is essentially

universal and many paleontological resource assessment and mitigation reports conducted in support of environmental impact documents and mitigation plan summary reports document similar findings (see for instance Lander, 1989, 1993; Reynolds, 1987, 1990; Spencer, 1990; Fisk et al., 1994; and references cited therein). In fact, most fossil sites recorded in reports of impact mitigation (where construction monitoring has been implemented) had no previous surface expression. Because the presence or location of fossils within a rock unit cannot be known without exposure resulting from erosion or excavation, under SVP (1991, 1995) standard guidelines, an entire rock unit is assigned the same level of sensitivity based on previously recorded fossil occurrences.

Using SVP (1991, 1995) criteria, the paleontological importance or sensitivity (high, low, or undetermined) of each rock unit exposed in a project site or surrounding area is the measure most amenable to assessing the significance of paleontological resources. This is because the areal distribution of each rock unit can be delineated on a topographic or geologic map. The paleontological importance of a stratigraphic unit reflects: (1) its potential paleontological productivity (and thus sensitivity), and (2) the scientific significance of the fossils it has produced. This method of paleontological resources assessment is the most appropriate because discrete levels of paleontological importance can be delineated on a topographic or geologic map. The potential paleontological productivity of a stratigraphic unit exposed in a project area is based on the abundance/densities of fossil specimens and/or previously recorded fossil sites in exposures of the unit in and near a project site. The underlying assumption of this assessment method is that exposures of a stratigraphic unit in a project site are most likely to yield fossil remains both in quantity and density similar to those previously recorded from that stratigraphic unit in and near the project site. An individual fossil specimen is considered scientifically important if it is:

- Identifiable,
- Complete,
- Well preserved,
- Age diagnostic,
- Useful in paleoenvironmental reconstruction,
- A type or topotypic specimen,
- A member of a rare species,
- A species that is part of a diverse assemblage, and/or
- A skeletal element different from, or a specimen more complete than, those now available for that species.

Identifiable land mammal fossils are considered scientifically important because of their potential use in providing accurate age determinations and paleoenvironmental reconstructions for the sediments in which they occur. Moreover, any kind of vertebrate remains are comparatively rare in the fossil record. Although fossil plants are usually considered of lesser importance because they are less helpful in age determination, they are actually more sensitive indicators of their environment and, thus, as sedentary organisms, more valuable than mobile animals for paleoenvironmental reconstructions. For marine sediments, invertebrate and marine algal fossils, including microfossils, are scientifically important for the same reasons that land mammal and/or land plant fossils are valuable in terrestrial deposits. The value or importance of different fossil groups varies depending on the age and depositional environment of the stratigraphic unit that

contains the fossils. Both the original SSU6 paleontological resources study and the additional study performed for the Amended Project involved the following tasks to establish the paleontological importance and sensitivity of each stratigraphic unit exposed in the Project area:

- Assessment of the potential paleontological productivity of each rock unit based on the density of fossil remains and/or previously recorded and newly documented fossil sites in and/or near the project site;
- Assessment of the scientific importance of fossil remains recorded from a stratigraphic unit exposed in the Project site; and
- Assessment of the paleontological importance of a rock unit, based on its documented and/or potential fossil content in the area surrounding the Project site.

In its standard guidelines for assessment and mitigation of adverse impacts to paleontological resources, the SVP (1995) established three categories of sensitivity for paleontological resources: high, low, and undetermined.

- **High Potential.** Rock units from which vertebrate or significant invertebrate fossils or suites of plant fossils have been recovered and are considered to have a high potential for containing significant nonrenewable fossiliferous resources. These units include, but are not limited to, sedimentary formations and some volcanic formations that contain significant nonrenewable paleontologic resources anywhere within their geographical extent and sedimentary rock units temporally or lithologically suitable for the preservation of fossils. Sensitivity comprises both (a) the potential for yielding abundant or significant vertebrate fossils or for yielding a few significant fossils, large or small, vertebrate, invertebrate, or botanical, and (b) the importance of recovered evidence for new and significant taxonomic, phylogenetic, ecologic, or stratigraphic data. Areas that contain potentially datable organic remains older than Recent, including deposits associated with nests or middens, and areas that may contain new vertebrate deposits, traces, or trackways are also classified as significant.
- **Low Potential.** Reports in the paleontological literature or field surveys by a qualified vertebrate paleontologist may allow determination that some areas or units have low potentials for yielding significant fossils. Such units will be poorly represented by specimens in institutional collections.
- **Undetermined Potential.** Specific areas underlain by sedimentary rock units for which little information is available are considered to have undetermined fossiliferous potentials.

It should be noted that highly metamorphosed rocks and granitic rock units do not generally yield fossils and, therefore, have low potential to yield significant nonrenewable fossiliferous resources.

In general terms, for geologic units with high potential, full-time monitoring typically is recommended during any project-related ground disturbance. For geologic units with low potential, protection or salvage efforts typically are not required. For geologic units with undetermined potential, field surveys by a qualified paleontologist are usually recommended to specifically determine the paleontologic potential of the rock units present within the study area.

5.9.3.3 Regional Geologic Setting

California is naturally divided into the following twelve geomorphic provinces, each distinguished from one another by having unique topographic features and geologic formations: (1) the Sierra Nevada, (2) the

Klamath Mountains, (3) the Cascade Range, (4) the Modoc Plateau, (5) the Basin and Range, (6) the Mojave Desert, (7) the Colorado Desert, (8) the Peninsular Ranges, (9) the Transverse Ranges, (10) the Coast Ranges, (11) the Great Valley, and (12) the Offshore area. The Amended Project area is located in the Imperial Valley, in the southern central-most region of the Colorado Desert geomorphic province as well as part of the south-central portion of the Salton Trough. The proposed transmission line route for the SSU6 Project extends south into the Transverse Ranges province and then veers west, crossing the San Andreas Fault zone.

The Project site is near the center of the Salton Basin, which is divided by the Salton Sea into the Coachella Valley to the north and the Imperial Valley to the south. The Imperial Valley comprises roughly the southern two-thirds of a major north-northwest-oriented structural and topographic depression variously called the Colorado Desert (Stearns, 1879; Preston, 1893; Fenneman, 1931), Salton Trough (Jahns, 1954; Muffle rand White, 1969; Crowell and Baca, 1979; Waters, 1983; McKibben, 1993), Salton Sea Trough (Muffler and Doe, 1968), Salton Sink (Mendenhall 1909a, 1909b; Threet, 1978), Salton Basin (Buwalda and Stanton, 1930; Wilke, 1980; Gobalet, 1992, 1994), Salton Sea Basin (Stanley,1962), Cahuilla Basin (Blake, 1914; Free, 1914), Imperial Basin (Rigsby, 1984; Dibblee, 1984),or Imperial Depression (Longwell, 1954). The Salton Trough Physiographic Province (Jahns, 1954) is between the Peninsular Range Physiographic Province on the west and the Basin and Range Physiographic Province on the east. The general Project area is bounded on the west and north by the Salton Sea and on the east by a gently inclined alluvial fan, which heads in the Chocolate Mountains. The plant site and pipelines are in the United States Geological Survey Obsidian Butte 7.5-minute (1:24,000 scale) Quadrangle.

The San Andreas Fault trends roughly northwest-southeast within the Imperial Valley. This large fault zone was created by the relative tectonic movement of the North American and Pacific plates. During the Miocene, about 25 to 29 million years ago, the Pacific and North American plates were moving towards each other. The Pacific plate became completely overridden; creating a subduction zone along the western coast of what is now the United States. The plates continued to converge until the Pacific plate's mid-ocean ridge reached the subduction zone and the ridge became the transform fault known today as the San Andreas. The Pacific plate began moving northwest in relation to the North American plate and today it is believed that about 350 miles of total displacement has occurred. In addition to displacement, the strike-slip movement of the Pacific and North American plates has created dramatic topography. As the Pacific plate pushes north into the North American plate, the compressional forces trap sediments and push them upward. The Salton Trough is now within a zone of transition from the ocean-floor spreading regime of the East Pacific Rise in the Gulf of California and the transform tectonic environment of the San Andreas Fault system. As the Orocopia and Chocolate Mountains to the northwest are pushed up, they also slowly erode away and alluvial sediments are deposited on top of the fault zones and on the valley floor.

The southwestern Imperial Valley today is characterized by three major rock groups. The first are the basement and subbasement complexes. The basement complex is composed of Late Cenozoic crystalline igneous and metamorphic rocks (Fuis and Kohler, 1984). The subbasement complex or lower crust beneath the axis of the Salton Trough is composed of a mafic intrusive complex similar to oceanic middle crust (Fuis and Kohler, 1984).

The second major rock groups are the Middle to Late Miocene-age Split Mountain and Mecca Formations, and the Pliocene Imperial Formation. The Split Mountain and Mecca Formations consist of sedimentary rocks mostly of terrestrial origin and comprised chiefly of coarse grained locally derived detritus from the surrounding mountains (Sylvester, 1976). These formations lie non-conformably on the crystalline

basement rocks where they are observed in the western margin of the basin (Sylvester, 1976). The Pliocene Imperial Formation consists of mudstones and shales that record a major marine incursion into the basin during the late Miocene to early Pliocene.

The third major rock assemblage in the western Colorado Desert is composed of Late Pleistocene and Holocene silts and clays deposited by the floodwaters of the Colorado River and local streams, which drain off the foothills of the surrounding mountain ranges (Crowell and Baca, 1979). The alluvial deposits accumulated in the Imperial Valley consist of a thick sequence of medium to fine-grained sediment deposited by the Colorado River. These deposits generally grade basin-ward through gradually decreasing grain sizes from coarse pebble to cobble/gravel in the foothills to clay-rich silt on the Salton Sea flood plain. In the Imperial Valley, where the deposition is the thickest, the depth of Cenozoic marine and non-marine deposits may be as much as 20,000 feet thick. Pleistocene and Holocene alluvial and lacustrine deposits comprise the upper 3,000 feet of the section (Dibblee, 1954; Kovatch, et al., 1962).

These lacustrine deposits near the center of the Imperial Valley have in the past produced abundant fossils, primarily invertebrates, fishes, birds, and large and small land mammals. These paleontological resources are discussed below. Geological materials composing this thick sediment accumulation have been subdivided into stratigraphic units based on differences in lithology and age. Immediately near the Project, sediments composing the Colorado River alluvial fan and delta have been divided into four stratigraphic units, from oldest to youngest: weakly cemented siltstone, sandstone, and conglomerate of the Pliocene marine Imperial Formation; finer grained sediments of the Early Pleistocene mixed marine and nonmarine Borrego Formation; a slightly younger (Middle Pleistocene to Early Holocene) and less consolidated, but otherwise similar sedimentary sequence known as the Brawley Formation; and Late Pleistocene to Holocene sediments informally named the Lake Cahuilla Beds. Because they were derived from a common source and deposited in similar environments, the Borrego Formation, Brawley Formation, and Lake Cahuilla Beds are not easily distinguished from one another. The principal differences between the older and younger lacustrine sediments are stratigraphic position, degree of consolidation, topographic expression, attitude (tilted versus flat-lying), and fossil content. Neither the Imperial Formation nor Borrego Formation is present at or near the surface of any proposed Project feature. Because they will not be impacted by Project construction, they will not be discussed further in this report.

The Quaternary alluvium on the Imperial Valley plain assigned to the Lake Cahuilla Beds is lithologically indistinct from the underlying Brawley Formation, but can be distinguished from it by stratigraphic position, degree of consolidation (and therefore topographic expression), amount of deformation, and age. The Brawley Formation is believed to be Pleistocene to possibly Early Holocene in age, while the age of the Lake Cahuilla Beds is probably entirely Holocene (although both Stanley [1962] and Thomas [1963] have presented evidence for a Pleistocene age for the oldest Lake Cahuilla Beds). Strata comprising the Brawley Formation have been deformed by tectonic activity related to movement on the San Andreas and related faults and can often be recognized from the overlying Lake Cahuilla Beds by their non-flat-lying attitude. Because of its greater consolidation and cementation, the older stratigraphic unit also often has a distinct topographic expression. As streams cut through these older deposits, remnants were preserved as topographic highs.

5.9.3.4 Geologic Setting of the Project Site and Vicinity

The geology near the Project site has been mapped or described by numerous workers, including Mendenhall (1909b), Brown (1920, 1923), Dibblee (1954, 1984), Longwell (1954), Merriam and Bandy

(1965), Jennings (1967),Van de Kamp (1973), Morton (1977), Crowell and Baca (1979), Waters (1983), Rigsby (1984), and McKibben (1993), among others. Surficial geologic mapping of the project site and vicinity has been provided at a scale of 1:750,000 by Jennings (1977); at a scale of 1:500,000 by Jenkins (1938); at a scale of 1:250,000 by Brown (1923), Dibblee (1954), Jennings (1967), and Loeltz et al. (1975); and at a scale of 1:125,000 by Morton (1977). No larger scale (such as 1:24,000-scale) geologic maps are currently available for this area. The information in geologic maps and other published and unpublished reports form the basis of the following discussion. The aspects of geology pertinent to paleontological resources are the types, distribution, and age of sediments immediately underlying the project area and their probability of producing fossils during project construction.

Regional geologic mapping of the proposed Project vicinity has been provided by Jennings (1977; 1:750,000 scale), Jenkins (1938; 1:500,000 scale), Brown (1923; 1:250,000 scale), Dibblee (1954; 1:250,000 scale), Jennings (1967; 1:250,000 scale), Loeltz et al. (1975; 1:250,000 scale), and Morton (1977; 1:125,000). No larger-scale mapping of the Project site is available. Unfortunately, in their geologic maps of the Late Cenozoic deposits of the Project area, geologists have not always used formally named stratigraphic units; nor have they consistently used the same map units.

The geologic mapping by Brown, Dibblee, Jennings, Loeltz et al., and Morton indicate that the Project plant site is underlain by the following geologic units, in approximate ascending age: (1) lacustrine deposits of the Lake Cahuilla Beds and (2) overlying deposits referable to the Brawley Formation (Table 5.9-3). The younger Cahuilla Lake Beds form a relatively thin sedimentary deposit over the older Brawley Formation. Thus, although the Cahuilla Lake Beds are mapped as being present at the surface over most of the Project area, the older Brawley Formation may be encountered in deep excavations, such as foundations for electrical transmission line towers. Sediments of both these formations have yielded fossilized remains of continental vertebrates, invertebrates, and plants at numerous previously recorded fossil sites in the Imperial Valley. As shown in Figure 5.9-1, all Project components are underlain by geologic units with high sensitivity.

Table 5.9-3 Geologic Units Underlying the Black Rock Project and their Paleontological Sensitivity Ratings

Geologic Unit	Geologic Map Abbreviation	Age	Types of Species	Sensitivity Rating
Cahuilla Lake Beds	Ql	Holocene	Vertebrates, Invertebrates, Land Plants	High
Brawley Formation	Ql	Holocene to Latest Pleistocene	Vertebrates, Invertebrates, Land Plants	High

5.9.3.5 Paleontological Resource Inventory

An inventory of the paleontologic resources of each stratigraphic unit exposed at the Amended Project site is presented below and the paleontological importance of these resources is assessed. The literature review and SBCM, UCMP, LACM, and SDNHM archival searches conducted for this inventory documented no previously recorded fossil sites within the footprint of the Project facilities or within one mile of the Project. However, numerous fossil sites were documented as occurring in sediments of the Lake Cahuilla Beds and

Brawley Formation. Five non-significant localities containing modern clams were discovered near irrigation ditches during the updated field survey in 2008; however, due to their very young age and lack of fossilization, they are considered non-significant occurrences.

Numerous vertebrate fossil localities have been reported from sediments referable to the Lake Cahuilla Beds and Brawley Formation in the general vicinity of the Project site. Surveys of Quaternary land mammal fossils of California have been made by Hay (1927), Lundelius et al. (1983), and Jefferson (1991b), and surveys of Quaternary birds, reptiles, and amphibians have been made by Miller and DeMay (1953) and Jefferson (1991a).

Lake Cahuilla Beds

The Lake Cahuilla Beds have yielded fossil remains at numerous sites in the Imperial Valley. Blake (1907) stated that the sediments of ancient Lake Cahuilla contained "*myriads of fossil fresh-water shells*". Stearns (1879) used language such as "*vast multitude*" and "*untold millions*" in reference to Lake Cahuilla fossil invertebrates. Jennings (1967) stated that the Lake Cahuilla deposits "*contain abundant nonmarine fossils*." In addition to invertebrates (primarily snails, clams, and ostracods), these fossil remains include wood (Stanley 1962; Van de Kamp, 1973; Whistler et al., 1995), seeds (Waters, 1983), pollen (Whistler et al., 1995), diatoms (Whistler et al., 1995); foraminifera (Van de Kamp, 1979); sponges (Whistler et al., 1995), fish (Hubbs and Miller, 1948; Gobalet, 1992, 1994; Wilke, 1980; Schoenherr, 1993; Whistler et al., 1995), birds (Whistler et al., 1995), and the bones and teeth of a diversity of land mammals (Whistler et al., 1995). Whistler et al. (1995) reported teeth and bones of rodents, rabbits, reptiles (tortoises, lizards, and snakes), horses, and desert bighorn sheep from sediments of the Lake Cahuilla Beds.

In summary, sediments referable to the Lake Cahuilla Beds have yielded scientifically significant fossils in the past. Because this unit in the past has produced significant fossils, under SVP (1995) criteria, the Lake Cahuilla Beds are judged to have high sensitivity.

Brawley Formation

The Brawley Formation was named and described by Dibblee (1954). The Brawley Formation is composed of interbedded, reddish-brown to gray, poorly sorted, clayey silts, and fine sands. Locally these sediments are weakly cemented with calcareous and/or hematite cements, but in other nearby locations they are uncemented. These beds are primarily lacustrine (lake) or fluvial (stream) deposits. The Brawley Formation is Pleistocene in age based on stratigraphic superposition and age-diagnostic fossils. However, several geologists have suggested that the youngest Brawley Formation sediments may be Early Holocene in age.

Fossils have also been previously reported from Brawley Formation sediments at numerous scattered locations. Fossils previously reported from the Brawley Formation include ostracods, foraminifera, snails, clams, fish, horses, other unidentified large mammals, and land plant remains (including wood). Herzig and Mehegan (1987) reported gastropods and ostracods in well cuttings from sediments at shallow depths that are probably Brawley Formation. These fossil remains from the Brawley Formation are scientifically highly significant because the taxa they represent previously had been unreported or only very rarely reported from the fossil record of California. Moreover, continental vertebrate remains are comparatively rare in the fossil record. Additionally, paleontological data derived from a study of the fossil remains, in conjunction with geologic (particularly geochronologic, sedimentologic, and paleomagnetic) evidence, have been significant

in documenting the origin and age of the Brawley Formation and in reconstructing the Pleistocene geologic history of the Imperial Valley and Salton Sea area.

Because fossil vertebrates have been previously reported from the Brawley formation, and because depositional conditions appear to be favorable for the preservation of fossils, the Brawley Formation is judged to also have high sensitivity. There is a high potential for paleontological resources to be negatively impacted during ground disturbance in sediments of the Brawley Formation.

Imperial and Borrego Formations

It should be noted that as the Lake Cahuilla Beds and Brawley formation were derived from a common source and deposited in similar environments, the Borrego Formation, Brawley Formation, and Lake Cahuilla Beds are not easily distinguishable from one another. The principal differences between the older and younger lacustrine deposits are stratigraphic position, degree of consolidation, topographic expression attitude (tilted flat versus lying), and fossil content. Neither the Imperial Formation nor Borrego Formations are present at or near the surface of the Amended Project plant site, offsite injection well locations and associated pipelines, or borrow site. Since they will not be impacted by Amended Project construction, they will not be discussed further.

Paleontological Resources Assessment

A comprehensive review of museum collections records at the UCMP, LACM, and SDNHM in fall 2008 confirmed that no fossil localities have been previously recorded within the Amended Project site or within a one-mile radius. However, numerous vertebrate fossil localities have been reported from sediments referable to the Lake Cahuilla Beds and Brawley Formation in the general vicinity of the site. LACM localities 6252, 6253, 6255, and 6256 yielded significant remains of freshwater fish and terrestrial vertebrates and microvertebrates including reptiles, birds, and mammals from Lake Cahuilla Beds. Localities 6252, 6253, and 6255 also yielded non-vertebrate fossils including diatoms, land plants, clams, snails, and crustaceans.

Based on the review of available data and the field surveys, no fossils are known to directly underlie the proposed Project plant site or the right-of-way of the linear facilities. However, because of the presence of fossil sites in alluvial deposits of the Cahuilla Lake Beds and Brawley Formation in the general vicinity, under SVP (1995) criteria, both these formations have a high sensitivity for producing additional paleontological resources. Fossil remains recovered from either formation during Project construction may be scientifically important and significant.

5.9.4 Environmental Impacts

Potential impacts on paleontological resources resulting from construction of the Amended Project can be divided into construction-related impacts and operation-related impacts. Construction-related impacts to paleontological resources primarily involve terrain modification (excavations and drainage diversion measures). Paleontological resources, including an undetermined number of fossil remains and unrecorded fossil sites; associated specimen data and corresponding geologic and geographic site data; and the fossil-bearing strata, could be adversely affected by (i.e., would be sensitive to) ground disturbance and earth moving associated with Project construction. Direct impacts would result from vegetation clearing, grading of roads and the generating facility site, trenching for pipelines, excavations for equipment foundations, and

any other earth-moving activity that disturbs or buries previously undisturbed fossiliferous sediments making those sediments and their paleontological resources unavailable for future scientific investigation. A paleontological resource can be significant if:

- It provides important information on the evolutionary trends among organisms, relating living organisms to extinct organisms.
- It provides important information regarding development of biological communities or interaction between botanical and zoological biota.
- It demonstrates unusual circumstances in biotic history.
- It is in short supply and in danger of being depleted or destroyed by the elements, vandalism, or commercial exploitation, and is not found in other geographic localities.

The potential environmental effects from construction and operation of the Amended Project on paleontological resources are presented in the following subsections. Significant resources are defined in this report to include the interpretation outlined by SVP (1995), wherein all vertebrate fossils are categorized as having significant scientific value. Identifiable fossil remains recovered during Project construction could represent new taxa or new fossil records for the area, for the State, or for a formation. They could also represent geographic or temporal range extensions. Moreover, discovered fossil remains could make it possible to more accurately determine the age, paleoclimate, and depositional environment of the sediments from which they are recovered. Finally, fossil remains recovered during Project construction could provide a more comprehensive documentation of the diversity of animal and plant life that once existed in Imperial County and could result in a more accurate reconstruction of the geologic history of the Imperial Valley and Salton Sea area. The potential environmental effects from construction and operation of the Project on paleontological resources are presented in the following subsections.

5.9.4.1 Construction and Operation Impacts

The Project site is located on Pleistocene and Holocene-aged alluvial deposits of the Lake Cahuilla Beds and Brawley Formation, both of which have produced fossils in the general vicinity and are considered of high paleontological sensitivity. The planned clearing, grading, and excavations (e.g., for foundations of equipment and facilities, for pipelines to and from the injection and production wells, and to obtain borrow materials for construction of the berm surrounding the plant site), have the potential to result in significant adverse impacts to paleontological resources. However, implementation of the mitigation measures included in Section 5.9.6 (e.g., proper planning by qualified professional paleontologist, employee training, monitoring by professional paleontologist), will ensure that unknown fossils that might be encountered will not be adversely impacted (destroyed), thereby rendering them permanently unavailable. With these measures in place, impacts during Project construction will be less than significant.

Operation phase impacts to paleontological resources typically stem from continuing activities in a specific project area. The operation of the Amended Project will not result in adverse impacts to paleontological resources because no substantial new ground disturbance is expected as part of Project operation.

5.9.4.2 Cumulative Impacts

Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. In general, for scientifically significant paleontological resources that are present within the Amended Project area, the potential for the Project to contribute to significant cumulative impacts would be low with the implementation of measures to avoid or salvage the resources. The mitigation measures incorporated in the Conditions of Certification (COCs) would effectively recover the value to science and society of significant fossils that would otherwise have been destroyed by surface disturbing actions. Further, other projects in the same vicinity as the Amended Project also will be required to comply with the laws and regulations that protect paleontological resources. For these reasons, the Project's potential contribution to significant cumulative adverse impacts would be less than significant.

5.9.5 Mitigation Measures

Paleontological resources mitigation measures are embodied in the CEC's existing COCs for the SSU6 project. The Applicant proposes no changes to the existing COCs.

5.9.6 Conditions of Certification

The Commission's Decision on the original SSU6 Project contained COCs for Paleontological Resources. The Applicant proposes no changes to these COCs for the Amended Project.

PAL-1 The project owner shall submit to the CPM for review and approval, the resume and qualifications of its Paleontological Resources Specialist (PRS). If the approved PRS is replaced prior to completion of project mitigation and report, the project owner shall obtain CPM approval of the replacement. The project owner shall submit to the CPM to keep on file, resumes of the qualified Paleontological Resources Monitors (PRMs). If a PRM is replaced, the resume shall also be provided to the CPM.

The PRS resume shall include the names and phone numbers of references. The resume shall also demonstrate to the satisfaction of the CPM, the appropriate education and experience to accomplish the required paleontological resources tasks.

As determined by the CPM, the PRS shall meet the minimum qualifications for a vertebrate paleontologist as described in the Society of Vertebrate Paleontology (SVP) guidelines of 1995

The experience of the PRS shall include the following:

- Institutional affiliations or appropriate credentials and college degrees;
- Ability to recognize and collect fossils in the field;
- Local geological and biostratigraphic expertise;
- Proficiency in identifying vertebrate and invertebrate fossils; and:
- At least three years of paleontological resource mitigation and field experience in California, and at least one year of experience leading paleontological resource mitigation and field activities.

The project owner shall ensure that the PRS obtains qualified PRMs to monitor the project as he or she deems necessary. PRMs shall have the equivalent of the following qualifications:

1. BS or BA degree in geology or paleontology and one year experience monitoring in California;

2. AS or AA degree in geology, paleontology, or biology and four years experience monitoring in California; or

3. Enrollment in upper division classes pursuing a degree in the fields of geology or paleontology and two years of monitoring experience in California.

Verification: At least 60 days prior to the start of ground disturbance, the project owner shall submit a resume for review and approval as well as a statement of availability for its designated PRS for on-site work.

At least 20 days prior to ground disturbance, the project owner shall provide a letter with resumes naming anticipated PRMs for the project and stating that the identified PRMs meet the minimum qualifications for paleontological resource monitoring required by the condition. If additional PRMs are obtained during the project, the PRS shall provide additional letters and resumes to the CPM. The letter shall be provided to the CPM no later than one week prior to the monitor beginning on-site duties.

At least 10 working days prior to termination or release of the PRSD, the project owner shall submit the resume of the proposed new PRS to the CPM for review and approval. In an emergency, the project owner shall immediately notify the CPM to discuss the qualifications and approval of a short-term replacement while a permanent PRS is proposed to the CPM for consideration.

PAL-2 The project owner shall provide to the PRS and the CPM, for approval, maps, and drawings showing the footprint of the power plant, construction laydown areas and all related facilities. Maps shall identify all areas of the project where ground disturbance is anticipated. If the PRS requests enlargements or strip maps for linear facility routes, the project owner shall provide copies to the PRS and CPM. The site grading plan and profile drawings for the utility lines would normally be acceptable for this purpose. The plan drawings should show the location and depth, and extent of all ground disturbance and can be of such as scale that 1 inch = 40 feet to 1 inch = 100 feet range. If the footprint of the power plant or linear facility changes, the project owner shall provide maps and drawings reflecting these changes to the PRS and CPM.

If construction of the project will proceed in phases, maps and drawings maybe submitted prior to the start of each phase. A letter identifying the proposed schedule of each project phase shall be provided to the PRS and CPM. Prior to work commencing on affected phases, the project owner shall notify the PRS and CPM of any construction phase scheduling changes.

At a minimum, the project owner shall ensure that the PRS or PRM consults weekly with the project superintendent or construction field manager to confirm area(s) to be worked during the next week, until ground disturbance is completed.

Verification: At least 30 days prior to the start of ground disturbance, the project owner shall provide the maps and drawings to the PRS and CPM.

If there are changes to the footprint of the project, revised maps and drawings shall be provided to the PRS and CPM at least 15 days prior to the start or restart of ground disturbance.

If there are changes to the scheduling of the construction phases, the project owner shall submit a letter to the CPM within five days of identifying the changes.

PAL-3 The project owner shall ensure that the PRS prepares, and the project owner shall submit to the CPM for review and approval, a Paleontological Resources Monitoring and Mitigation Plan (PRMMP) to identify general and specific measures to minimize potential impacts to significant paleontological resources. Approval of the PRMMP by the CPM shall occur prior to any ground disturbance. The PRMMP shall function as the formal guide for monitoring, collecting, and sampling activities and may be modified with CPM approval. This document shall be used as the basis for discussion in the event that on-site decisions or changes are proposed. The project owner shall ensure that copies of the CPM-approved PRMMP are distributed to the PRS, all PRMs, the project owner's on-site construction manager and the CPM.

The PRMMP shall be developed in accordance with the guidelines of the Society of Vertebrate Paleontology (SVP, 1995) and shall include, but not be limited to, the following:

1. Assurance that the performance and sequence of project-related tasks, such as any literature searches, pre-construction surveys, worker environmental training, fieldwork, flagging or staking; construction monitoring; mapping and data recovery; fossil preparation and collection; identification and inventory; preparation of final reports; and transmittal of materials for curation will be performed according to the PRMMP procedures;

2. Identification of the person(s) expected to assist with each of the tasks identified with in the PRMMP and Conditions of Certification;

3. A thorough discussion of the anticipated geologic units expected to be encountered, the location and depth of the units relative to the project when known and the known sensitivity of those units based on the occurrence of fossils either in that unit or in correlative units;

4. A discussion of the locations where the monitoring of project construction activities is deemed necessary, and a proposed schedule for the monitoring and sampling;

5. A discussion of the procedures to be followed in the event of a significant fossil discovery, halting construction, resuming g construction, and how notifications will be performed;

6. A discussion of equipment and supplies necessary for collection of fossil materials and any specialized equipment needed to prepare, remove, load, transport, and analyze large-sized fossils or extensive fossil deposits;

7. Procedures for inventory, preparation, and delivery for curation into a retrievable storage collection in a public repository or museum, which meets the Society of Vertebrate Paleontology standards and requirements for the curation of paleontological resources;

8. Identification of the institution that has agreed to receive and data and fossil materials collected, requirements or specifications for materials delivered for curation and how they will be met, and the name and phone number of the contact person at the institution; and

9. A copy of the paleontological Conditions of Certification.

Verification: At least 30 days prior to ground disturbance, the project owner shall provide a copy of the CPM-approved PRMMP to the CPM. The PRMMP shall include an affidavit of authorship by the PRS, and acceptance ob the project owner evidenced by a signature.

PAL-4 Prior to ground disturbance and for the duration of construction, the project owner and the PRS shall prepare and conduct weekly CPM approved training for all project managers, construction supervisors and workers who are involved with or operate ground disturbing equipment or tools. Workers shall not excavate in sensitive units prior to receiving CPM-approved worker training. Worker training shall consist of an initial in-person PRS training prior to ground disturbance. Following the initial in-person training, a CPM-approved video or in-person training may be used for new employees. The training program may be combined with other training programs prepared for cultural and biological resources, hazardous materials, or any other areas of interest or concern.

The Worker Environmental Awareness Program (WEAP) shall address the potential to encounter paleontological resources in the field, the sensitivity and importance of these resources, and the legal obligations to preserve and protect such resources.

The training shall include:

1. A discussion of applicable laws and penalties under the law;

2. Good quality photographs or physical examples of vertebrate fossils that may be expected in the area shall be provided;

3. Information that the PRS or PRM has the authority to halt or redirect construction in the event of a discovery or unanticipated impact to a paleontological resources;

4. Instruction that employees are to halt or redirect work in the vicinity of a find and to contact their supervisor and the PRD or PRM;

5. An informational brochure that identifies reporting procedures in the event of a discovery;

6. A Certificate of Completion of WEAP form signed by each worker indicating that they have received the training; and

7. A sticker that shall be placed on hard hats indicating that environmental training has been completed.

Verification: At least 30 days prior to ground disturbance, the project owner shall submit to the CPM the proposed WEAP including the brochure with the set of reporting procedures the workers are to follow.

At least 30 days prior to ground disturbance the project owner shall submit the script and final video to the CPM for approval if the project owner is planning on using a video for interim training.

If an alternate paleontological trainer is requested by the owner, the resume and qualifications of the trainer shall be submitted to the CPM for review and approval. Alternate trainers shall not conduct training prior to CPM authorization.

In the Monthly Compliance Report (MCR), the project owner shall provide copies of the WEAP Certification of Completion forms with the names of those trained and the trainer or type of training offered that month. The MCR shall also include a running total of all persons who have completed the training to date.

PAL-5 The project owner shall ensure that the PRS and PRM(s) monitor, (consistent with the PRMMP), all construction-related grading, excavation, trenching, and augering in areas where potentially fossil-bearing materials have been identified. In the event that the PES determines full time monitoring is not necessary in locations that were identified as potentially fossil-bearing in the PRMMP, the project owner shall notify and seek the concurrence of the CPM.

The project owner shall ensure that the PRS and PRM(s) have the authority to redirect construction if paleontological resources are encountered. The project owner shall ensure that there is no interference with monitoring activities unless directed by the PRS. Monitoring activities shall be conducted as follows:

1. Any change of monitoring different from the accepted schedule presented in the PRMMP shall be proposed in a letter or e-mail from the PRES and the project owner to the CPM prior to the change in monitoring. The letter or e-mail shall be submitted to the CPM for review and approval and shall include the justification for the change in monitoring.

2. The project owner shall ensure that the PRM(s) keeps a daily log or monitoring paleontological resources activities. The PRS shall recommend corrective action to resolve the issues or achieve compliance with Conditions of Certification.

3. The project owner shall ensure that the PRS notifies the project owner and the CPM within 24 hours of the occurrence of any incidents of non-compliance with any paleontological resources conditions of certification, The PRS shall recommend corrective action to resolve the issues or achieve compliance with the Conditions of Certification.

4. Either the project owner or the PRS shall notify the CPM within 24-hours (or Monday morning in the case of a weekend) of a significant find of fossil materials or a halt in construction activities due to the discovery of fossil materials.

The project owner shall ensure that the PRS prepares a summary of the monitoring and other paleontological activities that will be included in the MCR. The summary will include the name(s) of PRS or PRM(s) active during the month, general descriptions of training and monitored construction activities and general locations of excavations, grading, etc. A section of the report will include the geologic units or subunits encountered; descriptions of sampling within each unit; and a list of identified fossils. A final section of the report will address any issues or concerns about the project related to paleontological monitoring including any incidents of non-compliance and any changes to the monitoring plan that have been approved by the CPM. If no monitoring took place during the month, the project owner shall include an explanation in the summary as to why monitoring was not conducted.

Verification: The project owner shall ensure that the PRS submits the summary of monitoring and paleontological activities in the MCR. When feasible, the CPM shall be notified 10 days in advance of any proposed changes in monitoring different from the plan identified in the PRMMP. If there is an unforeseen change in monitoring the notice shall be given as soon as possible prior to the change.

PAL-6 The project owner, through the PRS, shall ensure that all components of the PRMMP are adequately performed throughout project construction.

Verification: The project owner shall maintain in their compliance file, copies of signed contracts or agreements with the PRS and other qualified research specialists. The project owner shall maintain these files for a period of three years after completion and approval of the CPM-approved Paleontological Resources report (PRR) (see APL-7). The project owner shall be responsible for payment of any curation fees charged by the museum for fossils collected and curated as a result of paleontological mitigation. A copy of the letter submitting the fossils to the curating instruction shall be submitted to the CPM.

PAL-7 The project owner shall ensure preparation of a PRR by the designated PRS. The PRR shall be prepared following completion of ground disturbing activities. The PRR shall include an analysis of the collected fossil materials and related information and submitted to the CPM for review and approval.

The report shall include, but not be limited to, a description and inventory of recovered fossil materials; a map showing the location of paleontological resources encountered; determinations of sensitivity and significance; and a statement by the PRS that project impacts to paleontological resources have been mitigated to below the level of significance.

Verification: Within 90 days of completion of ground disturbing activities, including landscaping, the project owner shall submit the PRR under confidential cover to the CPM.

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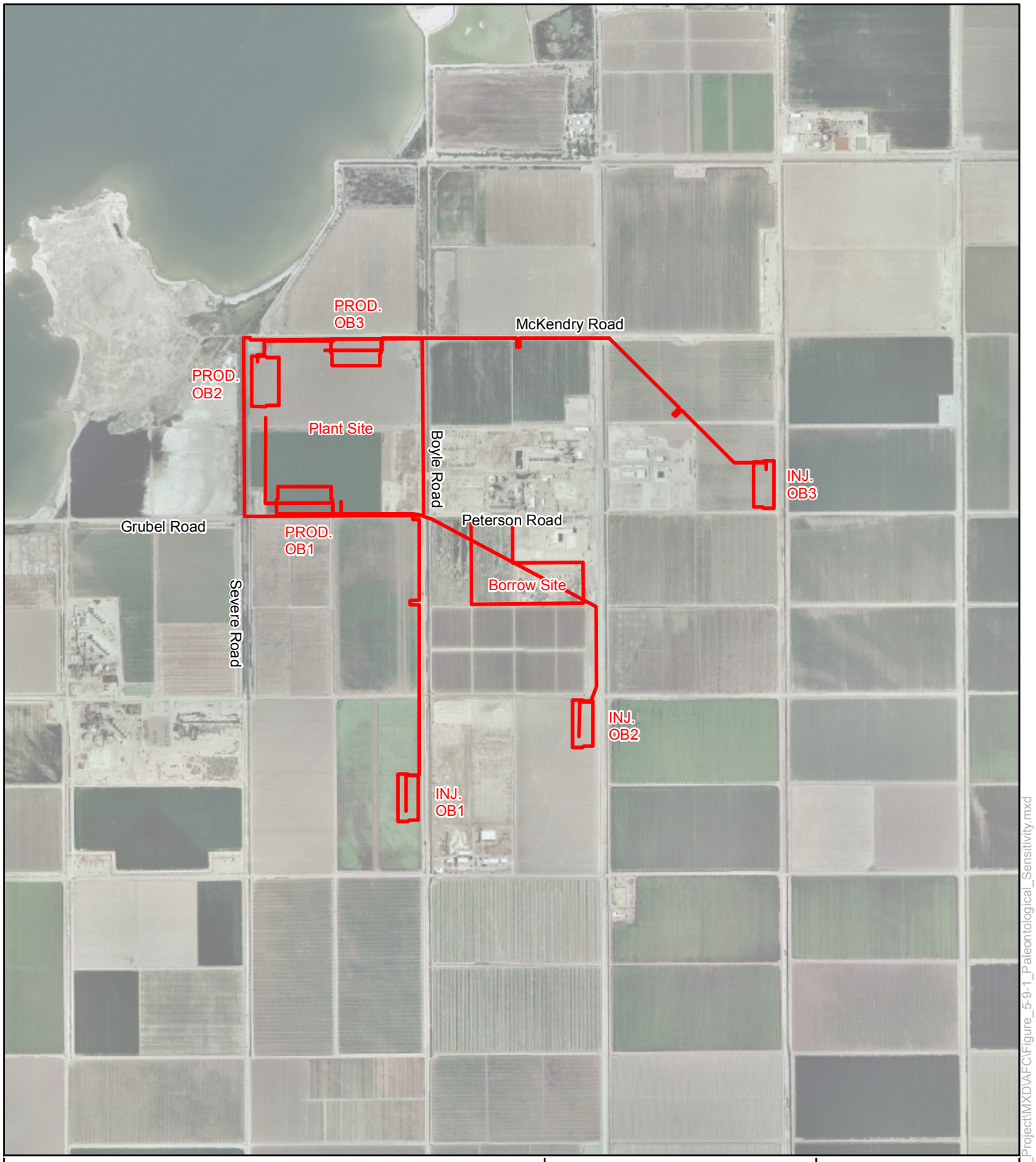

Legend

High Sensitivity

Note: Entire Project (Plant Site, Injection Well Pads, Pipelines and Borrow Site) is high sensitivity for paleontological resources.

1 inch = 2,000 feet

0 1,000 2,000 4,000 Feet

Amended SSU6 Project
Figure 5.9-1
Paleontological Sensitivity

CE GENERATION LLC
A MIDAMERICAN ENERGY HOLDINGS COMPANY AFFILIATE

AECOM

Project: 12676-001
Date: February 2009

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