APPENDIX E

Paleontological Resource Technical Report

PALEONTOLOGICAL RESOURCE TECHNICAL REPORT
LADWP Scattergood Generating Station (SGS),
Unit 3, Repowering Project
Vista del Mar,
CITY OF LOS ANGELES, CALIFORNIA

Prepared for:

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TABLE OF CONTENTS

EXECUTIVE SUMMARY

The following Paleontological Resource Technical Report has been prepared by John Minch and Associates, Inc. (JMA) at the request of Mr. Thomas Ryan of Power Engineers, Inc. Presented within are the results of a paleontologic assessment for the proposed LADWP Scattergood Generating Station (SGS), Unit 3, Repowering Project, located on Vista del Mar in Los Angeles, California.

The field survey and report were prepared using currently accepted paleontologic methods. The reconnaissance walkover survey was performed by JMA in February 2011. The field survey has been completed. JMA researched available published and unpublished scientific literature and museum locality records considered pertinent to the site as well as site rock units and contained fossil resources. No fossil specimens were identified during the field survey

The Pleistocene older alluvial sediments (Qal) of the Los Angeles Basin underlying the site are considered to be of high paleontologic sensitivity and are known to contain significant fossils in areas near the proposed project.

In light of the potential of encountering significant fossil resources during excavation of the site, recommendations are provided that if implemented would insure that excavations could proceed with less than significant impacts to paleontological resources.

INTRODUCTION

In accordance with the authorization of Power Engineers, Inc. JMA completed this Paleontological Resource Technical Report for the proposed LADWP Scattergood Generating Station (SGS), Unit 3, Repowering Project, located on Vista del Mar in Los Angeles, California. This survey and technical report were performed to:

- evaluate the existing paleontological resources of the area,
- determine if the redevelopment of the site will have any significant adverse impact on paleontological resources, and
- determine appropriate mitigation measures to minimize adverse impacts to paleontological resources (if any).

SITE DESCRIPTION

The Project Site is located in the city of Los Angeles within the existing Scattergood Generating Station on Vista del Mar, east of and adjacent to Dockweiler State Beach and Santa Monica Bay. It is approximately one mile south of the south runway of Los Angeles International Airport. The Chevron refinery property forms the southern boundary and the Hyperion WWTP forms the northern boundary. The site encompasses approximately 56 acres with elevations ranging from 30 feet to 155 feet.

The site is situated on the coastal bluffs that border the Los Angeles coastal plain which forms the relatively flat Los Angeles basin surface. The site topography has been highly modified to accommodate construction of the existing plant. Most of the flat surfaces are covered by buildings and pavement. Most of the slopes are covered with impermeable erosion control layers and vegetation such as ice plant. There are a few exposures of the geologic rock units on the site. Rock exposures on the adjacent properties also provided access to the geologic units underlying the site.

METHODOLOGY

The following was included in the investigation:

- Walkover and inspection of the geologic units exposed on and adjacent to the project site.
- Review of the available geologic literature pertinent to the geologic units and fossils including paleontological localities.
- Review of available EIR reports deemed pertinent to the site development.

PERTINENT LITERATURE

A literature review was performed to aid in the description and evaluation of the paleontological sensitivity of each geologic unit that will be encountered during Project construction. The literature review included published and unpublished paleontological and geological papers and maps, investigations, museum records and databases. Available geologic maps and reports that cover the Project site and its vicinity were reviewed to determine the areal extent of exposed and subsurface geologic units.

Paleontological literature was reviewed to determine the location of published fossil localities at the Project site or in the site vicinity, and in the geologic units that will be encountered by construction. The paleontological literature was also used to determine the types of fossils that might be encountered as well as the scientific importance of the fossils. Archival searches were conducted at the Los Angeles County Museum (LACM) and on the University of California Museum of Paleontology (UCMP) at Berkeley paleontologic website to locate known fossil localities at the Project site or in its vicinity. Dr. Samuel McLeod, Vertebrate Paleontologist at LACM, undertook the paleontological resources record data search. See report detailing results of data search in Appendix.

The literature review and LACM museum archival record searches documented no previously recorded fossil sites within the limited footprint of the Project Site. However, numerous fossil localities have been reported from sediments referable to the Project Site. There is no detailed geological or paleontological literature on the specific project area. Geological maps of the site delineate late Pleistocene sediments on the site. The most detailed, recently published, geologic map of the area is by Dibblee (2007).

FIGURE 1. REGIONAL LOCATION AND VICINITY MAP

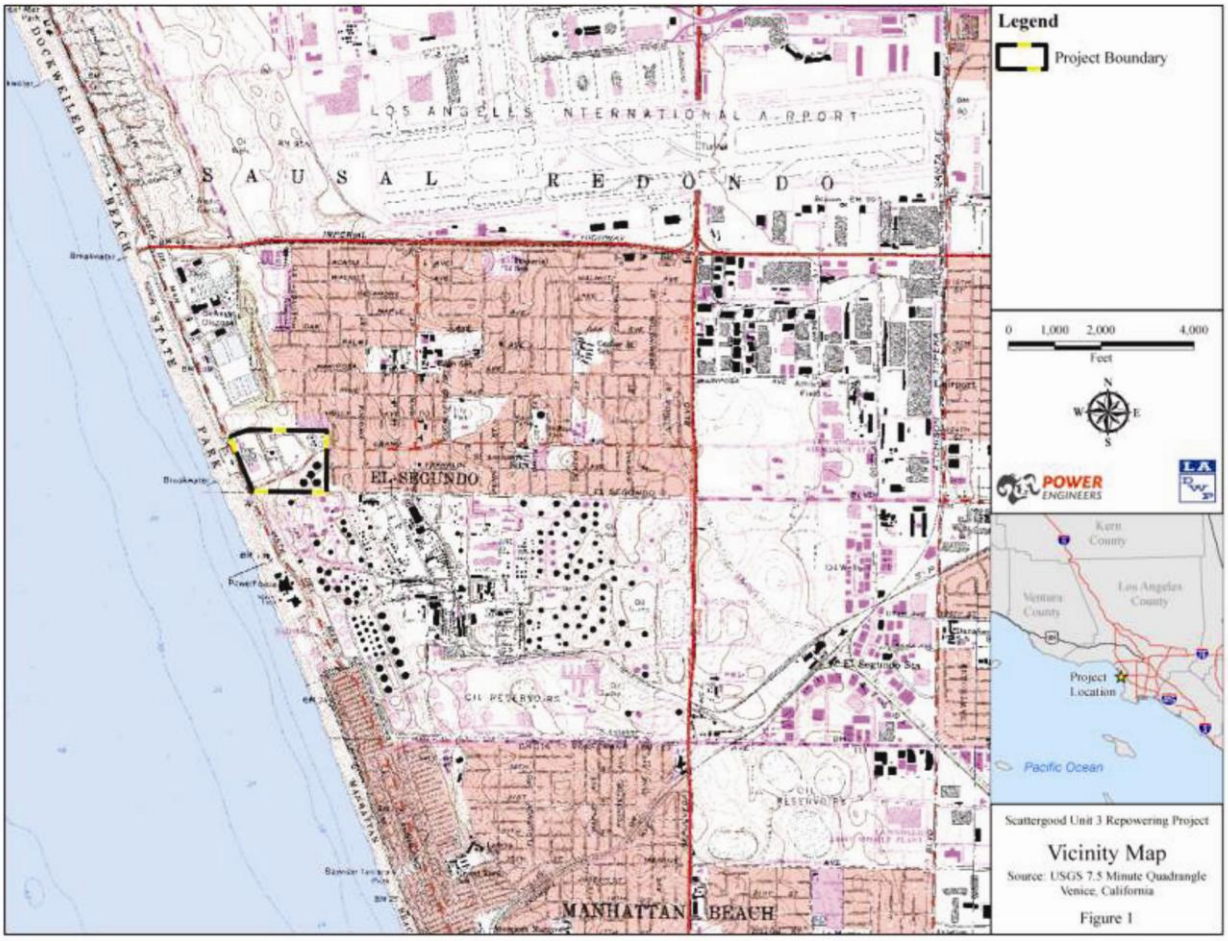
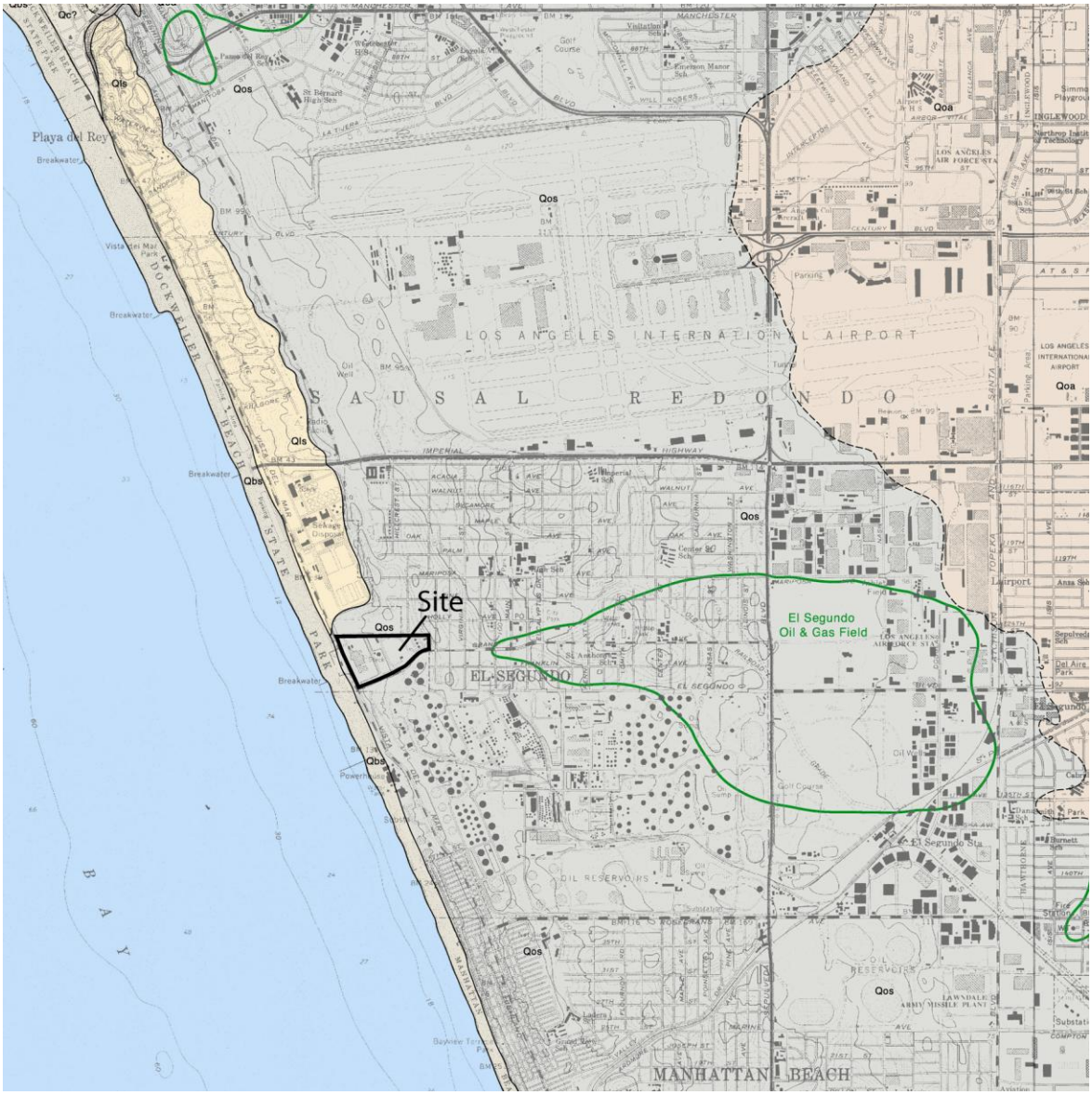


Figure 1 - Site Location Map



Qbs = Quaternary beach sand (Recent)

Qls = Quaternary loose dune sand (Recent) (wind blown)

Qos = Quaternary older dune sand (Pleistocene to Recent) (wind blown)

Qal = Quaternary Older Alluvium (Pleistocene}

FIGURE 2 – Geologic map of area. (Dibblee, 2007)

ON-SITE FIELD RECONNAISSANCE

No paleontologic resources were encountered during the visual inspection of exposures during the February 2011 field reconnaissance survey of the project site which was conducted to locate and check accessible exposures of the underlying rock units for the presence of paleontologic resources and unrecorded fossil localities, as well as the presence of potentially fossiliferous strata by JMA paleontologist John Minch, Ph.D. Dr. Minch is a locally experienced, County qualified vertebrate paleontological consultant who is a registered Professional Geologist in the State of California (PG #3269).

LORs FOR PALEONTOLOGICAL RESOURCES

Paleontological resources are considered nonrenewable and consist of the fossilized remains or traces of prehistoric organisms. Such remains are provided protection under the 1906 Federal Antiquities Act and other federal legislation and state laws.

California Public Resources Code [PRC §5097.5] states: No person shall knowingly and willfully excavate upon, or remove, destroy, injure or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands. Violation of this section is a misdemeanor. 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.

Under California Environmental Quality Act (CEQA) guidelines (Public Resources Code 15064.5), a project must be evaluated for its potential to cause a significant impact to paleontological resources. Under CEQA, paleontological resources are included with cultural resources.

The Society of Vertebrate Paleontology (SVP) has established its own “Standard Guidelines for the Assessment and Mitigation of Adverse Impacts to Nonrenewable Paleontological Resources” (SVP, 1994). These guidelines are a set of procedures and standards for assessing and mitigating impacts to vertebrate paleontological resources. These guidelines are accepted by most authorizing agencies as the standard for mitigation of impacts to paleontological resources.

IMPORTANCE CRITERIA FOR PALEONTOLOGICAL RESOURCES

The paleontological importance of a geologic unit is based on the potential for the unit to produce fossil remains and the scientific importance of their respective taxa. Fossils and fossiliferous deposits are considered important paleontological resources if they represent the remains of vertebrates and/or invertebrates or provide important information as to (1) the identification of an organism, (2) evolutionary trends of a lineage, (3) the environment in which the organism lived, or (4) biostratigraphic data to help determine the relative age of the geologic unit from which the fossil was derived.

Paleontological significance/importance is evaluated based on a review of pertinent geologic maps, applicable paleontological and geological literature pertinent to the local and regional geologic units and archival searches and interviews at appropriate paleontological repositories for information on known fossil localities, and the results of a field survey.

From this information, the importance of each geologic unit that will be encountered during Project construction is determined to be high, low, or none. Because the distribution and density of fossil remains or localities in a geologic unit in a project area often are unknown until after construction, the entire unit is assigned the same level of importance. A highly important geologic unit is one that has a high potential to produce identifiable vertebrate, invertebrate, or plant remains.

PALEONTOLOGICAL SENSITIVITY RATINGS

Due to the high sensitivity rating of the rock units underlying this site there is a high potential for significant paleontological resources to occur below surface. Therefore, the entire site has a high potential for significant paleontological resources and thus a HIGH SENSITIVITY RATING.

BIOSTRATIGRAPHY

Geologic Setting

San Pedro Formation (Qsp), Palos Verdes Sands (Qpv), and Quaternary Alluvial Deposits (Qal)

The relatively thin surface and near surface geologic units that underlie the Los Angeles coastal plain and the project area are frequently collectively mapped as Quaternary Alluvium (Qal). They range in age up to about a million years before present. Named

mapped geologic units included in the Qal in the western Los Angeles basin include the San Pedro Formation, Palos Verdes Sand, and Quaternary Stream deposits. Hydrogeologic units include Old Dune Sand, Manhattan Beach Clay, Gage Sand, El Segundo Clay, and the Silverado Sand. These units have been described and mapped by Dall (1898), Arnold (1903), Kew (1923), Tieje (1926), Woodring et. al. (1936, 1946), Brandy and Emery (1954), Kundert (1955), Poland and Piper (1956), Yerkes *et al*. (1965), Allen (1974), Cleveland (1976), Reiter (1984) and many others.

These units were deposited by a variety of surface environments such as perennial streams, alluvial fans, lakes, lagoons, deltas, marine terrace to near-shore, and wind. Due to shifting of the differing, often local, environments of deposition these units exhibit complex interfingering relationships with vertical and lateral variability. When combined with poor exposures and urban development these geologic units are difficult to individually characterize and, thus, without fossil evidence are difficult to trace and map as separate geologic units. Due to this variability and lack of adequate exposures most of these units are included in and designated as Qal on geologic maps. Paleontological resources are known to vary in distribution within this generalized geologic unit in areas adjacent to the project.

Site Geology

Sedimentary units of predominantly Pleistocene age underlie the project area. Geologic maps indicate that excavation of the site will encounter sedimentary rocks of the Los Angeles County coastal plain area known to be Pleistocene to Holocene in age. These sediments include deposits that range from non-marine wind and floodplain to near-shore marine deposits. Lithologies include sand, gravel, silt and clay; all of which are potentially favorable to the preservation of paleontological resources. Previous construction on the site has largely removed the shallow surficial surface Quaternary Older Sands (Qos) unit and exposed the underlying regional geologic units.

The geologic report for the site considers the near surface geologic unit to be “eolian deposits of sand, sand with silt, and silty sand. They do not assign the outcrops to any particular geologic unit. Geologic mapping of the area has assigned the site surficial rocks to the Old Dune/Gage Sand (Qos) which consists of light brown to brown, fine to medium grained sand with lenses of sandy gravel and occasional cobbles. Sparse exposures on and just off-site consist of beds of well-sorted fine (wind blown) sand and poorly-sorted silty to gravely sand. Based on knowledge of the sediments and geologic units in the area this author considers the sediments underlying the site as best

assigned to the Old Dune/Gage Sand, the Palos Verdes Sand, and/or the San Pedro Sand. Current paleontological investigations, by the author, at the ERG El Segundo regeneration project, one mile to the south have exposed the Old Dune/Gage Sand and the Palos Verdes Sand lithologies of fine sand, sandy gravel with thin beds of fore-beach sand containing fossil mollusca.

All of the Qal sediments are considered to be highly sensitive. Many of them contain significant paleontological resources in the Los Angeles Basin. Others, due to their environment of deposition, are considered to be potentially fossiliferous.

FOSSILS ON THE PROJECT SITE

No fossils were noted or recovered from the sediments on the site during the field reconnaissance survey. Published and unpublished literature indicates that sediments of the Los Angeles County coastal plain area contain fossil localities in the site units and their equivalents. Vertebrate fossil remains have been recovered from localities within the site units. The LACM search indicated "We have no vertebrate fossil localities that lie directly within the proposed project area, but we do have localities nearby from the same or similar sedimentary deposits as occur within the proposed project area."

FOSSILS IN THE SITE GEOLOGIC UNITS IN ADJACENT AREAS

The LACM locality search indicates that the vertebrate fossil localities that are closest to the site occur northeast of the proposed project area in or around the Los Angeles International Airport.

These localities include LACM 3264, in the middle of the Los Angeles International Airport approximately 450 feet south of Century Boulevard and 2000 feet west of Sepulveda Boulevard northeast of the proposed project area, that produced a fossil proboscidean, Proboscidea, at a depth of 25 feet below the surface; locality LACM 7332, further east at the northwest side of West Century Boulevard and Bellanca Avenue, that produced a fossil baby mammoth, *Mammuthus,* at a depth of 40 feet below street grade; locality LACM 3789, further north of locality LACM 7332 at 8734 Bellanca Avenue south of Manchester Avenue, that produced fossil mammoth, *Mammuthus,* rodent, Rodentia, and even a speckled sanddab, *Citharichthys stigmaens,* at a depth of 14 feet below the surface; and two localities, LACM 1180 and LACM 4942,

immediately northwest of locality LACM 3789 on the northeast and southeast sides respectively of Airport Boulevard at the intersection with Manchester Avenue, that produced fossil specimens of horse, *Equus,* mammoth, *Mammuthus,* bison. *Bison,* and rabbit, *Lepus,* at depths of 13 to 16 feet below the surface. East-southeast of the proposed project area, east of the San Diego Freeway (1-405) and south of El Segundo Boulevard, near the intersection of Prairie Avenue and 139th Street, the vertebrate fossil locality LACM 2035 produced a fossil specimen of mammoth, *Mammuthus,* at an unrecorded depth.

The La Brea Tar Pits in the northwestern portion of the Los Angeles Basin contain a fossil assemblage within the Palos Verdes Sand of upper Pleistocene age that is well known world-wide. This assemblage includes a wide variety of carnivores (canids and felids), small to large ungulate herbivores (cervids, antilocaprids, camelids, equids, suiids), edentates (sloths), and a myriad of small mammals including lagomorphs (rabbits), rodents, insectivores and a variety of birds and lower vertebrates (frogs, lizards and snakes). Many of the fossil specimens represent the best preserved specimens of particular taxa found to date.

Fossil assemblages from the San Pedro Sands and Palos Verdes Sands in the San Pedro area contain fossil remains of most of the above mentioned Rancho La Brea terrestrial vertebrates, as described by Hay (1927) and Miller (1971). Also included at the San Pedro sites are aquatic mammalian taxa including otter, whale, and dolphin as well as shark, teleost fish, and birds.

SIGNIFICANCE OF PALEONTOLOGICAL RESOURCES

The vertebrate assemblages contained in the Pleistocene sediments of the Los Angeles coastal region provide the best known record of late Pleistocene faunas in California. The near shore marine as well as continental sedimentary deposits of this coastal plain area have provided conditions favorable for preserving vertebrate fossils that have proven to be of significant scientific value. Any new localities need to be carefully collected.

CONCLUSIONS

The excavation into undisturbed subsurface sediments deposited in the Los Angeles County coastal plain area have high potential to impact paleontologic resources. The Los Angeles coastal plain area sediments are considered to be of high paleontologic sensitivity and are known to contain significant fossils. It is possible that previously unidentified paleontological resources present on the plant site could be disturbed or destroyed during construction as the result of excavation activity. Careful development of this area may increase our knowledge and collections of the fossil assemblages and environment of deposition of the rock units in this area. The site can be developed and still protect the paleontological resources of the area if the following mitigation measures are followed.

MITIGATION MEASURES

A. The project owner shall retain a qualified vertebrate paleontologist to design and implement a paleontologic resource mitigation monitoring program to mitigate impacts to significant nonrenewable resources. This plan should include a grading observation schedule to be maintained when grading in bedrock units to further evaluate the fossil resources of the site. This monitoring and mitigation plan shall be consistent with SVP (1995) standard guidelines for the mitigation of construction-related adverse impacts on paleontological resources, as well as the requirements of the designated museum repository for any fossils collected (SVP 1996). Specific components to be included in the monitoring program include the following:

1. A construction worker education program will be conducted to inform the workforce about the potential for discovery of paleontological resources and will include:
    - procedures to follow if resources are discovered during any construction-related activities including order of notification of appropriate construction personnel and LADWP officials, and redirection of construction activities while the find is evaluated,
    - a description of known resources in the area, and,

- clarification that these resources are protected by law and that there is a strict prohibition against collection or disturbance of any paleontological resource.

2. Excavation into the older Quarternary alluvial deposits, including the stratigraphic equivalents of the Palo Verdes Sand or San Pedro Fm. that possess a high paleontological sensitivity rating, shall be monitored by a professional paleontologist. Areas to be monitoring during construction shall be determined after review of detailed geologic boring information.

3. Procedures shall be established for identification, salvage, analysis, curation and accession into a museum repository with permanent retrievable storage of any significant fossil specimens and data recovered.

4. A Paleontological Resources Report (PRR) shall be prepared with an appended itemized inventory of specimens, upon completion of monitoring and evaluation. The report, inventory, and record of accession when submitted to LADWP, will signify completion of the program to mitigate impacts to paleontologic resources.

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NATURAL HISTORY MUSEUM
LOS ANGELES COUNTY

8 March 2011

John Minch & Associates, Inc.
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Attn: John A. Minch

re: Paleontological Resources Records Search for the proposed LADWP Scattergood Power Plant Regen Project, in the City of El Segundo, Los Angeles County, project area

Dear John:

I have thoroughly searched our paleontology collection records for the locality and specimen data for the proposed LADWP Scattergood Power Plant Regen Project, in the City of El Segundo, Los Angeles County, project area as outlined on the portion of the Venice USGS topographic quadrangle map that you sent to me via e-mail on 7 March 2011. We have no vertebrate fossil localities that lie directly within the proposed project area, but we do have localities nearby from the same or similar sedimentary deposits as occur within the proposed project area.

The entire proposed project area has surficial deposits consisting of older Quaternary coastal dune sands. At relatively shallow depth, however, there are older Quaternary alluvial deposits that contain vertebrate fossils. Our closest vertebrate fossil localities from these deposits occur northeast of the proposed project area in or around the Los Angeles International Airport These localities include LACM 3264, in the middle of the Los Angeles International Airport approximately 450 feet south of Century Boulevard and 2000 feet west of Sepulveda Boulevard northeast of the proposed project area, that produced a fossil proboscidean, Proboscidea, at a depth of 25 feet below the surface; locality LACM 7332, further east at the northwest side of West Century Boulevard and Bellanca Avenue, that produced a fossil baby mammoth, *Mammuthus*, at a depth of 40 feet below street grade; locality LACM 3789, further north of locality LACM 7332 at 8734 Bellanca Avenue south of Manchester Avenue, that produced fossil mammoth, *Mammuthus*, rodent, Rodentia, and even a speckled sanddab,

Citharichthys stigmaeus, at a depth of 14 feet below the surface; and two localities, LACM 1180 and LACM 4942, immediately northwest of locality LACM 3789 on the northeast and southeast sides respectively of Airport Boulevard at the intersection with Manchester Avenue, that produced fossil specimens of horse, *Equus*, mammoth, *Mammuthus*, bison, *Bison*, and rabbit, *Lepus*, at depths of 13 to 16 feet below the surface. East-southeast of the proposed project area, east of the San Diego Freeway (I-405) and south of El Segundo Boulevard, near the intersection of Prairie Avenue and 139th Street, our vertebrate fossil locality LACM 2035 produced a fossil specimen of mammoth, *Mammuthus*, at an unrecorded depth.

Surface grading or very shallow excavations in the Quaternary sands exposed in the proposed project area are unlikely to encounter significant vertebrate fossil remains. Deeper excavations in the proposed project area that extend down into older Quaternary alluvial deposits, however, may well uncover significant fossil vertebrate specimens. Therefore, any substantial excavations in the proposed project area should be monitored closely to quickly and professionally recover any fossil remains discovered while not impeding development. Any fossils recovered during mitigation should be deposited in an accredited and permanent scientific institution for the benefit of current and future generations.

This records search covers only the vertebrate paleontology records of the Natural History Museum of Los Angeles County. It is not intended to be a thorough paleontological survey of the proposed project area covering other institutional records, a literature survey, or any potential on-site survey.

Sincerely,

Samuel A. McLeod

Samuel A. McLeod, Ph.D.
Vertebrate Paleontology

enclosure: draft invoice