

**PALEONTOLOGICAL RESOURCES INVENTORY REPORT FOR
THE
NAKANO PROJECT
CITY OF CHULA VISTA,
SAN DIEGO COUNTY, CALIFORNIA**

Prepared for:

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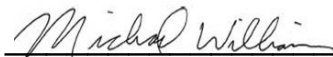
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February 17, 2022

Mr. David Stearn
13400 Sabre Springs Parkway, Suite 200
San Diego, California 92128

Subject: *Paleontological Resources Inventory Report for the Nakano Project, City of Chula Vista, San Diego County, California*

Dear Mr. Stearn:

This letter documents the results of the paleontological resources inventory in support of the Nakano project (project), located in the City of Chula Vista, San Diego County, California (Figure 1, Project Location Map - Attached). The project proposes a residential development with supporting recreational amenities and infrastructure of approximately 23.77 acres (Figure 1, Project Location Map - Attached). The project site is located east of Interstate 805, northwest of Dennery Road, and south of the Otay River and is shown on Section 24 of Township 18 South, Range 2 West, San Bernardino Meridian on the Imperial Beach U.S. Geological Survey quadrangle (USGS 1996). The City of Chula Vista is the lead agency responsible for compliance with the California Environmental Quality Act (CEQA). The project includes two scenarios: the Annexation Scenario, with the site being annexed into the City of San Diego, and the No Annexation Scenario, with the site remaining in the City of Chula Vista. Both project scenarios propose the same development footprint.

The proposed project consists of a residential development with supporting recreational amenities and infrastructure on Assessor's Parcel Number (APN) 624-071-0200 and includes up to 108,200 cubic yards of cut to a depth of 22 feet according to current grading plans. The proposed residential uses would consist of multi-family housing units. Recreational amenities would include a local-serving park, a regional overlook park associated with the Otay Valley Regional Park, as well as a trail connection to the Otay Valley Regional Park. To provide access to the site via Dennery Road, off-site access improvements would be required within APN 645-400-0500 located in the City of San Diego to the southwest. In addition, off-site remedial grading would be required to the northwest of the project site in the City of Chula Vista on APN 624-071-0100.

In accordance with CEQA guidelines, Dudek performed a paleontological resources inventory for the project. The inventory consisted of a San Diego Natural History Museum (SDNHM) records search, review of geological mapping and geological and paleontological literature, and an intensive pedestrian survey of the project site. The results of the paleontological records search were negative for paleontological resources within the project site; however, the SDNHM reported fossil localities nearby from the same geological units that underlie the project site. No paleontological resources were encountered during the pedestrian survey of the project site.

The project site has been historically used for agriculture. Historical aerials show the site in agricultural use since at least 1928 (Converse Consultants 2000), with agricultural uses ceasing in approximately 2013. A former structure foundation related to the previous agricultural use is located within the center area of the site. In addition, the site has been disturbed from the installation of various utilities and access paths. While the site has been previously disturbed, there is a potential to encounter intact subsurface paleontological resources. As such, a paleontological monitoring program, is recommended to reduce impacts to any potential paleontological resources

onsite. Under the Annexation Scenario, this paleontological monitoring program would be completed as a standard monitoring requirement per the City of San Diego Land Development Code (LDC) Section 142.0151, as detailed in the City of San Diego Land Development Manual Appendix P. As the City of Chula Vista does not include paleontological monitoring as a standard monitoring requirement, the No Annexation Scenario would require implementation of a Paleontological Resources Impact Mitigation Program (PRIMP) as mitigation to reduce impacts to less than significant.

Paleontological Resources

Paleontological resources are the remains or traces of plants and animals that are preserved in earth's crust, and per the Society of Vertebrate Paleontology ([SVP] 2010) guidelines, are older than written history or older than approximately 5,500 years. They are limited, nonrenewable resources of scientific and educational value, which are afforded protection under state laws and regulations. This study satisfies requirements in accordance with state guidelines (13 PRC, 2100 et seq.) and Public Resources Code Section 5097.5 (Stats 1965, c 1136, p. 2792). This analysis also complies with guidelines and significance criteria specified by SVP (2010). Table 1 provides definitions for high, moderate, low, marginal, and no paleontological resource potential, or sensitivity, as set forth in and in agreement with the County of San Diego's (2009) Guidelines for Determining Significance: Paleontological Resources. To determine paleontological sensitivity of the geological units present within the project site under the Annexation Scenario, this report used the City of San Diego (2020) paleontological monitoring determination matrix, which classifies geological units present within the City of San Diego as having high, moderate, low, or zero paleontological sensitivity. In addition, the City of San Diego LDC Section 142.0151 and the associated Land Development Manual Appendix P that includes the standard paleontological monitoring was considered.

Table 1. Paleontological Resource Sensitivity Criteria

Resource Sensitivity / Potential	Definition
High	High resource potential and high sensitivity are assigned to geologic formations known to contain paleontological localities with rare, well preserved, critical fossil materials for stratigraphic or paleoenvironmental interpretation, and fossils providing important information about the paleoclimatic, paleobiological and/or evolutionary history (phylogeny) of animal and plant groups. In general, formations with high resource potential are considered to have the highest potential to produce unique invertebrate fossil assemblages or unique vertebrate fossil remains and are, therefore, highly sensitive.
Moderate	Moderate resource potential and moderate sensitivity are assigned to geologic formations known to contain paleontological localities. These geologic formations are judged to have a strong, but often unproven, potential for producing unique fossil remains (Deméré and Walsh 1993).
Low	Low resource potential and low sensitivity are assigned to geologic formations that, based on their relatively young age and/or high-energy depositional history, are judged unlikely to produce unique fossil remains. Low resource potential formations rarely produce fossil remains of scientific significance and are considered to have low sensitivity. However, when fossils are found in these formations, they are often very significant additions to our geologic understanding of the area.

Table 1. Paleontological Resource Sensitivity Criteria

Resource Sensitivity / Potential	Definition
Marginal	Marginal resource potential and marginal sensitivity are assigned to geologic formations that are composed either of volcaniclastic (derived from volcanic sources) or metasedimentary rocks, but that nevertheless have a limited probability for producing fossils from certain formations at localized outcrops. Volcaniclastic rock can contain organisms that were fossilized by being covered by ash, dust, mud, or other debris from volcanoes. Sedimentary rocks that have been metamorphosed by heat and/or pressure caused by volcanoes or plutons are called metasedimentary. If the sedimentary rocks had paleontological resources within them, those resources may have survived the metamorphism and still be identifiable within the metasedimentary rock, but since the probability of this occurring is so limited, these formations are considered marginally sensitive.
No Potential	No resource potential is assigned to geologic formations that are composed entirely of volcanic or plutonic igneous rock, such as basalt or granite, and therefore do not have any potential for producing fossil remains. These formations have no paleontological resource potential, i.e., they are not sensitive.

Source: County of San Diego 2009.

Regulatory Framework

California Environmental Quality Act

The CEQA Guidelines require that all private and public activities not specifically exempted be evaluated against the potential for environmental damage, including effects to paleontological resources. Paleontological resources, which are limited, nonrenewable resources of scientific, cultural, and educational value, are recognized as part of the environment under these state guidelines. This study satisfies project requirements in accordance with CEQA (13 Public Resources Code [PRC], 21000 et seq.) and PRC Section 5097.5. This analysis also complies with guidelines and significance criteria specified by SVP (2010).

Paleontological resources are explicitly afforded protection by CEQA, specifically in Section VII(f) of CEQA Guidelines Appendix G, the “Environmental Checklist Form,” which addresses the potential for adverse impacts to “unique paleontological resource[s] or site[s] or ... unique geological feature[s].” This provision covers fossils of signal importance – remains of species or genera new to science, for example, or fossils exhibiting features not previously recognized for a given animal group – as well as localities that yield fossils significant in their abundance, diversity, preservation, and so forth. Further, CEQA provides that generally, a resource shall be considered “historically significant” if it has yielded or may be likely to yield information important in prehistory (PRC 15064.5 [a][3][D]). Paleontological resources would fall within this category.

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Other State Laws

In addition, the PRC section 5097.5 also regulates removal of paleontological resources from public lands, defines unauthorized removal of fossil resources as a misdemeanor, and requires mitigation of disturbed sites.

City of Chula Vista Regulations

City of Chula Vista's General Plan

The environmental chapter of the City of Chula Vista General Plan (Chapter 9, Section 3.1.10) specifically addresses potential impacts to non-renewable paleontological resources and outlines policies to mitigate negative impacts (City of Chula Vista 2005). The objective and policies protecting paleontological resources are outlined below:

Objective E-10: Protect important paleontological resources and support and encourage public education and awareness of such resources.

Policy E-10.1: Continue to assess and mitigate the potential impacts of private development and public facilities and infrastructure to paleontological resources in accordance with the California Environmental Quality Act.

Policy E-10.2: Support and encourage public education and awareness of local paleontological resources, including the establishment of museums and educational opportunities accessible to the public.

City of San Diego Regulations

California Environmental Quality Act: Significance Determination Thresholds

The *California Environmental Quality Act: Significance Determination Thresholds* for paleontology (City of San Diego 2020) identifies the grading thresholds for required monitoring within areas underlain by high paleontological sensitivity geological units are earthwork greater than 1,000 cubic yards in quantity and 10 feet or more in depth. Grading thresholds for required monitoring within areas underlain by geological units with moderate paleontological sensitivity are greater than 2,000 cubic yards in quantity and 10 feet or more in depth. Areas underlain by geological units with low or no paleontological sensitivity do not require monitoring, according to the City (City of San Diego 2020).

City of San Diego Land Development Code

The City of San Diego Land Development Code section 142.0151 states the following:

Paleontological Resources Requirements for Grading Activities

(a) Paleontological resources monitoring shall be required in accordance with the General Grading Guidelines for Paleontological Resources in the Land Development Manual for any of the following:

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(1) Grading that involves 1,000 cubic yards or greater, and 10 feet or greater in depth, in a High Resource Potential Geologic Deposit/Formation/Rock Unit; or

(2) Grading that involves 2,000 cubic yards or greater, and 10 feet or greater in depth, in Moderate Resource Potential Geologic Deposit/Formation/Rock Unit; or

(3) Grading on a fossil recovery site or within 100 feet of the mapped location of a fossil recovery site.

(b) If paleontological resources, as defined in the General Grading Guidelines for Paleontological Resources, are discovered during grading, notwithstanding Section 142.0151(a), all grading in the area of discovery shall cease until a qualified paleontological monitor has observed the discovery, and the discovery has been recovered in accordance with the General Grading Guidelines for Paleontological Resources.

The City of San Diego Land Development Manual Appendix P identifies general grading guidelines for paleontological resources, including standard monitoring requirements. Per this regulation, the City of San Diego requires the placement of standard monitoring requirements on grading plans when needed pursuant to Land Development Code section 142.0151. Refer to The City of San Diego Land Development Manual Appendix P for the complete standard measure.

Methods

Geological Map and Literature Review

Published geological maps (Kennedy 1975; Kennedy and Tan 1977; 2008) and published and unpublished reports were reviewed to identify geological units on the site and determine their paleontological sensitivity.

Paleontological Records Search

A records search request was sent to the SDNHM on June 01, 2020. The purpose of the museum records search is to determine whether there are any known fossil localities in or near the project site, identify the sensitivity of geological units present within the project site, and aide in determining whether a paleontological mitigation program is warranted to avoid or minimize potential adverse effects of construction on paleontological resources.

Field Survey

Dudek paleontologist, Jason Collins conducted a pedestrian survey of the project site on June 24, 2020. The survey was conducted to determine if any surficial paleontological resources are present within the project site. The survey utilized standard paleontological survey procedures and consisted of systematic surface inspection of the project site on 15 m interval transects, with closer inspection of exposed geological units with moderate to high paleontological sensitivity. The ground surface was examined for the presence of exposed surficial fossils. Ground disturbances such as burrows and eroded hillsides were also visually inspected for exposed fossils and sediments.

Results

Geological Map Review, Literature Review, and Paleontological Records Search

The project site lies within the Peninsular Ranges Geomorphic Province (California Geological Survey 2002). This province extends from the tip of the Baja California Peninsula to the Transverse Ranges (the San Gabriel and San Bernardino Mountains) and includes the Los Angeles Basin, offshore islands (Santa Catalina, Santa Barbara, San Nicholas, and San Clemente), and continental shelf. The eastern boundary is the Colorado Desert Geomorphic Province (California Geological Survey 2002; Morton and Miller 2006). The ancestral Peninsular Ranges were formed by uplift of plutonic igneous rock resulting from the subduction of the Farallon Plate underneath the North American Plate during the latter portion of the Mesozoic era (approximately 125 to 90 million years ago [mya]) (Abbott 1999).

According to surficial geological mapping at a scale of 1:100,000, the project site is underlain by the middle Eocene (~42 mya) Mission Valley Formation (map unit Tmv), middle to late Pleistocene (~781,000 to 11,700 years ago) Old Alluvial Floodplain Deposits (map unit Qoa), and Holocene (< 11,700 years ago) to late Pleistocene (129,000 to 11,700 years ago) Young Alluvial Floodplain Deposits (map unit Qya) (Cohen et al. 2021; Kennedy and Tan 2008) (Figure 2, Geological Map – Attached). In their paleontological records search letter, the SDNHM indicated the project site is likely underlain by the late Pliocene to early Pleistocene (~ 3.6 to 1.8 mya) San Diego Formation in areas mapped as the Mission Valley Formation since a neighboring construction project revealed a diverse fauna of San Diego Formation invertebrate and vertebrate fossils in sediments mapped as the Mission Valley Formation. Boring logs and test pit analyses indicate the majority of the project site is underlain by two to five feet of artificial fill (up to 18 feet in the northeast corner of the project site); 0.5 to 3 feet of topsoil; Holocene alluvium in the southeast corner of the project site; colluvium on slopes; Quaternary terrace deposits underlying artificial fill, topsoil, and Holocene alluvium in flat areas of the project site; and the Mission Valley Formation in the southern portion of the project site (Geocon Incorporated 2020). This report will analyze the San Diego Formation and the Mission Valley Formation, both of which have high paleontological sensitivity.

The records search results letter from the SDNHM was received on June 05, 2021. No records of fossil localities were found within the boundaries of the project site; however, nine San Diego Formation fossil localities are located within a 1-mile radius buffer zone of the project site. (Table 2) (Confidential Appendix A). The following paragraphs summarize the records search results and geological units present within the project site from oldest to youngest.

Table 2. Geological Units, Paleontological Sensitivities, and SDNHM Localities within a 1-Mile Radius Buffer Zone of the Project Site

Geological Unit	Epoch, Period, or Era	Geological Age (Millions of Years)	Paleontological Sensitivity	No. of SDNHM Localities within One Mile of Project Site
Mission Valley Formation	Middle Eocene	~ 42	High	*
San Diego Formation (Tsdss)	Late Pliocene to Early Pleistocene	~ 3.6 - 1.8	High	9
Old Alluvial Floodplain Deposits (Qoa)	Middle to Late Pleistocene	~ .781 - 0.117	Moderate	0
Young Alluvial Floodplain Deposits (Qya)	Late Pleistocene to Holocene	.129 - Recent	Low	0

*Not analyzed in records search

Mission Valley Formation (Tmv)

The middle Eocene Mission Valley Formation is a marine sedimentary unit found along coastal San Diego (Brown 2017; Kennedy and Peterson 1975; Kennedy and Tan 1977; Tan and Kennedy 1996). Part of the Poway Group, it is named for strata located within Mission Valley where it is characterized by light gray, fine- to very fine-grained marine sandstones (Deméré and Walsh 1993; Kennedy and Moore 1971). These strata grade to the east and south into fluvially-derived sandstones and mudstones.

The Mission Valley Formation has produced numerous terrestrial vertebrates and marine invertebrates and vertebrates and has high potential to produce scientifically significant paleontological resources (City of San Diego 2016; County of San Diego 2009; Deméré and Walsh 1993; Walsh 1996).

San Diego Formation (Tsdss)

The late Pliocene to early Pleistocene, marine San Diego Formation is mapped in the southern portion of the project site and consists of fossiliferous yellowish-gray to yellowish-brown, weakly consolidated, fine-grained sandstones, poorly sorted gravels, pebble conglomerates, and bedded claystones (Deméré and Walsh 1993; Kennedy 1975). It overlies Eocene age bedrock (e.g., Mission Valley Formation and Stadium Conglomerate) in the San Diego region and represents a marine transgressive sequence (Abbott 1999; Deméré 1982; Kennedy 1975; Kennedy and Tan 1977). The San Diego Formation is abundantly fossiliferous and has produced significant marine and terrestrial fossils throughout its extent in San Diego County. Jefferson (2003) reported a variety of birds and small and large terrestrial mammals in his compilation of early late Pliocene to early Pleistocene fossil localities. During a utility project located approximately nine miles north of the Nakano project site in the city of San Diego, Dudek paleontologists collected scientifically significant invertebrate (bivalves and gastropods) and vertebrate (a bat ray tooth) fossils from the San Diego Formation that were accessioned by the SDNHM (Dudek 2015). The SDNHM reported 9 fossil San Diego Formation localities within the 1-mile radius buffer zone for the project site in the

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paleontological records search results. These localities yielded fossil burrows, leaf and seed pod impressions and remains, brachiopods, gastropods, bivalves, tusk shells, sea birds, and baleen whales (Table 2). Based on the productivity of the San Diego Formation, it is assigned high paleontological sensitivity (Confidential Appendix A).

Old Alluvial Floodplain Deposits (Qoa)

Pleistocene Old Alluvial Floodplain Deposits are mapped at the surface within the southern portion of the project site. These deposits consist of variable amounts of clays, sands, silts, and gravels that are usually moderately indurated and oxidized. Old Alluvial Floodplain Deposits have produced significant paleontological resources in San Diego County. In his compilation of Quaternary (~2.58 mya – recent) vertebrates from California, Jefferson (1991a, 1991b) reported numerous fossil localities from Old Alluvial Floodplain Deposits in San Diego County that produced fossil amphibian, reptile, bird, and mammal specimens. The SDNHM reported no fossil localities from Old Alluvial Floodplain Deposits within the 1-mile radius buffer zone of the project site; however, they do have fossil localities from other areas of San Diego County that have yielded fossil reptiles, birds, small mammals, and Ice-Age megafauna (e.g., mammoth, bison, horse, and camel). This geological unit is assigned moderate paleontological sensitivity in the area of the project (Table 2) (Confidential Appendix A).

Young Alluvial Floodplain Deposits (Qya)

Late Pleistocene to Holocene Young Alluvial Floodplain Deposits contain varying amounts of clays, silts, sands, and gravels that are usually unconsolidated to moderately indurated. Young Alluvial Floodplain Deposits are generally Holocene in age on the surface, and therefore, have low paleontological sensitivity on the surface and at shallow depths below the surface. However, with depth they become older and oftentimes overlie geological units with moderate to high sensitivity (Table 2) (Confidential Appendix A).

Paleontological Survey

The project site terrain consists of modestly sloping hillsides with a dense cover of mixed-grass and scrub brush communities (Figure 2). The dense vegetation made it difficult to adequately survey the ground surface for exposed fossils; however, there were limited exposures of eroded San Diego Formation and Young and Old Alluvial Deposits that were inspected for potential fossils weathering on the surface (Figure 3). Exposed San Diego Formation strata consisted of fine- grained, dark orange to yellow brown silty sandstone.

Summary

Dudek's review of records search results, geological mapping, geological and paleontological literature did not identify any existing paleontological resources within the project site. The project site is underlain by the middle Eocene Mission Valley Formation and/or the late Pliocene to early Pleistocene San Diego Formation, middle to late Pleistocene Old Alluvial Floodplain Deposits, and Holocene to late Pleistocene Young Alluvial Floodplain Deposits. The Mission Valley Formation and San Diego Formation have high paleontological sensitivity, Old Alluvial Floodplain Deposits have moderate paleontological sensitivity, and Young Alluvial Floodplain Deposits have low paleontological sensitivity on the surface that increases with depth. The paleontological records search conducted by the SDNHM revealed nine localities within a 1-mile radius buffer zone of the project site boundary from the same geological units that underlie the project site. Based on the records search results, survey results, and map and literature

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review, areas within the project site has moderate to high potential to produce paleontological resources during planned construction activities.

Management Recommendations

As the project proposes up to 108,000 cubic yards of cut to a depth of 22 feet, which would impact the Pleistocene Alluvial Floodplain Deposits and the San Diego and/or Mission Valley Formation, a qualified paleontologist should be retained for the project who meets or exceeds the qualifications set forth in the SVP (2010) guidelines. For the City of Chula Vista the qualified paleontologist shall prepare and implement a PRIMP prior to the commencement of project-related earthmoving activities. Implementation of a paleontological mitigation program would reduce any potential impacts to below a level of significance for paleontological resources. For the City of San Diego, the standard paleontological monitoring measure shall be implemented in accordance with Land Development Manual Appendix P General Grading Guidelines for Paleontological Resources and impacts would be less than significant.

As mentioned in the introduction, the project includes two scenarios: the Annexation Scenario and the No Annexation Scenario. In consideration of the differing local processes and standards for each of these local jurisdictions, monitoring and reporting standards for each jurisdiction are identified below.

Annexation Scenario

Under the proposed Annexation Scenario, the project would be annexed into the City of San Diego and would be required to provide standard paleontological monitoring and reporting in accordance with the City of San Diego LDC and Land Development Manual. The following is the standard monitoring requirement that shall be placed on grading plans and implemented when required pursuant to LDC section 142.0151:

I. Prior to Permit Issuance

Entitlements Plan Check

Prior to issuance of any construction permits, including but not limited to, the first Grading Permit, Demolition Plans/Permits and Building Plans/Permits or a Notice to Proceed for Subdivisions, but prior to the first preconstruction meeting, whichever is applicable, the City Engineer (CE) and/or Building Inspector (BI) shall verify that the requirements for Paleontological Monitoring have been noted on the appropriate construction documents.

1. The applicant shall submit a letter of verification to Resident Engineer (RE) and/or Building Inspector (BI) identifying the qualified Principal Investigator (PI) for the project and the names of all persons involved in the paleontological monitoring program. A qualified PI is defined as a person with a Ph.D. or M.S. or equivalent in paleontology or closely related field (e.g., sedimentary or stratigraphic geology, evolutionary biology, etc.) with demonstrated knowledge of southern California paleontology and geology, and documented experience in professional paleontological procedures and techniques.

II. Prior to Start of Construction

A. Verification of Records Search

1. The PI shall provide verification to RE and/or BI that a site specific records search has been completed. Verification includes, but is not limited to a copy of a confirmation letter from the San Diego Natural History Museum, or another relevant institution that maintains paleontological collections recovered from sites within the City of San Diego.
2. The letter shall introduce any pertinent information concerning expectations and probabilities of discovery during trenching and/or grading activities.

B. PI Shall Attend Preconstruction Meetings

1. Prior to beginning any work that requires monitoring, the Applicant shall arrange a Preconstruction Meeting that shall include the PI, Construction Manager (CM) and/or Grading Contractor, RE, and BI, as appropriate. The qualified paleontologist (PI) shall attend any grading/excavation related Preconstruction Meetings to make comments and/or suggestions concerning the Paleontological Monitoring program with the Construction Manager and/or Grading Contractor.
 - a. If the PI is unable to attend the Preconstruction Meeting, the Applicant shall schedule a focused Preconstruction Meeting with the PI, RE, CM or BI, if appropriate, prior to the start of any work that requires monitoring.

2. Identify Areas to be Monitored

Prior to the start of any work that requires monitoring, the PI shall submit a Paleontological Monitoring Exhibit (PME) based on the appropriate construction documents (reduced to 11x17) to RE and/or BI identifying the areas to be monitored including the delineation of grading/excavation limits. The PME shall be based on the results of a site specific records search as well as information regarding existing known geologic conditions (e.g., geologic deposits as listed in the Paleontological Monitoring Determination Matrix below).

3. When Monitoring Will Occur

- a. Prior to the start of any work, the PI shall also submit a construction schedule to the RE and/or BI indicating when and where monitoring will occur.
- b. The PI may submit a detailed letter to RE and/or BI prior to the start of work or during construction requesting a modification to the monitoring program. This request shall be based on relevant information such as review of final construction documents and geotechnical reports which indicate conditions such as depth of excavation and/or thickness of artificial fill overlying bedrock, presence or absence of fossils, etc., which may reduce or increase the potential for resources to be present.

III. During Construction

A. Monitor Shall be Present During Grading/Excavation/Trenching

1. The paleontological monitor shall be present full-time during grading/excavation/trenching

activities as identified on the PME that could result in impacts to formations with high and moderate resource sensitivity. **The Construction Manager is responsible for notifying the PI, RE and/or BI of changes to any construction activities such as in the case of a potential safety concern within the area being monitored. In certain circumstances OSHA safety requirements may necessitate modification of the PME.**

2. The PI may submit a detailed letter to RE and/or BI during construction requesting a modification to the monitoring program when a field condition such as trenching activities that do not encounter previously undisturbed and paleontologically sensitive geologic deposits as previously assumed, and/or when unique/unusual fossils are encountered, which may reduce or increase the potential for paleontological resources to be present.
3. The paleontological monitor shall document field activity via the Consultant Site Visit Record (CSV). The CSV's shall be emailed by the CM to the RE and/or BI the first day of monitoring, the last day of monitoring, monthly (**Notification of Monitoring Completion**), and in the case of ANY discoveries.

B. Discovery Notification Process

1. In the event of a discovery, the paleontological monitor shall direct the contractor to temporarily divert trenching activities in the area of discovery and notify the RE and/or BI. The contractor shall also process a construction change for administrative purposes to formalize the documentation and recovery program, including modification to Mitigation Monitoring and Compliance (MMC).
2. The paleontological monitor shall notify the PI (unless paleontological monitor is the PI) of the discovery.
3. The PI shall notify MMC of the discovery, and shall submit documentation to MMC within 24 hours by email with photos of the resource in context.

C. Recovery of Fossils

If a paleontological resource is encountered:

1. The paleontological monitor shall salvage unearthed fossil remains, including simple excavation of exposed specimens or, if necessary as determined by the PI, plaster-jacketing of large and/or fragile specimens or more elaborate quarry excavations of richly fossiliferous deposits.
2. The paleontological monitor shall record stratigraphic and geologic data to provide a context for the recovered fossil remains, including a detailed description of all paleontological localities within the project site, as well as the lithology of fossil-bearing strata within the measured stratigraphic section, and photographic documentation of the geologic setting.

IV. Post Construction

A. Preparation and Submittal of Draft Paleontological Monitoring Report

1. The PI shall submit two copies of the Draft Paleontological Monitoring Report (even if negative), prepared to the satisfaction of the Development Services Department. The Draft Paleontological

Monitoring Report shall describe the methods, results, and conclusions of all phases of the Paleontological Monitoring Program (with appropriate graphics) to MMC for review and approval within 90 days following the completion of monitoring,

- a. For significant or potentially significant paleontological resources encountered during monitoring, as identified by the PI, the Paleontological Recovery Program shall be included in the Draft Monitoring Report.
 - b. The PI shall be responsible for recording (on the appropriate forms) any significant or potentially significant fossil resources encountered during the Paleontological Monitoring Program in accordance with the City's Paleontological Guidelines (revised November 2017), and submittal of such forms to the San Diego Natural History Museum and MMC with the Draft Paleontological Monitoring Report.
2. MMC shall return the Draft Paleontological Monitoring Report to the PI for revision or, for preparation of the Final Report.
 3. The PI shall submit revised Draft Paleontological Monitoring Report to MMC for approval.
 4. MMC shall provide written verification to the PI of the approved Draft Paleontological Monitoring Report.
 5. MMC shall notify the RE and/or BI, of receipt of all Draft Paleontological Monitoring Report submittals and approvals.
- B. Handling of Recovered Fossils
1. The PI shall ensure that all fossils collected are cleaned to the point of curation (e.g., removal of extraneous sediment, repair of broken specimens, and consolidation of fragile/brittle specimens) and catalogued as part of the Paleontological Monitoring Program.
 2. The PI shall ensure that all fossils are analyzed to identify stratigraphic provenance, geochronology, and taphonomic context of the source geologic deposit; that faunal material is taxonomically identified; and that curation has been completed, as appropriate.
- C. Curation of Fossil Remains: Deed of Gift and Acceptance Verification
1. The PI shall be responsible for ensuring that all fossils associated with the paleontological monitoring program for this project are permanently curated with an accredited institution that maintains paleontological collections (such as the San Diego Natural History Museum).
 2. The PI shall include an acceptance verification from the curation institution in the Final Paleontological Monitoring Report submitted to the RE and/or BI, and MMC.
- D. Final Paleontological Monitoring Report(s)
1. The PI shall submit two copies of the Final Paleontological Monitoring Report to MMC (even if negative), within 90 days after notification from MMC that the Final Paleontological Monitoring Report has been approved.
 2. The RE and/or BI shall, in no case, issue the Notice of Completion until receiving a copy of the approved Final Paleontological Monitoring Report from MMC, which includes the Acceptance

Verification from the curation institution.

No Annexation Scenario

Under the proposed No Annexation Scenario, the project would remain in the City of Chula Vista and would be required to provide monitoring and reporting in accordance with the City of Chula Vista standards. Accordingly, prior to the issuance of grading permits, the applicant shall provide written confirmation to the City that a qualified paleontologist has prepared a PRIMP and has been retained to carry out the PRIMP. A qualified paleontologist is defined as an individual with an MS or PhD in paleontology or geology who is familiar with paleontological procedures and techniques and has expertise in local geology, stratigraphy, and biostratigraphy. The PRIMP shall be consistent with the SVP (2010) guidelines and contain the following components:

- Introduction to the project, including project location, description grading activities with the potential to impact paleontological resources, and underlying geologic units.
- Description of the relevant laws, ordinances, regulations, and standards pertinent to the project and potential paleontological resources.
- Requirements for the qualified paleontologist to attend the pre-construction meeting and provide worker environmental awareness training at the pre-construction meeting as well as at the jobsite the day grading is to be initiated. In addition, the qualified paleontologist shall inform the grading contractor and City Resident Engineer of the paleontological monitoring program methodologies.
- Identification of where paleontological monitoring of excavations impacting the San Diego Formation, Old Alluvial Floodplain Deposits, and deep excavations (greater than five feet below the ground surface) in areas underlain by Young Alluvial Floodplain Deposits is required within the project site based on construction plans and/or geotechnical reports.
- Procedures for adequate paleontological monitoring (including necessary monitoring equipment), methods for treating fossil discoveries, fossil recovery procedures, and sediment sampling for microvertebrate fossils, including the following requirements:
 - A paleontological monitor shall be on site at all times during the original cutting of previously undisturbed sediments of moderately to highly sensitive geologic units (e.g., San Diego Formation, Old Alluvial Floodplain Deposits, and excavations below a depth of five feet below the ground surface in areas underlain by Young Alluvial Floodplain Deposits) to inspect cuts for contained fossils. (A paleontological monitor is defined as an individual who has experience in the collection and salvage of fossil materials.) The paleontological monitor shall work under the direction of a qualified paleontologist. Monitoring is not required during shallow excavations within Young Alluvial Floodplain Deposits.
 - Paleontological monitoring is not required in areas underlain by Artificial Fill unless grading activities are anticipated to extend beneath the veneer of fill and impact underlying geological units with moderate to high paleontological sensitivity (e.g., San Diego Formation, Old Alluvial Floodplain Deposits, or deeper excavations into Young Alluvial Floodplain Deposits).
 - If fossils are discovered, the qualified paleontologist and/or paleontological monitor shall recover them. The paleontologist (or paleontological monitor) shall be allowed to temporarily direct, divert, or halt grading within 50 feet of the resource to allow recovery of fossil remains. Because of the potential for the recovery of small fossil remains, it may be necessary in certain instances, and at the discretion of

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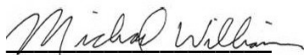
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the qualified paleontologist, to set up a screen-washing operation on the project site. Alternatively, sediment samples can be collected and processed off-site.

- Paleontological reporting, and collections management:
 - Prepared fossils along with copies of all pertinent field notes, photos, maps, and the final paleontological monitoring report discussed below shall be deposited in a scientific institution with paleontological collections such as the San Diego Natural History Museum within 90 days of completion of monitoring unless the City and the qualified paleontologist determine the extent of fossils recovered will require more preparation, stabilization, and/or curatorial time. Any curation costs shall be paid for by the applicant.
 - A final paleontological monitoring report shall be completed. This report shall include discussions of the methods used, stratigraphy exposed, fossils collected, and significance of recovered fossils, and shall be submitted to the designated scientific institution within 90 days of the completion of monitoring unless the City and the qualified paleontologist determine the extent of fossils recovered will require more preparation, stabilization, and/or curatorial time.

Should you have any questions relating to this report and its findings please contact Michael Williams (mwilliams@dudek.com).

Respectfully Submitted,



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Att.: *Figure 1, Regional Location Map*
Figure 2, Geological Map
Figures 3 – 4, Survey Photos
Appendix A, Confidential SDNHM Paleontological Records Search Results

cc: *Sarah Siren, Dudek*
Dawna Marshall, Dudek

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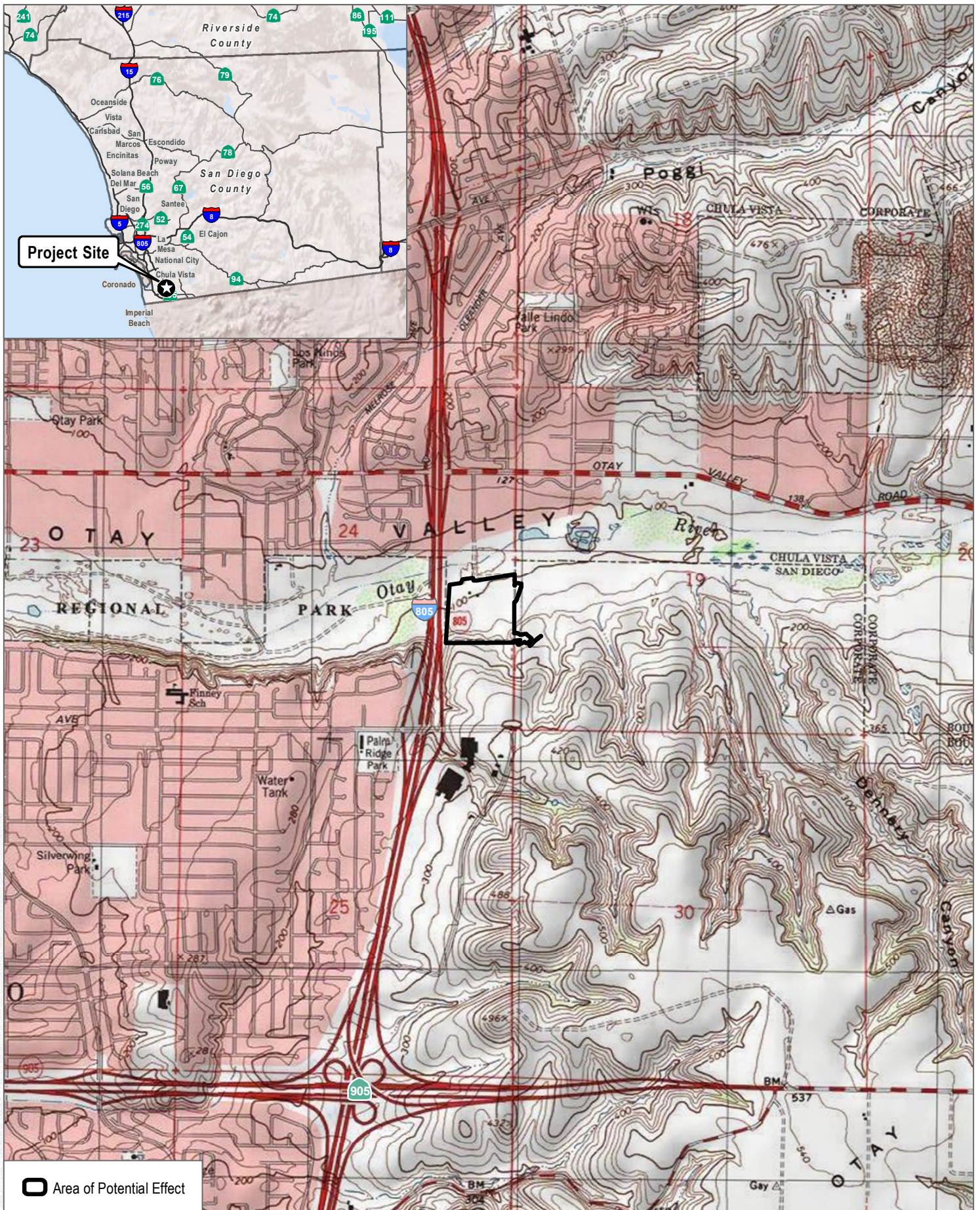
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SOURCE: USGS 1996 (HTMC, 2002 ed.) 7.5-Minute Series Imperial Beach Quadrangle

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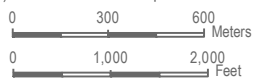
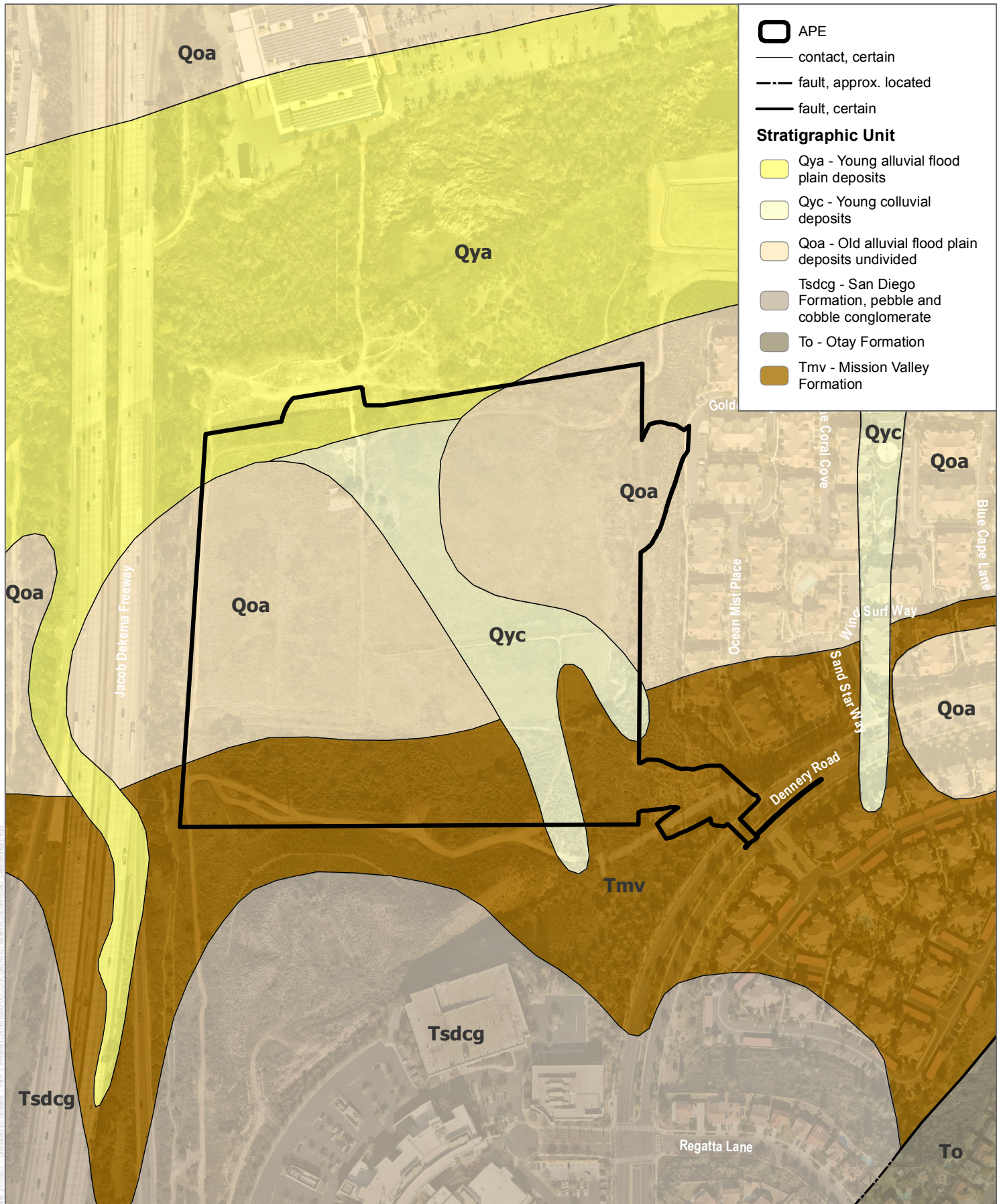


FIGURE 1
Project Location



SOURCE: SanGIS 2019; Kennedy and Tan 2008



FIGURE 2
Geological Map

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Figure 3. Photograph showing vegetation minimizing surface visibility.




Figure 4. Eroded San Diego Formation outcrop and overlying colluvial deposits.



Appendix A

SDNHM Records Search Results (Confidential)



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