4.3 GEOLOGY AND SOILS

This section describes the existing geological setting of the project site, identifies associated regulatory requirements, evaluates potential impacts, and identifies mitigation measures as necessary related to implementation of the Alta Oceanside Project (proposed project). The following analysis is based on the Geotechnical Update Report that was prepared for the proposed project by Leighton and Associates Inc. in 2019 and is incorporated by reference herein. The Geotechnical Report is included in Appendix E of this Environmental Impact Report (EIR). A geotechnical report update letter is also included as Appendix F.

4.3.1 Existing Conditions

4.3.1.1 Regional Geologic Setting

The site is located within the coastal subprovince of the Peninsular Ranges Geomorphic Province, near the western edge of the Southern California batholith. Throughout the last 54 million years, the area known as the "San Diego Embayment" has gone through several episodes of marine inundation and subsequent marine regression, resulting in the deposition of a thick sequence of marine and nonmarine sedimentary rocks on the basement rock of the Southern California batholithic. Gradual emergence of the region from the sea occurred in Pleistocene time, and numerous wave-cut platforms, most of which were covered by relatively thin marine and nonmarine terrace deposits, formed as the sea receded from the land. Accelerated fluvial erosion during periods of heavy rainfall, coupled with the lowering of the base sea level during Quaternary times, resulted in the rolling hills, mesas, and deeply incised canyons which characterize the landforms we see in the general site area today.

4.3.1.2 Site Geology

Topography

The 5.3-acre project site is located in the western portion of the City of Oceanside (City), which is within the northwestern portion of San Diego County (County) (Figure 2-1, Project Location). The site is located on a mesa top. The site has been graded previously for existing on-site commercial development as well as adjacent developments. The topography of the project site is generally flat, with a slight slope towards the southwest end of the project site. The northern portion of the site encompassing Costa Pacifica Way slopes steeply to the west serving the Seacliff community. Elevations range from approximately 31 feet above mean sea level in the northwestern corner of the project site, to approximately 61 feet above mean sea level on the eastern edge of the project site.

Soil and Geologic Conditions

Based on subsurface exploration, aerial photographic analysis, and review of pertinent geologic literature and maps, the geologic units underlying the site consists of relatively thin veneers of undocumented fill over Quaternary-aged Old Paralic Deposits, which overlies the Tertiary-aged San Mateo Formation. A brief description of the geologic units encountered on the site is presented below. Refer to Figure 4.3-1, Geologic Map, for the locations of these geologic units on site. Refer to the cross sections included in Appendix F for additional details regarding the vertical layering of these formations.

Undocumented Fill Material (Afu)

The undocumented fill soils generally consist of loose to medium dense silty sands that are generally less than 1 to 3 feet in depth. However, deeper areas of undocumented fills associated with previously site development (i.e., utility trench backfill and other excavations) should be anticipated across the site. The fill material is assumed to be derived from the underlying Old Paralic Deposits.

Quaternary Old Paralic Deposits

Quaternary-aged Old Paralic (Terrace) Deposits were encountered at shallow depths during our investigation. As encountered, these soils were observed to generally consist of orange-brown to red brown, damp to moist, medium dense to very dense silty fine to medium grained sands with localized cobble lenses, and sandy silt. These units are massive and abundant iron oxide staining was visible throughout the exposures. These deposits may have localized friable sand zones present.

Tertiary-aged San Mateo Formation

The Tertiary-aged San Mateo Formation underlies the entire site at depth. As encountered in the recent boring and previous trench explorations to the west, the San Mateo Formation generally consists of moderately well bedded to laminated, yellow-gray to orange-brown and light gray silty to very silty fine grained micaceous sandstone and massive, friable, gray silty fine- to medium-grained sandstone to sandy siltstone.

Geologic Hazards

Faulting and Seismicity

The project site can be considered to lie within a seismically active region, as can all of Southern California. The California Mining and Geology Board defines an active fault as a fault which has had surface displacement within Holocene time (about the last 11,000 years). The state geologist has defined a pre-Holocene fault as any fault considered to have been active during Quaternary time (last 1,600,000 years). This definition is used in delineating Earthquake Fault Zones as mandated by the Alquist-Priolo Earthquake Faulting Zones Act of 1972 (Alquist-Priolo Act) and

as most recently revised in 2007. The intent of this act is to assure that unwise urban development and certain habitable structures do not occur across the traces of active faults. Based on Geotechnical Update Report, the site is not located within any Earthquake Fault Zone (EFZ) as documented by the Alquist-Priolo Act. The report indicates that there are no known major or active faults on or in the immediate vicinity of the site. The nearest active regional fault is the Newport-Inglewood Fault Zone located offshore approximately 3.7 miles west of the site.

Utilizing American Society of Civil Engineers (ASCE) Standard 7-10, the following additional parameters for the peak horizontal ground acceleration are associated with the Geometric Mean Maximum Considered Earthquake (MCEG). The mapped MCEG peak ground acceleration (PGA) is 0.468g for the project site. For a Site Class D, the FPGA is 1.032 and the mapped peak ground acceleration adjusted for Site Class effects (PGAM) is 0.483g for the project site.

Ground rupture because of active faulting is not likely to occur on site due to the absence of known active faults. Cracking due to shaking from distant seismic events is not considered an existing significant hazard, although it is a possibility at any site in Southern California.

Liquefaction

Liquefaction and dynamic settlement of soils can be caused by strong vibratory motion due to earthquakes. Both research and historical data indicate that loose, saturated, granular soils are susceptible to liquefaction and dynamic settlement. Liquefaction is typified by a loss of shear strength in the affected soil layer, thereby causing the soil to behave as a viscous liquid. This effect may be manifested by excessive settlements and sand boils at the ground surface. The on-site soils are not considered liquefiable due to their relatively dense condition.

Landslides

The site is located at the top of a mesa, with slopes downward to the northwest. Potential for landslides are also considered negligible based on the soil types present and conditions. During the site reconnaissance for the Geotechnical Report (Appendix E), no evidence of landslides or instability was found.

Groundwater

Groundwater was not encountered during site geologic testing, although localized perched water may seasonally be encountered along geologic contacts. In summary, groundwater is not expected to impact the proposed development considering the estimated depth of the proposed improvements. However, groundwater may be encountered during deep excavations, such as, piles for shoring, if a basement or deep excavation is proposed. In addition, seepage conditions may locally be encountered after periods of heavy rainfall or irrigation. These conditions can be treated on an individual basis during construction, if they occur.

4.3.1.3 Paleontological Resource Setting

The proposed project site is underlain by middle to late Pleistocene (~781,000 years ago – 11,700 years ago) old paralic deposits (map unit Qop_{6-7}) that are roughly correlative to the Bay Point Formation (Kennedy et al. 2007). Paralic deposits are characterized by sediments that were deposited at or near sea level in in marine and terrestrial environments such as deltas, estuaries, tidal flats, beaches, lagoons, and shallow subtidal shelves. Because of this, these deposits have the potential to preserve both marine and non-marine animals and plants. Pleistocene marine terrace deposits in northern San Diego County have yielded an assortment of well-preserved shells of marine and estuarine invertebrates, including mollusks (e.g., clams, oysters, scallops, snails, and scaphopods), crustaceans (e.g., ostracods, crabs, and barnacles), and echinoderms (e.g., sea urchins and sand dollars) (County of San Diego 2007). River terrace deposits of the same age have yielded specimens of amphibians, reptiles, birds, and mammals (County of San Diego 2007). Numerous fossil localities from older sedimentary deposits (e.g., San Mateo Formation) are also known from Lawrence Canyon, on the east side of the I-5 and SR-76 interchange, within a mile of the project (Deméré and Siren 2009). The San Luis Rey River valley has produced many important fossil localities (Deméré et al. 2013). Moreover, approximately 4 miles inland from the project area and still within the City, Guthrie (2010) reported on fossils of turtle, frog, fish, and 21 species of birds from Pleistocene lacustrine deposits. Based on the quality of preservation and diversity of the fauna, these fossils are considered scientifically significant, thus giving old Paralic Deposits a high sensitivity rating.

4.3.2 Regulatory Setting

Federal

International Building Code

The International Building Code (IBC) is a model building code developed by the International Code Council that provides the basis for the CBC. The purpose of the IBC is to provide minimum standards for building construction to ensure public safety, health, and welfare. Prior to the creation of the IBC, several different building codes were used; however, by the year 2000, the IBC had replaced these previous codes. The IBC is updated every 3 years.

Occupational Safety and Health Administration Regulations

Excavation and trenching are among the most hazardous construction activities. The Occupational Safety and Health Administration (OSHA) Excavation and Trenching standard, Title 29 of the Code of Federal Regulations, Part 1926.650 et seq., covers requirements for excavation and trenching operations. OSHA requires that excavations in which employees could potentially be exposed to cave-ins be protected by sloping or benching the sides of the excavation, supporting the sides of the excavation, or placing a shield between the side of the excavation and the work area.

State

California Geologic Survey

The California Geologic Survey provides guidance with regard to seismic hazards. The California Geologic Survey's Special Publication 117A, Guidelines for Evaluating and Mitigating Seismic Hazards in California (CGS 2008), provides guidance for evaluation and mitigation of earthquake-related hazards for projects within designated zones of required investigation.

State of California Division of Occupational Safety and Health, California Department of Industrial Relations

The State of California Division of Occupational Safety and Health (CalOSHA) Excavations Standard (Subchapter 4, Article 6) details requirements for excavation operations. CalOSHA requires that all excavations in which employees could potentially be exposed to cave-ins be protected by sloping or benching the sides of the excavation, supporting the sides of the excavation, or placing a shield between the side of the excavation and the work area. Article 6 also includes a Tailgate/Toolbox Guide for Trenching Safety before and during excavation activities.

California Building Code

The CBC has been codified in the California Code of Regulations as Title 24, Part 2. Title 24 is administered by the California Building Standards Commission, which, by law, is responsible for coordinating building standards. Under state law, building standards must be centralized in Title 24 to be enforceable. The purpose of the CBC is to establish minimum standards to safeguard the public health, safety, and general welfare through structural strength, means of egress facilities, and general stability by regulating and controlling the design, construction, quality of materials, use, occupancy, location, and maintenance of all building and structures within its jurisdiction. The provisions of the CBC apply to the construction, alteration, movement, replacement, and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures throughout California. The CBC describes requirements for engineering geologic reports, supplemental ground-response reports, and geotechnical reports (California Building Standards Commission 2016).

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act of 1972 (California Public Resources Code, Sections 2621–2630) regulates development and construction of buildings intended for human occupancy to avoid the hazard of surface fault rupture. The act helps define areas where fault rupture is most likely to occur. The act groups faults into categories of active, potentially active, and inactive. Historic and Holocene age faults are considered active. Late Quaternary and

Quaternary age faults are considered potentially active and pre-Quaternary age faults are considered inactive. These classifications are qualified by the conditions that a fault must be shown to be sufficiently active and well defined by detailed site-specific geologic explorations in order to determine whether building setbacks should be established. Cities and counties affected by the zones must regulate certain development projects within the zones. They must withhold development permits for sites within the zones until geologic investigations demonstrate that the sites are not threatened by surface displacement from future faulting. The project site is not identified on an Alquist-Priolo Earthquake Fault Zoning Map.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act (California Public Resources Code, Sections 2690–2699.6) addresses earthquake hazards from non-surface fault rupture, including liquefaction, landslides, strong ground shaking, or other earthquake and geologic hazards. The Seismic Hazards Mapping Act also specifies that the lead agency for a project may withhold development permits until geologic or soils investigations are conducted for specific sites and mitigation measures are incorporated into plans to reduce hazards associated with seismicity and unstable soils. The project site is not identified on a seismic hazards map.

CEQA- Paleontological Resources

Paleontological resources are limited, nonrenewable resources of scientific, cultural, and educational value and are afforded protection under state (CEQA) laws and regulations. This study satisfies project requirements in accordance with CEQA (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 the 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. The PRC, Chapter 1.7, sections 5097.5 and 30244 also regulates removal of paleontological resources from state lands, defines unauthorized removal of fossil resources as a misdemeanor, and requires mitigation of disturbed sites.

Local

City of Oceanside General Plan

State of California law requires that each city prepare and adopt an approved General Plan that provides comprehensive, long-term guidance for the City's future. General Plans are also required to contain specific elements regarding different areas of planning; relevant elements include land use, environmental resource management, and public safety. While each element outlines policies, plans, and goals that guide the City to maintaining and improving each area of development, the Public Safety Element specifically addresses seismic hazards and geologic conditions. The Public Safety Element includes the following seismic and geologic hazard objectives:

1. Consider seismic and geologic hazards when making land use decisions particularly in regard to critical structures.
2. Minimize the risk of occupancy of all structures from seismic and geologic occurrences.
3. Provide to the public all available information about existing seismic and geologic conditions.

The Public Safety Element includes the Public Safety Plan that includes definitions, maps, and mitigation information for seismic and geologic hazards that exist within the City.

The Environmental Resource Management Element includes the following policy for soil, erosion, and drainage:

1. Consider appropriate engineering and land use planning techniques to mitigate rapid weathering of the rocks, soil erosion, and the siltation of the lagoons.

The Environmental Resource Management Element also provides a general map of soil types within the City (Figure ERM-3, Soil & Land Forms).

The Land Use Element contains the following objectives and policies regarding geology and soils:

3.14 Grading and Excavations, Objective: To provide mitigation recommendations for grading and excavations in the City of Oceanside.

Policy 3.14A: Investigation and evaluation of currently affected areas will indicate the measures to be included, such as the following measures:

1. Keep grading to a minimum, leave vegetation and soils undisturbed wherever possible.
2. Plant bare slopes and cleared areas with appropriate vegetation immediately after grading.
3. Chemically treat soils to increase stability and resistance to erosion.

4. Install retaining structures where appropriate.
5. Construct drainage systems to direct and control rate of surface runoff.
6. Construct silt traps and settling basins in drainage systems.
7. Construct weirs and check dams on streams.

City of Oceanside Building Code

Chapter 6, Building Construction Regulations, of the City's Municipal Code outlines the regulations and requirements for construction of buildings within the City's jurisdiction, including seismic and geologic safety design standards. The City adopts the most recent CBC as the local building code and makes amendments as needed.

City of Oceanside Grading Ordinance

City of Oceanside Grading Ordinance (City of Oceanside 1992) requires that all grading, clearing, brushing, or grubbing on natural or existing grade must have a grading permit from the City Engineer. A Landscape and Irrigation Plan is required for developments such as but not limited to commercial, grading permits, grading slopes, industrial, parking lots, planned residential developments, remodeling which requires a permit, and subdivisions. Said plan shall include details regarding landscaping, erosion control, and irrigation features. Section 1501(d) of the City's Grading Ordinance details requirements and practices of the Erosion Control System to lessen the potential for sediment runoff and erosion.

4.3.3 Thresholds of Significance

The significance criteria used to evaluate the project impacts to geology and soils are based on Appendix G of the CEQA Guidelines. According to Appendix G of the CEQA Guidelines, a significant impact related to geology and soils would occur if the proposed project would (14 CCR 15000 et seq.):

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

c. Seismic-related ground failure, including liquefaction.

d. Landslides.

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

4.3.4 Impacts Analysis

Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: (a) rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area based on other substantial evidence of as known fault. (Refer to Division of Mines and Geology Special Publication 42); (b) strong seismic ground shaking; (c) seismic-related ground failure, including liquefaction; or (d) landslides?

No known active or potentially active faults exist on or are adjacent to the project site. Additionally, the proposed project is not located within an Alquist-Priolo Earthquake Fault Zone or identified on a seismic hazard map per the Seismic Hazards Mapping Act. Ground surface rupture or cracking of the ground surface due to an active fault is, therefore, considered unlikely on the project site.

Due to regional proximity to major known active fault zones such as the Newport-Inglewood Fault, Rose Canyon Fault, Lake Elsinore Fault, and San Jacinto Fault, the project site lies in a seismically active region. The project site is likely to be subjected to strong ground motion from seismic activity similar to that of the rest of the San Diego County and Southern California, due to the seismic activity of the region as a whole. With adherence to the IBC and CBC requiring specific performance standards and the associated incorporation of the geotechnical recommendations provided in the Geotechnical Report Update pursuant to those requirements, project impacts related to strong seismic ground shaking would be less than significant.

The proposed project site consists of undocumented fill soils (Afu), quaternary-aged Old Paralic (Terrace) Deposits, and Tertiary-aged San Mateo Formation. The on-site soils are not considered liquefiable due to their relatively dense condition and absence of shallow groundwater, and they have a very low to low expansion range. Considering planned excavation and foundation design measures as required under CBC, would be included in the project, dynamic settlement potential would be negligible. Therefore, impacts due to liquefaction would be less than significant.

During the site reconnaissance for the Geotechnical Report Update, no evidence of landslides or instability was found. In addition, the project would be required to comply with standard CBC and IBC requirements and local grading standards that minimize geologic hazards, including seismic-related ground failure. The Geotechnical Report Update provides recommendations for measures in compliance with these building code requirements and local grading standards, such as remedial grading, compaction of fill material, and shoring of excavations, and utilizing other standard methods of construction in compliance with applicable local, state, and federal building construction standards, as provided in Appendix E. With incorporation of the recommendations, impacts associated with landslides or instability would be less than significant.

Overall, the project would result in a **less than significant** impact related to risk of loss, injury, or death involving earthquake faults, seismic ground shaking and seismic-related ground failure considering compliance with the IBC and CDC requirements.

Would the project result in substantial soil erosion or the loss of topsoil?

The potential for erosion would increase during construction as a result of vehicles, heavy equipment, and general earth work accelerating the erosion process. Wind erosion could occur on bare soils or where vehicles and equipment cause dust. Currently, the proposed project does not include finalized construction plans, therefore specific details relating to grading activities are not yet known. However, potential erosion impacts would be avoided by adherence to the erosion control standards established by the City's Grading Ordinance and through implementation of best management practices required by the Stormwater Pollution Prevention Plan (SWPPP) (refer to Section 5.6, Hydrology and Water Quality, for more information). Therefore, construction impacts related to erosion would be **less than significant**.

The proposed project would involve the development of the project site with proposed landscaping. Such features covering vacant land would inhibit erosion and proposed landscaping would stabilize soils thereby reducing erosion potential on the project site. The proposed project would follow best management practices to control surface drainage and erosion, such as drainage systems to collect roof runoff and directing surface water toward suitable drainage facilities (Appendix E). The project would also comply with the City's General Plan Grading and Excavations Objective and Policy 3.14A identified in Section 4.3.2, Regulatory Setting, above that

requires measures during grading to reduce erosion. Refer to Section 5.6, Hydrology and Water Quality, for additional details. The proposed project would not result in substantial soil erosion or loss of topsoil through implementation of the landscape plan and conformance with soil erosion control measures. Therefore, impacts would be **less than significant**.

Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

As mentioned above, the proposed project site consists of undocumented fill soils (Afu), quaternary-aged Old Paralic (Terrace) Deposits, and Tertiary-aged San Mateo Formation. The on-site soils are not considered liquefiable due to their relatively dense condition and absence of shallow groundwater, and they have a very low to low expansion range. Based on the nature of the soils and site topography, there is a less than significant risk for landslide, lateral spreading, subsidence or collapse (Appendix E). Therefore, impacts due to liquefaction, spreading, subsidence, collapse, and unstable soils would be **less than significant**.

Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?

As mentioned above, the on-site soils are not considered liquefiable (see discussion above). Therefore, impacts due to expansive soils would be **less than significant**.

Would the project have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

The site would be provided sewer service through the City, as discussed in Section 5.12, Utilities and Service Systems. The project does not require the use of septic tanks or alternative waste water disposal systems. **No impact** would occur.

Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

As discussed under the Section 4.3.1, the proposed project site is underlain by middle to late Pleistocene (~781,000 years ago – 11,700 years ago) old paralic deposits that are roughly correlative to the Bay Point Formation (Kennedy et al. 2007). This formation has yielded important fossils locally and is considered to have a high paleontological sensitivity rating due to its potential to yield significant paleontological resources. During geological testing (Appendix E), old paralic deposits were encountered at the site on the surface and under fill material at up to 2 feet below ground surface, with deposits documented to depths ranging from approximately 10 to 20 feet

below ground surface. Deposits may extend further past 20 feet in some areas, however, the geotechnical borings in those areas only extended to approximately 20 feet below ground surface.

The project proposes to grade 4.4 acres of the 5.3 site, including approximately 2,000 cubic yards of cut. Where cut extends into old paralic deposits, impacts to unknown subsurface paleontological impacts could occur. Considering old paralic deposits are present near the surface or at the surface of the site, grading would extend into this formation. Due to the proposed grading into this formation with a high paleontological sensitivity rating, project impacts to paleontological resources would be **potentially significant** (**Impact GEO-1**).

4.3.5 Mitigation Measures

MM-GEO-1 Prior to the issuance of a grading permit, the applicant shall submit a letter to the City of Oceanside (City) from a qualified professional paleontologist or a California Registered Professional Geologist with appropriate paleontological expertise, as defined by the Society of Vertebrate Paleontology's guidelines indicating that they have been retained by the applicant to prepare and implement a Paleontological Resources Impact Mitigation Program (PRIMP). The qualified paleontologist shall be available "on-call" to the City and the applicant throughout the duration of ground-disturbing activities. The PRIMP shall include preconstruction coordination; construction monitoring; emergency discovery procedures; sampling and data recovery, if needed; preparation, identification, and analysis of the significance of fossil specimens salvaged, if any; museum storage of any specimens and data recovered; and reporting. Earth-moving construction activities shall be monitored wherever these activities will disturb previously undisturbed sediment. Monitoring will not need to be conducted in areas where sediments have been previously disturbed or in areas where exposed sediments will be buried but not otherwise disturbed. In such cases, spot-checking of the excavation site is sufficient. This measure shall apply for all excavation activities within old paralic deposits that underlie the project.

MM-GEO-2 Prior to the issuance of a grading permit, the City of Oceanside (City) shall confirm the following measure is identified on the grading plan and will be implemented:

Grading activities are subject to a Paleontological Resources Impact Mitigation Program (PRIMP). If potential fossils are discovered by construction crews or during monitoring by a qualified paleontologist, all earthwork or other types of ground disturbance within 50 feet of the discovery shall stop immediately until the qualified professional paleontologist can assess the nature and importance of the discovery. If a fossil of scientific value or uniqueness is identified by the paleontologist, the paleontologist shall record the find and allow work to continue or recommend salvage and recovery of the fossil. If treatment and salvage is required,

recommendations shall be consistent with Society of Vertebrate Paleontology guidelines and currently accepted scientific practice and shall be subject to review and approval by the City. Work in the affected area may resume once the fossil has been assessed and/or salvaged and the City, in consultation with the professional paleontologist, has provided written approval to resume work.

4.3.6 Level of Significance After Mitigation

With the incorporation of **MM-GEO-1** and **MM-GEO-2**, **Impact GEO-1** related to paleontological resources would be less than significant considering any fossils discovered would be properly excavated and the associated paleontological research information would be preserved to the extent feasible.

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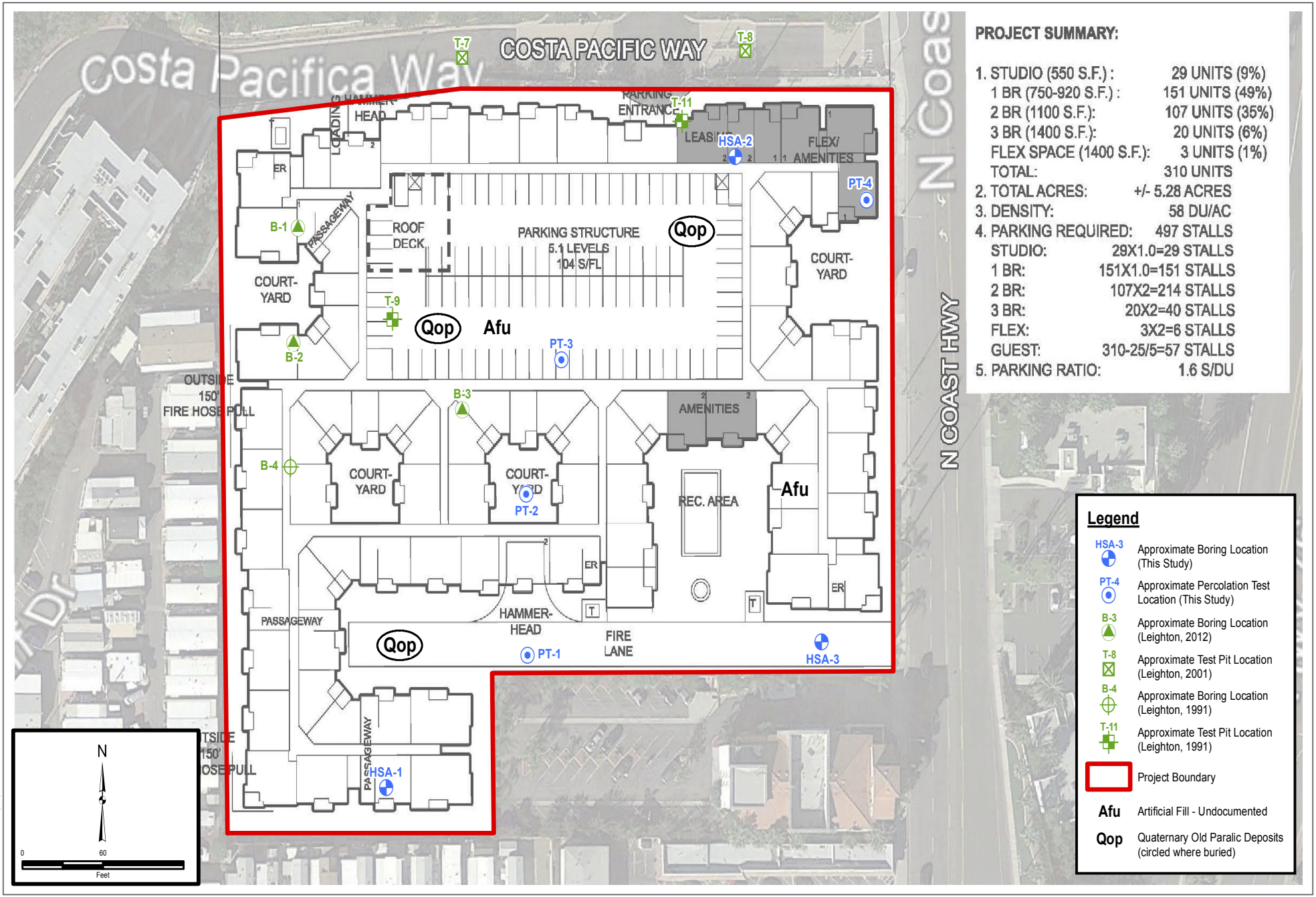

PROJECT SUMMARY:

1. STUDIO (550 S.F.) :	29 UNITS (9%)
1 BR (750-920 S.F.) :	151 UNITS (49%)
2 BR (1100 S.F.):	107 UNITS (35%)
3 BR (1400 S.F.):	20 UNITS (6%)
FLEX SPACE (1400 S.F.):	3 UNITS (1%)
TOTAL:	310 UNITS
2. TOTAL ACRES:	+/- 5.28 ACRES
3. DENSITY:	58 DU/AC
4. PARKING REQUIRED:	497 STALLS
STUDIO:	29X1.0=29 STALLS
1 BR:	151X1.0=151 STALLS
2 BR:	107X2=214 STALLS
3 BR:	20X2=40 STALLS
FLEX:	3X2=6 STALLS
GUEST:	310-25/5=57 STALLS
5. PARKING RATIO:	1.6 S/DU

Legend

HSA-3	Approximate Boring Location (This Study)
PT-4	Approximate Percolation Test Location (This Study)
B-3	Approximate Boring Location (Leighton, 2012)
T-8	Approximate Test Pit Location (Leighton, 2001)
B-4	Approximate Boring Location (Leighton, 1991)
T-11	Approximate Test Pit Location (Leighton, 1991)
	Project Boundary
Afu	Artificial Fill - Undocumented
Qop	Quaternary Old Paralic Deposits (circled where buried)

SOURCE: Leighton 2018

DUDEK

FIGURE 4.3-1
Geologic Map
Alta Oceanside Project

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