April 22, 2022

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Re: Archaeological Resources Report Form for the Survey of Two Outfalls Associated with the Nirvana Industrial Project, Chula Vista, California

Dear Ms. McKenna Lanier,

This Archaeological Resources Report presents the negative results of a cultural resources study conducted by Red Tail Environmental (Red Tail) on two outfall locations associated with the Nirvana Industrial Project (Project), located within the City of Chula Vista. The City of Chula Vista (City) is the lead agency for the Project. This study was performed in accordance with the California Environmental Quality Act (CEQA), and the City's Historic Preservation Program and Preservation Ordinance, Title 21, of the Chula Vista Municipal Code, to determine the presence or absence of potentially significant archaeological resources within the Project site. This study was also performed in accordance with the Section 106 of the National Historic Preservation Act (NHPA), as amended, in support of the U.S. Army Corps of Engineers' (USACE), consultation with the State Historic Preservation Office (SHPO).

The study utilized previously conducted record search data of the California Historical Resources Information System (CHRIS), held at the South Coastal Information Center (SCIC); a Sacred Lands Files Search (SLF) held by the Native American Heritage Commission (NAHC); an archaeological literature review, and a review of historic maps and aerial photographs. The study was negative for archaeological resources within the Outfall Area of Potential Effect (Outfall APE), which consisted of the two outfall locations. Therefore, there are no historical or prehistoric resources within the Outfall APE per CEQA guidelines, and no known historic properties within the Outfall APE in accordance with Section 106 of the NHPA. Implementation of proposed improvements within the Outfall APE will not pose any adverse effects to historic properties.

Since no resources have been identified, or previously recorded within the Outfall APE, the Archaeological Resource Report Form is being used to present the results of the study.

The results of the pedestrian survey were negative, and the Outfall APE exhibited high levels of disturbance from the construction of Main Street to the north, and from on-going seasonal flood events and erosional episodes within the Otay River. However, the probability of encountering in-situ or intact archaeological resources is moderate due to the proximity of cultural resources previously recorded near the Outfall APE. Construction monitoring by an archaeologist and Native American monitor is recommended for any new ground disturbance operations at the two outfall locations, including new trenching and grading for the installation of new rip-rip energy dissipators downstream of each outfall headwall.

I. PROJECT DESCRIPTION AND LOCATION

The Outfall APE is located within the City of Chula Vista, along the south side of Main Street, overlooking the Otay River to the south. The Outfall APE is currently undeveloped and is shown on the USGS 7.5' *Imperial Beach*, California topographic quadrangle map within Township 18 South, Range 1 West, Section 20. (Figures 1 and 2). The Outfall APE encompasses approximately 2,629 square feet (0.061 acres).

The Nirvana Industrial Project (Project) proposes to construct the Nirvana Business Park, an industrial complex consisting of three two-story buildings, and one three-story storage facility totaling approximately 296,753 square feet on approximately 13.31, located at 821 Main Street. The project site is identified as Tax Assessor parcel numbers APN 644-050-13, APN 644-050-14, and a portion of APN 644-050-80 (approximately 3 acres and an off-site easement). The focus of the current study is the augmentation and improvement of two existing outfall headwalls south of the Project.

The two outfall locations (Outfall APE) will be augmented to add a downstream rip rap energy dissipator while retaining the existing headwall outlet (Figure 3). The dissipator unit at Outfall 1 will consist of a base layer of 2-ton rock placed within a 24-feet long by 17-feet wide area, with a depth of 5.4 feet. The base layer will be overlain by a layer of light rock within an area measuring 12-feet long by 17-feet wide, with a thickness of 2 feet. The dissipator unit at Outfall 2 will consist of a base layer of 1 ton rock placed within an area measuring 27-feet long by 24-feet wide, and a depth of 4.4 feet. The base layer will be overlain by a second layer of 1 ton rock within an area measuring 15-feet long by 24-feet wide, with a thickness of 4.4 feet. The APE at each outfall consists of the dissipator element footprint plus a 10-foot-wide buffer around the dissipator perimeter. Excavation for the construction of the proposed dissipators would be performed from the road shoulder on the north side of the Otay River, and no vehicle access into the riverbed is expected.

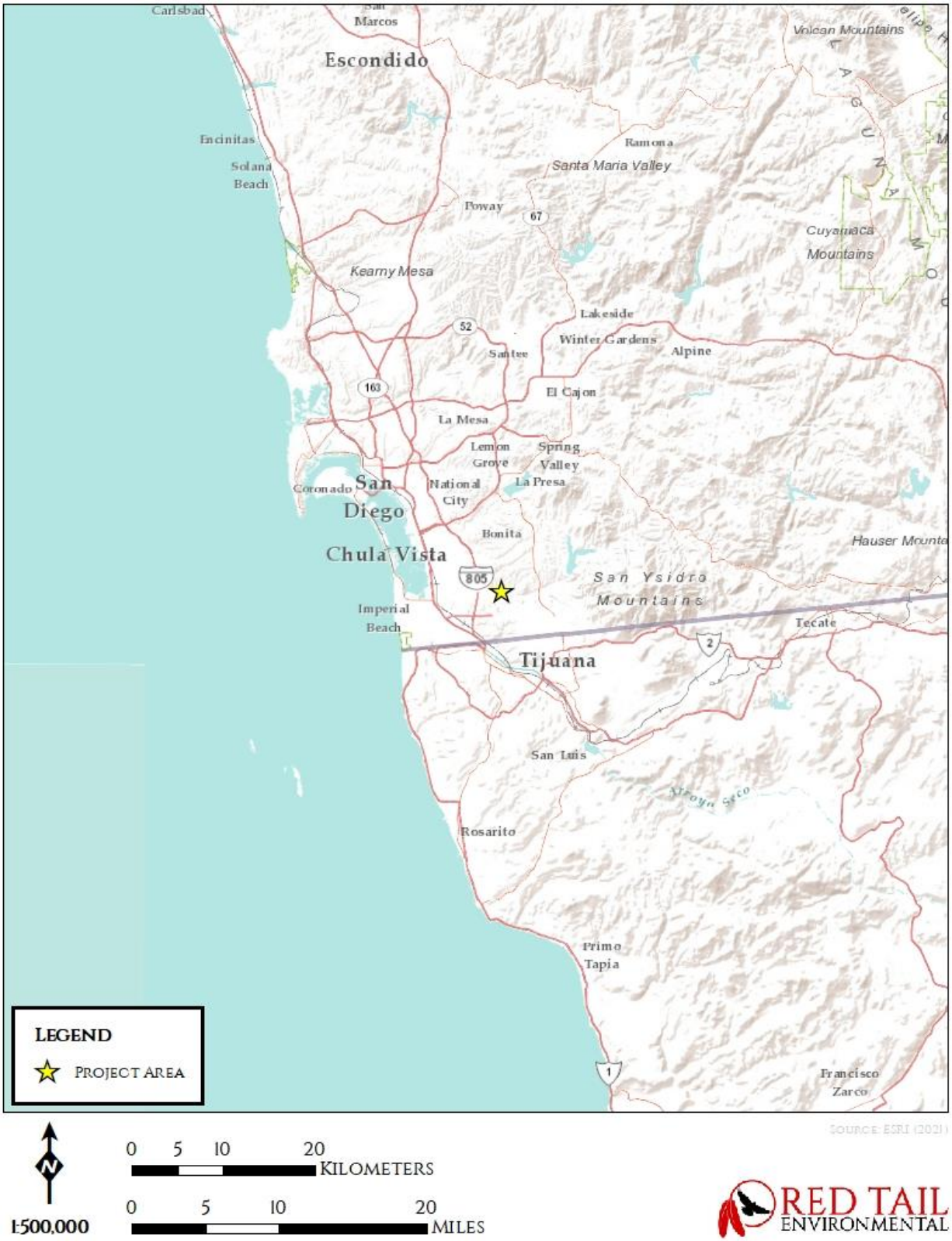

Figure 1. Project Vicinity Map.

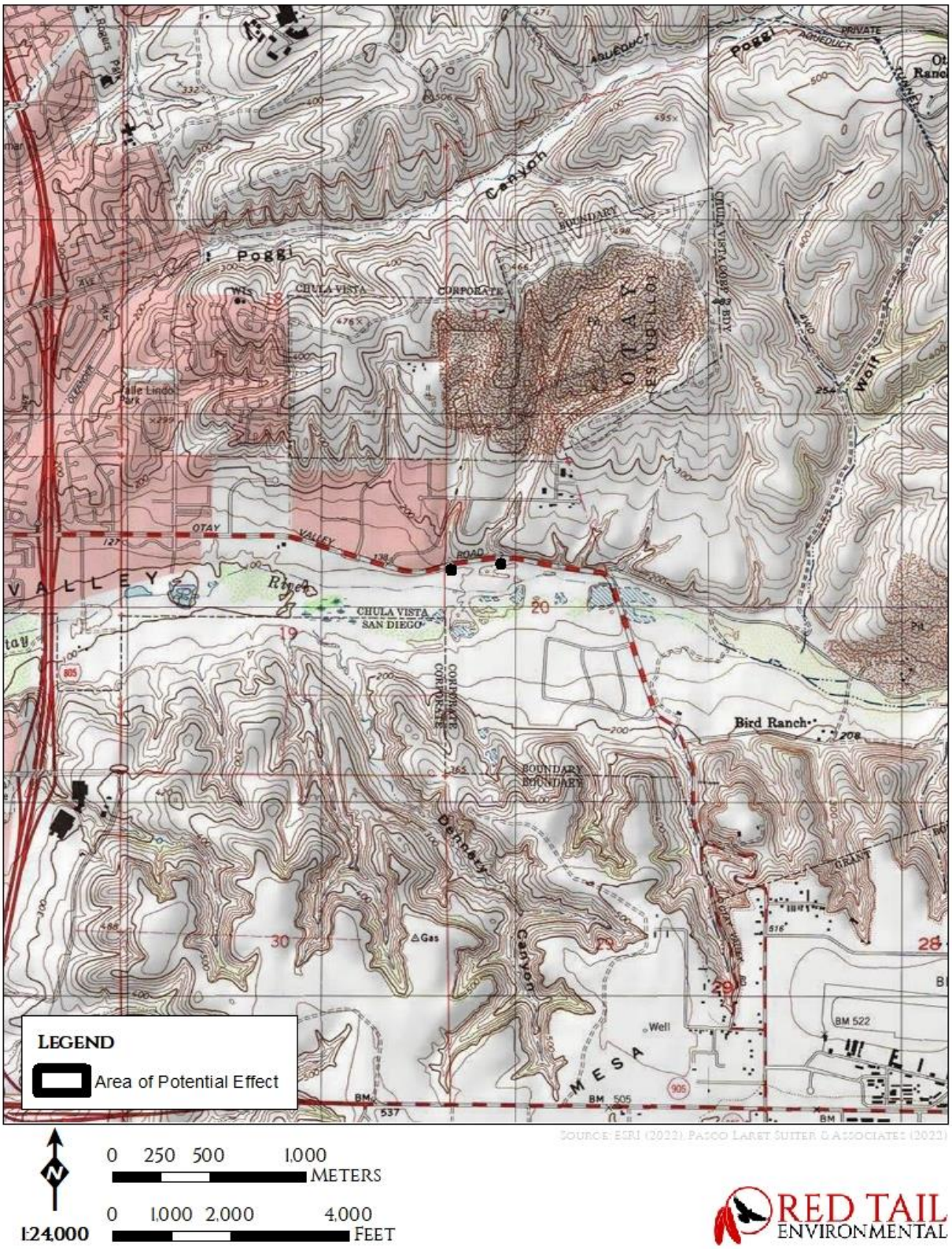

Figure 2. Project Location Map.

Figure 3. Area of Potential Effects Map.

II. REGULATORY FRAMEWORK

A. National Historic Preservation Act

Section 106 of the National Historic Preservation Act (NHPA) is the primary directive for cultural resource preservation. This section requires federal agencies, with either direct or indirect jurisdiction over a proposed action, to take into account the effect of their actions on historic properties. Concomitant with Section 106, Section 110 also requires federal agencies to assume responsibility for the preservation of historic properties under their jurisdiction or control.

Regulations revised in 1997 (36 CFR Part 800 et. seq.) set forth procedures to be followed for determining eligibility of properties for the National Register of Historic Places (NRHP). The eligibility criteria and process are used by federal, state, and local agencies in the evaluation of the significance of cultural resources. Recent revisions to Section 106 in 1999 emphasized the importance of Native American consultation.

36 CFR §800.16(I)(1) states:

Historic property means any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the NRHP, maintained by the Secretary of the Interior. This term includes artifacts, records, and cultural materials that are related to and located within such properties. The term also includes properties of traditional, religious, and cultural importance to an Indian tribe or Native Hawaiian organization that meet the NRHP criteria.

Section 106 of the NHPA also requires federal agencies, and those they fund or over which they have approval authority, to allow the Advisory Council on Historic Preservation (ACHP) the opportunity to comment on undertakings on historic properties, following 36 CFR Part 800. In order to determine whether an undertaking could affect NRHP-eligible properties, cultural resources (including archaeological, historical, and architectural properties) must be inventoried and evaluated for listing in the NRHP. Although compliance with Section 106 is the responsibility of the lead federal agency, others can undertake the work necessary to comply with Section 106.

Pursuant to the NHPA, NRHP eligibility criteria has become the standard for evaluating significance. As published in the Federal Register, the criteria states:

> The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and that:
>
> (a) Are associated with events that have made a significant contribution to the broad patterns of our history; or
>
> (b) Are associated with the lives of persons significant in our past; or
>
> (c) Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high

artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

(d) Have yielded or may be likely to yield, information important in prehistory or history [36 CFR 60.4].

In addition to meeting at least one of the eligibility criteria, a property must also retain sufficient integrity to convey its significance. Integrity is a quality that relates to the historic authenticity of a property. Again, the NRHP defines seven elements of integrity: location, design, setting, workmanship, materials, feeling, and association. Location and setting relate to the relationship of a property to its environment. Design, materials, and workmanship relate to construction methods and stylistic details. Feeling and association relate to the ability of the property to convey a sense of historical time and place. A significant loss of integrity will render a property ineligible for the NRHP, regardless of its level of historical significance. Evaluation of a property to the NRHP requires a consideration of both historical significance as defined by the evaluation criteria and integrity. The criteria under which a property is significant are relevant to the issue of integrity, because the property must retain sufficient integrity of those elements of integrity relevant to the qualifying criteria. For example, for an engineering structure that qualifies for listing under Criterion C, integrity of design, workmanship, and materials are paramount. Generally, prehistoric cultural resources and historical archaeology sites are evaluated for significance under Criterion D, based on their research potential.

B. CEQA and California Register of Historical Resources

CEQA requires that all private and public activities not specifically exempted be evaluated against the potential for environmental damage, including effects to historical resources. Historical resources are recognized as part of the environment under CEQA. The act defines historical resources as "any object, building, structure, site, area, or place that is historically significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California" (Division I, Public Resources Code, Section 5021.1[b]).

Lead agencies have a responsibility to evaluate historical resources against the California Register of Historical Resources (CRHR) criteria prior to making a finding as to a proposed project's impacts to historical resources. Mitigation of adverse impacts is required if the proposed project will cause substantial adverse change. Substantial adverse change includes demolition, destruction, relocation, or alteration such that the significance of a historical resource would be impaired. While demolition and destruction are obvious significant impacts, it is more difficult to assess when change, alteration, or relocation crosses the threshold of substantial adverse change. The CEQA Guidelines provide that a project that demolishes or alters those physical characteristics of a historical resource that convey its historical significance (i.e., its character-defining features) is considered to materially impair the resource's significance. The CRHR is used in the consideration of historical resources relative to significance for purposes of CEQA. The CRHR includes resources listed in, or formally determined eligible for listing in, the NRHP and some California State Landmarks and Points of Historical Interest. Properties of local significance that have been designated under a local preservation ordinance (local landmarks or landmark districts), or that have been identified in a local historical resources inventory, may be eligible for listing in the CRHR and are presumed to be significant resources for purposes of CEQA unless a preponderance of evidence indicates otherwise.

Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the CRHR (Pub. Res. Code SS5024.1, Title 14 CCR, Section 4852), which consist of the following:

- Criteria 1: it is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States; or
- Criteria 2: it is associated with the lives of persons important to local, California, or national history; or
- Criteria 3: it embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master, or possesses high artistic values; or
- Criteria 4: it has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

C. City of Chula Vista Historic Preservation Ordinance

Under Title 21 of the Chula Vista Municipal Code (Section 21.04.100) and the City's Historic Preservation Program (Chula Vista 2011) a Historic Resource includes buildings, structures, sites, signs, and other resources. Historical Resources may be designated on the Chula Vista Register of Historical Resources that are:

a) At least 45 years old; and
b) Have historical integrity and are determined to have historical significance by meeting at least one of the following criteria:

    1) Criterion 1: It is associated with an event that is important to prehistory or history on a national, state, regional, or local level.
    2) Criterion 2: It is associated with a person or persons that have made significant contributions to prehistory or history on a national, state or local level.
    3) Criterion 3: It embodies distinctive characteristics of a style, type, period, or method of construction, or represents the work of a master or important, creative individual, and/or possess high artistic values.
    4) Criterion 4: It is an outstanding example of a planned landscape or represents the work of a master landscape architect, horticulturalist, or landscape designer, or has potential to provide important information to the further study of landscape architecture or history.
    5) Criterion 5: It has yielded, or may be likely to yield information important in prehistory or the history of Chula Vista, the state, region, or nation.

In general, the City's Historic Preservation Ordinance builds on federal and state cultural resources laws and guidelines in an attempt to streamline the process of considering impacts to cultural resources within the City's jurisdiction, while maintaining that some resources not significant under federal or state law may be considered historical under the City's guidelines. Essentially, the City's Historic Preservation Ordinance guidelines localize cultural resources laws providing local perspective on significance criteria. In order to apply the criteria and determine the

significance of potential project impacts to a cultural resource, the Area of Potential Effects (APE) of the project must be defined for both direct impacts and indirect impacts. Indirect impacts can include increased public access to an archaeological site, or visual impairment of a historically significant viewshed related to a historic building or structure.

III. AREA OF POTENTIAL EFFECT (APE)

A Project APE is "the geographic area or areas within which an undertaking may cause changes to the cultural resources, as well as in the character or use of historic properties, if any such properties exist" (36 Code of Federal Regulations [CFR] 800.2(c)). The Outfall APE was delineated to ensure the identification of significant cultural resources and historic properties that may be affected by the proposed improvements at each outfall location and that are listed in or eligible for inclusion in the National Register of Historic Places (NRHP). The Outfall APE encompasses the maximum limits associated with the Project that will be altered by the Project, with a total area of approximately 2,629 square feet, or 0.061 acres (Figure 3). The energy dissipator at Outfall 1 will encompass a horizontal APE measuring 24-feet-long by 17-feet-wide and will have a depth of 12-feet for the vertical APE. The dissipator at Outfall 2 will encompass a horizontal APE of 27-feet-long by 24-feet-wide for a horizontal APE and will extend to a depth of 12-feet for the vertical APE.

As the project consists of stormwater outfall improvements, there are no anticipated indirect or cumulative impacts that would necessitate a larger APE outside of the direct Outfall APE area.

IV. SETTING

A. Natural Environment (Present)

The Outfall APE is located approximately 125 to 135 feet above mean sea level. Several seasonal drainages and canyons are in the vicinity of the Project area. The Outfall APE is undeveloped and lies within the base of the Otay River. Both outfall locations and their associated APEs contained visible ground surface bordered by dense native riparian vegetation within the river base. Areas directly north of the outfall locations are largely devoid of vegetation and have been previously developed into the Main Street roadway.

B. Natural Environment (Past)

The cultural setting of the Outfall APE can be divided into the prehistoric, ethnohistoric, and historic periods, as discussed below.

Prehistoric Archaeology

Generally, archaeologists believe that human occupation within San Diego County began sometime after 20,000 years Before Present (B.P.), and likely prior to 11,200 B.C. (Fagan 2003, Gallegos 2017). Archaeologists have developed numerous chronologies and nomenclature for the archaeological record many of which conflict with each other. Most archaeologists divide the human occupation of San Diego County during the prehistoric period into three main occupation eras: the Terminal Pleistocene / Early Holocene Period; the Middle Holocene Period; and the Late Holocene Period. While archaeological studies have taken place in San Diego County for over 100 years, portions of San Diego County have few well dated deposits as a result of development and the destruction of sites prior to the implementation of environmental laws and systematic archaeological studies (Hale 2009).

No definitive evidence of human occupation of San Diego County is available prior to approximately 12,000 B.C. However, a possible early archaeological site was identified in San Diego County, containing *in situ* hammerstones, a stone anvil, and fragmentary remains of spiral fractured fossilized mastodon bone and molar fragments, showing evidence of percussion, known as the Cerutti Mastodon site (Holen et al. 2017). The site was dated to 130.7 ± 9.4 thousand years ago, and if believed to be an archaeological site is the oldest archaeological site in North America. However, it is highly disputed if the site was formed by the genus *Homo* or is naturally occurring (Holen et al. 2017).

The earliest known archaeological sites near San Diego County with reliable dates are from the Channel Islands. The Arlington Springs site on Santa Rosa Island dates to 13,300 years ago, and the Daisy Cave site on San Miguel Island dates to 12,300-11,120 years ago (Lightfoot and Parrish 2009). Over 25 shell midden sites that date to between 12,000 and 8,000 years ago have been recorded on the Channel Islands. On the mainland a site near San Luis Obispo dates to 10,300-9,650 years ago and several sites on Cedros Island in Baja California date to 12,000 years ago (Lightfoot and Parrish 2009).

Previously, archaeologists believed that people came to North and South America through the Bering Land Bridge, however recent studies have identified that this ice-free corridor was blocked from 21,000 to possibly as late as 11,000 B.C. (Erlandson et al. 2007). Meanwhile, the coastal areas of the Pacific Northwest were deglaciated by approximately 14,000 B.C. Travel along the Pacific Coast in boats would have been possible during this period, and widespread kelp forest could have created a "kelp highway" with sufficient resources to sustain people entering North America during this time period (Erlandson et al. 2007, Gallegos 2017, Masters and Aiello 2007). Erlandson et al. (2007) argue that "it seems most likely that the peopling of the Americas included both coastal and interior migrations of peoples from northeastern Asia and Beringia, with an earlier migration possibly following the northern Pacific coast" (56). However, Erlandson et al. also argues that no archaeological sites have been unequivocally dated to over 15,000 years ago in California or North America.

Terminal Pleistocene / Early Holocene Period (ca. 12,000-6,000 B.C.), Paleo-Indian, San Dieguito

Paleo-Indian sites have been identified across most of North America, often referred to as the Clovis Complex. The Clovis Complex is defined by the use of large fluted projectile points and other large bifacial stone tools. Three isolated fluted points have been reported in San Diego County (Davis and Shutler 1969, Kline and Kline 2007, Rondeau et al. 2007). However, no fluted points have been found in San Diego County that are associated with radiocarbon dates or in association with Pleistocene fauna (Rondeau et al. 2007). Fluted points have been dated outside of California to 13,500 years before the present.

In San Diego County the Paleo-Indian period is generally termed San Dieguito. San Dieguito was defined by Warren (1968) at the C.W. Harris Site (SDI-149) and was characterized by leaf shaped and large stemmed projectile points, scrapers and other stone tools that were technologically similar to the Western Stemmed Point Tradition (WSPT), also called the Western Pluvial Lakes Tradition (WPLT). Archaeological evidence of the WSPT has been found across the westem interior of North America with small regional variations (Gallegos 2017, Sutton 2016, Warren 1968). Radio carbon dates from the C.W. Harris Site (SDI-149) ranged from ca. 8,000 to 6,500 cal B.C. (Byrd and Raab 2007, Gallegos 2017). Outside of the isolated Clovis points found in San Diego County, this is one of the earliest evidences of human occupation in the County. While the earliest radiocarbon dates in San Diego County are ca. 10,000 to 11,000 years ago, Gallegos (2017) stresses that all San Diego County sites have problematic stratigraphy because of bioturbation or disturbances from modern uses. Ground stone use was infrequent in San Dieguito archaeological remains, leading to the belief that the San Dieguito were highly mobile groups and their subsistence practices focused on the hunting of large game.

It is unknown if the first people arrived in San Diego County via the sea or from the pluvial lakes within the Great Basin to the east. Gallegos reports that there are two locations that may be the earliest San Dieguito habitation areas if they arrived in San Diego by sea: the La Jolla Archaeological area, extending from La Jolla Bay to the University of California, San Diego Chancellor's house, or at the Remington Hills Site (SDI-11079) near the coast of Otay Mesa, east of the Tijuana Lagoon (Gallegos 2017). Masters and Aiello argue that from approximately 10,800 to 9,400 B.C. the extensive kelp beds of the coast of southern California flourished and would have provided a resource rich environment that would have made the coastal area a more attractive

living location than the interior (2007). The estuaries off the coast of San Diego were productive with resources such as fish nurseries, shellfish, shorebird and marine mammals (Masters and Aiello 2007).

In addition, the Windsong Shores Site, SDI-10965/W-131, is representative of the San Dieguito Period, with artifacts similar to the WSPT, and was occupied ca. 9930 to 9580 years ago. However, these San Dieguito archaeological sites, in addition to artifacts similar to the WSPT, also contain artifacts which show a diet of shellfish, fish, birds, small to large mammals, and plant foods. Traditionally, archaeological research on Paleo-Indians has focused on the subsistence strategy of large game hunting of Pleistocene megafauna, which was then hunted to extinction. Subsequently Paleo-Indian peoples then focused on different subsistence strategies (Erlandson et al. 2007). More recent studies along the Southern California coast have focused on the diversity of subsistence strategies during this period, acknowledging the use of smaller animals and plant foods as staples, with limited evidence for big game hunting (Byrd and Raab 2007, Erlandson et al. 2007). There is little specific information from San Diego County archaeological sites for subsistence practices from this time period, besides the sites listed above. However, in the Daisy Cave archaeological site, only 200 miles to the north, one of the largest early Holocene archaeological deposits that has been excavated identified over 18 types of fish, multiple shellfish, marine mammals, and birds remains, showing that people relied on a wide assortment of marine resources as early as 8000 B.C., rather than subsisting on large mammal hunting (Erlandson et al. 2007). In addition, archaeological research across Southern California has shown the use of shellfish, marine mammals, and fish declined proportionately with distance from the coast. Less is known about plant use in interior sites from 8000 to 6500 B.C., besides the fact that an increase of milling tools is present suggesting that plant resources were heavily relied upon during this early period (Erlandson et al. 2007). Several sites in southwestern California from which spire removed *Olivella* beads have been recovered and dated to 9000 to 7000 B.C., which potentially indicating a trade network between the coast and the interior people or the movement of people between the two very different environments (Erlandson et al. 2007). Byrd and Raab argue that an environmental change from 10,000 to 8,000 cal. B.C. caused warming and drying conditions which shrunk the interior lakes and streams in Southern California's deserts and spurred the change from a reliance on large game hunting to a focus on a variety of subsistence strategies (2007).

There is a large debate between the relationship of the San Dieguito and the La Jolla Complex peoples in San Diego County, and whether they represent either distinct cultural changes or represent tool kits specific to the environment. The La Jolla Complex has been defined as the archaeological remains of the people inhabiting San Diego County during the Middle Holocene, discussed below. It has a focus on milling stone technology, rough percussion-flaked stone tools and a reliance on a variety of marine, plant, and small terrestrial resources (Hale 2009, Wallace 1955, Warren 1968). Sites which date to the Early Holocene in San Diego County do contain some milling tools, but at lower levels than the La Jolla period sites (Gallegos, 2017). The lowest levels of the C.W. Harris Site (SDI-149), however, have been identified as a Paleo-Indian Period occupation with a coastal adaptation. The artifacts are primarily bifaces and scrapers without the ground stone artifacts associated with milling identified in other early sites (Gallegos 2017:21). The Remington Hills site has four of the earliest radiocarbon dates in San Diego County, but contains cobble tools as well as milling tools, suggesting a dependence on coastal and lagoon resources rather than big game hunting (Gallegos 2017). Gallegos also stresses that in choice locations in San Diego County, such as Tijuana Lagoon surrounding Otay Mesa and around La

Jolla Bay, the archaeological record shows a continuous habitation through the Holocene with little evidence for cultural change until the Late Prehistoric Period (Gallegos 2017). Gallegos reiterates that development and bioturbation have resulted in a lack of stratigraphy in these areas, which may have obscured the presence of a traditional Paleo-Indian occupation, if one had been present.

Middle/Late Holocene Period (ca. 6000 B.C.-A.D. 500 - 800), Archaic Period, La Jolla Complex, Millingstone Horizon

The Millingstone Horizon, also known as the La Jolla Complex or the Archaic Period in San Diego County, is defined through the presence of specialized tools that focused on collection and processing of small plant seeds and the hunting of a variety of medium and small game animals. These specialized tools also promoted a reliance on marine resources along the coast (Byrd and Raab 2007, Hale 2009, Rogers 1945, Warren 1968). While early milling stone assemblages show that by 9,000 years ago milling tools were in use and that seeds and nuts must have been a dominant food source (Lightfoot and Parrish 2009), the Millingstone Horizon is generally attributed to the Middle to Late Holocene Period and has been identified across much of central and southern California by ca. 6000 to 5000 cal B.C. The La Jolla Complex has been identified as remaining relatively stable for thousands of years within San Diego County with very little technological changes identified within the archaeological record (Byrd and Raab 2007, Hale 2009).

The archaeological record from this period are often found near the coastal lagoons, however inland sites are also identified during the lengthy Middle Holocene Period. Coastal La Jolla Complex sites contain a large number of shellfish remains. Stone tools associated with this period are often described as "crude" or "expedient" and contain choppers, scrappers, handstone, milling slabs, basin metates, discoidals, and Pinto and Elko projectile points. Flexed burials are also associated with the La Jolla Complex (Moriarty 1966, Gallegos 2017, Hale 2009). A large number of small sandstone mortars or bowls have been recovered from archaeological sites in the La Jolla area, dated to the La Jolla Complex, as well as manos metates, pestles, net weights, scrapers and projectile points (Gallegos 2017).

Interior sites from this period contain similar archaeological collections but with a focus on milling tools, lithic choppers, and scrapers. Conversely, these sites focus less upon the use of shellfish and other marine resources. Unfortunately, there is little archaeological evidence that defines group size and habitation structure functionality within interior San Diego County sites during the middle Holocene.

During this lengthy period little technological changes are identified within the archaeological record until approximately 5,000 years ago when there was an increase in sedimentation along the coast. The increased sedimentation transformed the estuaries into shallow wetlands, closed several of the lagoons, transformed the coastal areas into sand and mudflats, and limited the kelp forests, causing the coastal region to have a lower level of subsistence resources than in the past (Byrd and Raab 2007, Gallegos 2007, Masters and Aiello 2007). Pismo Clams are used to identify the development of sand beaches as they require wide fine-grained sand beaches that are not lost in winter storms (Masters and Aiello 2007). While the sedimentation of the coastal lagoons and estuaries was a lengthy process, the Pismo Clam data suggests the San Diego County coast was the latest area within Southern California to show lagoon closure and the creation of sand beaches, taking place approximately 5,000 years ago, around 3,000 B.C., (Masters and Aiello 2007).

Gallegos theorizes that local populations adapted to the changing environmental conditions during this time by altering their settlement patterns to increase their use of plant and terrestrial animal use, which is identified in the archaeological record through an increase in habitation areas near oak and grassland resources and away from the coastal zone (Gallegos 2017). Gallegos shows that this is supported in the archaeological record by a near absence of human occupation at archaeological sites at Agua Hedionda, Batiquitos, San Elijo and San Dieguito lagoons ca. 3500-1580 B.P., with evidence that these lagoons opened again between 1580 and 1000 BP. However, Peñasquitos Lagoon, Tijuana Lagoon, San Diego Bay, and La Jolla Bay did not close and show continuous prehistoric occupation. Gallegos also argues that several of the coastal sites in the La Jolla area, which were located on the mesa tops, appear to have been abandoned ca. 5,000 to 3,000 years ago as the rocky shore shellfish population diminished (2017).

Past archaeological studies have argued that as the coastal estuaries became less productive for shellfish and other food sources, there was a depopulation along the coastal zone and settlements shifted to inland river valleys with an intensification of terrestrial game and plant resources (Byrd and Raab 2007). However, more recent archaeological work has identified Middle Holocene period sites remaining along the coastline along San Diego Bay, Mission Bay, Peñasquitos Lagoon, San Elijo Lagoon, Santa Margarita River drainage, Las Flores Creek, and San Mateo Creek, each displaying a continuous occupation from the Middle Holocene into the Late Holocene (Byrd and Raab 2007). Byrd and Raab argue that the larger drainage systems, such as San Elijo Lagoon, Las Flores Creek, and the Santa Margarita River Valley, likely maintained more productive estuaries that provided resources for a continuous occupation through the Middle to Late Holocene (Byrd and Raab 2007).

During the La Jolla Period there is less evidence for trade networks or migrations of people than in the Late Holocene. Shell bead types found in Southern California have been identified in the western and northern Great Basin from the Middle Holocene period. However, the extent and variety of these trade networks are unknown. There is an argument that during the Middle Holocene a migration of speakers of Uto-Aztecan languages migrated from the Great Basin into portions of Southern California, based on both archaeological and linguistic data, known as the Shoshonean Wedge, however additional research is needed (Byrd and Raab 2007). Overall, it is unknown if the people which created the La Jollan Complex archaeological sites are the same which created the San Dieguito. The archaeological records display differing subsistence strategies based on location and availability of resources, but additional information is needed to determine if they represent different cultural traditions due to population migration or from other external factors.

Besides the lessening of marine resources nearly 5,000 years ago, archaeologists have not come to a consensus on identifying different phases within the La Jolla Complex from either environmental or cultural changes. Overall, the archaeological record during this lengthy time period remains very similar (Hale 2009, Laylander 2018). Little is known about the transition from the La Jolla Complex to the Late Prehistoric Period. Laylander reports that there is a relative scarcity of dates within archaeological sites from 1300 B.C. to A.D. 200, but it is unknown if this represents a decline in population during the end of the Archaic Period or a bias in research data (Laylander 2014a).

Late Holocene Period (A.D. ca. 500 – 800 to 1769), Late Prehistoric Period

The Late Prehistoric Period is defined by the introduction of the bow and arrow after approximately A.D. 500 and the use of ceramics after approximately A.D. 1000. Also, during this time, mortuary practices changed from inhumations to cremations (Byrd and Raab 2007). It is unknown if the transition to the Late Prehistoric was caused by the adoption of new technologies by local San Diego populations during the La Jolla Complex or was representative of an influx of migrating populations into San Diego County (Laylander 2014a). Gallegos suggests that there may have been a long period of transition between what archaeologists identify as the La Jolla Period and the Late Prehistoric Period. He theorizes that the transition possibly occurred over a thousand years and that this transition is marked by an increase in the diversification of pressure flaked artifacts (Gallegos 2017:33).

The Late Holocene Period is identified as a continuation of the cultural practices that were present during the initial Euro-American exploration of San Diego County and that were recorded during the Ethno-Historic Period (Byrd and Raab 2007). During the Late Holocene Period, subsistence strategies focused on smaller and more plentiful resources such as the collection of small species of shellfish and seed plants and the hunting of smaller terrestrial animals and marine fish. Within the archaeological record there is an increase in the use of Donax shellfish, milling of plant seeds and nuts in inland locations, and the presence of numerous hearth features along the coast in Torrey Pines habitat which were likely used to processes pint nuts. Desert zones also show an increase in the number of agave roasting pits during this time (Gallegos 2017).

Late Period Sites are plentiful across San Diego County and Gallegos argues that it is unknown if the Late Period sites in San Diego County are found frequently due to an increase in population during this period, especially in the inland areas, or due to the result of more recent sites not being buried by silt and sediment like Early and Middle Holocene sites, and thereby hidden from the archaeological record (Gallegos 2017). Many Late Prehistoric Period archaeological sites are located inland and contain bedrock milling features, thought to relate to acorn or other seed processing. People lived in larger coastal and lower valley villages that were located near permanent water sources. These villages acted as ceremonial and political centers and may have been occupied, at least partially, year-round. Smaller villages and residential areas were inhabited seasonally and were located near subsistence resources or were used for specialized activities, especially in inland areas (Byrd and Raab 2007, Lightfoot and Parrish 2009). This may have led to an increase in community size, longer stays at the major residences, and different societal organization. It is unknown if these changes in settlement patterns were caused by environmental factors, resource usage, population growth, or other reasons. It is possible that some of these changes were responses to the Medieval Climatic Anomaly between A.D. 1100 and 1300, which caused a temperature increase and drought across the area (Gallegos 2017). Evidence of formal or permanent residential or communal structures has not been identified in the archaeological record. However, early archaeological studies in San Diego County by Rogers reported archaeological evidence of brush house structures, stone enclosures, sweathouses, hearths, roasting pits, granary bases, bedrock milling features, pictographs, and petroglyphs (Gallegos 2017). Most of the rock art in San Diego County has been attributed to the Late Prehistoric Period (Gallegos 2017).

Archaeological remains have identified over four dozen plant types that were used in San Diego County during this period (Byrd and Raab 2007). Grass seeds had the highest frequencies of use, and there was less evidence for acorn exploitation. Hale (2009) reports that an intensive use of acorns in San Diego County did not take place until A.D. 1700 in conjunction with a greater use of ceramics at that time as well. The lower level of acorn usage in San Diego, visible in macro-botanical studies, is in contrast to a reliance on acorns as a major subsistence resource in other parts of Southern California (Byrd and Raab 2007, Hale 2009). Little is known about plant cultivation during the Late Holocene. There is evidence that a high number of plants that follow fires were used, but no major research projects have focused on proto-agriculture in San Diego County. Early Spanish accounts identify that the Native Americans were practicing cultivation of certain plants through burning and water diversion (Gallegos 2017).

Agriculture was in use along the Colorado River, east of San Diego County as early as A.D. 700 (Schaefer and Laylander 2007). However, little evidence of agricultural practices has been identified prehistorically in San Diego County. Within the Jacumba Valley region ethno-historic evidence recorded Kumeyaay constructing small dams and ditches diverting water to terraces for agriculture. However, Gifford reported this in 1930 as taking place in the first half of the nineteenth century, and it is unknown if it was practiced prior to the ethnohistoric period (Schaefer and Laylander 2007). Generally, while there is archaeological evidence for use of fire and the manipulation of grasses producing seeds, the level of agricultural practices predating the mission period in San Diego County is unknown (Schaefer and Laylander 2007).

Ceramic use entered the San Diego region during the Late Prehistoric Period, with a wide variety of Late Prehistoric dates for the introduction of ceramics in various parts of the County (Gallegos 2017, Hale 2009, Schaefer and Laylander 2007). Shackley reported that ceramics were not identified west of the mountains within San Diego County prior to A.D. 1300 (2004), but were present in the Lake Cahuilla region as early as A.D. 700 and that there were at least five ceramic types present in the desert by A.D. 1000 (2004). Meanwhile, Schaefer and Laylander theorized that ceramics were in use by A. D. 800 (2007) and Gallegos described a range of ceramic use in County (2017). There is a consensus that ceramic use spread from the eastern deserts to the center of San Diego County, into Kumeyaay territory, and then spread to northern San Diego County, into the Luiseño territory, after it was in use in the Kumeyaay territory. Ceramic use within the region, especially in the area inhabited by the Tipai, was very diverse and included large food and water storage ollas, parching trays, paint pots, ceramic anvils, canteens, scoops, ceramic dance rattles, and effigy vessels (Shackley 2004). Residual clays from sources west of the Peninsular Ranges produced a ceramic style described as Tizon Brownware, which is identifiable by the brown color and high inclusions of mica and angular granite. Clay sources east of the Peninsular ranges resulted in a lighter buff colored ceramics, with fewer inclusions, known as Buff Ware. While more common in the respective territories in which they were made, both types are found across the region with a much larger variety of ceramic types found within the Colorado Desert area in eastern San Diego County (Schaefer and Laylander 2007, Shackley 2004)

Archaeological evidence shows that during the Late Prehistoric Period there was a decline in usage of large mammals and a focus on smaller terrestrial mammals, especially rabbits (Christenson 1990). This subsistence practice is linked to the use of bow and arrows. The earliest arrow points, small projectile points, have been dated in San Diego County is between A.D. 490 to 650 and A.D. 690 (Hale 2009). By A.D. 1000 small projectile points have been identified across San Diego

County in large numbers (Hale 2009). Two main projectile point types are found within the Late Prehistoric Period, the Cottonwood Triangular and the Desert Side-Notch, although some typologies have added a third category, Dos Cabezas Serrated (Laylander 2014b). Projectile points and lithic raw materials in general are consistent between the coastal and eastern areas of the County during the Late Prehistoric period, further implying that the western and eastern site of the territory were occupied by the same peoples seasonally.

Common lithic materials for formed tools, primarily projectile points include chert, jasper, agate, fossilized wood, rhyolite, wonderstone, quartz, obsidian, and Santiago Peak metavolcanics (Shackley 2004, Lightfoot and Parrish 2009). The wonderstone found in San Diego County derives from the Rainbow Rock source in the Colorado Desert (Schaefer and Laylander 2007). Dietler reports that for all lithic use during the Late Prehistoric Period, there was a preference for obsidian followed by cryptocrystalline silicates and then volcanic material. However, it was more advantageous to use material that was readily available rather than moving large amounts of preferred material far distances (Dietler 2000). In addition, Obsidian Butte obsidian is found across the County and the archaeological record suggests that access to the imported resource does not appear to have been controlled by one group (Dietler 2000).

Besides the creation of the small projectile points, which are ubiquitous in Late Prehistoric sites and were often carefully made, Schaefer and Laylander characterize lithic technology from this period as "expedient" (2007:252). In general, Schaefer and Laylander theorized that tools were created as needed from available materials and discarded after use. Gallegos (2017) also supports that lithic technologies were similar through time, with a focus on a direct response to the tools needed and the quality of local lithic material. The small projectile points in abundance during the Late Prehistoric Period could utilize poorer quality material than the large projectile points within the Early and Middle Holocene, as shown with the use of poor-quality Obsidian Butte obsidian and Piedra de Lumbre (PDL) chert. Generally, local volcanic material was used to make scraper tools, and local granitic and sandstone was used for groundstone tools (Gallegos 2017). Overall lithic technology, besides projectile points, tends to be stable over time across San Diego County, with the only clear chronologically identifiable lithic technology as the change in projectile point type. Groundstone tools show a greater effort of manufacture especially sandstone metates and other volcanic pestles and metates than flaked lithic tools (Gallegos 2017).

The Late Prehistoric Period additionally saw an increase in archaeological sites within portions of the Colorado Desert in eastern San Diego County. The Colorado Desert archaeological sites from this period have a range of radiocarbon dates from ca. A.D. 135 to 645 (Schaefer and Laylander 2007). Although located within Imperial County, Obsidian Butte was a major resource of lithic material in San Diego County during the Late Prehistoric Period. Obsidian Butte obsidian was available during periods of low water within Lake Cahuilla, and is found across Late Prehistoric archaeological sites within San Diego County during the last 1000 years, making up as much as 10 percent of some debitage assemblages in coastal and interior San Diego sites (Schaefer and Laylander 2007). The Colorado Desert was a major source of additional lithic material types found in San Diego County archaeological sites, including chert, chalcedony, basalt, rhyolite, quartz, and others.

After 1300 B.P. cremation was common practice across San Diego County and was practiced during the Ethno-Historic Period by both the Kumeyaay and the Luiseño (Gallegos 2017). It is

thought that this practice came from the north or east, and it is unknown if the transition from inhumations to cremations was adopted for religious or population reasons, or to control the spread of disease (Gallegos 2017).

Ethnohistoric Period

The project area lies within an area that was traditionally inhabited by the Kumeyaay, also known as Ipai, Tipai, or Diegueño (named for Mission San Diego de Alcalá). According to documentation in the ethnographic record, the Kumeyaay territory ranged from between Agua Hedionda Lagoon and Batiquitos Lagoon in the northwest, east through present day Escondido to the southern end of the Salton Sea, and then southeast through the Sonoran Desert into Mexico, with the southwestern boundary near Todos Santos Bay in Baja California, Mexico, south of Ensenada (Luomala 1978). Four to six dialects were present within the Kumeyaay territory, and northernmost groups referred to themselves as Ipai, while those in the southern portions of the Kumeyaay territory refer to themselves as the Kamia, Kamiyahi, or Tipai (Kroeber 1976). Ipai and Tipai were thought to be two distinct dialects of Kumeyaay, which was part of the Yuman Family of the Hokan Stock (Lightfoot 2005). The Tipai were present south of the San Diego River Valley into Mexico (Gallegos 2017).

The Kumeyaay are a group of exogamous, patrilineal territorial bands who lived in semi-sedentary, politically autonomous villages or rancherias. Most rancherias were the seat of a clan, although it is thought that, aboriginally, some clans had more than one rancheria and some rancherias contained more than one clan (Bean and Shipek 1978; Luomala 1978). Each group or clan was associated with a restricted locality, probably their summer home, called cimul or gentes (Luomala 1978, Spier 1923, Shackley 2004). Often several lineages lived together in a residential base. The number of residents, both full time or seasonally, is unknown. A hereditary male chief was present in each clan (Luomala 1978). Members of each clan had communal rights to the land and resources within their boundaries. The woman in the marriage were generally from another settlement, and if both agreed the couple would move to the man's father's house or would build a house nearby. While generally marriage was patrilocal, it was not uncommon for a couple to live with the woman's family. Either the husband or wife could leave the marriage if they wished.

Houses were made of Tule or California bulrush (Waterman 1910). In the center of villages was a circular dance ground, made of hard packed soils, where dances took place. Songs and dances were often accompanied by a turtle or tortoise shell rattle, wooden flute or whistle, or a bull-roarer, which was swung around the head to make a loud roaring sound. Tobacco was smoked from a stone pipe and was used primarily in ceremonies. Tobacco smoking is also referenced in Kumeyaay mythology (Waterman 1910).

Several sources indicate that large Kumeyaay villages or rancherias were located in river valleys and along the shoreline of coastal estuaries (Bean and Shipek 1978; Kroeber 1976). They subsisted on a hunting and foraging economy, exploiting San Diego's diverse ecology throughout the year; coastal bands exploited marine resources while inland bands might move from the desert, ripe with agave and small game, to the acorn and pine nut rich mountains in the fall (Cline 1984; Kroeber 1976; Luomala 1978). Subsistence cycles of the Kumeyaay were seasonal and generally focused on an east-west or coast-to-desert route based around the availability of vegetal foods, while hunting added a secondary food source to gathering practices (Luomala 1978, Shackley 2004). The Kumeyaay lived in the foothills on the edge of the Colorado Desert in the winter, in the

mountains in the spring, and in the inland valleys in the summer, although all settlements of a clan would be occupied throughout the year (Spier 1923). A clan's seasonal movement would be based on several major stable plants and a small number of people would arrive at a campsite to begin gathering in the vicinity of the staple crop, soon to be followed by a larger number. Staples included acorns, mesquite, cactus fruits, seeds, and piñon nuts (Luomala 1978). Spier (1923) goes into detail regarding the use of acorns, which are collected in the fall, and then stored to dry until the following February when they are processed by cracking them open, crushing them using a mortar and pestle, and leaching them. Cacti and succulents were used in greater quantity in the eastern side of the Kumeyaay territory, including agaves, Barrel Cactus, chollas, prickly pears, and yuccas (Luomala 1978).

Ethnographic and archaeological sources show the Kumeyaay using the following plant sources: California Buckwheat, Blue Dicks, Canary grasses, Chia, Native Barley, Pitseed Goosefoot, Tarweeds, wild cucumber, Blue Elderberry, California juniper berries, jojoba, Holly-leafed Cherry, Lemonade berry, Manzanitas, Oaks, Pinyon, Yucca, Prickly-pears, and others (Lightfoot and Parrish 2009). Meat sources included rodents, lizards, some snakes, insects, larvae, deer, and birds. Most hunting was performed by men, either alone or in informal parties (Luomala 1978). Rabbit was the most abundant source of meat, and was often caught in communal drives using nets, fences, or fires along with rabbit sticks or bows and arrows (Lightfoot and Parrish 2009). Other food sources within coastal environments include abalones, clams, mussels, marine snails, caterpillars, nearshore fishes, and marine birds (Lightfoot and Parrish 2009, Luomala 1978). Some limited agriculture was present in the east, consisting of the planting of maize, beans, and melons. The flood plain agriculture practiced in the eastern river valleys, was used by the same groups that practiced hunting and gathering in other areas of the Kumeyaay territory (Lightfoot and Parrish 2009).

It is likely that the east/west canyons and tributaries were also often used by the Kumeyaay as travel corridors from interior coastal plain areas, to and from villages located along, and at the mouth of the rivers (Trafzer and Carrico 1992:53). These river valleys were often referred to by native speakers as oon-ya, meaning trail or road, describing one of the main routes linking the interior of San Diego with the coast.

Kumeyaay religion was a mixture of the newer Chungichnish religion and older religious practices and shared many similarities with the Luiseño (Kroeber 1976, Waterman 1910). It is believed that the Chungichnish religion formed in the north and spread south to the islands of Santa Catalina and San Clemente, then to the San Juan Capistrano region and finally into San Diego County through the Luiseño (DuBois 1908). The Chungichnish religion did not reach the southern boundary of the Kumeyaay territory until very late in time, possibly as late as the American period, and was practiced less in the southern Kumeyaay territory (Kroeber 1976). Kroeber reports that these religious practices were not called Chungichnish by the Kumeyaay, rather they were called awik meaning "western". The cult centered around the boys' imitation ceremony in which toloache, *Datura meteloides*, was drunk. Shamans were present and were the principal performers in Chungichnish ceremonies (Spier 1923). All who took part of the toloache initiation ceremony received a shaman's powers, to a varying degree (DuBois 1908). Practicing the ceremonies of the cult protected the people from evils such as snake bites, and other misfortunes.

Waterman (1910) reported that the Kumeyaay believed that the souls of people have a continued existence after death and that the spirts of the dead go to the east, and the spirits of those that died are still associated with their places and objects. After death, the mourning ritual, Keruk, was performed in which the deceased were cremated, and the ashes were gathered and placed into a jar of pottery and either buried or placed between rocks. The body was burned so that the spirit would not return. The deceased's property was collected to use in the Mourning ceremony, which took place on the year anniversary of the death. During the ceremony the deceased's clothing and any other property was burned during a large gathering.

Other ceremonies and dances included the Feather Ceremony, the Whirling Dance (Tapakwrip), Image Burning Ceremony, the Eagle Ceremony which was a ceremony held on the anniversary of the death of the leader of the dances, the War Dance (Horloi), and the Fire Ceremony. East was the primary ceremonial direction, and ceremonial enclosures open to the east. East was also associated with the color white, south with green-blue, west with black, and north with red.

The Shaman was called the Kwasiyai, and was born a shaman. Waterman (1910) reported that disease was caused by deleterious substances in the body, which must be sucked out. The Shaman cured individuals by sucking blood or the diseased object through the mouth or through a pipe, kneading and pressing and blowing tobacco smoke on the diseased person.

Kroeber (1925) reports that the Kumeyaay origin story is similar to that of other Yuman speaking people in Southern California. Mankind and all things in the world are born from mother earth, with either the sky or night as the father. The divinity Wiyot is not the creator rather the first born. However, Waterman (2010) reports that there are two separate mythologies regarding creation and the divinity Wiyot. DuBois (1906) recorded that the Kumeyaay came from Wik-a-mee or Wikami, which was a mountain in the Colorado River region, that all the Indians came from that place and only had one language. Shackley (2004) recorded that Tom Lucas, an ethnographic source from Laguna Mountain, told a similar story that they came from "Spirit Mountain". Additionally, the spirits of all the dead people return to the mountain to dance (Spier 1923). Shackley states that the Kumeyaay origin story parallels the archaeological evidence in that sometime after A.D. 1000, a large number of Kumeyaay ancestors moved into the present territory and that, archaeologically, the relationship between the Kumeyaay ancestors and the populations living at the coast is not entirely known. Tom Lucas reported that the Kwaaymii, the people living in the Laguna Mountains, were created by the Great Spirit, Amaayahaa, who put life into their bodies made of dirt, in their current location, and his people did not migrate from a different area (Cline 1984).

Waterman also reported that there was a wonderful being called Chaup, and that several myths center on Chaup. Chaup named many of the plants and animals and marked them, and he also first brought storms and disease into the world. Chaup's physical manifestation is a ball of lightning or a shooting star (DuBois 1904; Miskwish 2016).

The Kumeyaay calendar was divided into six divisions, with 13 lunar months and four seasons. The calendar was used to know when to harvest plants and administer medicines. The Kumeyaay tracked the equinoxes and solstices, and both solar and lunar eclipses. The winter solstice was the most important date on the calendar, with the fall equinox being the start of the year as it also marked the acorn harvest (Miskwish 2016). Constellations were reflected in pictographs, petroglyphs, and cupules. Constellations played an important part of the puberty ceremonies, other

constellations represent creation stories, and other stories, such as death relate to the solstice and equinox. Observatories could be rock cairns, rock alignments, or even a singly placed rock (Miskwish 2016).

Waterman (1910) also recorded that the Kumeyaay played several gambling games, some of which may have been introduced historically. One such game, peon, was still played during Waterman's research and is thought to be an ancient practice. Peon was mentioned in the Chaup myth and is played ceremonially. Peon is played on two sides of four players each and involves guessing and reading the other player's expressions.

Village Sites Along Otay River

Two ethnohistoric village sites have been recorded within the Otay River Valley, *La Punta* and *Otai* (Gallegos *et al.* 1998). *La Punta* has been identified on early maps as being located along the mouth of the Otay River Valley at San Diego Bay and hearth features have been identified 1.2 m below the ground surface in alluvial deposits. *Otai* (also recorded as *Ueai*) has been recorded near the confluence of O'Neal Canyon and Otay River Valley, approximately 4 miles to the east of the Project area. The village site was along the main access trail from the Otay River Valley to the Mission San Diego do Alcala. It is believed that much of the remains of the village was destroyed in the 1916 flood (Schoenherr 2017). Additional habitation sites have been recorded along the Otay River Valley. Habitation areas have been defined within the Otay Mesa as sites with diverse surface artifact counts of over 200 artifacts per 10x10m collection grids (Gallegos *et al.* 1998).

History

San Diego history can be divided into three periods: the Spanish, Mexican and American periods.

Spanish Period (1769-1822)

European exploration of the San Diego area was initiated with the maritime expeditions of Juan Rodriguez Cabrillo in 1542 and Sebastián Vizcaíno in 1602. Continuous European settlement begin in 1769 when expeditions under the leadership of Gaspar de Portolá and Junípero Serra reached the region from Baja California and passed northward along the coastal plain to seek Monterey, and the presidio and the Misión San Diego de Alcalá were founded. Additional missions were founded in the region at San Juan Capistrano in 1776 and San Luis Rey de Francia in 1798. During this period the original El Camino Real ran from Mission San Diego de Alcalá through to Mission San Luis Rey de Francia (Cavalier 2008). Native Americans within the vicinity of the Project area were removed from their lands and forced into servitude at Mission San Diego de Alcalá. The vicinity of the Project area may have been used for crazing cattle by the Spanish during this period, but the Project area remained undeveloped. Directly north of the Project area was Rancho del Rey, which was in use since 1795 as a grazing area for the Presidio.

Mexican Period (1822-1846)

In 1821 Mexico achieved its independence from Spain and by 1833 the missions were secularized. During this period the Pueblo of San Diego was founded, although the population grew slowly (Schoenherr 2017). Native Americans released from the Mission San Diego de Alcalá returned to their native villages, moved east to areas lying beyond Mexican control, or sought work on ranchos

or in the towns across the region. Numerous large land grants were issued to private owners during this period.

The Project area is adjacent to the southern boundary of the Rancho de la Nación and the westem boundary of Rancho Otay. Rancho de la Nación was formerly referred to as Rancho del Rey and was granted in John Forster in 1845 and consisted of over 26,000 acres. Rancho Otay, consisting of over 6,000 acres, was granted in 1829 to Doña Magdalena Estudillo, although the lands may have been regranted in 1846 by Governor Pío Pico (Schoenherr 2017). Little development within the vicinity of the Project area took place during this period. Within in the ranchos houses, corrals and other facilities for cattle ranching were constructed, while most land remained unchanged and used for crazing of cattle.

American Period (1846-Present)

The American Period began at the end of the Mexican American War, between 1846-1848, with the Treaty of Guadalupe Hidalgo. After the Mexican American War, the population of the region began to grow, as the Ranchos changed hands and eventually were sold. Immigrants from the eastern U.S. gradually moved into the area and supplanted old Californio customs. Due to a lack of reliable water agriculture within the area was limited to grain and ranching of cattle. The growth of the population within San Diego County was punctuated with historical events such as the discovery of gold in the Julian area, the extension of the railroad to San Diego, and the establishment of military facilities.

During San Diego's population boom in the mid-1880s speculators formed land companies and subdivided town sites throughout the county (Pourade 1964:167-191). This boom brought homesteaders to the Chula Vista area. Rancho Otay changed hands several times and was eventually sold to the San Diego Land and Town Company in the 1880s (Schoenherr 2017). Rancho de la Nación also changed hand several times and eventually much of the rancho became National City (Schoenherr 2004).

The City of Chula Vista was incorporated in 1911 but most of the area remained rural for several decades. Lemon groves became the primary agricultural good in the region. Chula Vista was typical of the small agricultural communities that grew up in the hinterland of San Diego, characterized generally by widely dispersed settlements that were united by a common school district, post office, church, and general store (Van Wormer 1986a, 1986b, 1987). By 1919 the San Diego and Arizona Eastern Railway was completed, causing a population growth in the area (Schoenherr 2004). With the construction of dams and other water facilities agricultural production grew but Chula Vista remained a small agricultural community until World War II. World War II brough aeronautical companies and military housing to the area and by 1955 the population of Chula Vista had expanded to 31,330 people. Over the next several decades Chula Vista continued to grow adding residential development, transportation routes and additional irrigation and water infrastructure (Schoenherr 2004).

V. STUDY METHODS

The methods used to assess the presence or absence of cultural resources within the APE of the two outfall locations included a search of existing historical and archaeological records, background research, and a pedestrian archaeological survey. The records search of the California Historical Resources Information System (CHRIS) held by the South Coastal Information Center (SCIC) was conducted on June 9, 2021 for the associated Nirvana Industrial Project, located approximately 135 feet north of the two outfall locations. The search included the Nirvana Industrial Project APE and a radius of one-mile (mi.) around it. Historic aerial photographs and historic USGS topographic maps of the APE were consulted from historicaerials.com and the USGS Historic Topographic Map Explorer, respectively.

A record search of the Sacred Lands File (SLF) held by the Native American Heritage Commission (NAHC) was requested by Red Tail on June 8, 2021. The NAHC responded to the record search request of the SLF on June 29, 2021, that the record search of the SLF was negative. The NAHC also provided a list of twenty Native American individuals and organizations which may have additional information on the Project area.

The field survey of the two outfall locations was conducted on April 6, 2022, by Red Tail Archaeologist Spencer Bietz and Native American Monitor Corel Taylor. The ground surface visibility was mixed, with good visibility within areas directly abutting the headwalls, and poor visibility within areas along the perimeter of each outfall APE due to dense riparian vegetation within the Otay River. The Project area was located primarily within the Otay River. All exposed soil was examined for cultural resources. Current site overview photographs were taken from various angles.

VI. STUDY RESULTS

A. Background Research

SCIC Record Search Results

The record search conducted on June 8, 2021, indicated that 74 studies have previously been completed within the 1-mi. record search radius (Table 1). Six of the previously conducted studies intersect the Outfall APE, including the two outfall locations.

Table 1. Previously Conducted Studies within 1-Mile of the Outfall APE

Report Number	Year	Authors	Report Title	Relation to Outfall APE
SD-00122	1980	BANKS, THOMAS J.	AN ARCHAEOLOGICAL SURVEY OF THE OTAY RANCH PROPOSED BARROW PIT LOCATIONS SAN DIEGO COUNTY.	OUTSIDE
SD-00686	1974	FINK, GARY R.	FURTHER ARCHAEOLOGICAL INVESTIGATIONS OF THE PROPOSED YOUTH DEVELOPMENT CENTER, OTAY, CALIFORNIA	OUTSIDE
SD-00687	1973	FINK, GARY R.	PRELIMINARY ARCHAEOLOGICAL SURVEY OF THE PROPOSED YOUTH DEVELOPMENT CENTER, OTAY, CALIFORNIA	OUTSIDE
SD-00837	1975	FINK, GARY	OTAY LANDFILL EXPANSION ARCHAEOLOGICAL SURVEY PROJECT NO. UJ0144	OUTSIDE
SD-01041	1988	GALLEGOS, DENNIS R. AND DAYLE CHEEVER	CULTURAL RESOURCE INVENTORY FOR HIDDEN TRAILS: OTAY MESA, SAN DIEGO, CALIFORNIA	OUTSIDE
SD-01335	1986	PIGNIOLO, ANDREW, DENNIS GALLEGOS, AND RICHARD CARRICO	CULTURAL RESOURCE SURVEY OF THREE ALTERNATE JAIL FACILITIES IN SAN DIEGO COUNTY.	OUTSIDE
SD-01412	1989	SMITH, BRIAN F.	THE ARCHAEOLOGICAL SURVEY AT THE CHULA VISTA AUTO CENTRE PROJECT A CULTURAL RESOURCE SURVEY OF 31.667 ACRES	OUTSIDE
SD-01413	1987	SMITH, BRIAN F.	THE ARCHAEOLOGICAL INVESTIGATIONS AT THE OTAY RIO BUSINESS PARK PROJECT A CULTURAL RESOURCE SURVEY OF 210 ACRES AND THE EVALUATION OF THE LOCI OF SITE W-3861	OUTSIDE
SD-01432	1989	SMITH, BRIAN F.	AN ARCHAEOLOGICAL SURVEY OF THE OTAY RANCH/NELSON AND SLOAN QUARRY EXTENSION	OUTSIDE
SD-01460	1984	SCIENTIFIC RESOURCE SURVEYS, INC.	AN ARCHAEOLOGICAL SURVEY OF THE WALKER SCOTT PROPERTIES IN OTAY VALLEY, SAN DIEGO COUNTY, CALIFORNIA	OUTSIDE
SD-01784	1980	SCIENTIFIC RESOURCE SURVEYS, INC.	ARCHAEOLOGICAL/PALEONTOLOGICAL SURVEY REPORT ON THE CHULA VISTA-OTAY VALLEY ROAD LIMITED INDUSTRIAL PROJECT LOCATED IN THE CHULA VISTA AREA OF THE COUNTY OF SAN DIEGO	OUTSIDE
SD-02047	1985	JAMES HARGROVE	REVIEWERS OF THE OTAY MESA PRISON SEWER PIPELINE NEGATIVE DECLARATION	OUTSIDE
SD-02252	1991	ADVANCED SCIENCES, INC	AN ARCHAEOLOGICAL IMPACT EVALUATION FOR THE OTAY RIVER VALLEY RESOURCE ENHANCEMENT PLAN	OUTSIDE
SD-02511	1993	HIX, ANN B.	DENNERY RANCH PLANNED RESIDENTIAL DEVELOPMENT PERMIT HILLSIDE REVIEW OVERLAY ZONE/RESOURCE PROTECTION PERMIT AND REZONE #88-0785	OUTSIDE
SD-02522	1992	MOONEY, BRIAN	EVALUATION OF A PREHISTORIC RESOURCE PROCESSING SITE CA-SDI-10452 HISTORIC BIRD RANCH CA-SDI-11386H AND WATER CONVEYANCE SYSTEM CA-SDI-11383H FOR THE OTAY VALLEY WATER RECLAMATION PLANT	OUTSIDE
SD-02690	1993	CARRICO, RICHARD, THEODORE G. COOLEY, AND ANDREW PIGNIOLO	FINAL CULTURAL RESOURCES EVALUATION OF THE 23,088 ACRE OTAY RANCH, SAN DIEGO COUNTY	OUTSIDE
SD-02805	1992	CITY OF SAN DIEGO	DRAFT ENVIRONMENTAL IMPACT REPORT, HIDDEN TRAILS REZONE FROM AGRICULTURAL TO RESIDENTIAL, SAN DIEGO COUNTY	OUTSIDE

Report Number	Year	Authors	Report Title	Relation to Outfall APE
SD-02842	1984	KIDDER, FRED W.	ARCHAEOLOGICAL SURVEY OF TWO SEWER LINE ROUTES: PROPOSED OTAY MESA PRISON SITE, SAN DIEGO, CALIFORNIA	OUTSIDE
SD-02982	1995	CITY OF SAN DIEGO	HIDDEN TRAILS, DRAFT ENVIRONMENTAL IMPACT REPORT	OUTSIDE
SD-03077	1984	SMITH, BRIAN AND JAMES MORIARTY	AN ARCHAEOLOGICAL SURVEY OF THE ROBINHOOD BRIDGE PRECISE PLAN AND THE EVALUATION OF SITES SDM-W-3513 AND SDM-W-3514, OTAY MESA, CITY OF SAN DIEGO, CALIFORNIA	OUTSIDE
SD-03156	1996	SMITH, BRIAN F.	RESULTS OF AN ARCHAEOLOGICAL SURVEY AT THE OTAY VALLEY PARCEL OF THE OTAY RANCH	OUTSIDE
SD-03266	1996	GROSS, TIMOTHY, RUTH ALTER, AND MARY ROBBINS-WADE	ARCHAEOLOGICAL SURVEY FOR THE JOINT TASK FORCE-SIX BORDER ROAD REPAIR PROJECT, OTAY MOUNTAIN, CALIFORNIA	INTERSECTS
SD-03306	1988	CHEEVER, DAYLE AND DENNIS GALLEGOS	CULTURAL RESOURCE INVENTORY FOR HIDDEN TRAILS; OTAY MESA, SAN DIEGO, CALIFORNIA	OUTSIDE
SD-03359	1988	SMITH, BRIAN F.	A REPORT OF THE RESULTS OF AN ARCHAEOLOGICAL SURVEY AND CULTURAL RESOURCE EVALUATION AT THE ROBINHOOD RIDGE PRECISE PLAN, OTAY MESA, CITY OF SAN DIEGO, CALIFORNIA	OUTSIDE
SD-03452	1998	CITY OF SAN DIEGO	DRAFT EIR FOR ROBINHOOD RIDGE PROJECT	OUTSIDE
SD-03726	1996	KYLE, CAROLYN E. AND DENNIS R. GALLEGOS	ARCHAEOLOGICAL SURVEY REPORT FOR THE OTAY ANNEX LANDFILL PROJECT	OUTSIDE
SD-03767	1994	SCHAEFER, JERRY, STEPHEN VAN WORMER, AND SUSAN WALTER	HISTORIC STUDY REPORT OF SITES CA-SDI-11,374H, -11383H, -12,272H, AND -12,273H FOR STATE ROUTE 125 ON OTAY MESA, SAN DIEGO COUNTY, CALIFORNIA.	OUTSIDE
SD-03950	1997	GALLEGOS, DENNIS AND CAROLYN KYLE	CULTURAL RESOURCES REPORT FOR THE OTAY ANNEX LANDFILL PROJECT	OUTSIDE
SD-04089	1997	GALLEGOS, DENNIS R. AND CAROLYN E. KYLE	CULTURAL RESOURCE SURVEY AND TEST REPORT FOR THE SOUTH SAN DIEGO PIPELINE NO. 2 PROJECT CITY OF SAN DIEGO, CALIFORNIA	OUTSIDE
SD-04411	1992	ASM AFFILIATES, INC.	ARCHAEOLOGICAL TESTING AND SIGNIFICANCE EVALUATION PROGRAM REPORT FOR THE SENNERY RANCH PROPERTY CITY OF SAN DIEGO	OUTSIDE
SD-04533	1998	MONSERRATE, LAWRENCE C. AND CITY OF SAN DIEGO	NOTICE OF PREPARATION OF A DRAFT ENVIRONMENTAL IMPACT REPORT HIDDEN TRAILS	OUTSIDE
SD-04578	1988	CHEEVER, DAYLE AND DENNIS GALLEGOS	CULTURAL RESOURCE INVENTORY FOR HIDDEN TRAILS; OTAY MESA, SAN DIEGO, CALIFORNIA	OUTSIDE
SD-04590	1990	CITY OF SAN DIEGO	APPENDIXES FOR THE ENVIRONMENTAL IMPACT REPORT FOR OTAY VALLEY WATER RECLAMATION FACILITY FOR THE CLEAN WATER PROGRAM FOR GREATER SAN DIEGO	OUTSIDE
SD-04657	1992	OGDEN ENVIRONMENTAL AND ENERGY SERVICES CO., INC.	DRAFT PROGRAM ENVIRONMENTAL IMPACT REPORT. OTAY RANCH	OUTSIDE
SD-04677	1988	SMITH, BRIAN	A REPORT OF THE RESULTS OF AN ARCHAEOLOGICAL SURVEY AND CULTURAL RESOURCE EVALUATION AT THE ROBINHOOD RIDGE PRECISE PLAN	OUTSIDE
SD-04798	1999	CITY OF SAN DIEGO	RECIRCULATED ENVIRONMENTAL IMPACT REPORT: HIDDEN TRAILS PRECISE PLAN VESTING TENTATIVE MAPS	OUTSIDE
SD-05091	1988	CHEEVER, DAYLE	CULTURAL RESOURCE INVENTORY FOR HIDDEN TRAILS; OTAY MESA, SAN DIEGO, CALIFORNIA	OUTSIDE
SD-05092	2000	CITY OF SAN DIEGO	DRAFT EIR FOR HIDDEN TRAILS, OTAY MESA COMMUNITY PLAN	OUTSIDE
SD-05227	1992	COOK, JOHN	ARCHAEOLOGICAL TESTING & SIGNIFICANCE EVALUATION PROGRAM REPORT FOR THE DENNERY RANCH PROPERTY CITY OF SAN DIEGO, CA	OUTSIDE
SD-05247	1998	CITY OF SAN DIEGO	D.E.I.R. FOR HIDDEN TRAILS COMMUNITY PLAN AMENDMENT	OUTSIDE
SD-05361	2000	MONSERRATE, LAWRENCE	DRAFT ENVIRONMENTAL IMPACT REPORT: HIDDEN TRAILS	OUTSIDE
SD-06728	1999	CITY OF SAN DIEGO	PUBLIC NOTICE OF PROPOSED ADDENDUM TO AN ENVIRONMENTAL IMPACT REPORT-DENNERY RANCH	OUTSIDE
SD-06805	1987	BERRY, STANLEY AND JUDY A. BERRYMAN	ARCHAEOLOGICAL OVERVIEW AND PLANNING DOCUMENT FOR THE PROPOSED RANCHO OTAY PROJECT	OUTSIDE

Report Number	Year	Authors	Report Title	Relation to Outfall APE
SD-07668	2001	BUYSSE, JOHNNA AND BRIAN F. SMITH	ARCHAEOLOGICAL MITIGATION OF IMPACT TO PREHISTORIC SITE SDI-13864, OTAY RANCH VILLAGE ONE WEST	OUTSIDE
SD-07775	2000	JOHNNA L. BUYSSE AND BRIAN F. SMITH	A REPORT OF AN ARCHAEOLOGICAL EVALUATION OF CULTURAL RESOURCES AT THE OTAY RANCH VILLAGE TWO SPA	OUTSIDE
SD-08276	2002	CALTRANS AND MARTIN ROSEN	HISTORICAL RESOURCES COMPLIANCE REPORT FOR FILING COMPLETION OF PRC§5024 RESPONSIBILITIES FOR THE SR-905 WALL-HUDSON BIOLOGICAL MITIGATION PARCEL	OUTSIDE
SD-08311	2003	SMITH, BRIAN F.	ARCHAEOLOGICAL INVESTIGATIONS AND CULTURAL RESOURCE EVALUATIONS FOR THE OTAY RANCH COMPANY'S PROPERTY WITHIN VILLAGE 3 OF OTAY RANCH	OUTSIDE
SD-08607	1980	SCIENTIFIC RESOURCE SURVEYS, INC	ARCHAEOLOGICAL/PALEONTOLOGICAL HISTORICAL RECORDS SEARCH AND REPORT ON THE CHULA VISTA-OTAY VALLEY ROAD LIMITED INDUSTRIAL PROJECT LOCATED IN THE CHULA VISTA AREA OF THE COUNTY OF SAN DIEGO	OUTSIDE
SD-09004	2003	ROSEN, MARTIN D.	HISTORICAL PROPERTY SURVEY REPORT- 2ND SUPPLEMENTAL	OUTSIDE
SD-09765	1987	ROBBINS-WADE, MARY, TIMOTHY GROSS, AND SEAN CARDENAS	CULTURAL RESOURCES INVENTORY AND ASSESSMENT: CALIFORNIA TERRACES	OUTSIDE
SD-10448	2005	COOLEY, THEODORE	SITE SIGNIFICANCE EVALUATION OF A PORTION OF PREHISTORIC ARCHAEOLOGICAL SITE CA-SDI-17668 LOCATED ALONG THE PROPOSED OTAY WATER DISTRICT, 30-INCH RECYCLED WATER PIPELINE ROUTE, IN THE OTAY RIVER VALLEY, SAN DIEGO COUNTY, CALIFORNIA	OUTSIDE
SD-10821	2007	CASE, ROBERT P.	FINAL CULTURAL RESOURCES MITIGATION MONITORING REPORT FOR THE OTAY WATER DISTRICT 30- INCH RECYCLED WATER PIPELINE SAN DIEGO COUNTY, CALIFORNIA	OUTSIDE
SD-10935	2007	SMITH, BRIAN F. AND SETH A. ROSENBERG	AN ARCHAEOLOGICAL STUDY FOR THE CHULA VISTA INTERNATIONAL RACEWAY PROJECT	OUTSIDE
SD-11502	1995	SMITH, BRIAN F.	RESULTS OF AN ARCHAEOLOGICAL SURVEY AND THE EVALUATION OF CULTURAL RESOURCES AT THE OTAY RANCH SECTIONAL PLANNING AREA ONE AND ANNEXATION PROJECT	OUTSIDE
SD-12268	2009	ROBBINS-WADE, MARY	ARCHAEOLOGICAL RESOURCES SURVEY, MAIN STREET PROPERTY, CHULA VISTA, SAN DIEGO COUNTY, CALIFORNIA	INTERSECTS
SD-12397	2009	CLOWERY-MORENO, SARA AND LARRY J. PIERSON	ARCHAEOLOGICAL MONITORING OF THE OTAY RANCH VILLAGE 2 PROJECT	OUTSIDE
SD-14028	2012	CASTELLS, SHELBY GUNDERMAN	CULTURAL RESOURCES STUDY FOR THE GEOTECHNICAL FIELD INVESTIGATION, HERITAGE ROAD BRIDGE REPLACEMENT, CITY OF CHULA VISTA, CALIFORNIA	INTERSECTS
SD-14368	2013	CITY OF SAN DIEGO	DRAFT PROGRAM ENVIRONMENTAL IMPACT REPORT FOR THE OTAY MESA COMMUNITY PLAN UPDATE, CITY OF SAN DIEGO PROJECT NUMBER 30330/304032	OUTSIDE
SD-14714	2013	CITY OF SAN DIEGO	FINAL PROGRAM ENVIRONMENTAL IMPACT REPORT FOR THE OTAY MESA COMMUNITY PLAN UPDATE, CITY OF SAN DIEGO	OUTSIDE
SD-15229	2013	KRISTIN TENNESEN	ETS #24738.03, CULTURAL RESOURCES MONITORING FOR THE INTRUSIVE POLE INSPECTIONS, METRO DISTRICT, SUB-AREAS BORD, SNYS, IMPE, OTAY, SBAY, HILT, MONT, SSDE, LINC PROJECT, SAN DIEGO COUNTY, CALIFORNIA (HDR #207357)	INTERSECTS
SD-15274	2013	JAMES E. WHITAKER	ETS #26617, CULTURAL RESOURCES SURVEY FOR CMP POLE REPLACE, P86042, CHULA VISTA, SAN DIEGO COUNTY, CALIFORNIA (HDR #223892)	OUTSIDE
SD-15437	2014	KRISTIN TENNESEN	ETS #8357, ADDENDUM CULTURAL RESOURCES SURVEY REPORT FOR THE TL 649 WOOD-TO-STEEL REPLACEMENT AND RECONDUCTOR PROJECT, SAN DIEGO COUNTY, CALIFORNIA	OUTSIDE
SD-15873	2014	WAYNE H. BONNER AND SARAH A. WILLIAMS	CULTURAL RESOURCE RECORDS SEARCH AND SITE VISIT RESULTS FOR AT&T MOBILITY, LLC CANDIDATE SD0960 (SLEEP TRAIN AMPHITHEATRE), 2050 ENTERTAINMENT CIRCLE, CHULA VISTA, SAN DIEGO COUNTY, CALIFORNIA	OUTSIDE
SD-17037	2017	SMITH, BRIAN F.	CULTURAL RESOURCES MONITORING REPORT FOR THE OTAY RANCH VILLAGE 2 SOUTH PROJECT, CITY OF CHULA VISTA, SAN DIEGO COUNTY, CALIFORNIA	OUTSIDE
SD-17094	2017	SMITH, BRIAN F.	CULTURAL RESOURCES MONITORING REPORT FOR THE OTAY RANCH VILLAGE 3 NORTH PROJECT, CITY OF CHULA VISTA, SAN DIEGO COUNTY, CALIFORNIA	OUTSIDE

Report Number	Year	Authors	Report Title	Relation to Outfall APE
SD-17217	2016	CASTELLS, SHELBY GUNDERMAN	ARCHAEOLOGICAL SURVEY REPORT FOR THE HERITAGE ROAD BRIDGE REPLACEMENT PROJECT, CITY OF CHULA VISTA, SAN DIEGO COUNTY, CALIFORNIA	OUTSIDE
SD-17371	2017	FOGLIA, SHANNON E. AND THEODORE G. COOLEY	LETTER REPORT: ETS 34479 - CULTURAL RESOURCES SURVEY FOR THE OTAY RANCH VILLAGE 3 HERITAGE RD, MAIN STREET CONVERSION, CITY OF CHULA VISTA, SAN DIEGO COUNTY, CALIFORNIA - IO 7074264	INTERSECTS
SD-17372	2018	ROY, JULIE	LETTER REPORT: ETS 34479 - CULTURAL RESOURCES MONITORING FOR THE OTAY RANCH VILLAGE 3 HERITAGE RD, MAIN STREET CONVERSION, CITY OF CHULA VISTA, SAN DIEGO COUNTY, CALIFORNIA - IO 7074264	INTERSECTS
SD-17672	2017	VOLTA, BENIAMINO	ETS #26617, CULTURAL RESOURCES MONITORING FOR CMP POLE REPLC, P86042, CHULA VISTA PROJECT, SAN DIEGO COUNTY, CALIFORNIA	OUTSIDE
SD-18090	2019	PEREZ, DON C.	CULTURAL RESOURCES SURVEY, ESCAYA / CAL00920 / FA 13889810, 1700 MAXWELL ROAD, CHULA VISTA, SAN DIEGO COUNTY, CALIFORNIA 91911	OUTSIDE
SD-18125	2019	JOHNSTON, ROBYN	LETTER REPORT: ETS 41481 - CULTURAL RESOURCES SURVEY REPORT FOR THE RECONDUCTOR 4,500' OF #2 AL WITH 336 ACSR IN THE CITY OF CHULA VISTA, CALIFORNIA - IO 7074264	OUTSIDE
SD-18226	2019	WILLHITE, BRENTON E.	ARCHAEOLOGICAL MONITORING FOR INSTALL POLE P294011 IN CHULA VISTA, SAN DIEGO COUNTY, CALIFORNIA (SDG&E ETS # 40443, PANGIS PROJECT # 1401.131)	OUTSIDE
SD-18754	2020	MANCHEN, KENT AND BRIAN WILLIAMS	ARCHAEOLOGICAL RESOURCES MONITORING RESULTS FOR CONSTRUCTION OF SAN DIEGO GAS & ELECTRIC'S TIE LINE (TL) 649 WOOD-TO-STEEL REPLACEMENT PROJECT, SAN DIEGO COUNTY, CALIFORNIA	OUTSIDE
SD-18838	2021	JORDAN, AMY	ARCHAEOLOGICAL MONITORING FOR TCM ACCESS ROADS, ANNUAL REPORT 2020, SAN DIEGO COUNTY, CALIFORNIA (ASM #23005.67)	OUTSIDE

Sixty-six (66) cultural resources have been recorded within the 1-mi. record search radius, which includes archaeological sites, historic addresses, and isolates (Table 2). The record search indicated that no previously recorded resources were located within the Outfall APE. No historic addresses have been previously recorded within the 1-mile record search radius.

Table 2. Previously Recorded Cultural Resources within 1-Mile of the Outfall APE

Primary Number	Trinomial	Period	Contents	Recorder (Date)	Relation to Outfall APE
P-37-004738	CA-SDI-4738	PREHISTORIC	AP2 LITHIC SCATTER	M. WATERS (1973)	OUTSIDE
P-37-008065	CA-SDI-8065	PREHISTORIC	AP2 LITHIC SCATTER, AP16 MARINE SHELL SCATTER	M. ROEDER, M. DESAUTELS (N.D.)	OUTSIDE
P-37-008912	CA-SDI-8912	PREHISTORIC	AP2 LITHIC SCATTER, AP16 MARINE SHELL SCATTER	K. TENNESEN (2015) T.J. BANKS (1984) M. DESAUTELS (1980)	OUTSIDE
P-37-010055	CA-SDI-10055	PREHISTORIC	AP2 LITHIC SCATTER	N. BLOTNER (2010) J.R. COOK (1990) D. DESAUTELS (1984)	OUTSIDE
P-37-010056	CA-SDI-10056	PREHISTORIC	AP2 LITHIC SCATTER	J.R. COOK (1990) T.J. BANKS (1984)	OUTSIDE
P-37-010057	CA-SDI-10057	PREHISTORIC	AP2 LITHIC SCATTER	J.R. COOK (1990) A. CODY (1984)	OUTSIDE
P-37-010058	CA-SDI-10058	PREHISTORIC	AP2 LITHIC SCATTER	J.R. COOK (1990) JOINES, SINKOVEC, ROBBINS-WADE (1984) T.J. BANKS (1984)	OUTSIDE
P-37-010059	CA-SDI-10059	PREHISTORIC	AP2 LITHIC SCATTER	A. CODY (1984)	OUTSIDE

Primary Number	Trinomial	Period	Contents	Recorder (Date)	Relation to Outfall APE
P-37-010060	CA-SDI-10060/H	HISTORIC, PREHISTORIC	AP2 LITHIC SCATTER, AP16 MARINE SHELL SCATTER, AH2 FOUNDATIONS, AH4 PRIVIES/DUMPS/REFUSE SCATTERS	J.R. COOK (1990) D. DESAUTELS (1984)	OUTSIDE
P-37-010204	CA-SDI-10204	PREHISTORIC	AP2 LITHIC SCATTER, AP16 MARINE SHELL SCATTER	M. ROBBINS-WADE (1987) ROBBINS-WADE, JOINES, KYLE, SENECA (1984)	OUTSIDE
P-37-010452/ P-37-033070/ P-37-033071	CA-SDI-10452/ CA-SDI-20823	PREHISTORIC	AP2 LITHIC SCATTER, AP13 TRAILS/LINEAR EARTHWORKS, AP16 MARINE SHELL SCATTER	H. PRICE, C. ZEPEDA-HERMAN (2019) K. TENNESEN (2014) S. UNDERBRINK (2012) B. SMITH (1996) F. RITZ ET AL (1989) S. BERRYMAN (1986)	OUTSIDE
P-37-010471	CA-SDI-10471	PREHISTORIC	AP2 LITHIC SCATTER	G. FINK (1973)	OUTSIDE
P-37-010472	CA-SDI-10472	PREHISTORIC	AP2 LITHIC SCATTER	A. PIGNIOLO (1986) G. FINK (1973)	OUTSIDE
P-37-010473	CA-SDI-10473	PREHISTORIC	AP2 LITHIC SCATTER	G.R. FINK (1974)	OUTSIDE
P-37-010489	CA-SDI-10489	PREHISTORIC	AP2 LITHIC SCATTER	A. PIGNIOLO (1986)	OUTSIDE
P-37-010650	CA-SDI-10650	PREHISTORIC	AP2 LITHIC SCATTER	A. ANDREWS (2002) T. GROSS, M. ROBBINS-WADE (1986)	OUTSIDE
P-37-010738	CA-SDI-10738	PREHISTORIC	AP2 LITHIC SCATTER	B. SMITH (1984)	OUTSIDE
P-37-010739	CA-SDI-10739	PREHISTORIC	AP2 LITHIC SCATTER, AP16 MARINE SHELL SCATTER	B. SMITH (1984)	OUTSIDE
P-37-010783	CA-SDI-10783	PREHISTORIC	AP2 LITHIC SCATTER	N. BLOTNER (2010) B. SMITH (1987)	OUTSIDE
P-37-011145	CA-SDI-11145	PREHISTORIC	AP2 LITHIC SCATTER	A. GILETTI, J. MERIWETHER, L. HOFF (2009) B. SMITH (1989)	OUTSIDE
P-37-011146	CA-SDI-11146	PREHISTORIC	AP2 LITHIC SCATTER	B. SMITH (1989)	OUTSIDE
P-37-011378	CA-SDI-11378	PREHISTORIC	AP2 LITHIC SCATTER	F. RITZ ET AL. (1989)	OUTSIDE
P-37-011822	CA-SDI-11822	PREHISTORIC	AP2 LITHIC SCATTER	J.R. COOK (1990)	OUTSIDE
P-37-011968	CA-SDI-11968	PREHISTORIC	AP2 LITHIC SCATTER	C. HUNT (2003) C. SERR (1990)	OUTSIDE
P-37-012290	CA-SDI-12290	PREHISTORIC	AP2 LITHIC SCATTER	C. HUNT (2003) B. SMITH (1996) B. RADER, D. JAMES (1991)	OUTSIDE
P-37-012291	CA-SDI-12291	PREHISTORIC	AP2 LITHIC SCATTER	BRIAN F. SMITH & ASSOCIATES (2003) C. HUNT (2003) B. SMITH (1996) B. RADER, D. JAMES (1991)	OUTSIDE
P-37-012292	CA-SDI-12292	PREHISTORIC	AP2 LITHIC SCATTER	C. HUNT (2003) B. RADER, D. JAMES (1991)	OUTSIDE
P-37-012293	CA-SDI-12293	PREHISTORIC	AP2 LITHIC SCATTER	H. PRICE, C. ZEPEDA-HERMAN (2019) BRIAN F. SMITH & ASSOCIATES (2003) C. HUNT (2003) B. SMITH (1996) B. RADER, D. JAMES (1991)	OUTSIDE
P-37-014545	CA-SDI-14178	PREHISTORIC	AP2 LITHIC SCATTER, AP16 MARINE SHELL SCATTER	H. PRICE, C. ZEPEDA-HERMAN (2019) N. BLOTNER (2010) G. PARKER (2004) BRIAN F. SMITH & ASSOCIATES (1996)	OUTSIDE

Primary Number	Trinomial	Period	Contents	Recorder (Date)	Relation to Outfall APE
P-37-014546	CA-SDI-14179	PREHISTORIC	AP2 LITHIC SCATTER, AP16 MARINE SHELL SCATTER	BRIAN F. SMITH & ASSOCIATES (1996)	OUTSIDE
P-37-014570	CA-SDI-14203	PREHISTORIC	AP2 LITHIC SCATTER, AP3 CERAMIC SCATTER, AP16 MARINE SHELL SCATTER	C. HUNT (2004) BRIAN F. SMITH & ASSOCIATES (2003) C. HUNT (2003) BRIAN F. SMITH & ASSOCIATES (1996)	OUTSIDE
P-37-014571	CA-SDI-14204	PREHISTORIC	AP2 LITHIC SCATTER	BRIAN F. SMITH & ASSOCIATES (1996)	OUTSIDE
P-37-014578	CA-SDI-14211	PREHISTORIC	AP2 LITHIC SCATTER	C. HUNT (2003) BRIAN F. SMITH & ASSOCIATES (1996)	OUTSIDE
P-37-014739	-	PREHISTORIC	AP16 LITHIC ISOLATE	A. CODY (1984)	OUTSIDE
P-37-014791	-	PREHISTORIC	AP16 LITHIC ISOLATE	ROBBINS-WADE, JOINES, KYLE, SENECA (1984)	OUTSIDE
P-37-014792	-	PREHISTORIC	AP16 LITHIC ISOLATE	JOINES, SINKOVEC, ROBBINS-WADE (1984)	OUTSIDE
P-37-014793	-	PREHISTORIC	AP16 LITHIC ISOLATE	JOINES, SINKOVEC, ROBBINS-WADE (1984)	OUTSIDE
P-37-014794	-	PREHISTORIC	AP16 LITHIC ISOLATE	JOINES, SINKOVEC, ROBBINS-WADE (1984)	OUTSIDE
P-37-014795	-	PREHISTORIC	AP16 LITHIC ISOLATE	JOINES, SINKOVEC, ROBBINS-WADE (1984)	OUTSIDE
P-37-014796	-	PREHISTORIC	AP16 LITHIC ISOLATE	JOINES, SINKOVEC, ROBBINS-WADE (1984)	OUTSIDE
P-37-014799	-	PREHISTORIC	AP16 LITHIC ISOLATE	JOINES, SERR, ROBBINS-WADE (1984)	OUTSIDE
P-37-014800	-	PREHISTORIC	AP16 LITHIC ISOLATE	JOINES, SERR, ROBBINS-WADE (1984)	OUTSIDE
P-37-014801	-	PREHISTORIC	AP16 LITHIC ISOLATE	JOINES, SERR, ROBBINS-WADE (1984)	OUTSIDE
P-37-015148	-	PREHISTORIC	AP16 LITHIC ISOLATE	B. RADER, P. MITCHELL (1991)	OUTSIDE
P-37-015149	-	PREHISTORIC	AP16 LITHIC ISOLATE	B. RADER, P. MITCHELL (1991)	OUTSIDE
P-37-015334	-	PREHISTORIC	AP16 LITHIC ISOLATE	S. CAMPBELL, D. JAMES, T. COOLEY, J. BRIGGS (1993)	OUTSIDE
P-37-015335	-	PREHISTORIC	AP16 LITHIC ISOLATE	D. JAMES, S. BRIGGS (1993)	OUTSIDE
P-37-015525	-	PREHISTORIC	AP16 LITHIC ISOLATE	C. KYLE, L. TIFT (1996)	OUTSIDE
P-37-015975	-	PREHISTORIC	AP16 LITHIC ISOLATE	C. KYLE, L. TIFT (1996)	OUTSIDE
P-37-024806	CA-SDI-16437	PREHISTORIC	AP2 LITHIC SCATTER	BRIAN F. SMITH & ASSOCIATES (2003)	OUTSIDE
P-37-026519	CA-SDI-17415	HISTORIC	AH4 PRIVIES/DUMPS/REFUSE SCATTERS	G. PARKER (2004)	OUTSIDE
P-37-030568	-	PREHISTORIC	AP16 LITHIC ISOLATE	A. GILETTI, J. MERIWETHER, L. HOFF (2009)	OUTSIDE
P-37-030569	CA-SDI-19432	PREHISTORIC	AP2 LITHIC SCATTER	A. GILETTI, J. MERIWETHER, L. HOFF (2009)	OUTSIDE
P-37-031360	-	PREHISTORIC	AP16 LITHIC ISOLATE	N. BLOTNER (2010)	OUTSIDE
P-37-031373	CA-SDI-19921	PREHISTORIC	AP16 MARINE SHELL SCATTER	N. BLOTNER (2010)	OUTSIDE
P-37-032800	CA-SDI-20737	PREHISTORIC	AP2 LITHIC SCATTER	J. KRAFT (2012)	OUTSIDE
P-37-032801	CA-SDI-20738	PREHISTORIC	AP2 LITHIC SCATTER	J. KRAFT (2012)	OUTSIDE

Primary Number	Trinomial	Period	Contents	Recorder (Date)	Relation to Outfall APE
P-37-010452/ P-37-033070/ P-37-033071	CA-SDI-10452/ CA-SDI-20823	PREHISTORIC	AP2 LITHIC SCATTER, AP13 TRAILS/LINEAR EARTHWORKS, AP16 MARINE SHELL SCATTER	H. PRICE, C. ZEPEDA-HERMAN (2019) K. TENNESEN (2014) S. UNDERBRINK (2012) B. SMITH (1996) F. RITZ ET AL (1989) S. BERRYMAN (1986)	OUTSIDE
P-37-010452/ P-37-033070/ P-37-033071	CA-SDI-10452/ CA-SDI-20823	PREHISTORIC	AP2 LITHIC SCATTER, AP13 TRAILS/LINEAR EARTHWORKS, AP16 MARINE SHELL SCATTER	H. PRICE, C. ZEPEDA-HERMAN (2019) K. TENNESEN (2014) S. UNDERBRINK (2012) B. SMITH (1996) F. RITZ ET AL (1989) S. BERRYMAN (1986)	OUTSIDE
P-37-034473	-	PREHISTORIC	AP16 LITHIC ISOLATE	K. TENNESEN (2014)	OUTSIDE
P-37-034474	-	PREHISTORIC	AP16 LITHIC ISOLATE	K. TENNESEN (2014)	OUTSIDE
P-37-036628	CA-SDI-22124	PREHISTORIC	AP2 LITHIC SCATTER	J. MELING, R. LOVELESS (2014)	OUTSIDE
P-37-036629	-	PREHISTORIC	AP16 LITHIC ISOLATE	J. MELING, R. LOVELESS (2014)	OUTSIDE
P-37-036630	-	PREHISTORIC	AP16 LITHIC ISOLATE	J. MELING, R. LOVELESS (2014)	OUTSIDE
P-37-038705	-	HISTORIC	HP11 ENGINEERING STRUCTURE	M. IHLE (2018)	OUTSIDE
P-37-038724	-	PREHISTORIC	AP16 MARINE SHELL SCATTER	L. DOWNS, R. JOHNSTON (2019)	OUTSIDE

Four resources were identified in the record search as existing within the Nirvana Industrial Project area, located north of the Outfall APE. The four resources consist of three prehistoric sites and one prehistoric isolate, each being described in detail below.

P-37-011145/CA-SDI-11145 was originally recorded by B. F. Smith in 1989 as a moderate scatter of tools and lithic flakes upon a ridge overlooking Otay Valley Road to the south. The resource was revisited and updated in 2009 by A. Giletti, who was able to successfully relocate the site and discover additional artifacts that expanded the site's boundary. Giletti noted that the additional artifacts enlarged the site's size from 30 meters (north-south) by 45 meters (east-west) to 60 meters (north-south) by 45 meters (east-west). The survey conducted by Giletti discovered an additional two primary volcanic flakes, one volcanic core fragment, and two medium/coarse-grained volcanic test cores. The 2009 update described the newly discovered artifacts as widely dispersed within the site area, which appeared to be very disturbed. The resource was recommended to be not significant due to the scarcity of cultural material, the disturbed nature of the site, and the lack of research potential (Robbins-Wade 2009). It is unclear if formalized testing and evaluation has occurred with the resource. The 1989 site form by Smith notes "surface recovery" and a site depth of 20 cm, which suggests a testing program was conducted, however no records of the program are available. No testing was conducted by Affinis for the 2009 update (Robbins-Wade 2009 and 2012). The resource has not been updated since 2009.

P-37-011146/CA-SDI-11146 was originally recorded by B. F. Smith in 1989 as a scatter of lithic tools and production waste upon a ridge overlooking Otay Valley Road to the south. The site measured approximately 75 meters (east-west) by 30 meters (north-south) and carried a depth potential of approximately 20 centimeters. Artifacts present within the site consisted of lithic tools, flakes, lithic cores, and debitage fragments. It is unclear if formalized testing and evaluation has

occurred with the resource. The 1989 site form by Smith notes "surface recovery" and a site depth of 20 cm, which suggests a testing program was conducted, however no records of the program are available. The resource has not been updated since 1989.

P-37-030568 consists of a lithic isolate that was recorded by A. Giletti, J. Meriwether, and L. Hoff in 2009. The isolate consisted of a large rejuvenation flake containing core scars along its dorsal surface, measuring 7 cm by 7 cm by 2.5 cm, composed of Santiago Peak volcanic material. The isolate was situated along the edge of a south-facing terrace or bench, and has not been relocated or its record updated since original recordation.

P-37-030569/CA-SDI-19432 was originally recorded by A. Giletti, J. Meriwether, and L. Hoff in 2009 as a large lithic scatter occupying a south-facing terrace at an elevation of approximately 210 feet amsl. Although the scatter was large in size, Giletti noted that its density was low, consisting of four lithic flakes, five lithic cores, one scraper, and one fragment of angular waste. The site was measured at 75 meters (north-south) by 35 meters (east-west) and contained modern debris and moderate amounts of surface disturbance. The resource was recommended to be not significant due to the scarcity of cultural material, the disturbed nature of the site, and the lack of potential for intact subsurface deposits (Robbins-Wade 2009 and 2012). No testing was conducted by Affinis during the original recordation of the resource. The resource has not been updated since original recordation.

Historical Research Results

The APE of the two outfall locations is visible on *Imperial Beach, California* USGS topographic maps as early as 1904. The 1904, 1908, 1911, 1915, 1920, 1928, and 1932 topographic maps show a building and a road south of the Outfall APE and south of the current alignment of Main Street. In addition, the river is shown south of its current alignment, and it is unknown if the alignment of the map is incorrect or the river has been rerouted. The previously prepared archaeology report (Robbins-Wade 2009) identified a house shown on the 1904 USGS topographic map outside of the APE to the northeast. It is unknown if the building shown on the early topographic maps is the same building.

The 1943 topographic map shows the current alignment of Main Street and the Otay River to the south. It also shows a seasonal drainage running north-south to the present-day location of Outfall 2, and a seasonal drainage which leads to the present-day location of Outfall 1, both of which have a dam and reservoir north of the Outfall APE. The 1955 topographic map shows a road in the center of the drainage leading to Outfall 2, running north-south. It also shows additional development occurring outside of the Outfall APE. The 1962 topographic map shows no changes in the Outfall APE and the immediate vicinity, but the 1977 topographic map shows that the roadway is no longer present within the drainage leading to Outfall 2. It also shows that the drainage leading to Outfall 1 has been dammed north of Nirvana Avenue. No additional changes are shown on the topographic maps.

Aerial photographs are available of the Outfall APE as early as 1953, which shows the alignment of Main Street, although it is not as wide as the current alignment. The Outfall APE is undeveloped, however there is a roadway running north-south within the drainage that leads to Outfall 2. The drainage leading to Outfall 1, shown by an increase in vegetation along the western boundary of

the Project area is also present, and is more visible due to an increase of vegetation within the drainage. The 1964, 1966, and 1968 aerials show no changes to the Outfall APE and both of the associated drainages, although it is visible that agriculture and development is taking place north of Nirvana Avenue.

The 1971 aerial photograph shows that portions of the undeveloped land north of the Outfall APE and Main Street may have been graded, mowed, or used for agriculture. The 1978 aerial photograph shows that new industrial development along the south side of Nirvana Avenue is currently being constructed, with evidence of mass grading. The road that was present within the drainage leading to Outfall 2 is less visible and it is not clear if it has been abandoned and is being covered with vegetation.

The 1980 and 1981 aerials show that the road is no longer present within Outfall 2's associated drainage, and no other changes within the drainage leading to Outfall 1 are visible. The remaining aerials from the 1980s and 1990s show no changes in the Outfall APE or the two drainages besides a variation in vegetation levels. Between 1995 and 1996 Main Street was widened into its current extent, and the ground disturbances took place to the south of Main Street, including the APE of the two outfall locations.

NAHC Results

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was requested on June 8, 2021. The NAHC responded to the record search request of the SLF on June 29, 2021, indicating that the record search of the SLF was negative. The NAHC also provided a list of twenty Native American individuals and organizations which may have additional information on the Project area.

Red Tail Environmental sent an information request letter to the 20 Native American individuals and organizations on June 29, 2021. On July 2, 2021, Lisa Cumper, Tribal Historic Preservation Officer, the Jamul Indian Village of California, responded that they had searched their records and confirmed that the proposed project is within the Kumeyaay territory and questioned if a survey had been done. On July 6, 2021, Shelby Castells responded that the Project area has been previously surveyed, and that Red Tail would be conducting an additional archaeological survey as part of the Project. As of September 28, 2021, no additional responses or comments had been received.

Survey Results

No cultural resources were identified during the pedestrian field survey. The two outfall locations are situated along the north bank of the Otay River. Each of the impact areas for the two outfall locations are at the base of the bank which have a southerly aspect and slopes exceeding 70 percent. Each outfall location was surrounded by dense riparian vegetation. Ground visibility within each impact area was generally good, although decreasing quickly due to vegetation along each impact area's perimeter. Sediments visible within the embankment consisted of light tan/greyish tan silty sand, moderately compacted, with small-and medium-sized subrounded volcanic cobbles and rocks. Sediments within the floor of the alluvial terrace consisted of a mix of brown saturated silty clay and tan/greyish tan sands. Each location displayed evidence of prior grading and ground disturbance, most likely associated with the creation of the road shoulder for the widening of Main

Street and creating access to the river for removal of trash and debris. Evidence of modern trash, primarily from unauthorized transient camp use and thoroughfare, was present at both locations. Both outfall locations are located in a highly modified landscape due to the construction of the Main Street roadbed and the outfall headwalls, and no indications of sediments suggesting the presence of intact subsurface deposits or features were observed. No date stamps or other temporally diagnostic markers were visible on the outfall headwalls.

VII. CONCLUSIONS RECOMMENDATIONS

A review of the record searches, background research, and pedestrian archaeological survey shows that the Outfall APE is primarily undeveloped but highly modified from original in-situ contexts. No cultural resources have been identified within or adjacent to the APE. Therefore, there are no historical resources within the Outfall APE in accordance with CEQA, and no known historic properties within the Outfall APE in accordance with Section 106 of the NHPA. Implementation of the outfall improvements will not cause any adverse effects to historic properties.

Due to the lack of ground surface visibility around the perimeter of each outfall location, the unknown level of disturbance within the Outfall APE, and proximity of cultural resources previously recorded near the Outfall APE, construction monitoring by an archaeologist and Native American monitor is recommended for any new ground disturbance. Specifically, monitoring is recommended for new trenching and grading for the installation of new rip-rip energy dissipators downstream of each outfall headwall.

VIII. SOURCES CONSULTED

Source	**Date**
National Register of Historic Places	June 8, 2021
California Register of Historical Resources	June 8, 2021
City of San Diego Historical Resources Register	June 8, 2021
South Coastal Information Center	June 8, 2021
Historicaerials.com	June 8, 2021
USGS Historical Topographic Map Explorer	June 8, 2021
Native American Heritage Commission	June 11, 2021

IX. CERTIFICATION

Preparer: Jose Aguilar, M.A., RPA	Title: Principal Investigator
Signature: 	Date: April 20, 2022

X. ATTACHMENTS

A. National Archaeological Database Information

Author:	Jose Aguilar
Firm:	Red Tail Environmental
Client/Project Proponent:	Mary McKenna Lanier, McKenna Lanier Group, Inc.
Report Date:	April 2022
Report Title:	Archaeological Resources Report Form for the Survey of Two Outfalls Associated with the nirvana Industrial Project, Chula Vista, California
Type of Study:	Phase 1 Cultural Resources Survey
New Sites:	None
Updated Sites:	None
USGS Quad:	*Imperial Beach, California* 7.5-minute
Acreage:	2,629 square feet/ 0.061 acres
Keywords:	*Imperial Beach, California* 7.5-minute quad, Nirvana Industrial Project, Outfalls, Main Street, Negative Survey

B. Figures

Figure 1. Project Vicinity Map.
Figure 2. Project Location Map.
Figure 3. Area of Potential Effects Map.

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