RINCON PHASE 2 DECOMMISSIONING FEASIBILITY STUDY

VENTURA COUNTY, CALIFORNIA

California State Lands Commission
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LIST OF ABBREVIATIONS AND ACRONYMS

The following table contains the abbreviations and acronyms used in text of this document.

UNITS OF MEASUREMENT

°F	degrees Fahrenheit
BOPD	barrels of oil per day
cfs	cubic feet per second
cm	centimeter
cy	cubic yard(s)
dB; dBA	decibel; decibels on the A-weighted scale
Hz	hertz
ft	foot/feet
ft^2	square foot/feet
L_{eq}	Equivalent Sound Level
msl	mean sea level
mg/kg	milligrams per kilogram
mPa	micro-Pascals
ppb	parts per billion
ppm	parts per million
µg/m3	micrograms per cubic meter
yr	year

OTHER ABBREVIATIONS AND ACRONYMS

A	AADT	Average Annual Daily Trips
	AAWP	Asbestos Abatement Workplan
	AB	Assembly Bill
	ACM	Asbestos Containing Materials
	APN	Assessor’s Parcel Number
	ARCO	Atlantic Richfield Company
	APSA	Aboveground Petroleum Storage Tanks/Spill Prevention Control and Countermeasure Plans
	AQMP	Air Quality Management Plan
B	BACT	Best Available Control Technology
	BCC	USFWS Bird of Conservation Concern
	bgs	Below Ground Surface
	BLM	Bureau of Land Management
	BMP	Best Management Practices
C	CalARP	California Accidental Release Prevention Program
	CalGEM	California Geologic and Energy Management Division
	Caltrans	California Department of Transportation
	CAA	Clean Air Act
	CAC	Certified Asbestos Consultant
	CAP	Ventura County’s Coastal Area Plan
	CARB	California Air Resources Board

	CCA	California Coastal Act
	CCIC	Central Coast Information Center
	CCC	California Coastal Commission
	CDFW	California Department of Fish and Wildlife
	CESA	California Endangered Species Act
	CEQA	California Environmental Quality Act
	CFCs	Chlorofluorocarbons
	CH_4	Methane
	CMMU	Concrete Masonry Unit
	CNDDB	California Natural Diversity Database
	CNEL	Community Noise Equivalent Level
	CNPS	California Native Plant Society
	CO	Carbon Monoxide
	CO_2	Carbon Dioxide
	CO_2e	Carbon Dioxide Equivalent
	Commission	Refers to CSLC Decision-Making Body
	CP	Component Plan
	CRHR	California Register of Historical Resources
	CSC	California Species of Special Concern
	CSLC	California State Lands Commission
	CZO	Coastal Zoning Ordinance
D	DPM	Diesel Particulate Matter
	DPS	Distinct Population Segment
	DTSC	Department of Toxic Substances Control
E	EIR	Environmental Impact Report
	EFH	Essential Fish Habitat
	EMFAC	Emission Factor (model)
	ESL	Environmental Screening Level
F	FB	Fish Block
	FC	Federal Candidate
	FE	Federally Endangered
	FP	CDFW Fully Protected
	FEMA	Federal Emergency Management Agency
	FESA	Federal Endangered Species Act
	FT	Federally Threatened
G	GHG	Greenhouse Gas
	GP	General Plan
H	HAPC	Habitat Areas of Particular Concern
	HMBP	Hazardous Materials Business Plan
	H_2S	Hydrogen Sulfide
I	IPCC	Intergovernmental Panel on Climate Change
L	LiDAR	Light Detection and Range
	LCP	Local Coastal Program
	LSAA	Lake or Streambed Alteration Agreement

	LOS	Level of Service
M	MBTA	Migratory Bird Treaty Act
	MLPA	Marine Life Protection Act
	MMPA	Marine Mammal Protection Act
	MPA	Marine Protected Area(s)
	MHTL	Mean High Tide Line
N	NAHC	Native American Heritage Commission
	NEC	No Exposure Certification
	NHPA	National Historic Preservation Act
	NMFS	National Marine Fisheries Service
	NO	Nitric Oxide
	NO_2	Nitrogen Dioxide
	NO_x	Nitrogen Oxide
	NPDES	National Pollutant Discharge Elimination System
	NRCS	Natural Resources Conservation Service
	NRHP	National Register Of Historic Places
O	O_3	Ozone
	OEHHA	Office Of Environmental Health Hazard Assessment
	OHP	Office of Historic Preservation
	OPC	Onshore Pipeline Connections
	OS/AR	Open Space/Active Recreation (Zoning Designation)
	OS/PR	Open Space/Passive Recreation (Zoning Designation)
	OPR	Office of Planning and Research
P	P&A	Plugging and Abandonment
	PID	photoionization detector
	PEP	Project Execution Plan
	PERP	Portable Equipment Registration Program
	PM	Particulate Matter
	PM_{10}	Particulate Matter Less Than 10 Micrometers
	$PM_{2.5}$	Particulate Matter Less Than 2.5 Micrometers
	PPV	Peak Particle Velocity
R	RAP	Remedial Action Plan
	ROC	Reactive Organic Compounds
	ROG	Reactive Organic Gases
	LARWQCB	Regional Water Quality Control Board – Los Angeles Region
S	SFBRWQCB	San Francisco Bay Regional Water Quality Control Board
	SBC	Santa Barbara Channel
	SBCAPCD	Santa Barbara County Air Pollution Control District
	SC	California State Candidate
	SCE	Southern California Edison
	SCC	State Coastal Conservancy
	SCP	Site Cleanup Program
	SE	California State Endangered
	SF_6	Sulfur Hexafluoride

	SHPO	State Historic Perservation Office
	SIP	State Implementation Plan
	SLR	Sea Level Rise
	SO_2	Sulfur Dioxide
	SPL	Sound Pressure Level
	SQUIMP	Ventura Countywide Stormwater Quality Urban Impact Mitigation Plan
	SR	State Route
	ST	California State Threatened
	SVOC(s)	Semi-Volatile Organic Compounds
	SWPPP	Stormwater Pollution Prevention Plan
	SWRCB	State Water Resources Control Board
	SWRCB WQO	State Water Resources Control Board Water Quality Objectives
T	TAC	Toxic Air Contaminant
	TPH	Total Petroleum Hydrocarbons
U	UBC	Uniform Building Code
	UCSB	University of California Santa Barbara
	UPRR	Union Pacific Railroad
	USACE	U.S. Army Corps of Engineers
	USEPA	U.S. Environmental Protection Agency
	USFWS	U.S. Fish and Wildlife Service
	USGS	United States Geologic Survey
	UST	Underground Hazardous Materials Storage Tanks
V	V/C	Volume to Capacity Ratio
	VCAPCD	Ventura County Air Pollution Control District
	VC CUPA	Ventura County Environmental Health Division, Certified Unified Program Agency
	VMT	Vehicle Miles Traveled
W	WOTUS	Waters of the United States
	WQO	Water Quality Objectives

TECHNICAL GLOSSARY

Oil and Gas/Construction Terminology -

Annulus:	Void between a pipeline and a casing (in this instance)
Caretaker Status:	Does not require a full-time operator
P&A:	Plugging and Abandonment (of wells) means to set a cement plug in the wellbore at specific intervals to prevent fluid flow.
Pigging (and flushing):	Associated with cleaning of a pipeline by pushing a solid plug or “pig” device and clean fluids through the pipeline to prepare it for removal or abandonment.
Staging Area:	Area where supplies and equipment may be stored
Wellhead:	General term used to describe the component at the surface of an oil or gas well that provides the structural and pressure-containing interface for the drilling and production equipment
Well bay:	An area of an oil production facility where the wellheads are located, in this case within the southern portion of Rincon Island.

Biological Terminology -

Benthic:	The flora and fauna found on the bottom or in the bottom sediments of a body of water
Bryozoan:	Small microscopic aquatic animals that live in colonies and resemble the polyps which form coral
Demersal:	Living close to the sea floor
Epibiota/tic:	Living on the surface of another organism
Epifauna:	Animals living on the surface of the sea floor, or attached to submerged objects or aquatic animals or plants
Gorgonian:	Soft coral
Linear Transect:	Pre-established survey line
Macrobiota:	The organisms of a particular site or habitat that are large enough to be seen without a microscope
Macroinvertebrate:	Any animal lacking a backbone that is large enough to see without a microscope
Macrophytic:	Large (often aquatic) plants
Sessile:	Fixed in one place, immobile

FEASIBIILITY STUDY OVERVIEW

In December 2017, Rincon Island Limited Partnership, quitclaimed (transferred) its lease interests (including State Oil and Gas Lease Nos. PRC 145, PRC 410, and PRC 1466) to the California State Lands Commission (CSLC or Commission) after becoming financially insolvent. Thereafter, the State of California (State) pursued decommissioning of the oil and gas related facilities and final disposition of Rincon Island. Phase 1 of this process included the plugging and abandonment (P&A) of all oil and gas wells and removal of service equipment at Rincon Island, the Onshore Facility (State parcel), and the adjacent privately owned Coast Ranch Parcel (see Figures 1-1 and 2-8). Phase 1 activities were completed in June 2021. Phase 2 includes the development of a feasibility study and decommissioning plan including planning, public outreach, and development of California Environmental Quality Act (CEQA) documentation. This Feasibility Study (Study) is the first step of Phase 2.

The Feasibility Study includes:

- A summary of the existing facilities associated with Phase 2 and an overview of the Phase 2 decision process, including opportunities for public outreach and input (Chapter 1.0)
- A description of the existing Phase 2 facilities, an overview of the potential decommissioning activities (Component Plans 1 through 9) for those facilities, and three primary decommissioning alternatives being considered for Phase 2 (Reuse of Rincon Island, Reefing of the Island, and Complete Removal of the Island) (Chapter 2.0)
- A summary of supporting technical and engineering studies conducted in support of Phase 2 decommissioning activities; including, but not limited to, an engineering assessment, coastal engineering study, characterization of marine habitat, and site assessment at Rincon Island and the Onshore Facility (Chapter 3.0)
- A screening level environmental assessment for key resource areas associated with Phase 2 decommissioning activities (Chapter 4.0)
- A summary of alternatives; including comparison of potential environmental impacts and benefits, schedules required to implement each Alternative, and a cost comparison of each Alternative (Chapter 5.0)

PHASE 2 FACILITY LOCATIONS

Rincon Island is located approximately 3,000 feet offshore of Punta Gorda in Ventura County, approximately 7 miles northwest of the city of Ventura, California (refer to Figure 1-1). Rincon Island is located immediately offshore of the community of Mussel

Shoals and approximately 0.5 mile south of the community of La Conchita. The Island is located in approximately 55 feet of water. A causeway, or access pier, connects the Island to the coast. A State Coastal Conservancy (SCC) Parcel, managed by CSLC within Phase 2, is located just east of the causeway landing/abutment within Assessor's Parcel Number 060-0-090-425.

The Onshore Facility consists of a 6.01-acre parcel owned by the State located 1.3 miles to the east of Rincon Island at 5750 W. Pacific Coast Highway, Ventura. Rincon Island and the Onshore Facility were previously connected by a pipeline system, until they were disconnected as part of the Phase 1 well plugging and abandonment process. Decommissioning of the remaining Onshore Pipeline Connections is included in this Study.

STUDY COMPONENTS

Potential decommissioning activities for the Phase 2 facilities have been broken into nine primary Component Plans and are further described in Table 2-1. The nine Component Plans are:

- Component Plan 1 – Onshore Facility Decommissioning
- Component Plan 2 – Island Surface Structure Removal
- Component Plan 3 – Island Well Bay Concrete Deck Removal
- Component Plan 4 – Island Pavement and Contaminated Soil Removal
- Component Plan 5 – Island Core Removal
- Component Plan 6 – Island Protective Armor Removal
- Component Plan 7 – Island Causeway and Wharf Removal
- Component Plan 8 – Onshore Pipeline Connections Decommissioning
- Component Plan 9 – SCC Parcel Improvements

PHASE 2 ALTERNATIVES

As further described in Section 2.5 of this Study, various combinations of the nine Component Plans have been combined to create three primary decommissioning alternatives being considered for Phase 2. These alternatives were created based upon their feasibility and public input regarding preferred disposition of the Phase 2 facilities. The three Alternatives are: Reuse, Reefing, and Complete Removal.

STUDY FINDINGS

As described throughout the Feasibility Study and summarized in Chapter 5.0, *Summary of Alternatives*, the three Alternatives differ significantly in terms of potential environmental effects, environmental benefits, time required to implement, and associated costs.

The Reuse Alternative would require the least number of Component Plan decommissioning tasks and would result in fewer temporary impacts associated with construction activities. Specifically, the existing visual character of Rincon Island and the causeway would remain unchanged. Retention of Rincon Island protects the existing biological diversity (terrestrial and marine) that use the structure. Remediation of hydrocarbon-contaminated soil and interstitial water at Rincon Island, and soil and groundwater at the Onshore Facility, would remove any long-term risk of exposure to the existing community or environment. Proposed improvements at the SCC Parcel could improve existing erosion and recreational opportunities. The construction period associated with the Reuse Alternative is approximately 2 years, and costs are anticipated to be approximately 15 million dollars. This Alternative presents the shortest timeframe for decommissioning and least amount of capital required to complete.

The Reefing Alternative includes the retention of Rincon Island, but removal of the Rincon causeway and the Island wharf. The Reefing Alternative requires a longer decommissioning timeframe and could result in additional environmental impacts versus the Reuse Alternative. Additionally, removal of the causeway would result in a reduction of hardbottom habitat for offshore biological resources. Rincon causeway removal would also result in additional temporary noise/vibration impacts during decommissioning to adjacent residents and sensitive receptors as well as temporary impacts to recreational users at Mussel Shoals Beach due to restriction of beach access. However, as described above, remediation of hydrocarbon-contaminated soil and water at Rincon Island and soil and groundwater at the Onshore Facility would remove any long-term risk of exposure to the existing community or environment. Proposed improvements at the SCC Parcel could improve existing erosion and recreational opportunities. The construction period associated with the Reefing Alternative is approximately 3 years, and costs are anticipated to be approximately 25 million dollars.

The Complete Removal Alternative includes removal of both Rincon Island and the causeway. The Complete Removal Alternative requires the longest time to complete the included decommissioning activities and would result in the most potential for environmental impacts. Complete Removal would result in substantial impacts to air quality and biologically important habitat (outlined in biological survey findings in Section 3.5). Complete Removal would also result in additional temporary noise/vibration impacts during decommissioning to adjacent residents and sensitive receptors, as well as temporary impacts to recreational users at Mussel Shoals Beach due to restriction of beach access. Removal of the Island would cause changes to the existing wave characteristics leading into shore and to existing coastal processes. A permanent change to the existing visual character of the area would also result. However, as described above, remediation of hydrocarbon-contaminated soil and water at Rincon Island, and soil and groundwater at the Onshore Facility, would remove any long-term risks of exposure to the existing community or environment. Proposed improvements at

the SCC Parcel could improve existing erosion and recreational opportunities. The construction period associated with the Reuse Alternative is approximately 3.5 years, and costs are anticipated to be approximately 287 million dollars.

1.0 PHASE 2 FEASIBILITY STUDY OVERVIEW

Rincon Island (or Island) and its associated facilities were historically leased by the California State Lands Commission (CSLC or Commission) to oil and gas operators (State Oil and Gas Lease Nos. PRC 145, PRC 410, and PRC 1466), including most recently Rincon Island Limited Partnership, which quitclaimed (transferred) its lease interests to CSLC in December 2017 after becoming financially insolvent. Thereafter, the State of California (State) pursued decommissioning of the oil and gas related facilities and final disposition of Rincon Island. The process of securing and eventually decommissioning these facilities was planned to occur in three phases:

- Phase 1 included the plugging and abandonment (P&A) of all oil and gas wells and removal of service equipment at Rincon Island, the Onshore Facility (State parcel), and the adjacent privately owned Coast Ranch Parcel (see Figure 1-1 for map of area). Phase 1 activities were completed in June 2021.
- Phase 2 is the development of a feasibility study and decommissioning plan including planning, public outreach, and development of California Environmental Quality Act (CEQA) documentation. This Feasibility Study (Study) is the first step of Phase 2.
- Phase 3 will involve executing the decommissioning plan after an environmental document has been certified and a specific project has been approved by the Commission.

Phase 2 includes the following facilities: (Figure 1-1):

- Rincon Island
- Rincon Island Causeway and Wharf
- State Coastal Conservancy (SCC) Parcel (onshore, east of the causeway landing/abutment within Assessor's Parcel Number 060-0-090-425)
- Onshore Facility
- Onshore Pipeline Connections

As the first step of Phase 2, this Study has been prepared to summarize the results of an in-depth data gathering, review, and analysis effort undertaken by Padre Associates, Inc. (Padre) and a team of engineers and scientists, in coordination with CSLC staff, and with input from the public. The purpose of this Study is to provide an assessment of the current physical condition of the Phase 2 Facilities following the completion of Phase 1 activities, determine environmental factors related to current and future conditions, outline "Component Plans" that identify separate decommissioning activities that together comprise the Phase 2 Alternatives, and finally present a summary of the three broad Phase 2 Alternatives (the 3Rs: Reuse, Reefing, and Complete Removal)

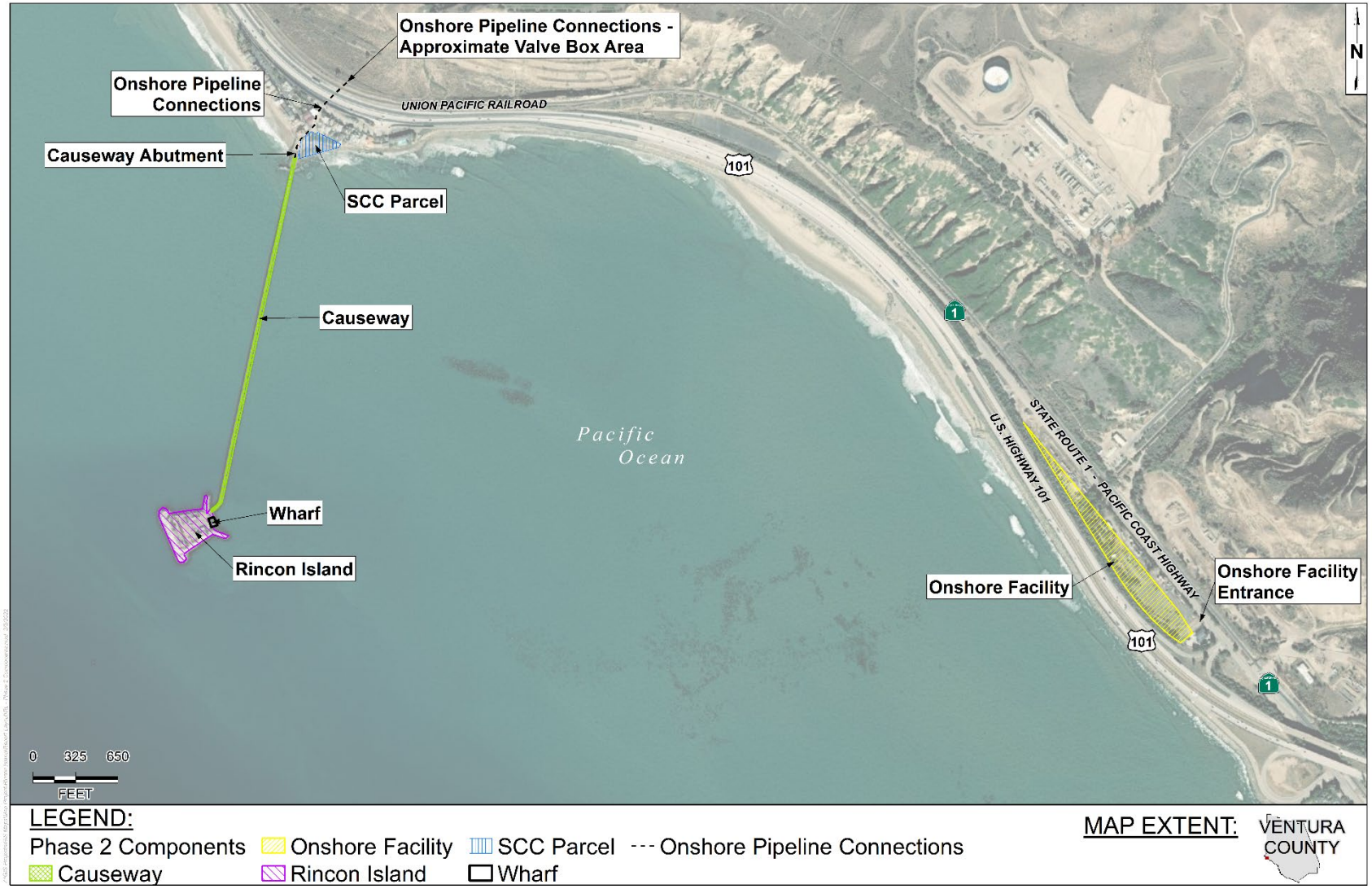
possible for the decommissioning of the Phase 2 facilities. This Study is also intended to provide information to support an environmental CEQA document and public process that will ultimately inform the decision by the Commission on the final disposition of the Phase 2 Facilities.

1.1 STUDY OVERVIEW

This Study is made up of a series of independent but interrelated technical studies that have been conducted including:

- A desktop study of available construction and repair documentation to develop a better understanding of how Rincon Island was designed and constructed (Attachment 1).
- An expanded geophysical survey of the potential offshore work area around the Island and causeway. This effort included the development of a three-dimensional model of the Island and causeway to support engineering review.
- A coastal engineering review to model the effects of the Island and causeway on local oceanographic conditions, including wave impacts to local beaches and a review of Rincon Island's structural integrity under regional oceanographic conditions and anticipated sea level rise concerns.
- A detailed biological assessment of the offshore environment surrounding Rincon Island by the University of California at Santa Barbara (UCSB) Marine Science Institute scientists (Attachment 2).
- An assessment of the soil and water throughout the interior portion of Rincon Island to determine the potential presence of petroleum hydrocarbons and other chemicals of potential concern associated with the historical oil and gas production and processing activities on the Island. This work included an additional assessment of the Onshore Facility to determine the extent of soil and groundwater contamination resulting from historical oil and gas operations (Attachment 3).
- An engineering review of each potential Component Plan (and associated Phase 2 Alternatives) to determine the engineering requirements and associated costs to either retain, partially retain, or demolish these facilities (further described in Section 3.2 below). The engineering plans were then used to support the development of example Project Execution Plans (PEPs, Attachment 4) for the three primary Phase 2 Alternatives considered (Reuse, Reefing, and Removal). A final PEP will be developed once a final proposed Project has been selected.

Figure 1-1. Phase 2 Area and Facilities



1.2 PHASE 2 DECISION PROCESS

In addition to the studies noted above, the three preliminary Phase 2 Alternatives have undergone an initial environmental assessment to identify potential environmental issues associated with each (see Section 4.0). The final Study will be considered by the Commission (as the decision-making body) at a properly noticed public meeting. The Commission will determine the preferred alternative (proposed Project) and what alternatives should be carried forward into the CEQA document. The Commission could select any of the three preliminary Phase 2 Alternatives or another combination of the Component Plans. Additional public and agency review will occur during the CEQA process. At the end of the CEQA process, both the CEQA document and proposed Project will be presented to the Commission for final adoption/certification and consideration for approval, respectively. Figure 1-2 provides an overview of the Study and Phase 2 decision process.

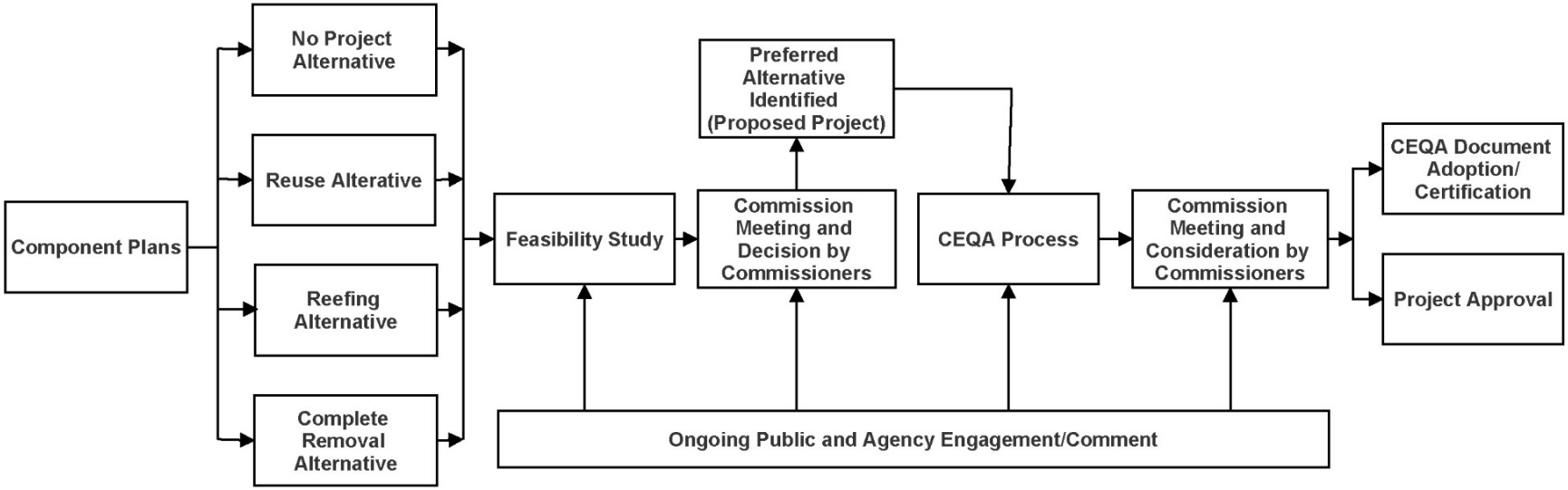
The chosen proposed Project will be implemented in Phase 3. After Phase 3 has begun, the Commission will consider applications for leases from entities who have an interest in managing the facilities that remain in place. Any impacts associated with reuse options will be evaluated at that time.

1.3 PUBLIC OUTREACH AND INPUT

A public meeting on Rincon Decommissioning Phases 1 and 2 was held by CSLC staff on April 7, 2021, to seek public input on the process. In addition, on June 23, 2021, a special Phase 2 Feasibility Study Workshop (Workshop) was hosted by CSLC staff to receive input from interested parties on Phase 2 of the Rincon decommissioning process and possible reuse scenarios. Notices for the Workshop were sent to residents in the immediate area of the facilities, environmental justice groups (July 1 and 8, 2021, respectively), and Native American tribal representatives (June 7, 2021, and August 10, 2021). Video of these meetings and answers to frequently asked questions can be viewed at https://www.slc.ca.gov/oil-and-gas/rincon/.

Following the meetings, CSLC staff received and responded to multiple written inquiries regarding Phase 2 and potential reuse of Rincon Island and the Onshore Facility, chiefly from the residents in Mussel Shoals, which helped to focus the Study and provide the public with information about the decommissioning process. The next public meeting will be held after the release of this Study.

Figure 1-2. Phase 2 Decision Process



2.0 BACKGROUND/SETTING

2.1 PHASE 2 FACILITY LOCATIONS

Rincon Island is located approximately 3,000 feet offshore of Punta Gorda in Ventura County, approximately 7 miles northwest of the city of Ventura, California (refer to Figure 1-1), immediately offshore of the community of Mussel Shoals, and approximately 0.5 mile south of the community of La Conchita. The Island is located in approximately 55 feet of water. A causeway, or access pier, connects the Island to the coast. The SCC parcel is located just east of the causeway landing/abutment.

The Onshore Facility consists of a 6.01-acre parcel owned by the State located 1.3 miles to the east of Rincon Island, at 5750 W. Pacific Coast Highway, Ventura. Rincon Island and the Onshore Facility were previously connected by a pipeline system, until they were disconnected as part of the Phase 1 P&A process. Decommissioning of the Onshore Pipeline Connections from their current terminations at the causeway abutment (which is a concrete structure that supports the landward end of the causeway) to a valve box located on the northeast side of the Union Pacific Railroad (UPRR) right-of-way is included in this Study.

2.2 BACKGROUND

Rincon Island was constructed in 1959 by Atlantic Richfield Company (ARCO) for the specific purpose of well drilling and oil and gas production. Rincon Island and its appurtenant facilities were historically leased by CSLC to oil and gas operators (State Oil and Gas Lease Nos. PRC 145, PRC 410, and PRC 1466), including most recently Rincon Island Limited Partnership, which quitclaimed its lease interests to CSLC in December 2017 after becoming financially insolvent.

Rincon Island was designed to support approximately 50 oil and gas production wells. Rincon Island has not produced oil or gas commercially since October 2008 due in part to the condition and integrity of the causeway that connects the Island to the shore. Prior to the completion of the P&A activities (Phase 1), the Island contained storage tanks, oil processing equipment, and other appurtenant facilities.

In June 2018, CSLC selected Driltek, Inc. (Driltek), a firm with expertise in the P&A of onshore and offshore oil and gas wells, to perform engineering, operations, and administrative services for Rincon Island and the facilities onshore (Phase 1), under the oversight of CSLC engineers. In addition, Driltek undertook the development and execution of the program to P&A the onshore and offshore wells, perform all ancillary tasks associated with the P&A, provide essential personnel to continue the safe daily operations of the leases at the current baseline conditions, and place the facilities into caretaker status or equivalent condition. Phase 1 began in January 2019 and was completed in June 2021. The facilities are currently in caretaker status, meaning there is a caretaker onsite until a decommissioning plan is decided on and implemented.

With the completion of the P&A activities, Rincon Island provides approximately 1.2 acres of useable space that lies within the interior of the revetment walls. A single lane causeway connects the Island to shore at Mussel Shoals. Rincon Island was previously supported by a processing facility that operated until the completion of Phase 1 P&A activities. That original facility included both a parcel owned by the State (Onshore Facility) and a privately owned parcel referred to as the Coast Ranch Parcel, and contained 25 State oil wells, a handful of orphaned private wells, oil storage and processing facilities, and administrative offices. Only the parcel owned by the State (Onshore Facility) is included in this Study.

2.3 DESCRIPTION OF EXISTING PHASE 2 FACILITIES

2.3.1 Rincon Island

Rincon Island is an approximately 2 acre manmade island constructed for oil and gas production and processing. The core of Rincon Island is made up of 160,000 cubic yards of medium to fine-grain sand that was obtained from the bluff behind Punta Gorda, north of the site (ASCE 1959). This core is surrounded with 72,600 cubic yards of locally sourced riprap (boulders and gravel) (Figure 2-1). Additionally, the seaside exterior is reinforced with 1,100 concrete tetrapods, each weighing approximately 31 tons (Figure 2-2). Each tetrapod has four, 6-foot-long concrete legs that are greater than 2 feet in diameter at the end.

The working surface of Rincon Island is approximately 1.2 acres, which is paved with approximately 8 to 14 inches of concrete and asphalt. Prior to completion of Phase 1, the working area of the Island contained an 88-slot well bay, one additional oil well located in a concrete cellar east of the well bay, aboveground storage tanks, sumps, pumps, gas scrubbers, a gas compressor, flare, pipeline systems, electrical supports, and various office and support building space. As part of the P&A activities, the oil production and injection wells were permanently abandoned and the oil, gas, and water processing and storage facilities were removed. Following removal of the oil production and processing facilities, the working area of the Island was sealed with concrete and asphalt. All equipment and major structures were also removed from the Island, and it is currently in “caretaker” status, meaning it does not require a full-time operator. The layout of the Rincon Island facility following completion of Phase 1 activities is shown in Figure 2-3 and Figure 2-4a and b.

Figure 2-1. Cross-Section of Rincon Island

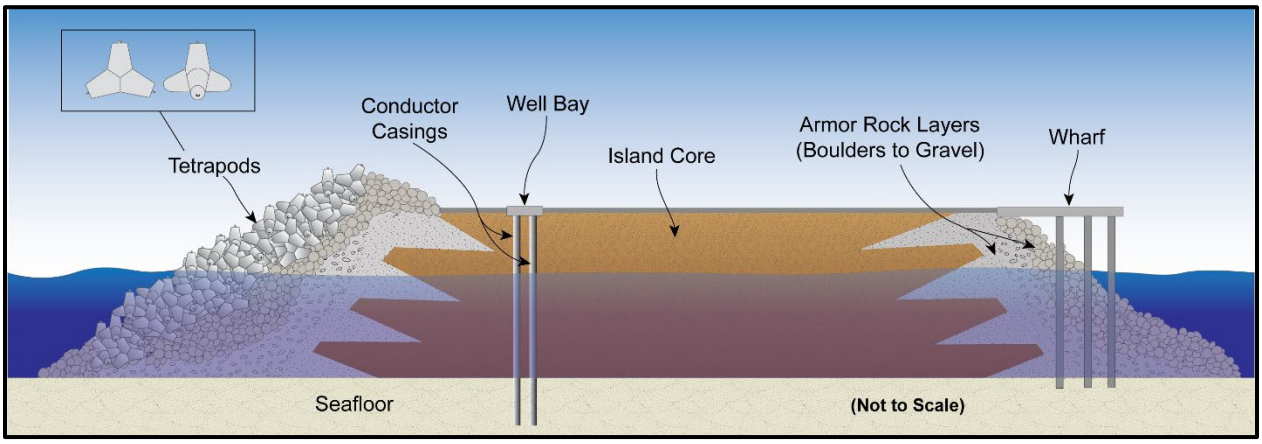


Figure 2-2. Concrete Tetrapods

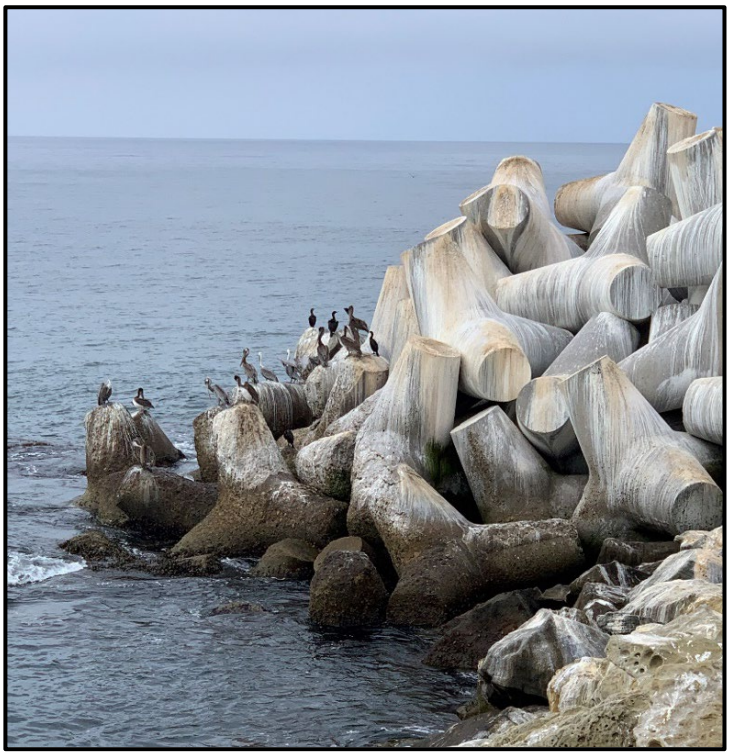


Figure 2-3. Aerial View of Rincon Island Following Completion of Phase 1 (2021)

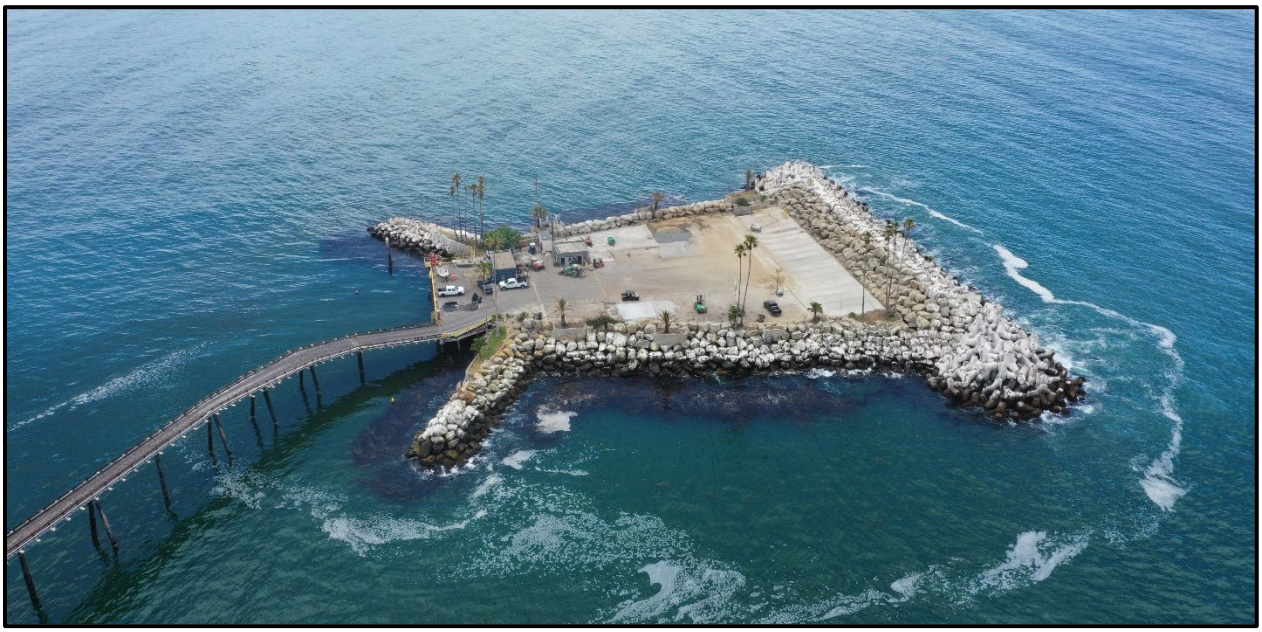


Figure 2-4. Island Surface Following Completion of Phase 1 (2021)

a. Island Interior Looking North Towards Causeway Entrance

b. Asphalt Leading to Concrete Well Bay Following Completion of Well P&A and Installation of Concrete (Looking South Towards Back of Island Riprap)

2.3.2 Rincon Island Causeway and Wharf

The Rincon Island Causeway is a single lane, 2,732-foot-long wood and steel bridge that provides access to Rincon Island from the mainland coast at Punta Gorda (near Mussel Shoals) in northern Ventura County (Figure 2-5). The causeway provides vehicle, equipment, and personnel access to the Island. The causeway underwent repairs during Phase 1 activities to restore its load capacity to 65,000 pounds.

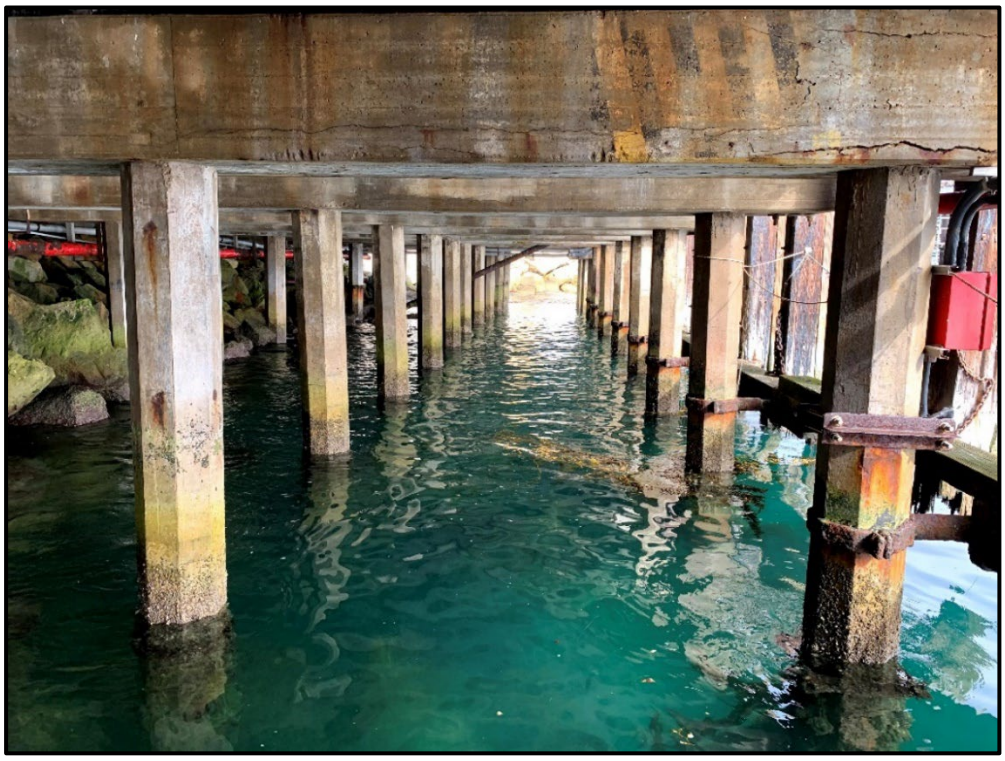
Prior to the completion of Phase 1 activities, there were oil and gas pipelines that ran along the causeway. The gas pipeline had been out of service since 2009 because of considerable corrosion. The oil pipeline was in serviceable condition during the completion of the Phase 1 activities. Both pipelines have been removed and are terminated at the abutment located on the landward side of the causeway. A locked entry fence and gate with barbed wire currently prohibits public access to the causeway and Island.

The Rincon Island Wharf is located adjacent to the southeast of the end of the causeway at Rincon Island (Figure 2-6). The Wharf is comprised of 30 concrete and wood pilings (Figure 2-7) and approximately 4,611 square feet (342 cubic yards) of wooden decking material. The Wharf includes a small hoist, metal scaffolding surrounding the deck, and ladders to the ocean surface.

Figure 2-5. Rincon Island Causeway

Figure 2-6. Rincon Island Wharf

Figure 2-7. Decking and Pilings Beneath Rincon Island Wharf



2.3.3 Onshore Facility

The original facilities on shore were located on two parcels of land situated between Highway 101 and Pacific Coast Highway near Mussel Shoals (Figure 2-8). Associated facilities located onshore included a 4.91-acre parcel of land privately owned by Coast Ranch, LLC, which contained onshore oil production wells, oil storage and processing facilities, and pipelines. The Coast Ranch parcel is not part of Phase 2. The Onshore Facility is a 6.01-acre parcel of land owned by the State that was under lease (PRC 145) and contained four abandoned oil wells. The Onshore Facility was recently utilized as a staging area for storage of supplies and equipment during the Phase 1 abandonment activities at Rincon Island. A photograph of the Onshore Facility is included in Figure 2-9.

Figure 2-8. Onshore Facility Included in Phase 2 Scope

Figure 2-9. Photograph of the Onshore Facility

2.3.4 Onshore Pipeline Connections

Oil and gas pipelines extend from the abutment on the landward side of the causeway and under U.S. Highway 101 and the UPRR right-of-way. These pipelines terminate within a valve box on the northeast side of the railroad right-of-way (Figures 1-1 and 2-10). Although CSLC jurisdiction does not extend past the causeway abutment in the area near the causeway entrance, the decommissioning of the pipelines from the abutment to the valve box is included as part of Phase 2. These pipelines then extend up the hill to the privately owned DCOR, LLC oil and gas processing facility (not part of this Study) and finally traverse back to and terminate at the Onshore Facility.

Figure 2-10. Onshore Pipeline Connections Valve Box Area North of U.S. 101

2.3.5 State Coastal Conservancy Parcel

The State Coastal Conservancy (SCC) Parcel is located within Ventura County (Assessor's Parcel Number 060-0-090-425), south of the Mussel Shoals community adjacent to Breakers Way and Ocean Avenue, and east of Assessor's Parcel Number 060-0-090-125 and the Rincon Island Causeway landing/abutment (Figures 1-1 and 2-11). The parcel forms a band of continuous State ownership adjacent to the Pacific Ocean. The gross area includes approximately 0.82 acre. The site is currently occupied by interspersed native and non-native ground cover/vegetation, a statue, wooden bench, and informal walking paths that lead down to a beach cove that is partially protected with riprap.

Figure 2-11. SCC Parcel Looking Southeast Towards Breakers Way

2.4 COMPONENT PLANS AND PHASE 2 ALTERNATIVES

2.4.1 Decommissioning Component Plans

The proposed work activities associated with the decommissioning of each of the Phase 2 Facilities (as described in Section 2.3) have been broken into nine primary Component Plans summarized in Table 2-1. Differing combinations of Component Plans together comprise each of the three Phase 2 Alternatives (Reuse, Reefing, or Complete Removal). Section 3.2, *Engineering Assessment,* and Attachment 4, *Example PEPs*, provide additional detail about each Component Plan, including an overview of the scope of work, proposed methodology, and potential costs associated with each.

Table 2-1. Summary of Phase 2 Decommissioning Component Plans

Component Plan	Phase 2 Facility	Overview of Proposed Work Activities
Component Plan 1 - Onshore	Onshore Facility	**Component Plan 1** consists of removal of all recycled asphalt aggregate, remediation of

Component Plan	Phase 2 Facility	Overview of Proposed Work Activities
Facility Decommissioning		underlying contaminated soil within the Onshore Facility to screening levels acceptable for future public use, and associated site restoration.
Component Plan 2 – Island Surface Structure Removal	Rincon Island	**Component Plan 2** includes removal of all remaining surface structures on Rincon Island including their foundations, which may or may not be replaced with pavement. - ***Component Plan 2A*:** Pavement left intact and the remaining foundation footprints would be paved to match. - ***Component Plan 2B:*** Pavement left intact, but the remaining foundation footprints would not be replaced with pavement.
Component Plan 3 – Island Well Bay Concrete Deck Removal	Rincon Island	**Component Plan 3** includes removal of the existing well bay concrete deck. - ***Component Plan 3A:*** Removal of concrete deck and backfilled with compacted clean soil. - ***Component Plan 3B:*** Removal of concrete deck, no backfill.
Component Plan 4 – Island Pavement and Contaminated Soil Removal	Rincon Island	**Component Plan 4** includes removal of Rincon Island's pavement and contaminated soil. - ***Component Plan 4A:*** Removal of pavement and contaminated soil, no backfill or repaving. - ***Component Plan 4B*:** Removal of pavement and contaminated soil. The excavation would be backfilled with compacted clean soil.
Component Plan 5 – Island Core Removal	Rincon Island	**Component Plan 5** includes removal of the Rincon Island core to the elevation of the surrounding seafloor contours (essentially complete removal). All the Island's remaining facilities, including the remaining south and north pipelines would be removed in their entirety and the well conductors removed to 5 feet below the seafloor.
Component Plan 6 – Island Protective Armor Removal	Rincon Island	**Component Plan 6** includes removal of Rincon Island's exterior protective armor (tetrapods and riprap). Component Plan 6 assumes that the removal of the core, as defined in Component Plan 5 above, would necessarily be tied to

Component Plan	Phase 2 Facility	Overview of Proposed Work Activities
		Component Plan 6 such that both or neither are performed.
Component Plan 7 – Island Causeway and Wharf Removal	Rincon Causeway and Wharf	**Component Plan 7** includes removal of the causeway and Rincon Island's wharf. **- *Component Plan 7A*:** would consist of removal of the causeway and the wooden pile stubs on the seafloor running parallel with the pier (used in original construction of the causeway). The causeway pilings and wooden pile stubs would be removed to 5 feet below the seafloor. This work would include removal of the reinforced concrete pieces of the shoreline abutment. **- *Component Plan 7B*:** would consist of the removal of the Rincon Island wharf components except the rock armor, which would be left in place.
Component Plan 8 – Onshore Pipeline Connections Decommissioning	Onshore Pipeline Connections	**Component Plan 8** includes decommissioning the 6-inch-diameter gas pipeline and the 6-inch-diameter oil pipeline from their current terminations at the causeway abutment to the valve box located on the northeast side of the UPRR right-of-way. The section from the causeway abutment to the southwest side of Highway 101 would be filled with cement and abandoned in place; the section from the southwest side of Highway 101 to the valve box on the northeast side of the railroad right-of-way would be removed and the casing cemented and abandoned in place.
Component Plan 9 – SCC Parcel Improvements	SCC Parcel	**Component Plan 9** includes restoration options for the SCC parcel located east of the causeway within Ventura County Assessor's Parcel Number 060-0-090-425. **- *Component Plan 9A*:** includes revegetation of the back portion of the SCC parcel (approximately 0.33 acre) with native plants intended to promote biodiversity and reduce erosion. Existing non-native vegetation would

Component Plan	Phase 2 Facility	Overview of Proposed Work Activities
		be removed by hand and replaced with native plants/seed mix to create a uniformly covered area. Existing walking pathways would be improved with crushed rock or other appropriate surface to allow for percolation and drainage to remain unchanged. A short stairway would be added to facilitate beach access from the low bluff area. A concrete or composite bench would replace the existing wooden bench at the overlook area. An interpretive sign would be included at the lookout area that would provide the opportunity for public outreach. **- *Component Plan 9B*:** Includes 9A and would add shoreline protection in the form of placement of compatible cobble rock within a portion of the upland restoration area to form a covered back berm and sloping down to the existing unsupported section of beach (also known as managed retreat). **- *Component Plan 9C*:** Includes 9A and would add shoreline protection (riprap) to the remaining unprotected section of beach (an area of approximately 130 feet [40 meters] in length).

2.4.2 Phase 2 Alternatives

There are three primary decommissioning alternatives being considered for Phase 2. These alternatives are based upon feasibility and public input regarding preferred disposition of Phase 2 facilities. The major focus of the three alternatives is Rincon Island and the causeway. Decommissioning of the other facilities (Onshore Facility, Onshore Pipelines Connections, and the SCC Parcel) remain standard throughout all three alternatives. A summary of the three Phase 2 Alternatives is provided below.

- **Reuse** - This alternative is based on the proposition that the remaining structures and pavement on Rincon Island and the contaminated soil, including the well bay area, would be removed and replaced with clean fill (based on the results of the soil assessment activities, the depth of contaminated soil stops just below the depth of interstitial water in isolated areas). The well bay conductors, surrounding perimeter rock and tetrapods, as well as the submerged Island would be left

intact. The Reuse alternative is intended to prepare the island for a potential lessee; a separate evaluation of any proposed use would subsequently occur. The Rincon Island causeway and wharf would be left intact and available for use in some form. The Onshore Facility would be left in a condition acceptable for future public use, the SCC Parcel would be improved (improvement level to be decided at a later date), and the Onshore Pipeline Connections would be decommissioned.

- **Reefing** - This alternative is based on the proposition that the remaining structures and pavement on Rincon Island, and the contaminated soil, including the well bay area, would be removed and replaced with clean fill (based on the results of the soil assessment activities, the depth of contaminated soil stops just below the depth of interstitial water in isolated areas) to an elevation and condition consistent with use of the remaining island structure as habitat for wildlife species. The well bay conductors, surrounding perimeter rock and tetrapods, as well as the submerged Island would be left intact. Under the Reefing Alternative, the causeway, wharf, and abutment are intended to be removed in their entirety with the pilings removed to 5 feet below the seafloor. The Onshore Facility would be left in a condition acceptable for future public use, the SCC Parcel would be improved (improvement level to be decided at a later date), and the Onshore Pipeline Connections would be decommissioned.

- **Complete Removal** – This alternative is based on the proposition that the remaining structures on or within Rincon Island, the surrounding perimeter rock and tetrapods, the wharf, and the causeway would be removed in their entirety. Rincon Island would be removed down to the seafloor, except for the decommissioned well conductors and causeway/wharf pilings, which would be removed to a minimum of 5 feet below the seafloor. The Onshore Facility would be left in a condition acceptable for future public use, the SCC Parcel would be improved (improvement level to be decided at a later date), and the Onshore Pipeline Connections would be decommissioned.

As indicated in Figure 1-2, an evaluation of the Component Plans identified above with respect to these three alternatives will help to determine what is selected as the final Project to be completed in Phase 3. Table 2-2 provides a summary of applicable Component Plans in relation to each potential Phase 2 Alternative (Reuse, Reefing, or Complete Removal). The Commission could choose any combination of Component Plans, either under one of the three Phase 2 Alternatives (Reuse, Reefing, or Removal) or an alternative not expressly described in this Study to constitute the final Project.

Table 2-2. Phase 2 Component Plans Associated with Each Potential Decommissioning Alternative

REUSE	REEFING	REMOVAL
• Component Plan 1 – Onshore Facility Decommissioning (State Parcel) • Component Plan 2 – Island Surface Structure Removal • Component Plan 3 – Island Well Bay Concrete Deck Removal • Component Plan 4B – Removal of Island Pavement and Petroleum Hydrocarbon Containing Soil and Backfill with Compacted Clean Soil • Component Plan 8 – Onshore Pipeline Connections Decommissioning • Component Plan 9 – SCC Parcel Improvements	• Component Plan 1 – Onshore Facility Decommissioning (State Parcel) • Component Plan 2 – Island Surface Structure Removal • Component Plan 3 – Island Well Bay Concrete Deck Removal • Component Plan 4B – Removal of Island Pavement and Petroleum Hydrocarbon Containing Soil and Backfill with Compacted Clean Soil • Component Plan 7A – Causeway Removal • Component Plan 8 – Onshore Pipeline Connections Decommissioning • Component Plan 9 – SCC Parcel Improvements	• Component Plan 1 – Onshore Facility Decommissioning (State Parcel) • Component Plan 2 – Island Surface Structure Removal • Component Plan 3 – Island Well Bay Concrete Deck Removal • Component Plan 4A – Removal of Island Pavement and Petroleum Hydrocarbon Containing Soil, No Backfill or Repaving • Component Plan 5 – Island Core Removal • Component Plan 6 – Island Protective Armor Removal • Component Plan 7A – Causeway Removal • Component Plan 7B – Island Wharf Removal • Component Plan 8 – Onshore Pipeline Connections Decommissioning • Component Plan 9 – SCC Parcel Improvements

Note: Any combination of Component Plans under each of the three scenarios (Reuse, Reefing, Complete Removal) could be chosen by the Commission to constitute the final "Proposed Project"

3.0 SUPPORTING TECHNICAL AND ENGINEERING STUDIES SUMMARY

The following Chapter provides a summary of each of the technical and engineering studies completed in support of the Phase 2 decommissioning activities. Complete copies of the technical studies are included as attachments to this Study or are available upon request.

3.1 DESKTOP STUDY REPORT

The Phase 2 Engineering Team completed a review of available technical information to provide useful background data and identify any data gaps that needed to be investigated further to prepare for selection of a final proposed Project. There are limited historical documents available; however, one historical report entitled *Rincon Island and Open Causeway Construction, Journal of Waterways and Harbors Division of the American Society of Civil Engineers* (Blume, J. and Keith, J., September 1959) summarized the design and construction of the Island (Figure 3-1) and causeway. Notable information in this report includes material and volumes required to construct the Island and causeway, means and methodologies employed during construction, and design specifications (especially with respect to oceanographic conditions). A copy of this report is provided in Attachment 1.

Figure 3-1. Historical Construction of Rincon Island (Prior to Completion in 1958)

Source: American Society of Civil Engineers 1959 (Attachment 1)

3.2 ENGINEERING ASSESSMENT

As part of the Study, Padre contracted an engineering firm, Longitude 123 (L123), to develop an Engineering Assessment of potential decommissioning methodologies, which are presented as the various Component Plans (briefly described in Table 2-1; L123 2021a; 2021b):

- Component Plan 1 - Onshore Facility Decommissioning
- Component Plan 2 – Island Surface Structure Removal
- Component Plan 3 – Island Well Bay Concrete Deck Removal
- Component Plan 4 – Island Pavement and Contaminated Soil Removal
- Component Plan 5 – Island Core Removal
- Component Plan 6 – Island Protective Armor Removal
- Component Plan 7 – Island Causeway and Wharf Removal
- Component Plan 8 – Onshore Pipeline Connections Decommissioning
- Component Plan 9 – SCC Parcel Improvements

In addition, example PEPs were prepared (Attachment 4) for each of the three Phase 2 Alternatives (Reuse, Reefing, and Complete Removal). A summary of each Component Plan and decommissioning methodology, as detailed within the Engineering Assessment, is provided below.

3.2.1 Component Plan 1 – Onshore Facility Decommissioning

The Onshore Facility is a 6.01-acre parcel owned by the State. All buildings, equipment, and materials have previously been removed from the Onshore Facility site, and the site surface currently consists of bare dirt and the recycled asphalt aggregate base. Initial site assessments have been performed at the Onshore Facility (Padre 2021b), including groundwater and soil sampling and monitoring (see Section 3.2.8 below and Attachment 3 for additional detail). The laboratory analytical results indicate the presence of petroleum hydrocarbons at concentrations greater than environmental screening levels in soil and groundwater resulting from historical petroleum hydrocarbon production and processing activities performed at and in the vicinity of the Onshore Facility.

The Component Plan 1 scope of work includes removal of the approximately 2.80 acres of recycled asphalt aggregate base material spread across much of the Onshore Facility to a depth of 2.5 feet (anticipated to include approximately 9,360 cubic yards). The recycled asphalt aggregate base material would be excavated to the underlying native soil and transported to an offsite disposal or recycling facility that accepts non-hazardous petroleum hydrocarbon-contaminated waste.

The scope of work also includes remediation of approximately 0.48 acre of petroleum hydrocarbon-contaminated soil to a depth estimated at 12 feet below ground surface (bgs) (anticipated to include approximately 7,500 cubic yards). This level of remediation would bring the site contamination to screening levels acceptable for public use, which require the maximum extent of remediation, but could vary depending on the specific use decided upon. The contaminated soil would be excavated and transported to an offsite disposal or recycling facility that accepts non-hazardous petroleum hydrocarbon-contaminated waste. Once the asphalt has been removed, the surface grade would be backfilled with clean imported soil to establish positive surface drainage. The final site restoration and revegetation plan consists of applying a native hydroseed to the disturbance area of the site.

3.2.1.1 Decommissioning Methods

An engineered grading plan would be prepared for submittal to the County of Ventura to obtain a grading permit for the excavation and backfill activities at the Onshore Facility. Import fill materials would be graded and compacted in-place to a minimum of 90 percent relative compaction. Equipment used for backfilling and compaction includes trucks, front end loaders, excavators and potentially dozers, graders or roller compactors.

The petroleum hydrocarbon-contaminated soil and asphalt would be excavated using standard commercial excavation equipment (e.g., hydraulic excavator, front-end loader, track-mounted dozer). The excavation area sidewalls would be sloped to provide safe access for the excavating equipment to excavate the vertical and lateral extent of petroleum hydrocarbon-contaminated soil. Groundwater dewatering wells would be installed around the excavation area. The extracted petroleum hydrocarbon-contaminated groundwater would be processed through a series of settling tanks, bag filters, and granular activated carbon vessels to meet the requirements to discharge into the County of Ventura-operated wastewater system.

The excavated petroleum hydrocarbon-contaminated soil would be placed into trucks and transported to an offsite disposal or recycling facility that accepts non-hazardous petroleum hydrocarbon-contaminated waste. Verification soil samples would be collected from the excavation area on a grid pattern with approximately 25 feet between sample locations. The soil samples would be chemically analyzed for the presence of petroleum hydrocarbons.

Once complete, the dewatering wells would be removed, and the excavation area would be backfilled to match surrounding grade with clean soil from a source located in Ventura County. The surface area would be graded with clean soil to establish positive drainage from the disturbed area. Once the excavation activities were considered complete, hydroseed composed of a native seed mix would be applied to the disturbance areas of the site.

Alternative remediation methods, such as bioremediation (the use of microorganisms to consume and break down environmental pollutants), are currently being assessed. However, since it is not yet known which alternative remediation methods may be feasible, the scope of work does not include such alternatives at this time.

3.2.2 Component Plan 2 – Island Surface Structure Removal

Three buildings remain on Rincon Island, including the Operator's Building, Electrical Building, and Communications Building, and would be removed as part of Component Plan 2 activities along with the building's foundations. The location of each building is shown below in Figure 3-2. Details of each building are listed below:

- The Operator's Building is a concrete masonry unit (CMU) building that includes an office, tool room, storage room, restroom, and a locker room. An underground septic tank is also associated with the Operator's Building, which would be removed.
- The Electrical Building is a CMU building that contains electrical equipment such as transformers, switchgear, conduits, and cables. Some of the electrical equipment is owned by Southern California Edison (SCE).
- The Communications Building is a prefabricated, trailer-mounted building containing cellular communications equipment. A cell phone antenna tower is attached to the north wall of the Communications Building. Both the tower and the building would be removed.

3.2.2.1 Component Plan 2A – Surface Structures Removed and Foundations Replaced with Pavement to Match Existing Surrounding Pavement

Component Plan 2A is based on removal of the three remaining surface structures, including their foundations. The remaining foundation footprints would be paved to match the surrounding paving. The existing island pavement would be left in place. Under Component Plan 2A, the residual hydrocarbon contamination in the soil and interstitial water would remain encapsulated under the existing pavement.

3.2.2.2 Component Plan 2B – Surface Structures Removed and Foundation Footprints Not Paved

Component Plan 2B is based on removal of the three remaining surface structures, including their foundations, if any. However, the remaining foundation footprints would not be replaced with pavement. Component Plan 2B would be implemented under any scenario where the underlying residual hydrocarbon contamination is proposed for removal.

Figure 3-2. Rincon Island Surface Structures

Decommissioning Methods

The Operator's Building, including the foundation and associated underground septic tank, would be demolished using excavators equipped with hydraulic claw, cutter, and breaker attachments, as well as buckets for moving material (Figure 3-3). Prior to demolition, any remaining underground septic tank waste would be pumped out, and the tank removal would be coordinated through the Ventura County Environmental Health Division, Technical Services Department (Ventura County 2022). Front-end loaders would be used to assist with materials handling. The debris would be loaded onto trucks and transported offsite for disposal.

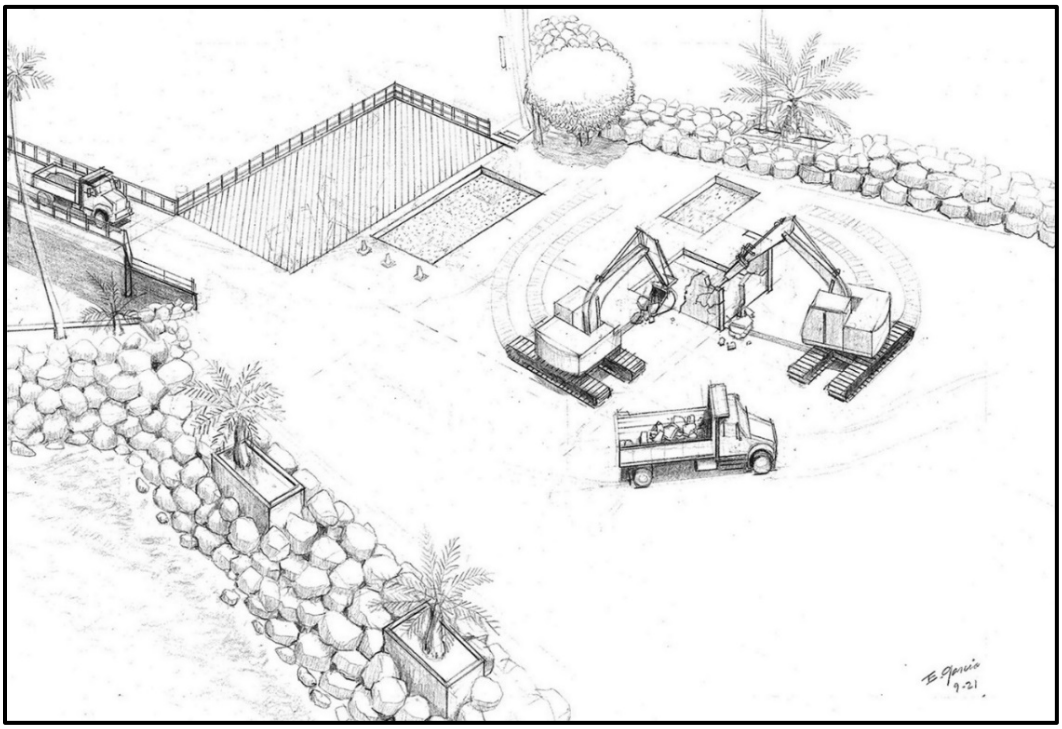
The electrical equipment within the Electrical Building would be disconnected by electricians, and SCE would be provided access to remove SCE-owned equipment. Electrical equipment would be loaded onto trucks using truck-mounted cranes, forklifts, or similar lifting equipment and transported offsite for recycling or disposal. Once electrical equipment has been removed, the Electrical Building and its foundation would be demolished using excavators and front-end loaders, and the debris would be loaded onto trucks and transported offsite for disposal.

A Driltek report (*Rincon Island Discussion of Preparation for Caretaker Status*, Driltek, 2020) indicates that both the Operator's Building and the Electrical Building have non-friable asbestos containing material (ACM) in the roofing materials and parapet walls. A

Cal/OSHA-Certified Asbestos Consultant (CAC) would prepare an Asbestos Abatement Work Plan (AAWP), which would include procedures for removal and handling of ACM, waste labeling and waste manifest requirements, transportation requirements, and acceptable disposal facilities prior to removal of these materials.

Assumptions for decommissioning work include the understanding that the company that owns and operates the cell phone tower and Communications Building (Sprint/T-Mobile) would also demobilize their equipment. The cell phone tower would most likely be disassembled and loaded onto a truck or trailer using a truck-mounted crane, and a truck would be used to tow the mobile building.

Figure 3-3. Illustration of Island Surface Structures Demolition



3.2.3 Component Plan 3 – Island Well Bay Concrete Deck Removal

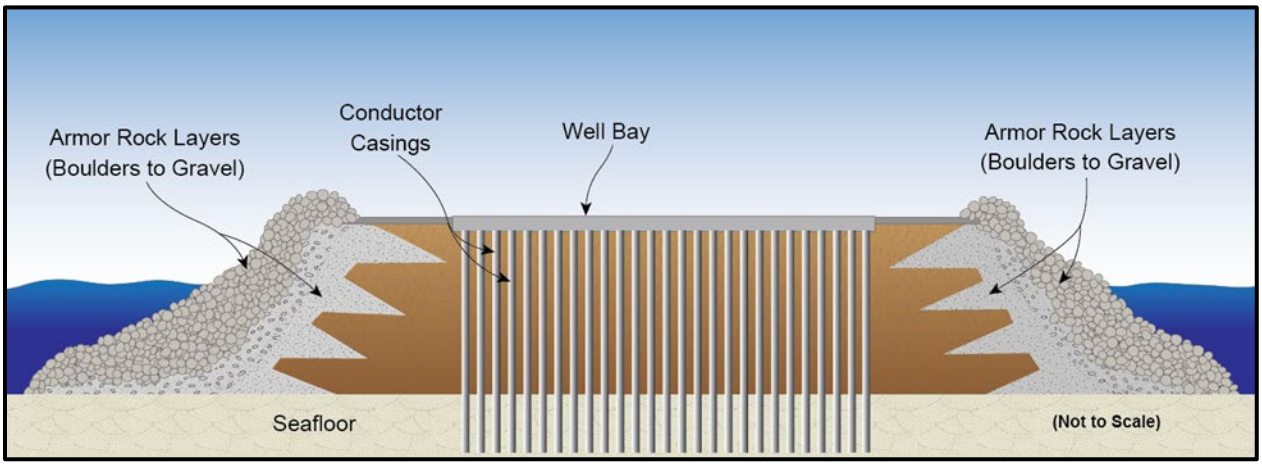
Component Plan 3 consists of demolishing and removing the concrete deck that was constructed over the well bay at the completion of Phase 1 activities. This activity would be performed in conjunction with the removal of the Island pavement (Component Plan 4A or 4B). The location of the well bay is depicted below in Figure 3-4 and in the cross-section illustration provided in Figure 3-5.

The well bay currently consists of a 3-inch-thick concrete deck poured over clean soil that was backfilled around the previously plugged and abandoned conductors that are filled with cement. The well bay wall and original deck were removed during Phase 1 activities.

The scope of work consists of breaking and removing the existing concrete deck. The concrete and steel debris would be transported to an offsite recycling or disposal facility. Any contaminated soil remnants surrounding the conductors would be removed and verification soil samples would be collected for laboratory analysis as part of Component Plan 4. The well conductor casings would remain in place, except under the Complete Removal Alternative where the conductors would be addressed further in Component Plan 5.

Figure 3-4. Rincon Island Well Bay Area

Figure 3-5. Rincon Island Cross Section (Illustration)



3.2.3.1 Component Plan 3A – Removal of Concrete Deck and Backfill

Component Plan 3A includes removal of the concrete well bay deck and backfill with clean soil to facilitate a future use (Reuse and Reefing Alternatives).

3.2.3.2 Component Plan 3B – Removal of Concrete Deck with No Backfill

Component Plan 3B includes removal of the concrete well bay deck but would not require any backfill because it would be performed as part of the Complete Removal Alternatives, where backfill would not be necessary.

Decommissioning Methods

The well bay concrete deck would be demolished using excavators equipped with hydraulic claw, cutter, shear, and breaker attachments, as well as buckets for moving material. A front-end loader may be used to assist with materials handling. The debris would be loaded onto trucks and transported offsite for recycling or disposal.

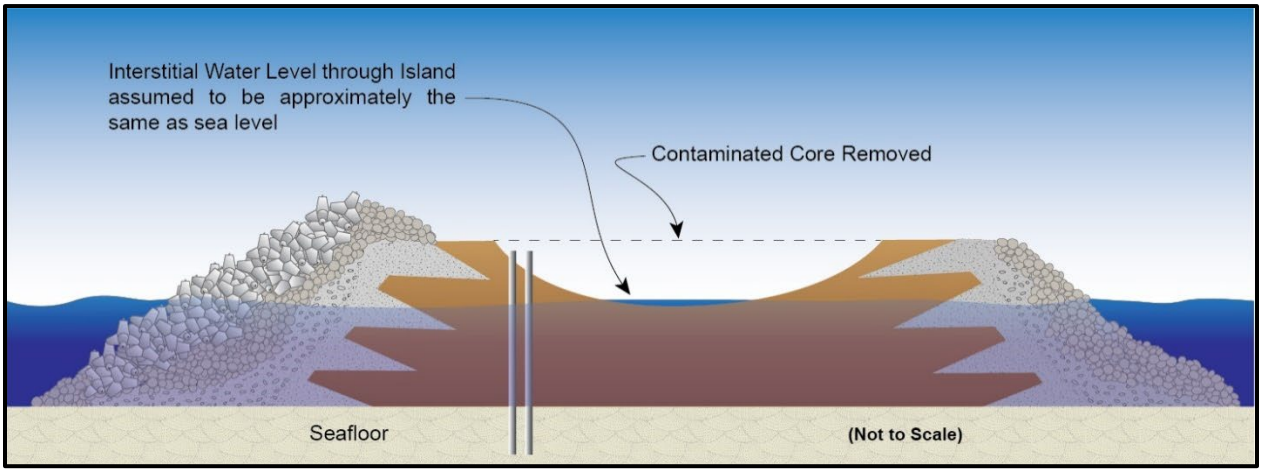
3.2.4 Component Plan 4 – Island Pavement and Contaminated Soil Removal

Component Plan 4 involves the removal of approximately 9,605 cubic yards of existing hydrocarbon contaminated sand and gravel in the Island's core (including a mix of artificial fill of fine to coarse-grained sand and gravel) and in the well bay area.

To remediate the contaminated soil, the 3.5-inch-thick asphalt pavement that currently covers the Island's core would first need to be demolished and removed to facilitate access to the contaminated soil and interstitial water in the Island core (Figure 3-6). The contaminated sand, gravel, and water would then be removed and shipped offsite for disposal (Figure 3-7, see decommissioning methods below).

Figure 3-6. Rincon Island Paved Area

Figure 3-7. Schematic of Contaminated Soil and Interstitial Water Removal



3.2.4.1 Component Plan 4A – Removal of Island Pavement and Contaminated Soil Without Backfill or Repaving

Component Plan 4A includes the activities noted above but does not include backfill or repaving of the excavation left by the removal of the contaminated sand and gravel.

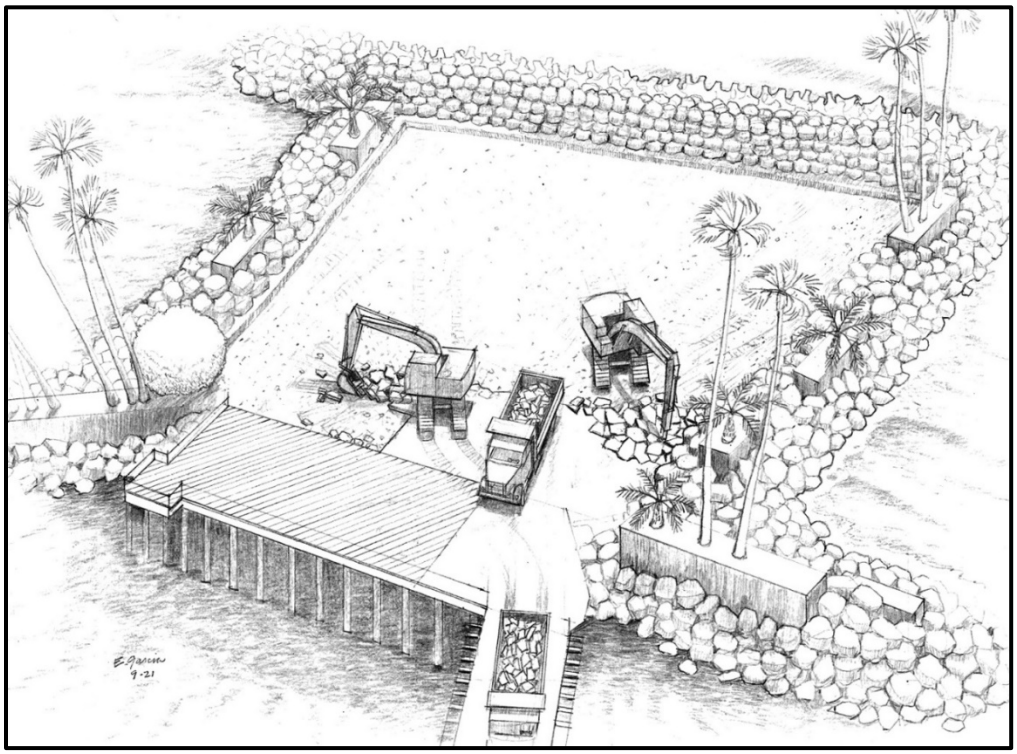
The surface area of the Island site potentially containing hydrocarbon-contaminated soil is estimated to be 0.54 acre, inclusive of potentially contaminated materials around the conductors in the well bay. The estimated maximum depth of excavation is 16 feet bgs. The total volume of contaminated soil is estimated at 9,605 cubic yards.

Removal of the hydrocarbon contaminated soil from the Island core and well bay, and any interstitial water would require excavation and transportation of the contaminated material to approved offsite disposal or recycling facilities.

Decommissioning Methods

For Component Plan 4A, the pavement would be removed using excavators equipped with hydraulic claw, cutter, and breaker attachments, as well as buckets for moving material. Front-end loaders and vacuum trucks, as feasible would be used to assist with materials handling. The asphalt debris would be loaded onto trucks and transported over the causeway offsite for recycling or disposal (Figure 3-8).

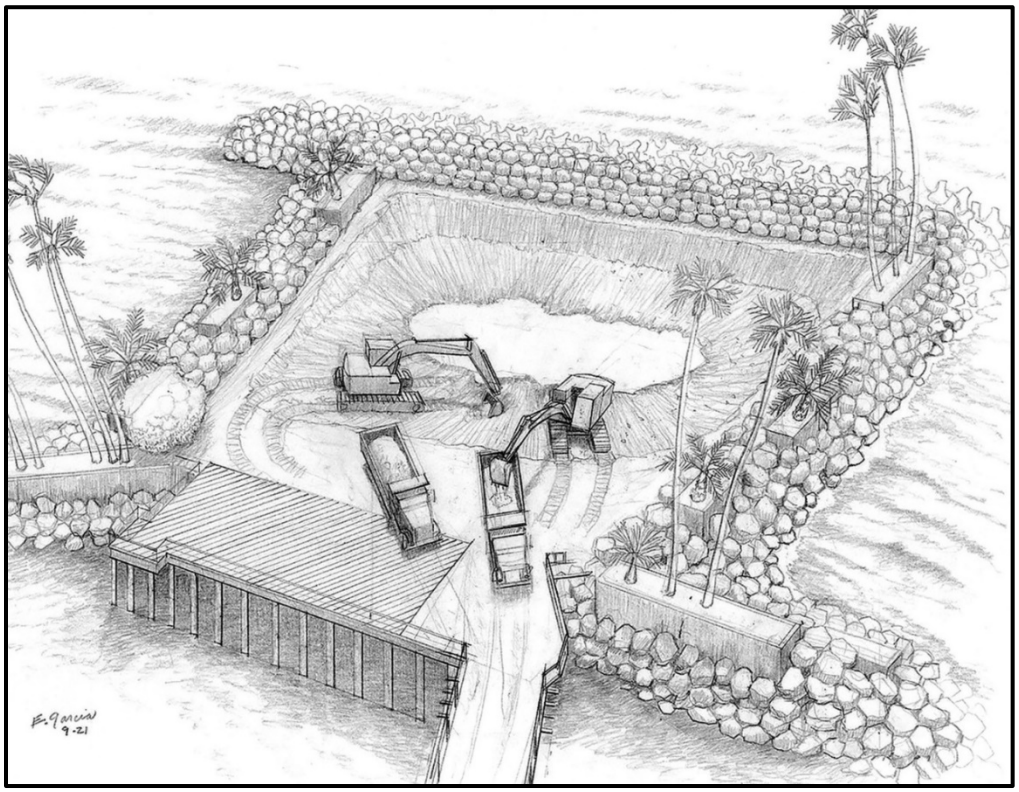
Figure 3-8. Illustration of Island Pavement Removal



The petroleum hydrocarbon-contaminated soil would then be excavated using standard commercial excavation equipment (e.g., hydraulic excavator, front-end loader, track-mounted dozer) (Figure 3-9). Removal of interstitial water would be limited to isolated pockets where petroleum hydrocarbons may be observed using absorbent booms and vacuum trucks, as feasible. Excavation of the petroleum hydrocarbon-contaminated soil and interstitial water would continue until the presence of petroleum hydrocarbons is not detected using a field portable handheld photoionization detector (PID), as well as visual and olfactory[1] observations. The remaining clean fill materials would be sampled and chemically analyzed to confirm adequate removal of petroleum hydrocarbon-contaminated soil and interstitial water.

Petroleum hydrocarbon-contaminated soils would be loaded onto trucks and transported over the causeway to an offsite disposal or recycling facility that accepts non-hazardous petroleum hydrocarbon-contaminated waste. Due to causeway weight limits, smaller loads may be transported from Rincon Island to the onshore facility for staging, and then loaded onto other trucks for subsequent transportation to the landfill in larger loads, resulting in fewer trips.

Figure 3-9. Illustration of Contaminated Soil Removal



[1] Relating to sense of smell

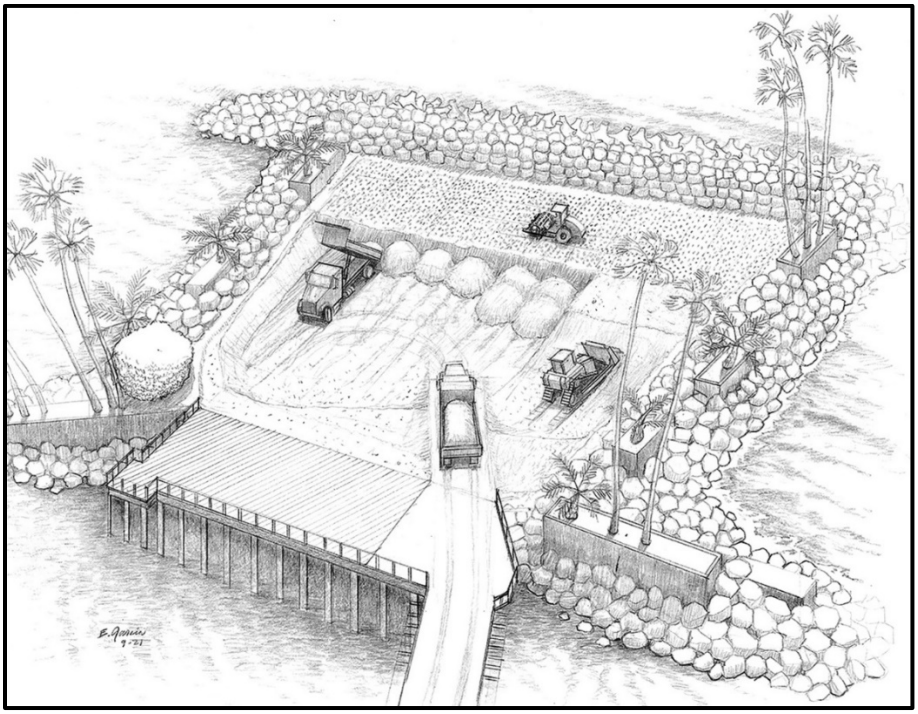
3.2.4.2 Component Plan 4B – Removal of Island Pavement and Contaminated Soil, with Backfill

Component Plan 4B is essentially the same as Component Plan 4A above, but with clean backfill of the excavation added to the scope of work. The volume of backfill would be what is required to backfill the excavation to specified contours. This component plan would be applicable to the Reuse and Reefing Alternatives, but with different amounts of backfill material dependent upon the specified use.

Decommissioning Methods

If Component Plan 4B is implemented, the pavement would be removed, and petroleum hydrocarbon-contaminated soil would be excavated from the interior of the Island as described in Component Plan 4A above. However, once all contaminated soil has been removed, the excavation would be backfilled and compacted using clean soil (Figure 3-10). Equipment used for backfilling and compaction includes trucks, front end loaders, excavators and potentially dozers, graders, or roller compactors.

Figure 3-10. Illustration of Island Backfill and Compaction



3.2.5 Component Plan 5 – Island Core Removal

Component Plan 5 assumes that the contaminated soil has already been removed, that the excavation has not been backfilled (Component Plan 4A), and that the remainder of the Island core would be removed (Figure 3-11). Component Plan 5 would only be implemented as part of the Complete Removal Alternative and focuses on the removal of the Rincon Island core down to the seafloor, removal of the subsurface south and

north pipelines[2] in their entirety, and removal of the well conductors to approximately 5 feet below the seafloor, but not removal of the Island's surrounding riprap or tetrapods (which would be addressed as part of Component Plan 6).

Figure 3-11. Rincon Island Core Plan View

Decommissioning Methods

Removal of the Island core above the waterline would be performed using excavators. Front-end loaders would be used to assist with materials handling. The soil and debris would be stockpiled separately, and then loaded onto trucks and transported offsite for disposal.

Removal of the Island core below the waterline would be performed using one or more derrick barges equipped with a crane, clam bucket, shear, rock tongs, grapple, and diving vessel. The marine equipment would also include at least two hopper barges to store and transport excavated spoils, along with tugboats for transporting barges to and from the site as well as maneuvering barges around the marine worksite. Vessels would be anchored near the worksite (as appropriate) to facilitate Island core removal activities or in some cases, the barge(s) can be kept on station by the supporting tugboat(s).

A crew boat would be required to transport marine crews between shore and the marine worksite. Excavation of core materials (sand and gravel) would be performed using the

[2] Pipelines remaining under the surface of Rincon Island

clam bucket. Excavated core spoils (sand and gravel) would be placed in a hopper barge, which when fully loaded would be towed to a dock where the spoils would be loaded into trucks and transported to an appropriate upland disposal site.

Dredging equipment was considered as an alternative to using the clam bucket for underwater excavation, but the clam bucket was chosen as the preferred method. If dredging equipment was used, a substantial volume of water would be mixed with the excavated soils. In this case, both the soil and the water mixed with it would likely need to be transported to shore via hopper barge and disposed of in an upland location. The costs associated with disposing of the additional volume of material that dredging would produce makes dredging more expensive than using the clam bucket for excavation.

3.2.6 Component Plan 6 – Island Protective Armor Removal

The scope of work for Component Plan 6 includes removing the riprap and tetrapods that form the outermost layer of Rincon Island down to the seafloor. See Figures 3-12 and 3-13 below, which illustrate the location and nature of the riprap and tetrapods. In the event the Complete Removal Alternative is selected, Component Plan 6 would be performed in coordination with the removal of the Rincon Island core to the seafloor described in Component Plan 5. Component Plan 6 would be performed only for the Complete Removal Alternative. It would not be performed for the Reuse or Reefing Alternatives.

Decommissioning Methods

Component Plan 6 would be performed using a derrick barge equipped with a crane, clam bucket, rock tongs, grapple, and diving spread. The equipment would also include two hopper barges to store and transport removed riprap and tetrapods, tugboats for transporting barges to and from the site as well as maneuvering barges around the marine worksite, a crew boat to transport marine crews between shore and the marine worksite, an anchor handling vessel, and an inflatable skiff. Tetrapods would be individually rigged and lifted onto the hopper barge using the derrick barge crane (Figure 3-14). Larger rocks would be lifted by the derrick barge crane using rock tongs and deposited onto the hopper barge. Small rocks and gravel would be excavated using the clam bucket and placed onto the hopper barge. When the hopper barge is full, it would be towed to a dock where material would be loaded into trucks and transported to an appropriate upland disposal site. Although no offshore dump site has been identified for the disposal of the riprap and tetrapods, the creation of such a site in relatively close proximity to the Phase 2 Facilities could greatly reduce the cost of transporting and handling these materials. Figure 3-15 shows what the seafloor would look like following completion of Component Plans 5 and 6.

Figure 3-12. Rincon Island Protective Armor Aerial View

Figure 3-13. Cross-Section Illustration of Rincon Island Showing Tetrapods and Riprap (Before Removal)

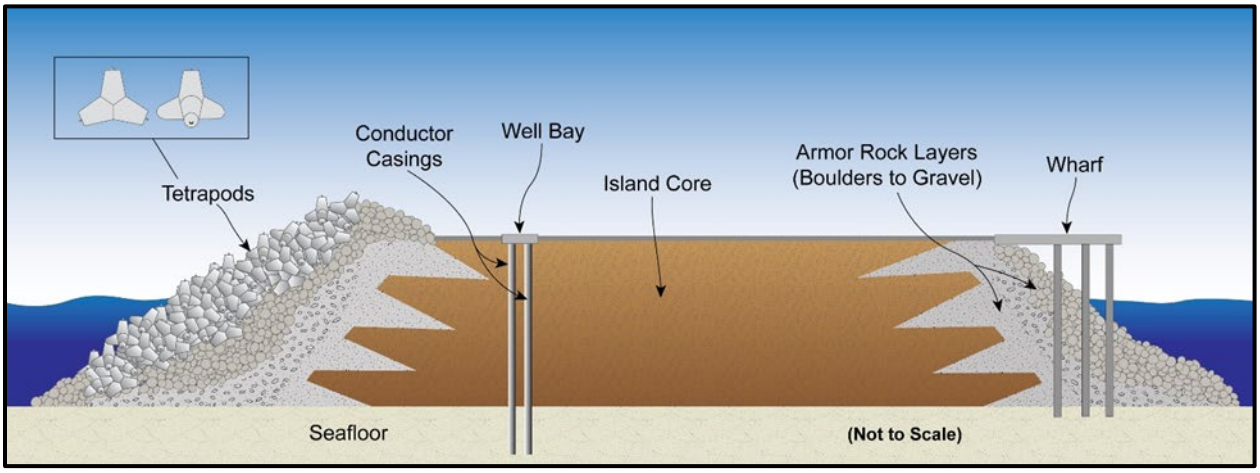


Figure 3-14. Illustration of Island Core and Riprap Removal

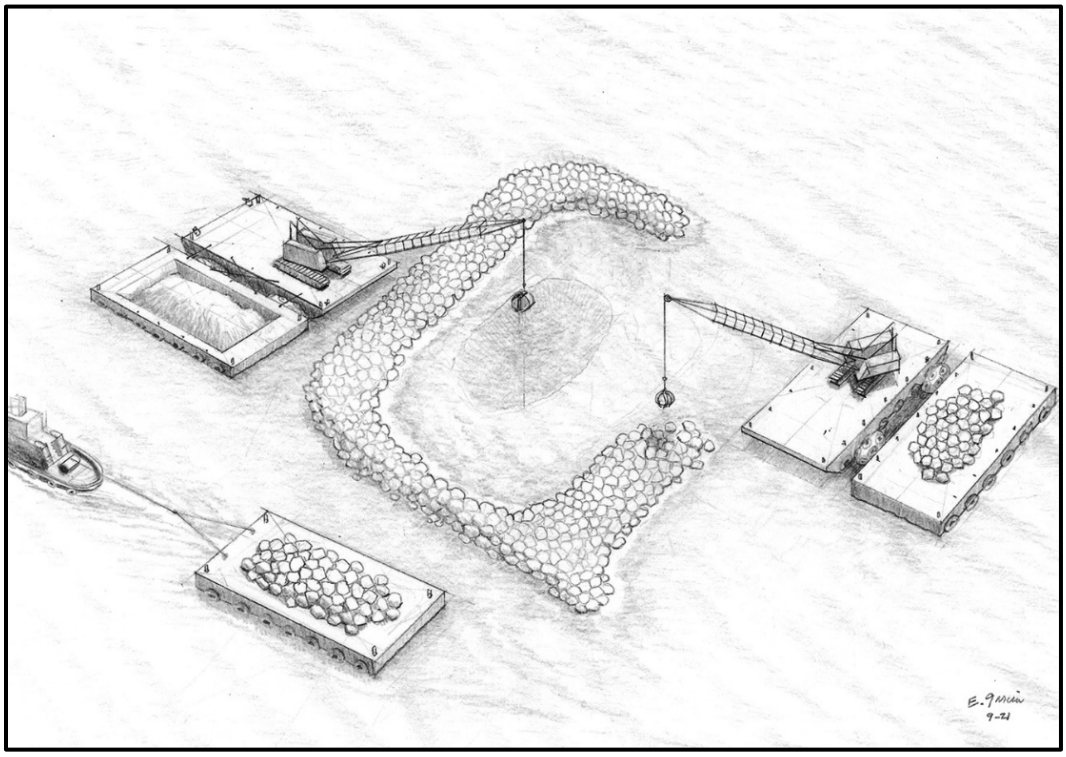
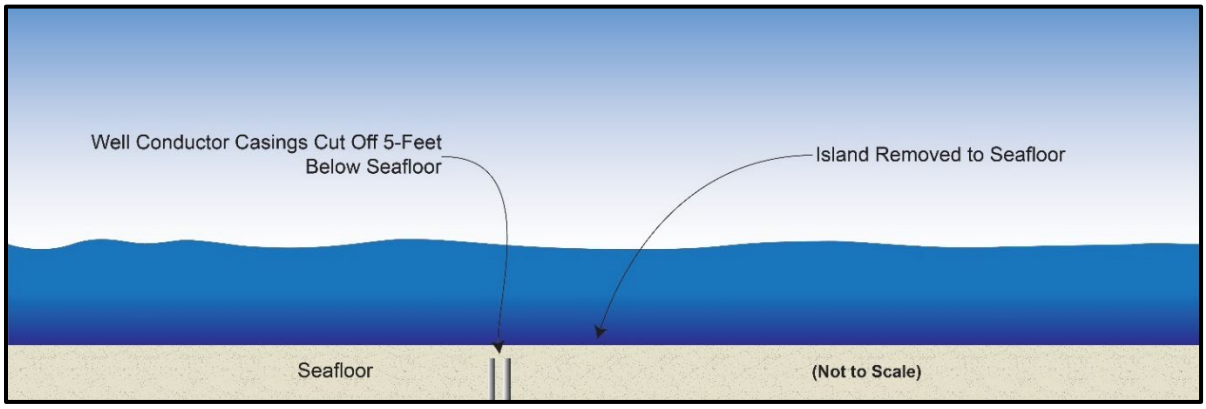


Figure 3-15. Island Removed to Seafloor



3.2.7 Component Plan 7 – Island Causeway and Wharf Removal

Component Plan 7 consists of removal of the Rincon Island causeway and wharf (Figure 3-16 and Figure 3-17). For purposes of the Engineering Assessment, it is assumed that the causeway could be removed without affecting the wharf, and that the wharf could be left intact if the Reuse Alternative is selected.

3.2.7.1 Component Plan 7A – Remove Island Causeway

Component Plan Alternative 7A would consist of removal of the causeway and the wooden pile stubs on the seafloor running parallel with the pier (used in original construction of causeway). The causeway piling and wooden pile stubs would be removed to 5 feet below the seafloor. This work would include removal of the abutment located on the shoreline groin and would consist of removal of the reinforced concrete walls, steel components, fencing, utilities, and pavement. The groin's riprap and the point of land that currently supports the concrete abutment structure would be left intact.

Decommissioning Methods

The methods anticipated for use in decommissioning the wharf and causeway are based on that assumption that the causeway's current capacity of 65,000 pounds does not change due to storm damage, corrosion, or other means of deterioration prior to decommissioning (Phase 3).

The causeway demolition would be performed using a mobile crane operating from the causeway (Figure 3-18); no vessels would be required for removal of the causeway. The work would start at the offshore end of the causeway and work landward dismantling the causeway and removing its pilings 5 feet beneath the seafloor one bent at a time. Working from the causeway, the wooden pile stubs from the causeway's original construction would be excavated and removed to a depth of 5 feet below the seafloor. The supporting dive crew would also operate from the causeway. All components would be recovered, loaded on trucks, and shipped offsite for recycling or disposal.

Figure 3-16. Rincon Island, Causeway, Abutment, and Wharf

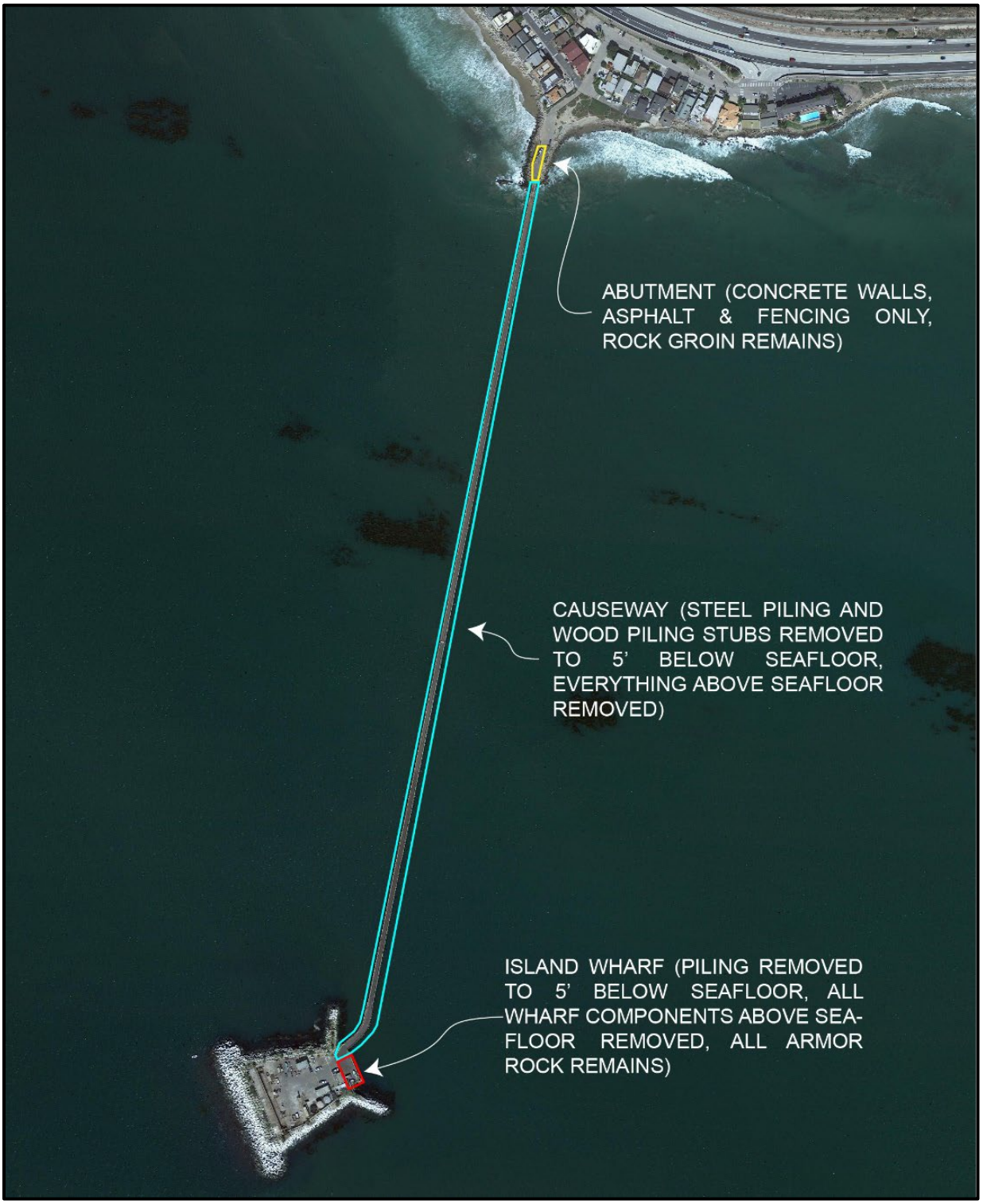
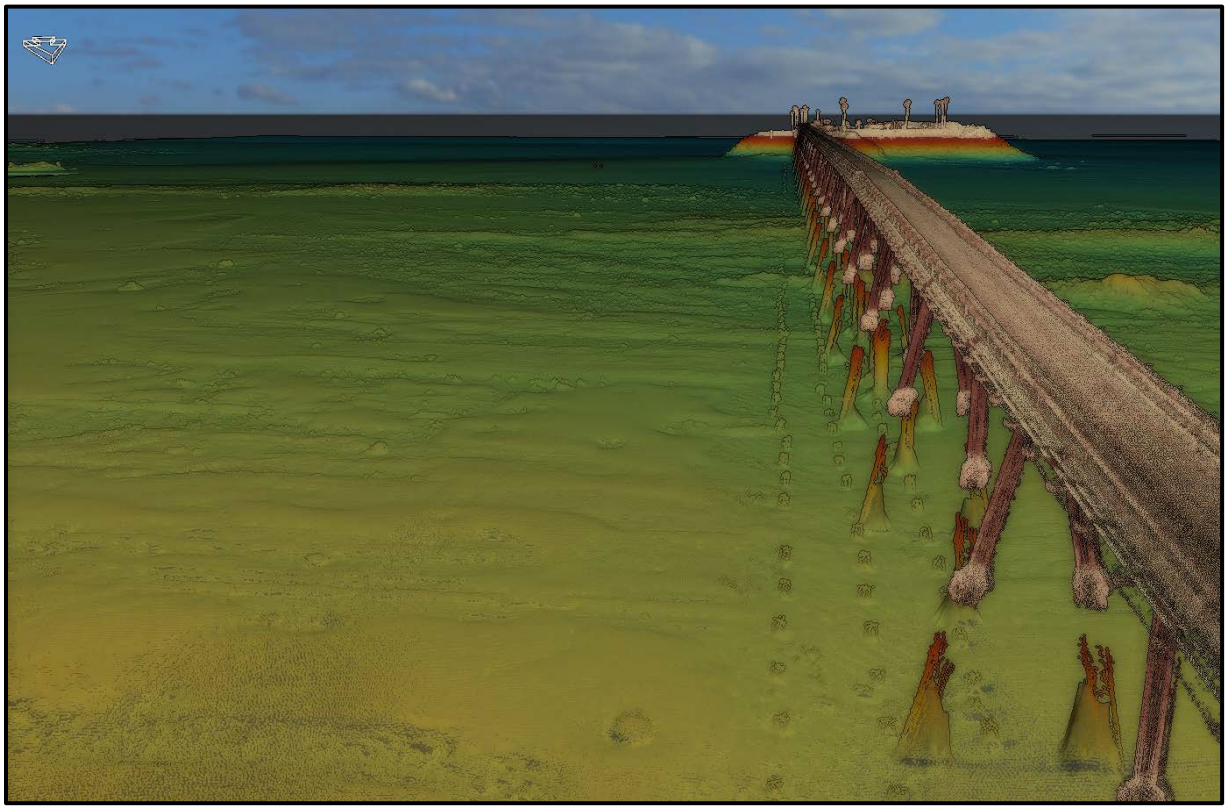


Figure 3-17. 3D Composite LIDAR and Multibeam Sonar Image of the Causeway



At the abutment, the riprap currently piled against the concrete walls of the abutment would be temporarily relocated and the concrete abutment demolished and transported to offsite recycling (Figure 3-19). Once the abutment demolition is completed, the riprap would be placed back over the existing point of land that supported the abutment within the abutment footprint but would be at a lower elevation (Figure 3-20). The existing riprap surrounding the groin and the groin itself would be left intact.

Figure 3-18. Illustration of Causeway Removal

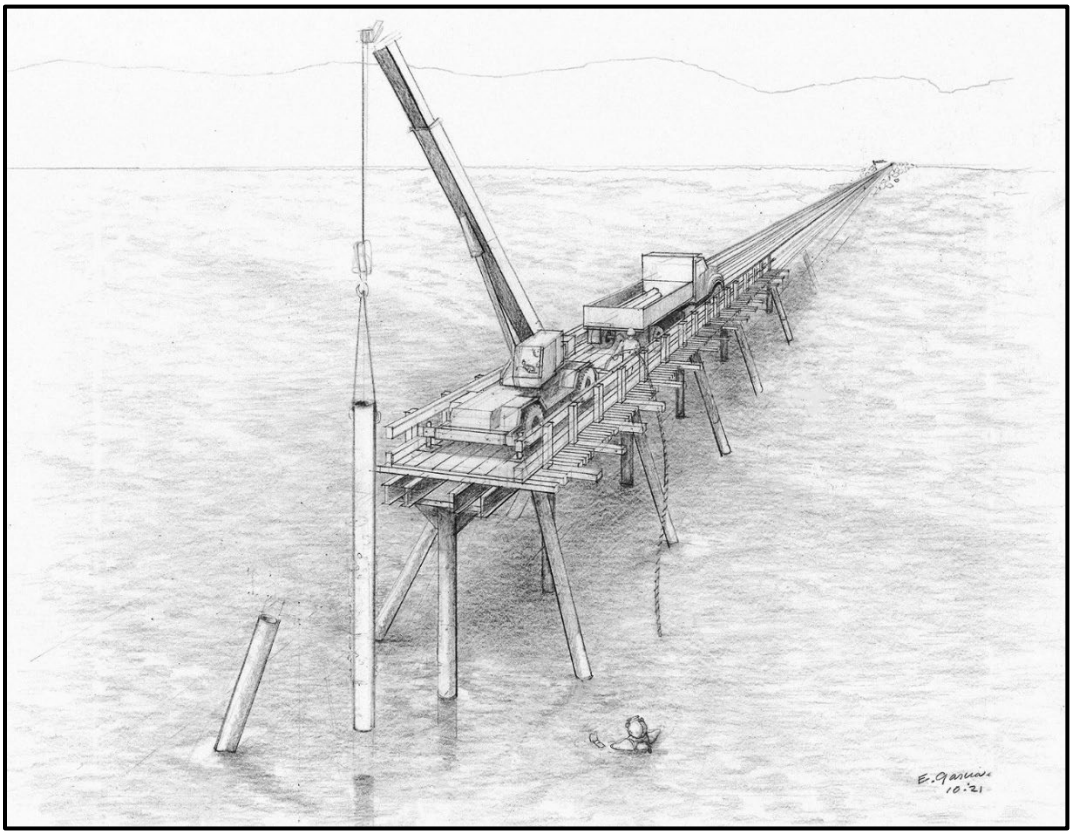


Figure 3-19. Illustration of Causeway Abutment Removal (Not to Scale)

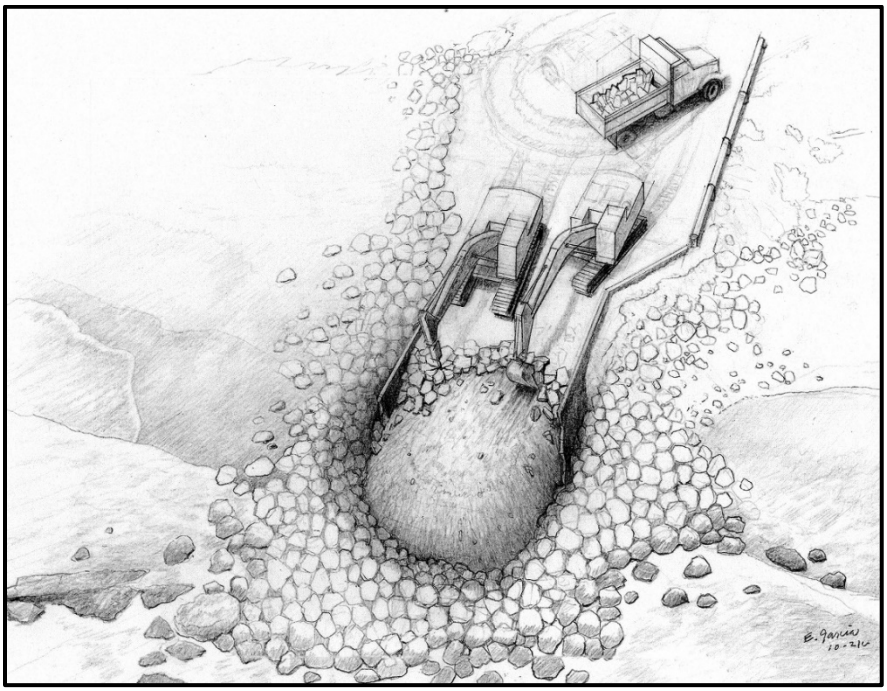


Figure 3-20. Causeway Abutment Location Final Condition

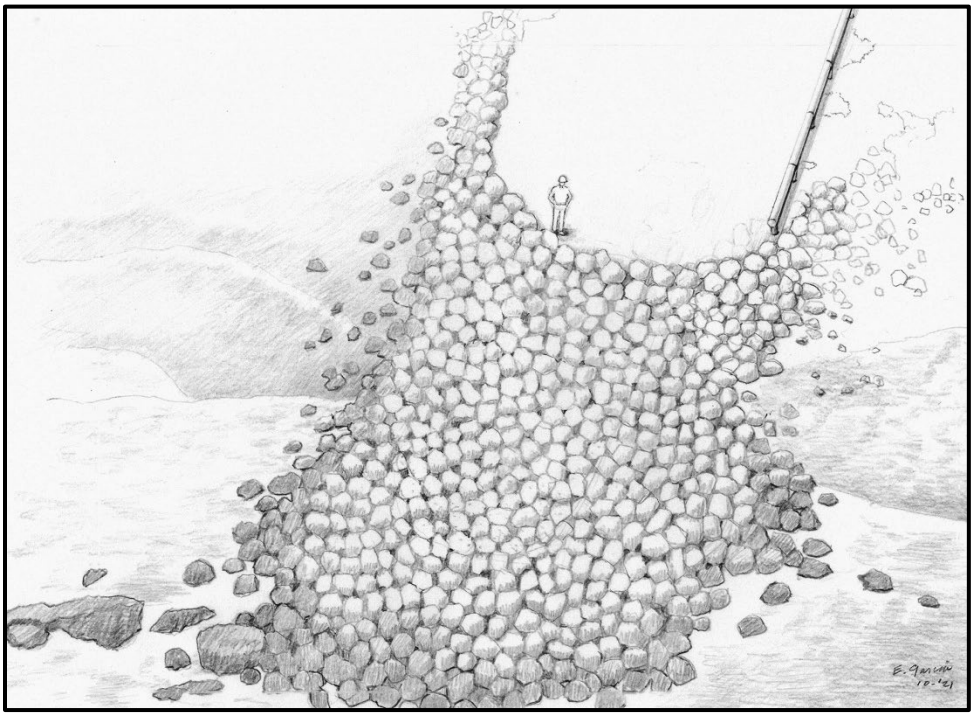


Illustration Not to Scale

3.2.7.2 Component Plan 7B – Remove Island Wharf

Component Plan 7B is based on facility information taken from original construction drawings, past surveys, and the recent Lidar and multi-beam surveys performed in support of the Engineering Assessment. Component Plan 7B is focused on the removal of components of the Island's wharf including removal of all pilings down to 5 feet below the seafloor. The existing riprap and tetrapods would be left in place.

Decommissioning Methods

If the wharf is to be removed, the removal would take place before the causeway is removed so that the causeway could be used to transport recovered materials to shore for recycling or disposal. The wharf decommissioning would take place using excavators equipped with hydraulic claw, cutter and breaker attachments, as well as buckets for moving material. Front-end loaders may be used to assist with materials handling. The debris would be loaded onto trucks and transported offsite for disposal.

3.2.8 Component Plan 8 – Onshore Pipeline Connections Decommissioning

Component Plan 8 involves the decommissioning of the 6-inch-diameter gas pipeline and the 6-inch-diameter oil pipeline from their terminations at the causeway abutment to the valve box located on the northeast side of the UPRR right-of-way (Figure 3-21). Component Plan 8 is included in all three Phase 2 Alternatives (Reuse, Reefing Complete Removal).

Figure 3-21. Onshore Pipeline Connections

The 6-inch-diameter gas pipeline and the 6-inch-diameter oil pipeline have been previously removed from the causeway and are currently terminated with caps at the abutment. Both pipelines proceed north from the abutment under Ocean Avenue, then cross underneath Highway 101 and the adjacent railroad track to an underground concrete vault located on the north side of the railroad track. Both pipelines are installed within a 30-inch-diameter steel pipe casing that passes beneath the freeway and the railroad. The oil pipeline terminates at the concrete vault where it formerly connected to a separately owned oil pipeline. The gas pipeline continues north and east of the vault, connecting to the nearby privately owned DCOR oil and gas processing facility as well as the onshore lease area previously described in Component Plan 1 related to the

Onshore Facility. The onshore pipeline was capped and removed from the Onshore Facility during Phase 1.

Component Plan 8 consists of cleaning and flushing the pipelines from the abutment to the concrete valve vault to remove any potential contaminants, filling the pipelines with cement slurry from the abutment to the southern end of the casing, removing the pipelines from the 30-inch-diameter casing north to the concrete vault, and then filling the casing with cement slurry. The decommissioning of the concrete vault and the gas pipeline that continues north of the vault are not part of Phase 2.

Decommissioning Methods

The first step in the decommissioning process for the onshore pipelines is to pig and flush the pipelines. Spherical or bullet-shaped foam “pigs” along with water and cleaning agents would be inserted into the pipeline and pushed from one end to the other with pumped water or compressed air. A water sample would be obtained and sent to a state-certified laboratory to ensure the total petroleum hydrocarbon (TPH) levels in the pipeline are less than 15 parts per million (ppm). Additional pigging and flushing runs would be performed until TPH test results indicate that the TPH within the pipeline is less than 15 ppm. Wastewater generated by pigging and flushing would be collected in vacuum trucks or temporary storage tanks. Wastewater may be tested and treated onsite, and then transported offsite for disposal. This step assumes that the pipeline conditions (integrity and strength) would support pigging and flushing between the abutment and the concrete vault.

The ends of the casing would be excavated, the pipelines would be cut on each end of the casing and then pulled out from the casing. The pipelines would also be excavated and removed from the northern end of the casing to the outer wall of the concrete vault. Removed pipeline sections would be cut into pieces, loaded onto trucks, and transported to a disposal facility. This step assumes that the southwest end of the casing beneath the freeway and railroad can be accessed from Ocean Avenue, the northern end of the casing can be accessed at the valve box or somewhere near the valve box and the railroad right-of-way, and that the pipelines are not currently grouted into the casing and can be removed from the casing.

The ends of the remaining pipeline buried under Ocean Avenue would temporarily be welded shut in preparation for cementing the void between the pipeline and the casing. Temporary plates and pipe inlet/outlets (flanges) would also be welded to the ends of the empty 30-inch-diameter casing in preparation for venting the pipes and filling the casing with cement.

Cement slurry would be either mixed on-site or pre-mixed and trucked to the site in cement trucks. A trailer mounted concrete pump would be used to pump the cement into the pipelines and casing through hoses attached to the temporary flanges. The cement slurry would be allowed to cure, then the temporary flanges would be cut off and

half-inch-thick steel plates would be welded onto the pipeline and casing ends to complete the pipeline abandonment.

The excavations would be backfilled and compacted using native soils where feasible, supplemented with imported fill if required. Pavement would be repaired, and the worksite would be restored to the original condition.

Anticipated equipment used for Component Plan 8 includes excavators equipped with buckets, hydraulic grapple, shear and roller compactor attachments, front-end loaders, vacuum trucks, cement trucks, cement mixer, temporary tanks, water pump, air compressor, cement pump, welding machine, temporary piping, pig launchers and pig receivers. Temporary shoring and traffic control measures may be required depending on the location and depth of burial at the casing ends.

3.2.9 Component Plan 9 – SCC Parcel Improvements

The SCC Parcel is identified as Ventura County Assessor's Parcel No. 060-0-090-425, south of the Mussel Shoals community adjacent to Breakers Way, and east of the causeway landing/abutment. The gross area includes approximately 36,105 square feet (0.83 acre). The parcel is included within Lot 67, however the adjacent parcel within the lot (060-0-090-125) is owned by Rincon Island Limited Partnership and is not included in the SCC Parcel Improvement(s) area. Approximately 60 percent of the parcel is above the mean high tide line (Everest 2014). The site is currently occupied by interspersed native and non-native ground cover/vegetation, informal walking paths, a statue, and wooden bench on the back of the parcel, and includes a portion of a partially riprap-armored beach cove. The beach area transitions from a low bluff that can drop several feet during certain times of the year when sand levels are lowest, restricting access to and along the narrow cobble and sand beach. Several options are being considered with respect to improvements at the SCC Parcel as further described below.

3.2.9.1 Component Plan 9A – Native Revegetation of Parcel

Component Plan 9A would include revegetation of the upland portion of the parcel adjacent to Breakers Way and Ocean Avenue on the SCC parcel (approximately 0.33 acre) with native plants intended to promote biodiversity and reduce erosion. Existing non-native vegetation would be removed by hand and replaced with native plants/seed mix to create a uniformly covered area. Revegetation would require approximately 2 weeks to complete. Following the initial planting, bi-weekly watering and maintenance for approximately 1 year would be included to ensure the new plantings become established. Existing walking/access pathways would be improved with crushed rock or other appropriate surface to allow for percolation and drainage to remain unchanged. A short stairway would be installed at the termination of one of these pathways to provide safer access to the beach from the low bluff drop-off area. A concrete or composite bench would replace the existing wooden bench at the overlook area. An interpretive sign would be included at the lookout area that would provide the opportunity for public

outreach (possible topics include, but are not limited to, tribal cultural history in the area, biological resources along this portion of the coast, or the history of the former Rincon Island facility).

3.2.9.2 Component Plan 9B – Native Revegetation and Managed Retreat

Component Plan 9B would include all the activities described in Component Plan 9A above. Additionally, in order to further stabilize the shoreline from erosion, Component Plan 9B includes the addition of cobble along the portion of the shoreline that is currently unarmored in order to slow natural erosional processes (sometimes referred to as managed retreat). In this instance, managed retreat would include import of compatible cobble fill within the existing gap in the riprap armament that exists on either side of the shoreline within the parcel. Similar to 9A, a stairway would be installed to provide access to the beach.

Following removal of the non-native vegetation described in Component Plan 9A, a portion of the upland area would be excavated (approximately 3,800 cubic yards) in order to place a cobble back berm (Figure 3-22). Soil removed would be temporarily stockpiled to replace native soil cover over the cobble back berm. Following placement of the cobble, this area would be backfilled with approximately 3.5 feet of the original native soil and revegetated with native plants as described in Component Plan 9A above. Excess soil would be balanced onsite as feasible, but as a worst-case-scenario, 2,500 cubic yards would need to be trucked away for disposal.

This cobble back berm would transition to connect into the new cobble fill placed further down on the beach within the gap and would provide additional stability to that fill. The profile of the cobble would mimic a natural grade from the upland vegetated portion of the parcel down to the beach and intertidal area (Figure 3-22). The design premise is taken from another successful managed retreat project (Surfers Point, CDP Permit Amendment 4-05-148-A1 and A-4-SBV-06-037-A1) in Ventura County (CCC 2020). Approximately 2,500 cubic yards (4,300 tons) of cobble would be required to complete the cobble back berm and fill in the existing gap area, for a linear distance of approximately 50 feet (of which approximately 40 feet would be covered with native soil and revegetated). This cobble would be imported to the site using dump trucks and placed with two excavators on the beach. The excavators would also be utilized to demolish portions of an existing concrete box (former infrastructure) that is present along the eastern extent of the shoreline. If the entire structure cannot be removed, each of the remaining concrete walls would be demolished to 5 feet below the existing cobble line and backfilled using native material onsite to ensure that they would not become re-exposed. The managed retreat construction would require approximately 2 weeks to complete.

3.2.9.3 Component Plan 9C – Riprap Along Parcel Frontage

Component Plan 9C would include all the activities as described in Component Plan 9A above, but as an alternative to managed retreat installed within Component Plan 9B, Component 9C would instead include replacement of riprap that was formerly present within this section of coastline to provide long-term protection from coastal processes that would have the potential to threaten homes within the Mussel Shoals Community (Figure 3-23). Early conversations with the CCC indicate that Component Plan 9C may not be acceptable to that agency. Documentation provided in a study done by Bionic (2014) for the State of California Coastal Conservancy shows that coastal erosion in this area has been significant (resulting in a change in beach elevation from 6 to10 feet) and would continue northward into the back of the SCC parcel by the year 2100 if left unprotected. The western and eastern extents of the SCC beach cove are already supported by riprap shoreline protection.

Component Plan 9C would add riprap to the remaining unarmored section of beach (an area of approximately 130 feet [40 meters] in length). Approximately 360 cubic yards of riprap (chosen to match the size of the riprap that currently exists onsite) would be required to complete the shoreline armoring in this area. The riprap would be initially hauled from a quarry in Ventura County to the SCC area in covered dump trucks and staged within the vegetated area between the beach and Breakers Way. Approximately 90 truckloads would be required. A small crane with a rock grapple and spider excavator would then be utilized to place the riprap onto this section of beach. The riprap configuration would be placed to match the contours of the existing riprap on either side.

A survey would be required for accurate design and volume calculations; however, it is assumed that a maximum depth of cover would be 3 feet at the crown leading to an even slope down to the waterside toe. Additionally, the existing remnant concrete box infrastructure would be removed as described in Component Plan 9B above. Approximately 14 construction workdays (3 weeks) would be required to complete Component Plan 9C. The equipment staging area would be repaired, and re-planted once construction is complete.

Figure 3-22. Component Plan 9B (Managed Retreat)

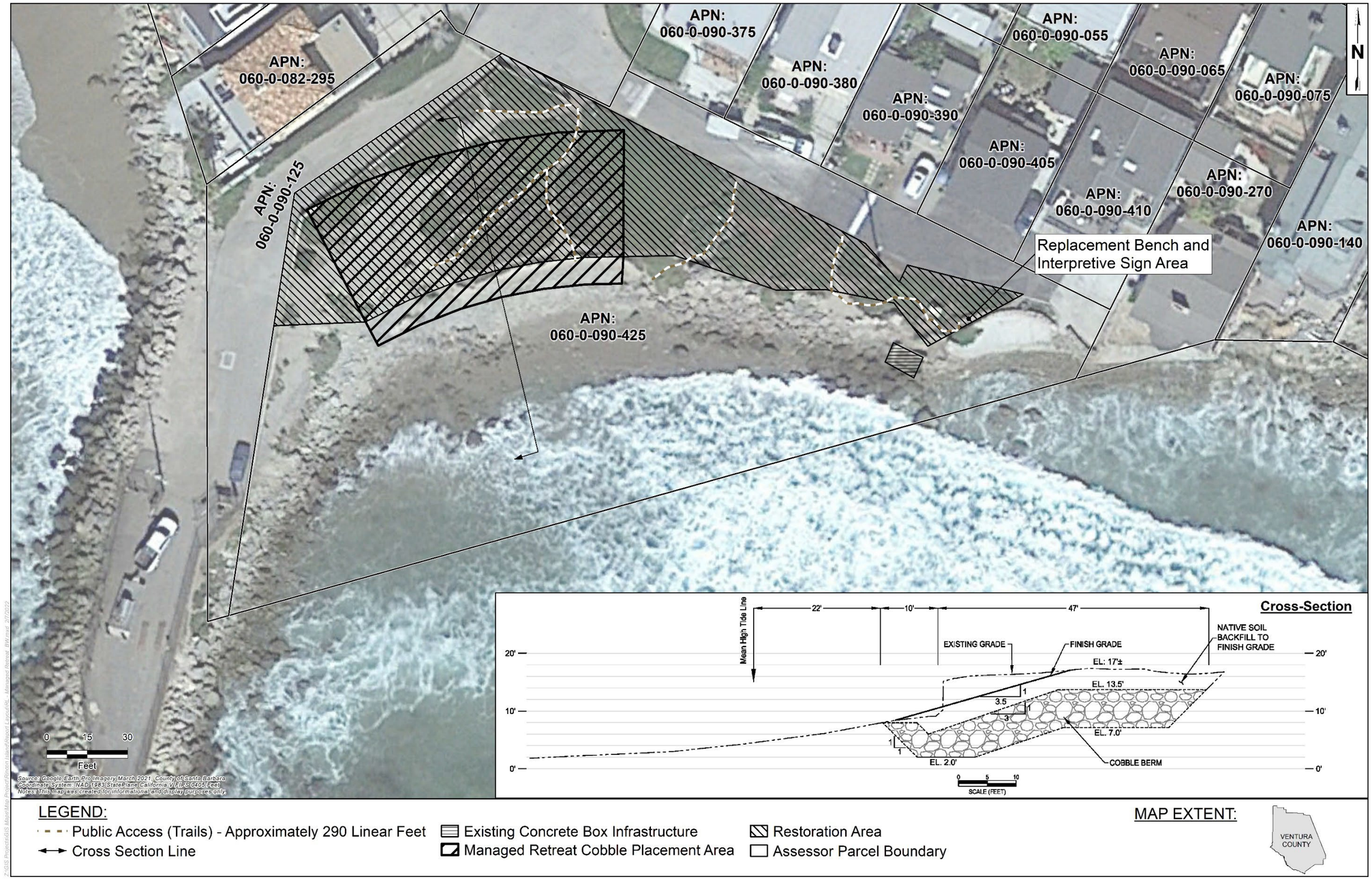
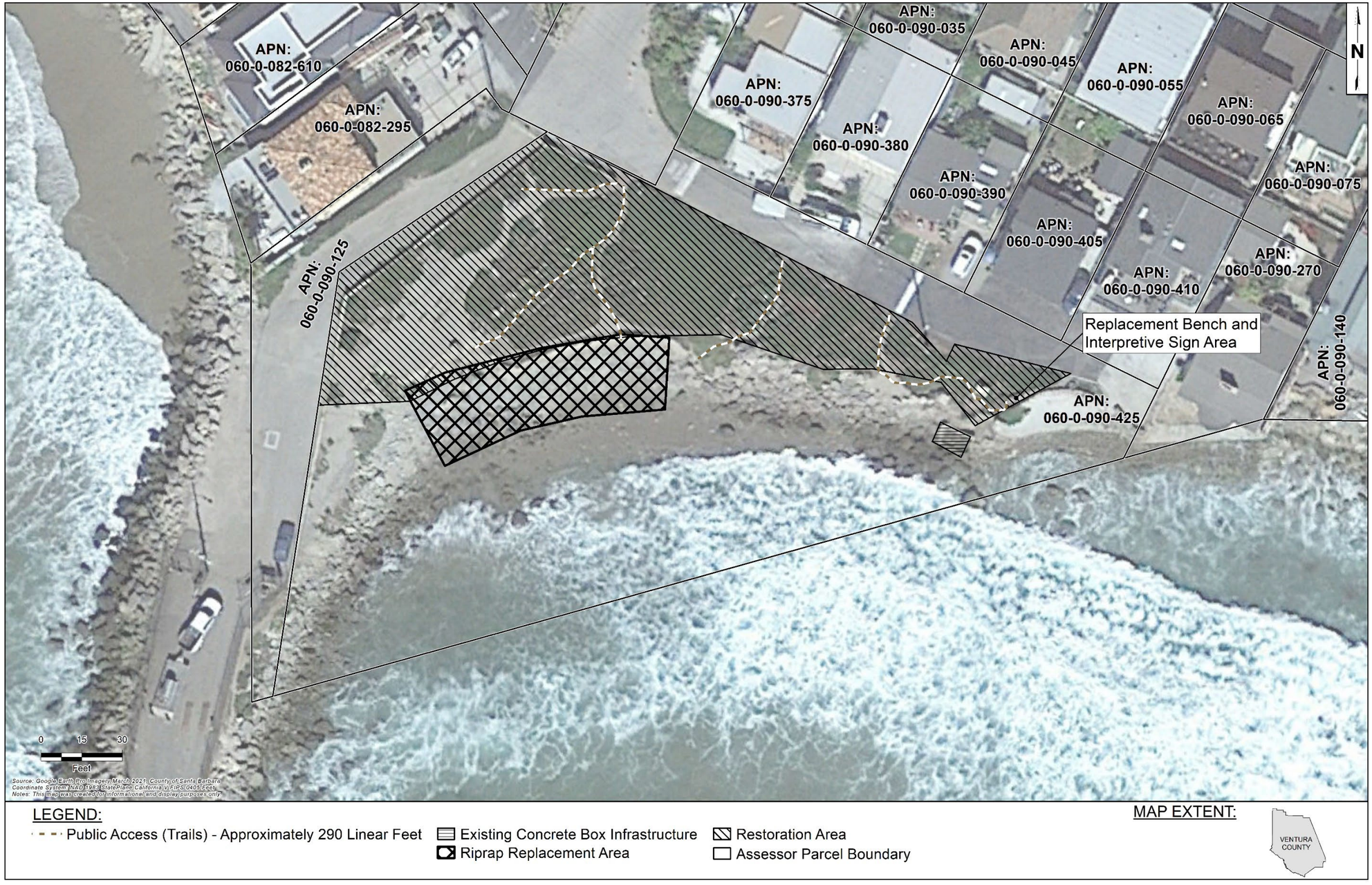


Figure 3-23. Component Plan 9C (Riprap Along Parcel Frontage)



3.2.10 Cost Estimates Summary (by Component)

Table 3-1 provides a comparison of costs for each Component Plan.

Table 3-1. Cost Estimate by Component

Component Scenario	Cost Estimate
Component Plan 1 - Onshore Facility Decommissioning	$5,468,771
Component Plan 2A – Rincon Island Surface Structure/ Foundation Removal and Repavement	$372,370
Component 2B – Rincon Island Surface Structures/Foundation Removal, No Repavement	$332,659
Component Plan 3 – Island Well Bay Concrete Deck Removal	$163,966
Component Plan 4A - Removal of Pavement and Contaminated Soil, No Backfill	$5,809,184
Component Plan 4B - Removal of Pavement and Contaminated Soil with Backfill	$8,294,229
Component Plan 5 – Island Core Removal	$121,718,181
Component Plan 6 – Island Protective Armor Removal	$141,033,067
Component Plan 7A - Causeway Only Removal	$9,859,788
Component Plan 7B – Rincon Island Wharf Removal	$1,971,816
Component Plan 8 - Onshore Pipeline Connections Decommissioning	$319,704
Component Plan 9A – Native Revegetation of SCC Parcel	$82,292
Component Plan 9B – Managed Retreat and Native Revegetation of SCC Parcel (Includes Removal of Existing Concrete Infrastructure)	$641,102
Component Plan 9C – Riprap Along Parcel Frontage and Native Revegetation of SCC Parcel (Includes Removal of Existing Concrete Infrastructure)	$358,902

3.3 BATHYMETRIC SURVEY AND STRUCTURAL SURVEY

This Feasibility Study was developed using a variety of detailed scientific and engineering analyses to identify the key features and conditions in and around the Island. An ultra-high resolution multibeam survey for detailed bathymetry (submarine topography) of the offshore site and 3D terrestrial Light Detection and Ranging (LiDAR) survey of the Island and causeway above the waterline was completed by Etrac in 2021. The survey data are summarized in a technical report as well as an online 3D model which allows the user to view interactive images http://las.etracinc.com/rincon/elevation.html.

Figures 3-24 and 3-25 provide examples of the bathymetric and structural data obtained during this survey.

The results of the survey indicate that the Island is located in an area of relatively flat sand or mud bottom with some exposed rocky areas close to shore. No significant displacement of the rock riprap or tetrapods around the Island is visible, indicating the Island has not had any significant structural changes as a result of storms or seismic activity since installation.

Figure 3-24. Bathymetric Survey of Rincon Island (Oblique View)

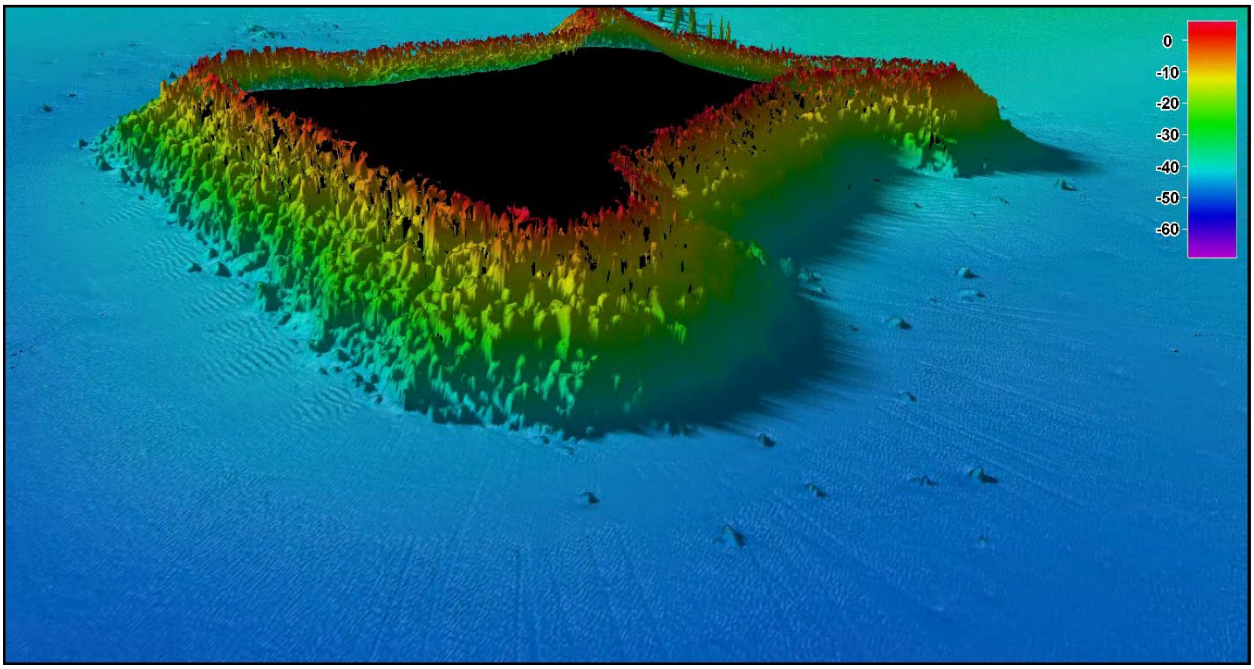
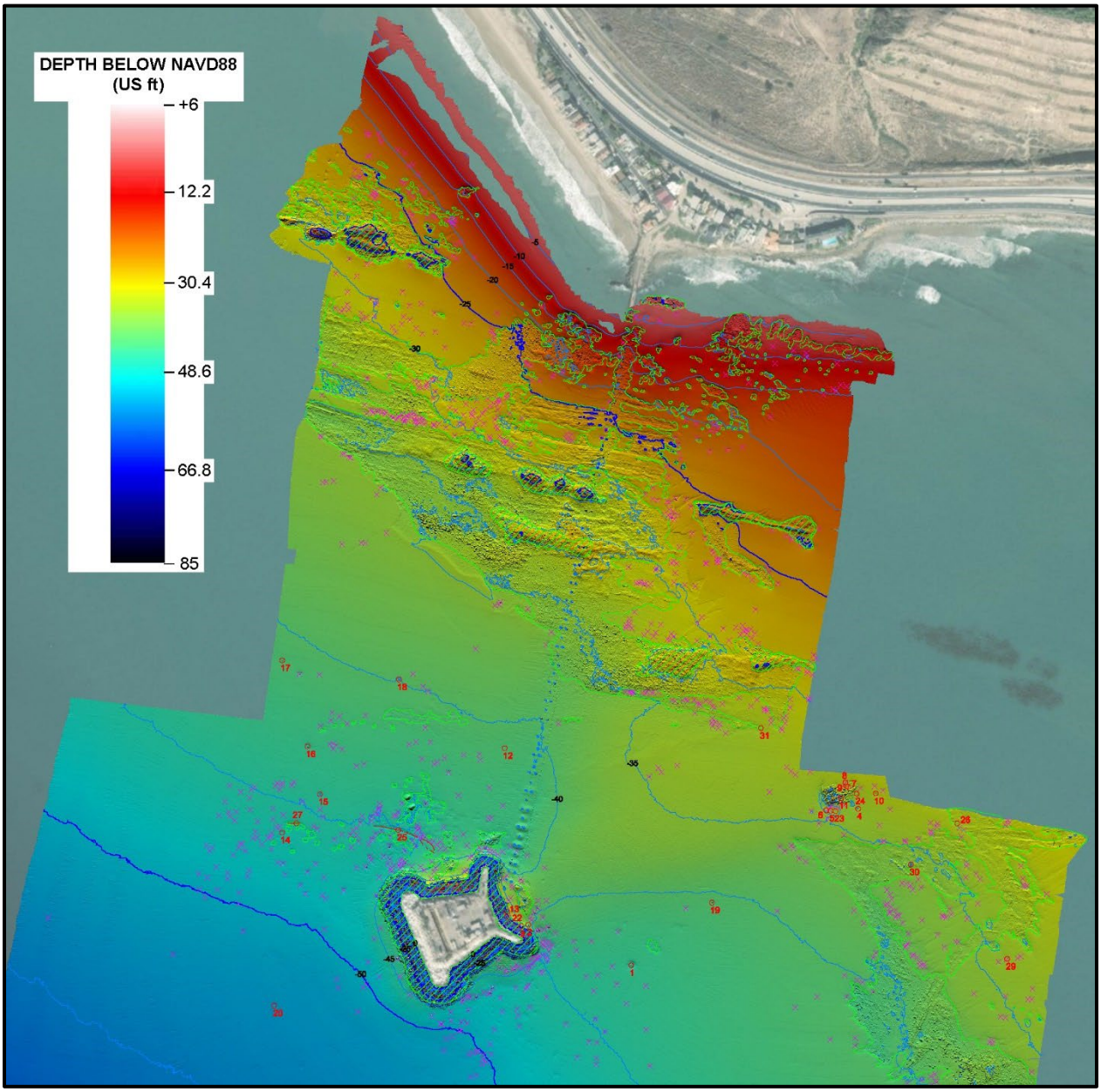


Figure 3-25. Bathymetric* Map of Rincon Island and Causeway (Aerial View)



Bathymetry = measurement of depth of water in ocean, seas, or lakes. Depth below NAV88 (Datum) sea level in feet.

3.4 COASTAL ENGINEERING STUDY

A Coastal Engineering Study (NV5 2021) was performed to create a baseline summary of the existing physical condition of the Phase 2 Study components, and existing offshore oceanographic conditions including sea level variations (tides) and anticipated sea level rise (based on the 2018 State of California Sea Level Rise Guidance), as well as maximum wind and wave height data recorded at an offshore buoy located in the Santa Barbara Channel since 1994.

This information was utilized to investigate the impact of various decommissioning alternatives on existing and potential coastal processes; including nearshore wave characteristics, ocean circulation, littoral (sand) transport, and shoreline morphology (changes); and assessed the coastal hazards on Rincon Island and the stability of the Island's protective armoring. The analysis examined the alternative of full removal of Rincon Island, the causeway, and all other associated infrastructure and a range of other alternatives. The findings and conclusions are summarized below.

3.4.1 Coastal Engineering Study Results

Rincon Island, the Causeway, and the SCC Parcel are the only applicable Phase 2 Facilities affected by coastal processes. A discussion of potential affects to these facilities during each of the Alternatives is included below.

3.4.1.1 Reuse Alternative

The Reuse Alternative includes retention of the Island (including the core and surrounding protective armor revetment). According to the Coastal Engineering Study, this alternative is not anticipated to cause any impact to coastal processes in adjacent areas. The existing Island and revetment have been stable over the past 60 years. The existing protective armors on the north side, leeside (sheltered from the wind), and southeast side of the Island appear to be able to withstand 100-year storm events. Future sea level rise should not impact the stability of the existing armor material because the sea level rise is small compared to the existing water depth at the toe of these revetments.

Additionally, based on the existing Island height(s) compared to estimated wave height and sea level rise, Rincon Island is not anticipated to be inundated (flooded) by the year 2100 even considering the highest projection of sea level rise. However, even under the existing condition, Rincon Island could be overtopped during a 10-year or larger storm event.

3.4.1.2 Reefing Alternative

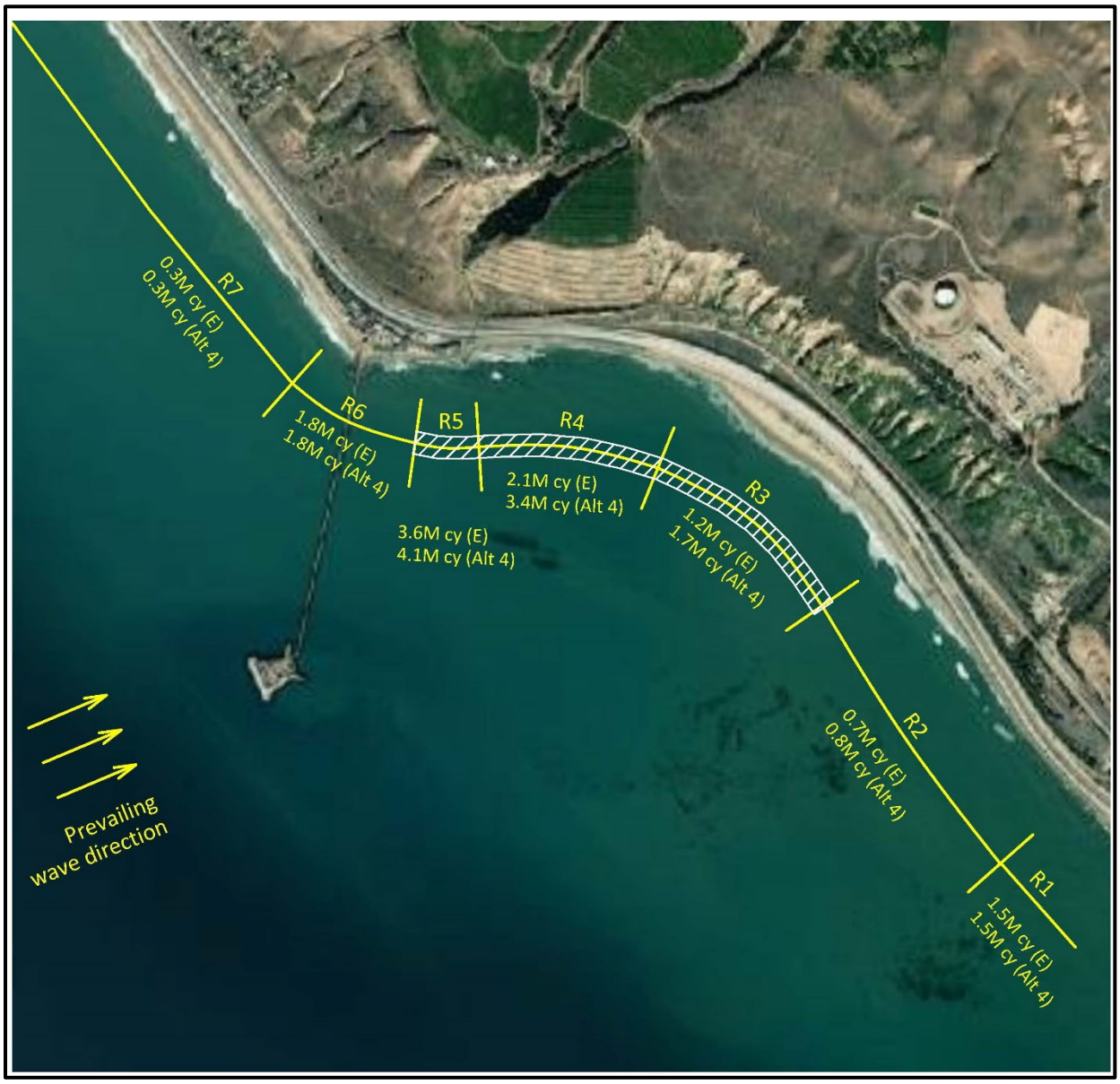
No additional findings were noted for the Reefing Alternative, which includes removal of the causeway compared to the Island Reuse Alternative.

3.4.1.3 Complete Removal Alternative

Modeling of 36 potential wave events representing the long-term changes in wave characteristics and extreme storm events was conducted for the Coastal Engineering Study. The modeling included a comparison of the existing conditions to full removal of Rincon Island and the causeway revetment. The modeling indicated that removal of Rincon Island and the causeway would increase the wave height and intensify the wave energy in the coastal area behind the Island leading into shore (see Figure 3-26). The impacted area could be as long as 4,000 feet in the alongshore direction during extreme

storm events and extend from the Island to the surf zone. Removal is not anticipated to have any impact to the offshore currents; but it would increase the wave-induced alongshore currents and cross-shore currents in the areas where the wave climate is impacted by removal.

Figure 3-26. Complete Removal Impact to Alongshore Sediment Transport Capacity (per year)



Cross-hatched area = primary downcoast impact area
Rates in cubic yards (cy) per year

Removal of the Island and causeway is anticipated to increase the alongshore sediment transport capacity (the maximum amount of sediment that can be carried by alongshore currents) by a range of 10 to 60 percent. This alternative is also anticipated to increase

the cross-shore sediment transport rate in the areas where the wave climate is impacted by removal. Complete decommissioning may also cause a long-term retreat of the beach and increase the magnitude of seasonal beach variation downcoast and make sand even harder to be retained at areas just shoreward and downcoast of the Island (see Figure 3-26). However, the decommissioning is not likely to induce any erosion for the shoreline that has already been armored with revetments or impact the stability of these riprap.

The rock abutment at the causeway landing acts as a sand-retention structure (similar to a short groin). Since sand moves from upcoast to downcoast in this region, the abutment currently helps prevent sand in the surf zone from moving downcoast, and therefore helps retain more sand on the upcoast. Although removal of this abutment may cause more sand being moved from the beach immediately north of the abutment to offshore areas south of the abutment, the existing shoreline configuration and currents would prevent most of this sand from depositing on the beach or shoreline in the southern areas; it would be instead deposited in the intertidal areas, and thus the impact to the beaches and shoreline in the south areas are expected to be insignificant.

3.4.2 Summary of Conclusions

The Coastal Engineering Study (NV5 2021) provided a comparison of the three Phase 2 Alternatives. A comparison of the Coastal Engineering Study's conclusions is provided in Table 3-2 below.

Table 3-2. Comparison of Phase 2 Alternatives

Coastal Processes	Reuse	Reefing	Complete Removal
Affected by Sea Level Rise?	No	No	Not Applicable.
Changes to Waves?	No	No	Yes. Removal of the Island would result in increased wave height and energy onshore which could lead to beach erosion.
Changes to Alongshore Sediment Transport?	No	No	Yes. Increased alongshore and cross-shore sediment transport capacity which could result in a change of sand distribution downcoast of the site.
Changes in Sand Retention on the Beach?	No	No	Yes. (with the exception of armored shoreline areas).

3.5 CHARACTERIZATION OF MARINE HABITAT

The use of artificial structures by fish and macro-invertebrates, marine birds, and mammals has been extensively documented in California and throughout the world. The UCSB Marine Science Laboratory has conducted research for the federal government on fish and invertebrate populations on offshore production platforms, and this same research design was used to characterize the marine habitat and associated species on and around Rincon Island (UCSB 2021, Attachment 2), as summarized below.

3.5.1 Past Observations

There are three published environmental evaluations of marine biota at Rincon Island; none more recent than 1978. The UCSB study compared the more recent survey results with information from these past evaluations to determine if there are historical patterns in species compositions that can be used to determine the effects of removal of Rincon Island (Reuse and Reefing Alternatives would not affect these habitats).

1) Carlisle, J. G., Turner, C. SCUBA., and E. E. Ebert. 1964. Artificial Habitat in the Marine Environment. Fish Bulletin 124, The Resources Agency of California, Department of Fish and Game, Long Beach, California, 1964.
2) Keith, J. M. and R. E. Skjei. 1974. Engineering and ecological evaluation of artificial-island design, Rincon Island, Punta Gorda, California. U.S. Army Corps of Engineers, Coast Engineering Research Center Technical Memorandum No. 43, Appendix “The Biota of Rincon Island.”
3) Johnson, G. F. and L. A. deWit. 1978. Biological effects of an artificial island, Rincon Island, Punta Gorda, California. U. S. Army, Corps of Engineers, Coastal Engineering Research Center, Miscellaneous Report No. 78-3.

3.5.2 Recent Observations

Comprehensive surveys of the marine biological environment were conducted by UCSB to assess the potential impact of removing Rincon Island. Over the course of four nonconsecutive days from October 9 to November 5, 2020, a team of scuba divers from UCSB performed a series of dives along pre-established linear survey transects (also referred to as belt transects) to look for fishes, macroinvertebrates[3], and macroalgae[4] present on and adjacent to the Rincon Island outer reef (comprised of riprap and tetrapods) as well as four unnamed natural rocky reefs (two to the northwest or upcoast and two to the northeast or downcoast of the Island), with the closest site being approximately 0.5 mile from the Island to provide a basis of comparison to the observations at the Island itself (Figure 3-28).

A total of 16 transects (960 square meters [m^2]) were surveyed at each site (including Rincon Island and the natural reefs). Each belt transect was 30 meters long and 2

[3] A macroinvertebrate is any animal lacking a backbone and large enough to see without a microscope
[4] In this instance, macroalgae includes a group of aquatic algae, such as kelp

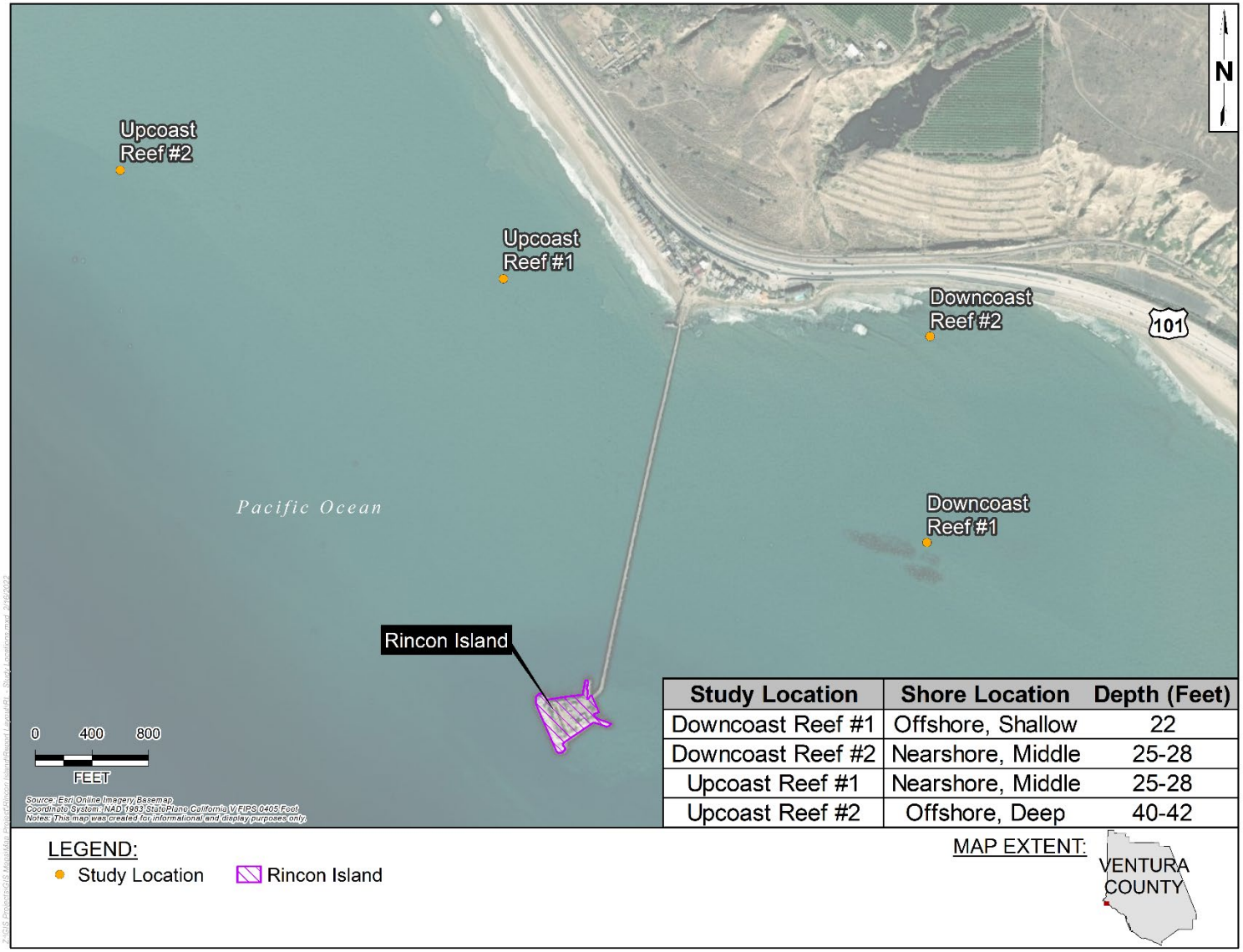
meters wide covering an area 60 m^2. The transect length was followed using a measuring tape along the seafloor. The number of transects completed by divers at each site was based on the size and shape of the reef and visibility at the time of the survey (which in some instances prevented survey results at one location). All fishes and mobile benthic macroinvertebrates encountered by the observing divers along the belt transects were recorded. Based on the counts, abundance was estimated by density: the number of individuals per 100 m^2 for fish and the number of individuals per 1 m^2 for invertebrates. Photoquadrat surveys[5] were also conducted to assess the algae and sessile benthic macroinvertebrates[6] on and adjacent to the Rincon Island outer reef (riprap) and the natural reefs. Figure 3-27 shows a UCSB diver performing a survey within the kelp included within the Rincon Island reef survey location.

Figure 3-27. Diver in Kelp Observed on Tetrapods

Source: UCSB 2021

[5] Photographic surveys of a defined area, typically one square meter
[6] Small bottom-dwelling aquatic animals that remain in one place

Figure 3-28. Dive Survey Locations



Study Location	Shore Location	Depth (Feet)
Downcoast Reef #1	Offshore, Shallow	22
Downcoast Reef #2	Nearshore, Middle	25-28
Upcoast Reef #1	Nearshore, Middle	25-28
Upcoast Reef #2	Offshore, Deep	40-42

During these surveys, 18 invertebrate species were identified. No species listed by the Endangered Species Act or species of concern were noted. Additionally, two commercial fisheries species, Spiny lobster (*Palinuridae*) and Kellet's whelk (*Kelletia kelletii*), as well as the wavy turban snail (*Megastraea undosa*) were observed and are common, based on the proportion of transects in which a species occurred at Rincon Island. These species only occurred in 10 to 20 percent of the transects at three comparison natural reefs. Other organisms observed included benthic invertebrates, which were dominated by unidentified sponges, gorgonians (soft coral), and staghorn bryozoan species (small, microscopic aquatic animals that live in colonies and resemble the polyps which form coral). The total number of gorgonians observed was greater at Rincon Island than at the three comparison reef areas combined.

A total of 1,500 fishes were observed in 32 total survey transects conducted at both Rincon Island (16 transects) and the four nearshore natural reefs in the vicinity (16 transects). Of the 28 fish species observed, 19 are recreational fisheries species and seven are commercial fisheries species. All of these species are associated with nearshore natural rocky reef habitat in the Santa Barbara Channel at large. Fishes were more abundant at Rincon Island than at the surveyed natural reefs, however younger and smaller fishes dominated the fish assemblage at Rincon Island (55 percent were 15 centimeters [cm] total length [TL] or less). Although the proportion of larger fishes greater than 25 cm TL was greater at the reefs (40 percent) than at Rincon Island (14 percent), more of these larger fishes were observed at Rincon Island (160 fish) than at the reefs (139 fish). Species richness (the number of species within an area/region) was greater at Rincon Island than at the four comparison reefs combined. Overall, there were 26 species of fishes seen at Rincon Island and 15 species at the four surveyed comparison reefs.

Attachment 2 of the UCSB Study includes tabulated survey results (see Section 3.3 [Results and Findings]) and a master list of species observed (Appendix 1).

3.5.3 Summary of Results and Findings

As indicated by the UCSB Study (2021), the physical structure supporting the biological communities at Rincon Island and the more nearshore natural reefs are strikingly different. The sloped armor revetment surrounding the Island is composed of rock boulders with crevices of a variety of sizes, and the west side of the Island is reinforced with concrete tetrapods creating caves in excess of 3 meters deep at the seafloor and cavernous gaps in all directions up the slope of the revetment. In contrast, the natural reefs in this study are mostly very low relief, rarely exceeding 1 meter in height. More often they were relatively flat rock with few crevices. As a result, the revetment around Rincon Island provides a great variety of habitats for a community of marine flora and fauna (Figure 3-29). The complexity of the revetment structure extending up from the seafloor to above the splash zone provides a unique ecosystem that is significantly different from nearshore reefs in the area. The rock and tetrapod surfaces, holes, and

crevices have not been silted over and continue to shelter a diversity of fishes. The orientation of the offshore Island allows for varied wave exposure and currents around the installation providing a unique environment that has exposed and protected habitat.

Figure 3-29. Macroinvertebrates on Tetrapod Arm in Proximity to Rincon Island

Source: UCSB 2021

Although there is no organized study of the biota in the area before the construction of Rincon Island, the area was described in Keith and Skjei (1974) as a “biological desert” with a “sparsity of life.” This analogy was based on the lack of substrate variability that limits the diversity of associated species. As noted in the UCSB Study (2021), “it is reasonable to assume that the biota associated with the site of Rincon Island would have remained impoverished without (1) the establishment of a substrate conducive to the attachment of a diverse set of marine forms and their associates, and (2) the Island’s orientation, location and private status one-half mile off the coast which inhibits interaction with the public”.

Further, it was concluded by UCSB (2021) that Rincon Island has had a major positive effect on local ecological conditions, significantly increasing the biodiversity of fishes, invertebrates, and algae. The Island’s rock and tetrapod revetments provide a great variety of habitats for a diverse community of marine flora and fauna that would not otherwise occur in the local area’s natural bottom habitats. The Island’s hard substrate is colonized by encrusting and attached biota. Many are habitat-forming species that provide shelter and food for additional species that in turn serve as food for more

species. The revetment around Rincon Island continues to provide a wide range of habitats for a community of marine flora and fauna. The distinctive design of the revetment structure provides a unique ecosystem that is significantly different from the small, scattered, nearshore reefs in the area.

3.6 RINCON ISLAND AND ONSHORE SITE ASSESSMENT

In support of the Feasibility Study, Padre on behalf of CSLC, performed a site assessment at both Rincon Island and Onshore Facility to determine the potential presence of any constituents of concern. A copy of these assessments is included as Attachment 3 (Padre 2021a; 2021b). A summary of the findings is provided below.

There are no contaminated materials known to exist within the SCC Parcel area, and this area was not previously used for oil and gas production. As such, no additional site assessment for hazardous materials was conducted at this time. Additionally, completion of pipeline pigging, flushing, and abandonment activities associated with the Onshore Pipeline Connections would ensure that these facilities are removed or left clean and cemented in place. Because the Onshore Pipeline Connections area is located within a concrete vault, no additional site assessment for hazardous materials was conducted.

3.6.1 Rincon Island

As part of the recently completed Phase 1 P&A activities, the oil production and injection wells have been permanently abandoned and the oil, gas, and water processing and storage facilities have been removed. Following removal of the oil production and processing facilities, the working area of Rincon Island was sealed with concrete and asphalt. There are no known above-ground sources of hazardous materials following removal of equipment and piping at Rincon Island.

Padre completed initial limited soil assessment activities on the Island in support of Driltek and the Phase 1 activities on March 3 and 5, 2021. Padre completed the soil, interstitial (subsurface) water, and ocean water assessment activities on the Island on May 4, 5, 11, and 13, and October 4, 2021. The results of the site assessment activities completed by Padre on the Island are presented in the report titled *Report of Site Assessment Activities, Rincon Island, Lease 1466, 6687 Breakers Way, Ventura, California,* dated December 18, 2021 (Padre 2021a), included as Attachment 3. The results of the site assessment activities are summarized below.

The objective of the site assessment activities was to determine the potential presence of constituents of concern located within the Island core and interstitial water at the Rincon Island structure resulting from historical petroleum hydrocarbon production and processing activities conducted on the Island. Additionally, the site assessment activities included the collection of ocean water samples from within the revetment wall riprap material immediately adjacent to the Island perimeter. The results of the soil, interstitial water, and ocean water assessment activities were used to identify areas of

potential concern in the vicinity of the former crude oil and gas production, storage, and processing facilities, as well as to provide an understanding of the nature and extent of the artificial fill materials that make up the Island core inside the perimeter rock revetments.

The scope of work included advancement of a total of 21 drill holes to facilitate the collection of soil samples for chemical analyses to maximum depths of 20 feet bgs. A total of three temporary interstitial water monitoring wells were constructed on the Island. A total of 60 soil samples, four interstitial water samples, and three ocean water samples were collected for laboratory analyses to determine the potential presence of petroleum hydrocarbon contamination.

The laboratory analytical results for soil and interstitial water samples collected on the Island were compared to applicable San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) Environmental Screening Levels (ESLs), dated 2019 (Revision 2), and the ocean water samples were compared to Water Quality Objectives (WQO) listed in the State Water Resources Control Board, California Environmental Protection Agency, California Ocean Plan, Water Quality Control Plan, Ocean Waters of California, established in 1972 and revised in 2019.

The depth to interstitial water measured at temporary monitoring wells ranged from approximately 11.96 feet to 14.61 feet bgs, which correspond to elevations that range from approximately 0.47 feet to 3.18 feet mean sea level (msl). The Island core is composed of artificial fill materials imported from the bluff at Punta Gorda located east of the Island and consist of fine to coarse grained sand with varying amounts of silt, pebbles, gravel, and minor amounts of shell fragments.

The laboratory analytical results for 31 soil samples collected on the Island identified the presence of petroleum hydrocarbon concentrations within certain areas of the artificial fill material of the Island core at depths from approximately 1 foot to 16 feet bgs. The laboratory analytical results for interstitial water samples collected from temporary monitoring wells indicated petroleum hydrocarbon concentrations that were less than the applicable screening levels, and the laboratory analytical results for three ocean water samples collected at the site did not indicate the presence of petroleum hydrocarbon constituents (Padre 2021a).

The estimated total volume of petroleum hydrocarbon-containing soil identified within the Island core is approximately 9,605 cubic yards.

3.6.2 Onshore Facility

Padre completed soil and groundwater assessment activities at and adjacent to the Onshore Facility and to the west of the area in the Highway 101 median during the period from August 26, 2019, through November 1, 2021. The objective of the site assessment activities was to determine the potential presence of petroleum hydrocarbon contamination in soil and groundwater resulting from historical petroleum

hydrocarbon production and processing activities; sampling performed at and in the vicinity of the Onshore Facility are presented in the report titled *Report of Site Assessment Activities, Rincon Onshore Facility, State Lease No. PRC 410, Rincon Oil Field, Ventura County, California*, dated December 2021 (Padre 2021b), included as Attachment 3. The results of the site assessment activities are summarized below.

The scope of site assessment activities completed at the Onshore Facility included the collection of 18 soil samples for chemical analyses from four oil well abandonment excavation areas, a total of 25 drill holes advanced to maximum depths of approximately 31 feet, construction of six groundwater monitoring wells, and collection of a total of 10 groundwater samples. Two of the groundwater samples were collected from drill holes located downgradient from the Site at off-site locations within the southbound median of U.S. Highway 101. A total of 78 soil samples were chemically analyzed for the presence of petroleum hydrocarbon constituents, and a total of 10 groundwater samples were chemically analyzed for the presence of petroleum hydrocarbon constituents.

Earth materials encountered during the course of the soil and groundwater assessment activities completed at the Onshore Facility included artificial fill composed of silt, sand, gravel, clay, and recycled asphaltic base material, as well as Quaternary surficial sediments and weathered Pico Formation clay. Groundwater monitoring activities completed by Padre at the Onshore Facility indicated depths to groundwater that ranged from approximately 10.17 feet to 13.85 feet bgs, which correspond to groundwater elevations that ranged from approximately 1.95 feet to 3.91 feet msl. The hydraulic flow direction is estimated towards the Pacific Ocean to the southwest. The first encountered groundwater beneath the Onshore Facility is not a source of drinking water.

The laboratory analytical results indicate the presence of petroleum hydrocarbon contamination at concentrations greater than ESLs in soil and groundwater resulting from historical petroleum hydrocarbon production and processing activities performed at and in the vicinity of the Onshore Facility. The results for two groundwater samples collected from offsite locations within the median of the U.S. Highway 101 indicated the presence of petroleum hydrocarbon concentrations that were greater than the applicable ESLs. Refer to Attachment 3.

The total estimated volume of petroleum hydrocarbon-contaminated soil at the Onshore Facility is approximately 7,500 cubic yards, and the estimated in-place volume of recycled asphalt aggregate base material is approximately 9,360 cubic yards.

4.0 SCREENING LEVEL ENVIRONMENTAL ASSESSMENT

A screening level environmental assessment of the three Phase 2 Alternatives (Reuse, Reefing, and Complete Removal, as described in section 2.5) has been provided for key resource areas associated with the proposed Phase 2 decommissioning activities. These resource areas include the following, as further discussed in Sections 4.1 through 4.12 below.

- Aesthetics
- Air Quality/GHGs
- Biological Resources
- Cultural and Tribal Cultural Resources
- Geology/Soils
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Noise
- Recreation
- Transportation/Traffic
- Commercial Fishing
- Sea Level Rise/Climate Change

To simplify this preliminary discussion, retention of both the Island and causeway in addition to the remediation, decommissioning, and improvement of the Onshore sites (Onshore Facility, Onshore Pipeline Connections, and the SCC Parcel) are presented within the Reuse Alternative scenario. Retention of the Island and removal of the causeway (in addition to remediation, decommissioning, and improvement of the Onshore sites) constitutes the Reefing Alternative. Complete removal of both Rincon Island and the causeway (in addition to remediation, decommissioning, and improvement of the Onshore sites) represents the Complete Removal scenario. After review of the Study, the Commission will choose a proposed Project and decide which alternatives will be analyzed in a CEQA document. The final proposed Project and alternatives may be chosen from the three Phase 2 alternatives presented in the Study or a new alternative(s) made up of a number of Component Plan combinations (1 through 9).

4.1 AESTHETICS

4.1.1 Setting

The Phase 2 Facility sites are located within and adjacent to the Pacific Ocean in northern unincorporated Ventura County. Specifically, Rincon Island, the Rincon Island causeway and wharf, and the SCC Parcel are located adjacent to the residential community of Mussel Shoals near Punta Gorda (Figure 1-1 and Figure 4.1-1, Representative Site Photographs). The Onshore Facility is located south and approximately 1.3 miles east of Rincon Island along U.S. Highway 101, and the

Onshore Pipeline Connections are located from the end of the causeway and underground to a vault box located north of Highway 101 and the UPRR right-of-way.

Rincon Island has been cleared of the former oil and gas processing equipment, and what remains primarily includes an interior concrete pad and three small buildings surrounded by Rincon Island's original tetrapod and riprap perimeter as well as sporadic palm trees/vegetation. The entrance to the causeway and Island includes a locked fenced area atop a man-made abutment surrounded with riprap armament. The Onshore Facility and associated oil and gas wells have also been abandoned and cleared. Several large eucalyptus tree stands and brush vegetation are located within the interior of the Onshore Facility.

Rincon Island and the associated causeway are a visual landmark for the Mussel Shoals area and adjacent beaches. These features are visible from U.S. Highway 101/State Route 1 (SR 1) which is listed by the County of Ventura as an eligible scenic highway for the State of California (Caltrans 2021). Although Rincon Island is located within the scenic coastal area of California, it is not included within the County's "Scenic Resources Protection Map," which includes areas primarily limited to scenic views of inland lakes and streams (Ventura County 2020a).

Figure 4.1-1. Representative Site Photographs

Figure	Caption
	**View of Rincon Island and Causeway from Residential Homes at Mussel Shoals Along Breakers Way (looking Southwest)**

Figure	Caption
	**Residential Homes and Beach Area at Mussel Shoals (Looking West)**
	**Residential Homes and Beach area at Mussel Shoals (Looking East)**

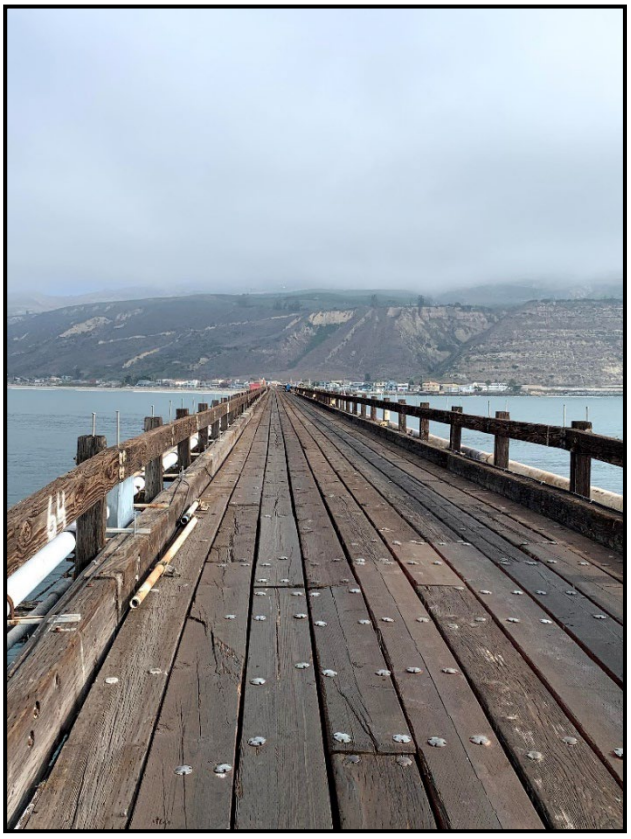
Figure	Caption
	**Fenced Facility Entrance to Rincon Island and Causeway (Looking South)**
	**Causeway Leading from Rincon Island Back to Shore (Looking North)**

Figure	Caption
	**Rincon Island Following Phase 1**
	**Onshore Facility Following Phase 1**

4.1.2 Regulatory

4.1.2.1 Federal and State

There are no federal laws pertaining to aesthetics that are applicable to Phase 2 alternatives. State laws, regulations, and policies pertaining to aesthetics and potentially applicable to Phase 2 alternatives include:

- **California Scenic Highway Program (Sts. & Hwy. Code, § 260 et seq.)**. The purpose of California's Scenic Highway Program, which was created by the Legislature in 1963 and is managed by the California Department of Transportation (Caltrans), is to preserve and protect scenic highway corridors from change which would diminish the aesthetic value of lands adjacent to highways. State highways identified as scenic, or eligible for designation, are listed in Streets and Highways Code section 260 et seq. A highway's status changes from eligible to officially designated when a local governmental agency has implemented a corridor protection program for an eligible highway that meets the standards of an official scenic highway.
- **California Coastal Act (Pub. Resources Code, § 30251).** Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural landforms, to be visually compatible with the character of the surrounding area, and, where feasible, to restore and enhance visual quality in visually degraded areas. New development in highly scenic areas such as those designated in the California Coastline Preservation and Recreation Plan prepared by the Department of Parks and Recreation and by local government shall be subordinate to the character of its setting.
- **California Coastal Act (Pub. Resources Code, § 30253).** New development shall, where appropriate, protect special communities and neighborhoods that, because of their unique characteristics, are popular visitor destination points for recreational uses.

4.1.2.2 Local

Ventura County General Plan. The site is located within the coastal zone of Ventura County. In addition to the California Coastal Act (CCA), Ventura County considers "the scenic and visual qualities of coastal areas [to] be considered protected as a resource of public importance." Policies included within the Ventura County 2040 General Plan Conservation and Open Space Element (2020b) include the following related to protection of aesthetic resources:

- **Policy COS-3.6: Open Space Character**. The County shall require discretionary development outside of Existing Communities be planned and designed to

maintain the scenic open space character of the surrounding area, including view corridors from highways. Discretionary development should integrate design, construction, and maintenance techniques that minimize the visibility of structures from public viewing locations within scenic vistas.

- **Policy LU-16.1: Community Character and Quality of Life**. The County shall encourage discretionary development to be designed to maintain the distinctive character of unincorporated communities, to ensure adequate provision of public facilities and services, and to be compatible with neighboring uses.
- **Section 8109-4.7.3 (Prohibited Lighting)** of the Ventura County Code of Ordinances indicates that no outdoor luminaire prohibited by this Section shall be installed or replaced after November 1, 2018. In addition, the use of any existing outdoor luminaire that is prohibited by this Section shall be discontinued as of November 1, 2019. The following luminaires are prohibited:
    - Luminaires located along the perimeter of a lot, except those used for security/safety purposes that comply with all other applicable standards and requirements of Section 8109-4.7.4.
    - Permanently installed luminaires that blink, flash, rotate, have intermittent fading, or strobe light illumination.
- **Section 8109-4.7.2 (Existing Lighting)** of the Ventura County Code of Ordinances indicates that any outdoor luminaires installed as of November 1, 2018 that do not comply with any standard or requirement of Section 8109-4.7.4 are subject to the following requirements, as applicable:
    - Existing Outdoor Lighting for Commercial and Industrial Uses in Commercial and Industrial Zones. Existing outdoor lighting installed for commercial and industrial uses in a commercial or industrial zone are subject to the following:
        - Non-Essential Luminaires. Non- essential luminaires shall comply with the following requirements as of November 1, 2019:
            - Luminaires that have adjustable mountings with the ability to be redirected shall be directed downward, to the extent feasible, to reduce glare and light trespass onto adjacent properties; and
            - The lighting shall be turned off during dark hours as described in Section 8109-4.7.4(d).
- **Section 8109-4.7.4 (General Standards)** of the Ventura County Code of Ordinances indicates that all luminaires installed or replaced after November 1, 2018 shall comply with the following standards and requirements (as applicable

pertaining to construction. Any permanent uses must refer back to full provision of Section 8109-4.7.4 for additional requirements):

- Shielding and Direction of Luminaires. All outdoor luminaires shall be fully shielded, directed downward, and installed and maintained in such a manner to avoid light trespass beyond the lot line in excess of those amounts set forth in Section 8109-4.7.4(i) below.
- Dark Hours. All outdoor luminaires, other than an essential luminaire, shall be turned off from 10:00 p.m., or when people are no longer present in exterior areas being illuminated, or the close of business hours, whichever is latest, until sunrise.

Coastal Area Plan. Applicable policies included within Ventura County's Coastal Area Plan (CAP) (2017) are included within the CCA sections above.

4.1.3 Applicable Thresholds

According to the Ventura County Initial Study Assessment Guidelines (2011), a project has the potential to create a significant impact to scenic resources if it:

- Is located within an area that has a scenic resource that is visible from a public viewing location; and
- Would physically alter the scenic resource either individually or cumulatively when combined with recently approved, current, and reasonably foreseeable future projects; or
- Would substantially obstruct, degrade, or obscure the scenic vista, either individually or cumulatively when combined with recently approved, current, and reasonably foreseeable future projects.

Any project that is inconsistent with the pertinent policies of the Ventura County General Plan Goals, Policies, and Program or policies of the applicable Area Plan (above), will result in a potentially significant environmental impact.

4.1.4 Environmental Assessment of Potential Alternatives

4.1.4.1 Reuse of Rincon Island and the Causeway; Remediation, Decommissioning, and Improvement of the Onshore Sites

Retention of Rincon Island and the causeway would result in a negligible impact to the existing offshore viewshed. The Island and causeway have been in place since 1958. Leaving these components unchanged would result in a continuation of the current aesthetic baseline of the viewshed. In accordance with the Ventura County General Plan, this alternative would protect the existing public view of the Island within this scenic coastal area. Protection of the existing viewshed has been specified as the preference for some residents of the Mussel Shoals community.

For the Reuse Alternative, remediation activities are estimated to take approximately 2 years. Construction equipment would be present at the Island during remediation activities, which would temporarily modify views. Future use of the Island would need to consider Ventura County policies with respect to aesthetics. Specifically, to “protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural landforms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas”.

Remediation, decommissioning, and improvement of the onshore sites (inclusive of the Onshore Facility, SCC Parcel, and Onshore Pipeline Connections) could also result in minimal changes to the viewshed. The Onshore Facility would still be remediated and restored in support of future use of the property, including removal of all hydrocarbon-contaminated asphalt and soil and returning the Onshore Facility to its original condition. Activities at the Onshore Facility would take approximately 196 days. This would be an improvement to the onshore aesthetic, although the Onshore Facility has limited visibility from public viewsheds (primarily from U.S. Highway 101).

The SCC Parcel alternatives would result in the addition of construction equipment to the area, resulting in temporary impacts to the viewshed for approximately 2 to 4 weeks; however, enhancements would result in a permanent benefit to aesthetics through improvement of the area with native plants.

Decommissioning of the Onshore Pipeline Connections would take approximately 30 days; however, would be subsurface and not visible to the public following completion.

4.1.4.2 Reefing of Rincon Island; Removal of the Causeway; Remediation, Decommissioning, and Improvement of the Onshore Sites

Reefing Alternative remediation and decommissioning activities are estimated to take approximately 3 years. Retention of Rincon Island primarily in its current state in support of Reefing may include a slightly modified view from what exists now following removal and backfill of the Island’s contaminated core and palm tree removal, but this change would be slight and inconsequential to public views, as the existing island profile would remain relatively consistent.

Removal of the causeway would result in a partial but significant change to the current viewshed of the region. As discussed further below, removal of the causeway would necessitate the introduction of temporary construction equipment on the causeway for the period of time it takes to complete the removal (estimated at approximately 251 days). Additionally, onshore construction equipment (e.g., a crane, vibratory hammer, and excavators) would be required to decommission the causeway abutment within the beach area at the rocky headlands and topsides including the gated offshore facility entrance adjacent to the Mussel Shoals community. These temporary impacts to the views of the community could be considered substantial.

In accordance with the Ventura County General Plan, this alternative would protect the existing public view of the Island within this scenic coastal area. Protection of the existing viewshed has been specified as the preference for some residents of the Mussel Shoals community. Removal of the causeway would alter the existing viewshed but would establish uninterrupted views of the Pacific Ocean in the former causeway alignment. Removal of the causeway would have the secondary benefit of removal of vehicular access to the Island, which would result in a permanent reduction in views of vehicles transiting through the Mussel Shoals community for this purpose.

Remediation of the Onshore Facility, improvement of the SCC Parcel, and decommissioning of the Onshore Pipeline Connections, would be the same as previously discussed in Section 4.1.4.1 above.

4.1.4.3 Complete Removal of Rincon Island and the Causeway; Remediation, Decommissioning, and Improvement of the Onshore Sites

Complete Removal Alternative decommissioning activities are estimated to take approximately 3.5 years. Complete removal of Rincon Island and the causeway would result in a substantial change to the existing visual character of the coastal viewshed in this area, which would be visible from the Mussel Shoals community, adjacent beaches, and UPRR/U.S. Highway 101/SR 1 transportation corridors. Specifically, removal would result in the introduction of temporary large construction equipment spreads both onshore (for remediation, decommissioning, and improvement of the Onshore Facility, SCC Parcel, and Onshore Pipeline Connections) and offshore (for removal of the Island and the causeway) for the duration of these activities. The introduction of this equipment would partially obstruct public views of the coastline and introduce a temporary element that is incompatible with the existing viewshed. Following completion of the Rincon Island and causeway removal, the offshore area would be returned to its natural (pre-installation) condition and reestablish uninterrupted views of the Pacific Ocean in this area. The Onshore Facility would be cleared and restored in support of future use of the property.

As discussed above, the aesthetic impact of Island and causeway removal is subject to local opinion. Pre-Study solicitation from local residents and the public who utilize the adjacent beach indicated a preference to leave the Island in place. Although removal of Rincon Island and the causeway would return the area to pre-project conditions, this change in the existing baseline aesthetic of the region may result in a substantial aesthetic impact.

Remediation of the Onshore Facility, improvement of the SCC Parcel, and decommissioning of the Onshore Pipeline Connections, would be the same as previously discussed in Section 4.1.4.1 above.

4.2 AIR QUALITY

4.2.1 Setting

The federal government has established ambient air quality standards to protect public health (primary standards) and welfare (secondary standards). The State has established separate, more stringent standards. Federal and State standards have been established for ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, suspended particulate matter (e.g., dust), and lead. In addition, California has standards for ethylene, hydrogen sulfide, sulfates, and visibility-reducing particles (e.g., combustion from motor vehicles and industry resulting in smog, brushfires, and windblown dust).

4.2.1.1 Local Climate and Meteorology

The existing Phase 2 Facilities are located within the South-Central Coast Air Basin (SCCAB) offshore and onshore of Ventura County and fall under the jurisdiction of the Ventura County Air Pollution Control District (VCAPCD). The county can be described as having a Mediterranean climate, characterized by warm, dry summers and cooler mildly damp winters. The unique combination of prevailing wind conditions generated by a persistent offshore high-pressure system and the topography of coastal mountains results in airflow variations that are conducive to the formation and retention of air pollutants.

4.2.1.2 Criteria Pollutants

Criteria air pollutants are those contaminants for which ambient air quality standards have been established for the protection of public health and welfare. Criteria pollutants include ozone (O_3), carbon monoxide (CO), oxides of nitrogen (NO_X), sulfur dioxide (SO_2), particulate matter with a diameter of 10 micrometers (microns) or less (PM_{10}), and particulate matter with a diameter of 2.5 microns or less ($PM_{2.5}$).

4.2.2 Regulatory

The U.S. Environmental Protection Agency (USEPA) has jurisdiction under the Federal Clean Air Act. The California Air Resources Board (CARB) has jurisdiction under the California Clean Air Act and California Health and Safety Code. The USEPA and CARB classify an area as attainment, unclassified, or non-attainment, depending on whether the monitored ambient air quality data show compliance, insufficient data to determine compliance, or non-compliance with Federal or State ambient air quality standards, respectively. Ventura County occasionally exceeds the federal 8-hour ozone standard and State 1-hour ozone standard. Under both Federal and State Clean Air Acts, Ventura County is an ozone nonattainment area. The county also has elevated ambient levels of PM_{10}. While the county is an attainment area for the federal PM_{10} standard, it is in nonattainment for the more stringent State PM_{10} standard.

4.2.2.1 Air Quality Standards

Air quality standards are specific pollutant concentration thresholds that are used to protect public health and the public welfare. The USEPA has developed two sets of standards: one to provide an adequate margin of safety to protect human health, and the second to protect the public welfare from any known or anticipated adverse effects (e.g., respiratory diseases such as asthma). At this time, SO_2 is the only pollutant for which the two standards differ. The CARB has developed air quality standards for California, which are generally lower in concentration (i.e., more stringent) than federal standards. California standards exist for O_3, CO, suspended PM_{10}, visibility, sulfates, lead, hydrogen sulfide, and vinyl chloride. Table 4.2-1 lists applicable ambient air quality standards.

Table 4.2-1. Ambient Air Quality Standards (State and Federal)

Pollutant	Averaging Time	California Standard	Federal Standard
Ozone (O_3)	1 Hour	0.09 ppm	--
Ozone (O_3)	8 Hour	0.070 ppm	0.070 ppm
Carbon Monoxide (CO)	1 Hour	20 ppm	35 ppm
Carbon Monoxide (CO)	8 Hour	9.0 ppm	9 ppm
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.030 ppm	0.053 ppm
Nitrogen Dioxide (NO_2)	1 Hour	0.18 ppm	100 ppb
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	--	0.030 ppm
Sulfur Dioxide (SO_2)	24 Hour	0.04 ppm	0.14 ppm
Sulfur Dioxide (SO_2)	3 Hour	--	0.5 ppm (secondary)
Sulfur Dioxide (SO_2)	1 Hour	0.25 ppm	75 ppb
Respirable Particulate Matter PM_{10}	Annual Geometric Mean	20 µg/m^3	--
Respirable Particulate Matter PM_{10}	24 Hour	50 µg/m^3	150 µg/m^3
Fine Particulate Matter $PM_{2.5}$	Annual Geometric Mean	12 µg/m^3	12.0 µg/m^3

Pollutant	Averaging Time	California Standard	Federal Standard
Fine Particulate Matter $PM_{2.5}$	24 Hour	--	35 µg/m^3
Hydrogen Sulfide (H_2S)	1 Hour	0.03 ppm	--
Vinyl Chloride	24 Hour	0.01 ppm	--
Sulfates	24 Hour	25 µg/m^3	--
Lead	30 Day Average	1.5 µg/m^3	--
Lead	Calendar Quarter	--	1.5 µg/m^3
Lead	Rolling 3 Month Average	--	0.15 µg/m^3
Visibility Reducing Particles	8 Hour	Extinction coefficient* of 0.23 per kilometer - visibility of 10 miles or more due to particles when relative humidity is less than 70 percent	--

Source: CARB 2019
ppm = parts per million
ppb = parts per billion
µg/m^3 = micrograms per cubic meter
Annual Arithmetic Mean – Average of a given data set
Annual Geometric Mean - Time weighted, or average rate of return
*Measure of the rate of transmitted light via scattering and absorption for a medium

Air Toxic Health Risks. Diesel fuel combustion in internal combustion engines produces exhaust containing a number of compounds that have been identified as toxic air contaminants (TACs) by CARB. In 1998, CARB identified diesel particulate matter (DPM) from diesel exhaust as a TAC. In 2000, CARB developed the Diesel Risk Reduction Plan to reduce PM and DPM emissions from diesel-fueled engines and vehicles to establish new emission standards, certification programs, and engine retrofit programs to control exhaust emissions from diesel engines and vehicles. CARB has the following diesel enforcement programs and regulations to reduce DPM (a smog-forming pollutant) and TAC emissions that may be applicable to the implementation of proposed Phase 2 alternatives:

- Commercial Vehicle Idling. Diesel-fueled motor vehicles with a gross vehicle weight rating greater than 10,000 pounds are prohibited from idling the vehicle's primary engine for more than 5 minutes at any location.
- Heavy Duty Vehicle Inspection Program (HDVIP). The HDVIP program requires heavy-duty trucks and buses to be inspected for excessive smoke, tampering, and engine certification label compliance.
- Software Upgrade for Diesel Trucks. Requires owners of eligible 1993–1998 model year electronically controlled heavy-duty diesel engines to install low NOx software at the time of an engine rebuild.
- Truck and Bus Regulation. This regulation requires that all trucks and buses be equipped with 2010 or newer model year engines to reduce PM, DPM, and NOx emissions. As of 2020, the California Department of Motor Vehicles will only register vehicles that comply with this regulation.
- Strategic Plan for Diesel Enforcement. Assembly Bill (AB) 233 (Jones 2007) also known as the Healthy Heart and Lung Act (HHLA) enacted in 2007, requires CARB to develop a strategic plan to enforce diesel emission control regulations. HHLA specifically requires CARB, every 3 years, to review existing diesel emission control regulations enforcement and anticipated enforcement needed to implement the Diesel Risk Reduction Plan. Based on that review, CARB is required to develop a Strategic Plan for consistent, comprehensive and fair enforcement of these regulations. In 2008 CARB issued a notice of postponement for the first Strategic Plan's public review. No future date for public review has been set and further review by CARB has been postponed (CARB 2019).

4.2.2.2 Commercial Harbor Craft Regulation

On November 15, 2007, CARB approved a Commercial Harbor Craft Regulation to reduce emissions from diesel engines on commercial harbor craft vessels. The regulation requires the following:

- All commercial harbor craft owners and operators are required to fuel diesel engines with California ultralow sulfur diesel and install a non-resettable hour meter on each engine.
- All new commercial harbor craft engines are required to meet the USEPA marine or off-road emissions standard in effect at the time the vessel is acquired.
- All new replacement engines for all in-use harbor craft are required to meet the Tier 2 or Tier 3 marine or off-road standards in effect at the time the engine is acquired.

- Existing Tier 1 or earlier propulsion and auxiliary engines on in-use harbor craft are required to meet USEPA Tier 2 or Tier 3 standards in effect at the time of regulation compliance.

4.2.2.3 Regional/Local Regulatory

Ventura County General Plan. The Ventura County General Plan Hazards and Safety Element (2020c) includes several updated policies with respect to air quality. The following policies are applicable to Phase 2 alternatives:

- **Policy HAZ-10.2: Air Quality Management Plan Consistency.** The County shall prohibit discretionary development that is inconsistent with the most recent adopted Air Quality Management Plan (AQMP), unless the Board of Supervisors adopts a statement of overriding considerations.
- **Policy HAZ-10.3: Air Pollution Control District Rule and Permit Compliance**. The County shall ensure that discretionary development subject to Ventura County Air Pollution Control District (VCAPCD) permit authority complies with all applicable APCD rules and permit requirements, including the use of Best Available Control Technology (BACT) as determined by the VCAPCD.
- **Policy HAZ-10.11: Air Quality Assessment Guidelines**. In evaluating air quality impacts, the County shall consider total emissions from both stationary and mobile sources, as required by the California Environmental Quality Act. The County shall evaluate discretionary development for air quality impacts using the Air Quality Assessment Guidelines as adopted by the Ventura County Air Pollution Control District (APCD), except the emissions from APCD-permitted sources shall also be included in the analysis. The County shall revise the Initial Study Assessment Guidelines to implement this policy.
- **Policy HAZ-10.12: Conditions for Air Quality Impacts**. The County shall require that discretionary development that would have a significant adverse air quality impact shall only be approved if it is conditioned with all feasible mitigation measures to avoid, minimize or compensate (offset) for the air quality impact. The use of innovative methods and technologies to minimize air pollution impact shall be encouraged in project design.
- **Policy HAZ-10.13: Construction Air Pollutant Best Management Practices**. Discretionary development projects that will generate construction-related air emissions shall be required by the County to incorporate best management practices (BMPs) to reduce emissions. These BMPs shall include the measures recommended by VCAPCD in its Air Quality Assessment Guidelines or otherwise to the extent applicable to the project.

- **Policy HAZ-10.14: Fugitive Dust Best Management Practices**. The County shall ensure that discretionary development which will generate fugitive dust emissions during construction activities will, to the extent feasible, incorporate appropriate BMPs to reduce emissions to be less than applicable thresholds.

Ventura County Air Pollution Control District (VCAPCD). The VCAPCD shares responsibility with CARB for ensuring that all ambient air quality standards are attained within the County. The VCAPCD has jurisdiction under the California Health and Safety Code to develop emission standards (rules) for the County, issue air pollution permits, and require emission controls for stationary sources in the County. The VCAPCD is also responsible for the attainment of air quality standards in the County. Ventura County is currently designated as nonattainment for the Federal and State 8-hour ozone standard, State 1-hour ozone standard, and the State 24 hour and annual arithmetic mean PM_{10} standard (VCAPCD 2019). The County is in attainment for all other Federal and State standards.

<u>VCAPCD Rules and Regulations</u>

The following VCAPCD rules and regulations are applicable to Phase 2:

- **Rule 50 - Opacity**: This rule sets the opacity standards for the discharge of visible air contaminants.
- **Rule 51 – Nuisance:** Rule 51 indicates that no air contaminants shall be discharged that would cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public or which endangers the comfort, repose, health or safety of any such persons or the public or which would cause injury or damage to business or property.
- **Rule 55 – Fugitive Dust**: This rule sets the requirements of fugitive dust generators. The provisions of this rule shall apply to any operation that would result in disturbed surface area, or a human-made condition capable of generating fugitive dust, including bulk material handling, earth-moving, construction, demolition, storage piles, unpaved roads, track-out, or off-field agricultural operations.
- **Rule 64 – Sulfur Content of Fuels**: This rule sets the sulfur content requirements for gaseous and liquid fuels used in any combustion source. Ocean vessels are exempted.

Santa Barbara County Air Pollution Control District (SBCAPCD). Ventura County does not provide established thresholds regarding air quality emissions during construction. In order to provide a conservative estimate of applicable regulation, SBCAPCD policies and thresholds have also been utilized in this preliminary assessment. SBCAPCD rules and regulations applicable to construction are limited to potential nuisances (typically dust and odors):

- **Rule 303 (Nuisance)**: A person shall not discharge from any source whatsoever such quantities of air contaminants or other material in violation of Section 41700 of the Health and Safety Code which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public or which endanger the comfort, repose, health or safety or any such persons or the public or which cause or have a natural tendency to cause injury or damage to business or property.

4.2.3 Applicable Thresholds

4.2.3.1 Ventura County Air Pollution Control District

The VCAPCD's 2003 Air Quality Assessment Guidelines include adopted significance thresholds for NO_X and ROGs for long-term operational emissions of 25 pounds per day (VCAPCD 2003). Additionally, a project that is inconsistent with the Air Quality Management Plan is considered to have a significant cumulative adverse air quality impact (VCAPCD 2003).

While VCAPCD has not formally adopted construction-related thresholds of significance, they recommend that construction-related emissions should be mitigated if ROG and NO_X estimates from heavy-duty construction equipment are anticipated to exceed 25 pounds per day (VCAPCD 2003).

4.2.3.2 Santa Barbara County Air Pollution Control District

The significance thresholds developed by the SBCAPCD, as documented in Scope and Content of Air Quality Sections in Environmental Documents (updated 2017), include:

- Emits (from all sources, both stationary and mobile) greater than the daily trigger for offsets in the SBCAPCD New Source Review Rule (240 pounds per day for NO_x or ROC; 80 pounds per day for PM_{10}).
- Emits greater than 25 pounds per day of NO_x or ROC (motor vehicle trips only).
- Causes or contributes to a violation of a State or Federal air quality standard (except ozone).
- Exceeds the health risk public notification thresholds (10 excess cancer cases in a million hazard index of 1.0 for non-cancer risk).
- Is inconsistent with adopted State and Federal Air Quality Plans (2016 Ozone Plan).

The above thresholds do not apply to short-term, construction or decommissioning emissions. The SBCAPCD recommends that the following threshold be used to determine the significance of short-term air pollutant emissions of larger projects, which is taken from SBCAPCD Rule 202:

- Construction emissions associated with a stationary source requiring a permit from SBCAPCD exceeding 25 tons of any pollutant (except carbon monoxide) in a 12-month period.

4.2.4 Environmental Assessment of Potential Alternatives

Equipment and vessel emissions during decommissioning efforts are the primary source of air quality impacts from the potential alternatives. Since full removal activities will result in the most extensive use of equipment and take the longest to complete (3.5 years), emissions are expected to be highest for this alternative. A preliminary estimate of air pollutant emissions associated with all activities (onshore and offshore) associated with the Complete Removal Alternative indicates:

- Peak day decommissioning (removing the Island core) emissions within the South-Central Coast Air Basin (excludes tug emissions in Los Angeles County) would be approximately 304 pounds of NO_x and 35 pounds of ROC, which would exceed the VCAPCD operational threshold of 25 pounds per day.
- Peak 12-month period decommissioning (removing the Island core) emissions within the South-Central Coast Air Basin (excludes tug emissions in Los Angeles County) would be approximately 29 tons of NO_x and 3.5 tons of ROC, which would exceed the SBCAPCD threshold of 25 tons per year.

More refined calculations of air pollutant emissions will be completed as part of the CEQA document preparation. Based on Ventura County recommendations regarding construction-related emissions, emissions resulting in an exceedance of 25 pounds per day (or 25 tons per year) could be substantial and would have to be mitigated in accordance with Section 7.4 of the Ventura County Air Quality Guidelines, which include mitigations for fugitive dust, as well as reduction of ROC and NOx.

Emissions associated with peak day and peak 12-month activities during the Complete Removal Alternative are provided as a conservative estimate to represent maximum potential air quality emissions. The Reuse and Reefing Alternatives require less equipment during their peak decommissioning phases, and therefore air pollutant emissions generated by the Reuse and Reefing Alternatives may not exceed the SBCAPCD 25 tons per year threshold.

4.3 BIOLOGICAL RESOURCES

4.3.1 Setting

4.3.1.1 Onshore Study Area

Padre surveyed the onshore study area encompassing the Onshore Facility, the SCC Parcel intertidal area, and the Onshore Pipeline Connections area during multiple site visits in 2021.

Onshore Facility. The Onshore Facility, which is located between U.S. Highway 101 and SR 1 in Ventura County on State Lands Lease PRC 145 totals approximately 6 acres of disturbed lands that were previously used for oil and gas operations. All oil wells have been abandoned and all above ground oil and gas facilities at the Onshore Facility and the adjacent site have been removed, and the site is currently cleared and in caretaker status. Currently the majority of the Onshore Facility is graded flat with a few remaining landscaping trees (Figure 4.3-1). Vegetation primarily consists of stands of non-native trees and non-native grasses with approximately 0.4 acre (based on aerial imagery) of riparian habitat that occurs where Los Sauces Creek runs through the middle of the area. The following discussion provides a summary of the vegetation communities present within the Onshore Facility area.

Figure 4.3-1. Onshore Facility Area (2021)

Tree Stands

Tree stands comprised mostly of blue gum eucalyptus (*Eucalyptus globulus*), and to a lesser degree of tamarisk (*Tamarisk* sp.), occur intermittently around the border of the Onshore Facility, along U.S. Highway 101. Some of the more densely planted stands provide cover, roosting and nesting habitat for a number of resident and migratory bird species, and overwintering habitat for Monarch butterflies (*Danaus plexippus*).

Disturbed

Disturbed areas within the Onshore Facility are all formerly graded, bermed, or degraded ground up asphalt and bare soil. Very small populations of non-native plants

can be found along the margins of this area; however, the majority of the Onshore Facility is bare ground as of June 2021. In addition, ornamental trees and shrubs line the perimeter of the graded Onshore Facility area (Figure 4.3-2).

Riparian

Los Sauces Creek transects the Onshore Facility before it runs under U.S. Highway 101 to the ocean. The riparian corridor within the Onshore Facility is characterized by willows (*Salix* spp.), cattails (*Typha* sp.), elderberry (*Sambucus* spp.) and a few large canopy trees including cottonwoods (*Populus fremontii*) (Figure 4.3-3). Water flows seasonally within Los Sauces Creek, and there was a small amount of standing water present during a site visit in June 2021 (Figure 4.3-4). Northeast of the Onshore Facility, Los Sauces Creek has been channelized with concrete levees for flood control through the adjacent oil fields. A survey has not been performed to determine the actual extents of Los Sauces Creek that would be under the jurisdiction of the LARWQCB or the USACE, but that delineation will be conducted during future surveys related to CEQA analysis.

Figure 4.3-2. Onshore Disturbed and Ornamental Community

Figure 4.3-3. Vegetation within Los Sauces Creek

Figure 4.3-4. Seasonal Creek Extent on Onshore Facility Area (June 2021)

Onshore Pipeline Connections. The Onshore Pipeline Connections area is located in a heavily disturbed area on the northeast side of Highway 101, approximately 40 feet north of the UPRR and adjacent to a gravel access road (Figure 4.3-5). North of the Onshore Pipeline Connections valve box and the access road is densely vegetated, steeply sloping hillside of coastal sage scrub species, such as such as California sagebrush (*Artemisia californica*) and coyote brush (*Baccharis pilularis*), that leads back into the oil field; however, no work is proposed to occur north of the Onshore Pipeline Connections valve box. The Onshore Pipeline Connections area is primarily devoid of vegetation, except for non-native herbaceous forbes and grasses are present around the perimeter. The adjacent coastal scrub habitat may provide suitable habitat for burrowing small mammals and nesting birds.

Figure 4.3-5. Onshore Pipeline Connections Valve Box

SCC Parcel. The upland portion of the SCC Parcel is currently occupied by interspersed native and non-native ground cover/vegetation, primarily consisting of hottentot-fig ice plant (*Carpobrotus edulis*) (Figure 4.3-6). Large riprap rock line the western and eastern edges of the SCC Parcel. The riprap areas, as well as the public access paths down to the beach, are largely devoid of vegetation, aside from the ice plant ground cover. Along the high-tide line, the SCC Parcel provides marginal, man-made intertidal habitat.

Figure 4.3-6. SCC Parcel Area

4.3.1.2 Nearshore/Offshore Study Area

The nearshore/offshore study area is defined for the purposes of this analysis as the offshore region between the residential community of Mussel Shoals at Punta Gorda in Ventura, California to offshore at Rincon Island, located within the eastern portion of the Santa Barbara Channel. This area encompasses the SCC Parcel intertidal area, Rincon Island Causeway and abutment, and Rincon Island. Regionally, the Santa Barbara Channel is bordered on its seaward margin by the northern Channel Islands. In addition to protecting the coastline from significant waves, the Channel Islands support unique and important marine communities. The natural seafloor habitat around the offshore area is comprised of a mixture of sediment (sand, silts, and clays) and low-relief solid substrate consisting of sediment-covered boulders and shale bedrock ridges that run parallel to shore (eTrac 2021a; 2021b).

The Santa Barbara Channel lies along important migration routes for marine mammals, fishes, and seabirds and also contains a rich and diverse assemblage of resident marine life. The following provides a discussion of protected habitats and the birds, fishes, and marine mammals that may occur in the region.

Marine Protected Areas. California adopted the Marine Life Protection Act (MLPA) in 1999 to provide improved protection for the diversity and abundance of California's ocean habitats through a network of Marine Protected Areas (MPAs) with the goals of sustaining, conserving and protecting marine life populations; protecting marine ecosystems; improving recreational, educational, and study opportunities provided by

marine ecosystems; and protecting marine natural heritage. There is strong scientific evidence that MPAs restore and protect the natural diversity and abundance of marine life, and the structure, function and integrity of marine ecosystems.

The Offshore study area has not been identified by the California Department of Fish and Wildlife as an MPA. The closest MPA is the Scorpion State Marine Reserve within the northern Channel Islands located approximately 17.7 miles south of Rincon Island.

California Coastal National Monument. The California Coastal National Monument managed by the Bureau of Land Management (BLM) provides unique habitat for marine-dependent species on more than 20,000 rocks, islands, exposed reefs, and pinnacles, as well as 7,924 acres of public land at six onshore units: Trinidad Head, Waluplh-Lighthouse Ranch, Lost Coast Headlands, Point Arena-Stornetta, Cotoni-Coast Daires, and Piedras Blancas. The rocky headlands within the California Coastal National Monument provide foraging and roosting areas, nesting habitat for breeding seabirds, and haul-outs for marine mammals. The offshore rocks included in the monument are those exposed above mean high tide within 12 nautical miles of the California mainland. Rincon Island is designated as part of the monument.

Pinniped Haul-Outs and Rookeries. The California south coast provides a diversity of haul-out locations such as rocky shorelines, sandy beaches, estuaries, and mudflats. California sea lion and harbor seals have several haul-outs along beaches and on shallow, rocky outcroppings. Both harbor seals and California sea lions currently utilize the riprap surrounding Rincon Island and nearby shoreline as haul-out habitat. There have not been any reports that pinnipeds use Rincon Island as a breeding area or rookery.

The nearest other pinniped haul-outs and rookeries include the Carpinteria Harbor Seal Rookery and Preserve located on Carpinteria Beach approximately 3.8 miles northwest of the Nearshore/Offshore area, and Mugu Lagoon located south of the study area at Pt. Mugu Naval Air Warfare Center in Ventura County. The Carpinteria rookery is one of a few known active harbor seal rookeries in Southern-central California.

Kelp Beds. The coastline along much of the Southern California coast has typically been fringed by large beds of giant kelp (*Macrocystis pyrifera*). Kelp offers food, attachment sites, and microhabitats for invertebrates and provides food and shelter for fishes. In subtidal areas off the southern California coast where hard/rocky substrate is available, giant kelp (*Macrocystis pyrifera*) communities (i.e., kelp forests) are often present. Kelp forests are an important part of the marine ecosystem in that they provide habitat structure and substrate surfaces for many epibiotic, benthic, and sessile organisms[7], and provide food, shelter, and nursery habitat for migratory and resident

[7] Epibiotic - living on the surface of another organism
Benthic – the flora and fauna found on the bottom, or in the bottom sediments of a body of water
Sessile – fixed in one place, immobile

species of fish, marine mammals, and invertebrates. In addition to the importance of living kelp as a structural and nutritional resource, drift kelp is extremely important in detritus-based food chains. Drift kelp is an important food source for such key species as sea urchins (*Strongylocentrotus* spp.) and abalone (*Haliotis* spp.). Drift kelp also seems to be of nutritional and structural importance well beyond the limits of the kelp bed both inshore and offshore in deeper water habitats.

Geophysical bathymetric surveys conducted by eTrac (2021) identified kelp beds associated with hard-bottom substrates around the perimeter of Rincon Island and perpendicular to the causeway in the vicinity (Figures 4.3-7). Kelp was also noted around Rincon Island during the biological surveys conducted by UCSB (2021, Attachment 2).

Figure 4.3-7. Kelp at Rincon Island and Adjacent to Causeway

Note: Kelp shown in this photograph includes the brown floating vegetation area(s) located on the water surface near the west (left) of the causeway and along the right (east) side of Rincon Island below the riprap

Essential Fish Habitat. The Magnuson-Stevens Fishery Conservation and Management Act (MSA) defined essential fish habitat (EFH) as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” According to the National Marine Fisheries Service (NMFS), EFH can include sediment, hard bottom, underwater structures, and associated biological communities. Section 303, subdivision (a)(7) of the MSA requires fishery management councils to identify EFH. EFH that is judged to be particularly important to the long-term productivity of populations of one or more managed species, or to be particularly vulnerable to degradation, should be identified as habitat areas of particular concern (HAPC). Kelp and potential sea grass beds within the nearshore/offshore study area qualify as HAPC and represent essential habitat areas for managed groundfish, coastal pelagic and salmonid species. Permanent removal of these habitats could potentially cause significant impacts to EFH and the species that depend on it.

Critical Habitats. The nearshore/offshore study area including Rincon Island is not within a designated critical habitat area for marine species. The nearest aquatic critical habitat is designated for southern California steelhead (*Oncorhynchus mykiss*) and is located approximately 2.5 miles northwest within Rincon Creek (Hydrologic subarea 331534). None of the proposed Phase 2 alternatives would occur within critical habitat areas (NMFS 2022).

Surf Grass and Eelgrass Beds. Surf grass beds (*Phyllospadix* sp.) are commonly found along the southern California intertidal reefs and are known to provide cover and habitat structure for intertidal invertebrates and marine alga. Surf grass can be found growing on the surface of intertidal rocks in the nearshore/offshore study area; however, its presence may fluctuate on a seasonal basis depending on the intensity of sand deposition or wave action.

Eelgrass (*Zostera marina, Z. pacifica*) beds are important ecological communities of estuaries and nearshore habitats because of the multiple ecosystem values that they provide. Eelgrass is a major source of primary production in nearshore marine systems, supplying detrital based food chains. In addition, several organisms directly graze upon it, thus contributing to the system at multiple trophic levels. Eelgrass forms extensive meadows in soft-bottom habitats from the low intertidal to depths of about 20 feet (6 meters), and from sheltered areas to exposed coasts. In southern California, eelgrass has been reported to occur as deep as 98 feet (30 meters) (CDFG 2010).

Further study would be required to determine if surf grass or eelgrass beds are present in the nearshore/offshore area prior to implementation of Phase 2 Alternatives that would require mobilization of an offshore marine construction spread. Surf grass beds are commonly observed within intertidal habitats in Santa Barbara and Ventura Counties. The nearest reported eelgrass bed is located approximately 12 miles southwest of the nearshore/offshore study area, in northern Ventura Harbor (Sherman and DeBruyckere 2018).

Pre-Island Construction Conditions

There was no organized study of the biota in the area before construction of Rincon Island. Dr. William Brisby, in his ecological evaluation, “The Biota of Rincon Island,” in Keith and Skjei (1974) described the area as a "biological desert" before the installation of the Island. Brisby made such an analogy because without hard substrate for attachment, algae and sessile invertebrates are mostly absent in the sand-silt habitat except for where rock is exposed in scattered places (UCSB 2021).

Post-Island Construction Conditions

Following the construction of the Island in 1957, initial observations of the marine community at Rincon Island by Carlisle et al. (1964) began in July 1958. Early communities were already highly diverse compared to the algae and fish communities prior to construction. Numerous fishes, at least 50 species in 22 families, were observed, a modest kelp bed (giant kelp, *Macrocystis pyrifera*) grew on the rock and tetrapod revetments on all sides of the Island, and an abundant community of at least 117 invertebrate species in 10 phyla and at least 14 algal species were found living on the armor revetment and soft bottom substrate of sandy silt adjacent to the Island’s base (UCSB 2021).

In 1978, Johnson and deWit conducted extensive surveys of the Island to map the various species over all submerged parts of the Island. The survey included 250 randomly placed quadrats (0.25 square meter areas) that were photographed, individuals were counted in the quadrats, detachable macrobiota[8] were collected, and attached organisms were scraped from measured areas for measurements. Faunal and floral species found around the organisms were identified based on characteristics such as size and abundance (UCSB 2021).

Nine major algal and invertebrate species were identified on the Island:

- Barnacle-limpet association found in the uppermost zone relatively uniform in composition and found on all sides of the Island
- Mussel-Gooseneck barnacle (*Mytilus/Pollicipes*) association confined to a narrow band on the west side of the Island
- Green anemone (*Anthopleura* spp.) association occurring as patches within the macrophytic algae zone
- Macroalgae (“Macrophyic algae”) association occurring as a continuous band around the Island except under the wharf on the east side where light is presumably the limiting factor

[8] Organisms of a particular site or habitat

- Coralline algae-red algae (*Lithothamnium-Veleroa*) association including bat stars and urchin abundant on all sides of the Island
- Red algae-bryozoa ("moss animal") gorgonia (*Veleroa-Lagenipora-Leptogorgia-Muricea*) association, the deepest of the nine associations
- Red algae (*Rhodymenia-Veleroa*) association found only on the east side of the Island where it was significantly depauperate of the Coralline algae complex
- Coralline algae-thatched barnacle (*Lithothamnium-Tetraclita*) association located above the red algae association on the east side of the Island
- Tube worm-tube anemone (*Diopatra-Cerianthidae*) association occurring on shell talus and extending into the natural soft bottom habitat

Invertebrates. The epifauna[9] of the shallower sedimentary habitats between Rincon Island and shore typically includes several species of macro-invertebrates, including sea stars, Pacific sand dollars (*Dendraster excentricus*), and slender crabs (*Cancer gracilis*), as well as polychaete worms and mollusks. The rocky substrata tend to support a generally more diverse epibiota, comprised of macrophytic[10] algae, urchins (*Strongylocentrotus* spp.), sea stars, and cnidarians (anemones and solitary corals).

Abalone are known to inhabit nearshore rocky reef habitats along the southern California coast. Black and white abalone (*Haliotis cracherodii* and *H. sorenseni*) are both federally endangered species protected under the Federal Endangered Species Act (FESA) and are considered rare in the study area. Black abalone live in rocky intertidal and subtidal reefs (out to 18 feet deep) where they are generally found in rock crevices and feed on drifting giant kelp (*Macrocystis*) and feather boa kelp (*Egregia menziesi*i). White abalone live on rocky substrates alongside sand channels and are found at depths of 50 to 180 feet. They feed on algae that accumulates within the sand channels between deep rock reefs and are more often found out of crevices but camouflaged by the algae that grows on their shells. Other abalone species that could be found in the offshore area include red (*H. rufescens*), pink (*H. corrugate*), green (*H. fulgens*), and pinto (*H. kamtschatkana*), whose populations are managed by California Department of Fish and Wildlife (CDFW). No abalone species were observed during the Phase 2-related surveys conducted by UCSB (Attachment 2, 2021).

Pilings such as those comprising the causeway structure are habitat for a number of marine intertidal invertebrates, such as: Pacific acorn barnacle (*Balanus glandula*), small acorn barnacle (*Semibalanus balanoides*), California barnacle (*Megabalanus californicus*), checkered periwinkle (*Littorina scutulata*), striped shore crab (*Pachygrapsus crassipes*), giant green anemone (*Anthopleura xanthogrammica*), Brown bryozoan (*Bugula neritina*), Colonial bryozoan (*Cryptosula pallasiana*), Opalescent

[9] Epifauna – animals living on the surface of the seabed, or attached to submerged objects or aquatic animals or plants
[10] Macrophytic – large plants

Nudibranch (*Hermissenda crassicornis*), gribble (*Limnoria tripunctata*), bay mussel (*Mytilus trossulus*), Sea fur (*Obelia* spp.), Gooseneck barnacle (*Pollicipes polymerus*), Pleated sea squirt (*Styela plicata*), and Elephant Ear Tunicate (*Polyclinum planum*) (Allen 1990).

Fishes. By virtue of the diversity of habitats it encompasses and its proximity to a major biogeographical boundary (at Point Conception), the Santa Barbara Channel supports a diverse fish fauna.

Early post-construction surveys reported the most frequently encountered reef fishes were four species of surfperch (pile perch [*Rhacochilus vacca*], black perch [*Embiotica jacksoni*], rubberlip perch [*Rhacochilus toxotes*], and rainbow seaperch [*Hypsurus caryi*]), halfmoon (*Medialuna californiensis*), and two recreationally important species, kelp bass (*Paralabrax clathratus*) and barred sand bass (*Paralabrax nebulifer*), all seen in at least 21 dives. Other recreationally important reef fishes often seen were blue rockfish (*Sebastes mystinus*), brown rockfish (*S. auriculatus*), olive rockfish (*S. serranoides*) and cabezon (*Scorpaenichthys marmoratus*). These species were still present in large numbers during later dives (1960-1970 and 1978) as well as recent dives conducted by UCSB (UCSB 2021).

Substrate composition, wave exposure, depth, and presence of kelp or seagrass often determine fish species composition in a particular area**.** Within the nearshore environment of the area, sandy bottom species are the most likely fishes to be found in and around the causeway area. Soft-bottom substrates in the nearshore/offshore area provide habitat for demersal[11] species, such as sanddabs (*Citharichthys* spp.), California halibut (*Paralichthys californicus*), or Pacific staghorn sculpin (*Leptocottus armatus),* and during the summer spawning periods, grunion (*Leuresthes tenuis*)**.** Other species such as white croaker (*Genyonemus lineatus*) or barred surfperch (*Amphisticus argenteus*) inhabit the water column but feed on invertebrates living in the substrate. Still others are restricted mainly to the water column, such as anchovy, sardine, topsmelts (*Atherinidae*), striped bass (*Morone saxatilis*), or white seabass (*Atractoscion nobilis*), where they feed on midwater plankton or other midwater fishes. Hard substrate features (pilings) and submerged riprap attract different assemblages of fishes, primarily rockfish (*Sebastes* sp.), which occur as a resident population around the Rincon Island area.

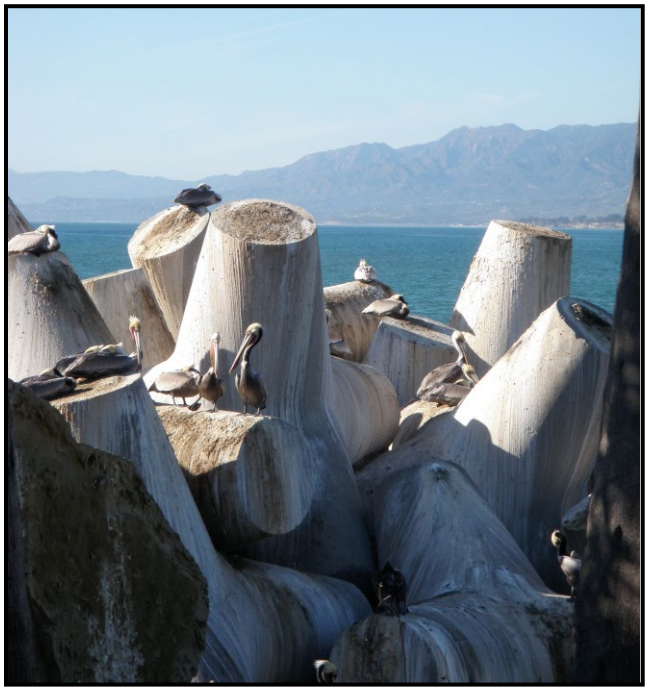
Birds (Avifauna). The Southern California Bight, in general, and the Santa Barbara Channel, in particular, have been characterized as exhibiting a diverse and abundant marine avifauna. As a consequence of its location within a portion of the Pacific Flyway and due to the variability of its mainland and insular coastal terrain, the Santa Barbara Channel region, including Ventura County, provides foraging and breeding habitat for over 250 species of birds. Bird species commonly associated with nearshore open

[11] Demersal – living close to the floor of the sea

waters and beach habitats include three species of gulls (Heermann's [*Laurus heermanni*], western [*L. occidentalis*], and Bonaparte's [*L. elaniaphia*]), two species of cormorant (Brandt's [*Phalacrocorax penicillatus*] and double-crested [*P. elania*]), the western grebe (*Aechmophorus occidentalis*), and the formerly endangered brown pelican (*Pelecanus occidentalis*). These marine bird species feed on small schooling fish, squid, and zooplankton, and forage in open water where prey is concentrated near the water's surface. In addition, several special-status species have the potential to migrate or forage in the offshore area adjacent to the nearshore/offshore area including California least terns (*Sternula antillarum*), Ashy storm petrels (*Oceanodroma homochroa*), and black storm petrels (*O. elania*).

Migrant shorebirds such as the black-bellied plover (*Pluvialis squatarola*), willet (*Tringa semipalmata*), whimbrel (*Numenius phaeopus*), long billed curlew (*Numenius americanus*), marbled godwit (*Limosa fedoa*), and sanderling (*Calidris alba*) are commonly found foraging and resting along this stretch of coastline. Several species of gulls scavenge area beaches. As shown in Figure 4.3-8, Rincon Island serves as a roosting area for a number of species, particularly the brown pelican, gulls, and pelagic cormorant. In addition, the Island is frequented by osprey (*Pandion haluaetus*) that roosts in the Island's palm trees at night and forge around the Island and causeway. According to a survey conducted in December 2021 (Christmas bird count) (ebird 2021), 20 species (728 individuals) of birds were observed; including 420 brown pelican, one osprey, and one peregrine falcon.

Figure 4.3-8. Brown Pelicans Roosting at Rincon Island



Marine Mammals and Sea Turtles. The marine mammal population off California includes eight baleen whale species, more than a dozen species of porpoises, dolphins, and other toothed whales, six species of pinnipeds, and the southern sea otter. Some species are purely migrants that pass through central and southern California waters on their way to calving or feeding grounds elsewhere, some are seasonal visitors that remain for a few weeks or months, and others are resident for much or all of the year. At certain times of the year, hundreds of thousands of marine mammals may be present along the coast of central and southern California. Due to the nearshore location of Rincon Island, the species with the greatest potential for occurrence include the coastal bottlenose dolphin, California sea lion, harbor seal, and migrating gray and humpback whales.

Although rarely encountered, marine turtles occasionally are reported within waters off the central and southern California coast and could potentially occur within the Rincon Island offshore area. Populations of marine turtles have been greatly reduced due to over harvesting and loss of nesting sites in tropical coastal areas. Sea turtles breed at sea and the females return to their natal beaches to lay their eggs; however, sea turtles do not nest anywhere along the California coast. The four listed sea turtles that may occur include the endangered Leatherback turtle (*Dermochelys coriacea*) and Loggerhead turtle (*Caretta caretta*), and the threatened Green turtle (*Chelonia mydas*) and Olive Ridley turtle (*Lepidochelys olivacea*). Although several occurrences of sea turtles have been documented off the southern California coast, the likelihood of their occurrence in nearshore/offshore study area is considered low.

4.3.1.3 Special-Status Terrestrial and Aquatic Species

Based on the literature review and species lists obtained from U.S. Fish and Wildlife Service (USFWS) (IPaC Trust Resource Report) (Ventura Office Consultation code: 08EVEN00-2021-SLI-0442) and from NMFS for Pitas Point quadrangle, a list of special-status species that have been reported within a 5-mile radius surrounding Rincon Island has been compiled. Definitions of special status species and habitats included in this environmental assessment are listed below:

- Listed as endangered, threatened, or a candidate species under the Federal Endangered Species Act (FESA)
- Listed as endangered, threatened, or a candidate species under the California Endangered Species Act (CESA)
- Listed as a species of special concern by the CDFW
- A plant species that is on the California Native Plant Society's (CNPS) Rare Plant Ranking System as List 1 or 2
- Marine mammal species afforded protection by NMFS under the Marine Mammal Protection Act (MMPA)

- A species that would occur in Habitat Areas of Particular Concern (HAPC) within Essential Fish Habitat (EFH)
- Considered rare, threatened, or endangered under CEQA Guidelines 15380(d) as the species' survival is in jeopardy due to loss or change in habitat

Special-status species included on the USFWS and NMFS species lists or with California Native Diversity Database (CNDDB) occurrences within 5 miles of the nearshore/offshore study area are evaluated for potential occurrence in Table 1 of Attachment 5. This table also includes rationale for why certain species were excluded from further analysis in this document.

4.3.2 Regulatory

4.3.2.1 Federal and State

Federal

Special-Status Species

The Federal Endangered Species Act (FESA), administered by the USFWS and the NMFS, provides protection to species listed as (Federally) Threatened (FT) or (Federally) Endangered (FE), or proposed for listing as Threatened or Endangered. The USFWS and NMFS maintain lists of species that are neither formally listed nor proposed but could be listed in the future. These Federal Candidate (FC) species include taxa for which substantial information on biological vulnerability and potential threats exists and are maintained in order to support the appropriateness of proposing to list the taxa as an endangered or threatened species. The FESA makes it unlawful to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect an endangered species, or to attempt to engage in any such conduct. Anyone violating the provisions of the ESA and regulations is subject to a fine and imprisonment. An "endangered species" is any species which the Secretaries of the Department of the Interior or the Department of Commerce determine is in danger of extinction throughout all or a portion of its range. A "threatened species" is any species which the Secretaries determine is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

The U.S. MMPA of 1972, amended 1994, protects all marine mammals, including cetaceans (whales, dolphins, and porpoises), pinnipeds (seals and sea lions), sirenians (manatees and dugongs), sea otters, and polar bears within the waters of the U.S. Specifically, the MMPA prohibits the intentional killing or harassment of these marine mammals; however, incidental harassment, with authorization from the appropriate federal agency, may be permitted. National Oceanic and Atmospheric Administration (NOAA) Fisheries (or NMFS) is responsible for enforcing the MMPA.

The USFWS administers the federal Migratory Bird Treaty Act (MBTA) of 1918 (16 USC 703-711) and the Bald Eagle and Golden Eagle Protection Act (16 USC 668-688). The MBTA prevents the removal of trees, shrubs, and other structures containing active nests of migratory bird species that may result in the loss of eggs or nestlings. Adherence to construction windows either before the initiation of breeding activities or after young birds have fledged is a typical step to protect migratory birds and comply with the MBTA. The Bald Eagle and Golden Eagle Protection Act prohibits the taking or possession of bald and golden eagles, their eggs, or their nests without a permit from the USFWS.

Essential Fish Habitat

Section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act protects Essential Fish Habitat (EFH) which is defined as "…those waters and substrate necessary for fish spawning, breeding, feeding, or growth to maturity." "Waters," as used in this definition, are defined to include "aquatic areas and their associated physical, chemical, and biological properties that are used by fish." These may include "…areas historically used by fish where appropriate; 'substrate' to include sediment, hard bottom, structures underlying the waters, and associated biological communities." "Necessary" means, "the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem." EFH is described as a subset of all habitats occupied by a species (NOAA 1998).

The NOAA identifies four Habitats of Particular Concern (HAPC) within the southern central California area: estuaries, rocky reefs, seagrass beds, and kelp beds. HAPCs are defined as discrete subsets of EFH that provide important ecological functions or are especially vulnerable to degradation. The HAPC designation does not necessarily confer additional protection or restrictions upon an area, but it helps prioritize and focus conservation efforts.

Waters and Wetlands

The USACE and the USEPA regulate the discharge of dredge and fill material into jurisdictional "waters of the United States" (WOTUS) and wetlands under Section 404 of the Clean Water Act.

The USACE is responsible for the issuance of permits for the placement of dredged or fill material into WOTUS pursuant to Section 404 of the Clean Water Act (33 USC 1344). As defined by the USACE at 33 CFR 328.3(a)(3), WOTUS are those waters that are used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including waters which are subject to the ebb and flow of the tide; tributaries and impoundments to such waters; interstate waters including interstate wetlands; and territorial seas.

The USACE asserts jurisdiction over traditional navigable waters and adjacent wetlands. Under USACE and EPA regulations, wetlands are defined as: "those areas

that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."

Section 10 of the Rivers and Harbors Act of 1899 (33 USC 403)

In addition to Section 404, the USACE regulates activities affecting "navigable waters of the United States" under Section 10 of the Rivers and Harbors Act of 1899 (33 USC 403). Navigable waters are defined as "…*those waters of the United States that are subject to the ebb and flow of the tide shoreward to the mean high-water mark and/or are presently used, or have been used in the past, or may be susceptible to use to transport interstate or foreign commerce* (33 CFR 322.2[a])." Structures or work under or over a navigable WOTUS is considered to have an impact on the navigable capacity of the waterbody (33 CFR 322.3[a]).

State

Special-Status Species

The CDFW administers a number of laws and programs designed to protect the State's fish and wildlife resources. Principal of these is the California Endangered Species Act of 1984 (CESA) (Fish and Game Code Section 2050), which regulates the listing and take of (State) Endangered (SE) and (State) Threatened species (ST). Under Section 2081 of CESA, CDFW may authorize an incidental take permit allowing the otherwise unlawful take of a SE or ST species.

CDFW maintains lists of State Candidate-Endangered species (SCE) and State Candidate-Threatened species (SCT). These candidate species are afforded the same level of protection as listed species. CDFW designates Species of Special Concern (SSC) that are species of limited distribution, declining populations, diminishing habitat, or unusual scientific, recreational, or educational value. These species do not have the same legal protection as listed species but may be added to official lists in the future. The SSC list is intended by CDFW as a management tool for consideration in future land use decisions.

Waters and Wetlands

Pursuant to Section 1602 of the Fish and Game Code, a Lake or Streambed Alteration Agreement (LSAA) between the CDFW and State or local governmental agency, public utility, or private citizen is required before the initiation of a construction project that will: (1) divert, obstruct, or change the natural flow or the bed, channel, or bank of a river, stream, or lake; (2) use materials from a streambed; or (3) result in the disposal or deposition of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into a river, stream, or lake. Therefore, the CDFW claims jurisdiction over the bed, bank, and channel of drainage features with regard to activities

regulated under Section 1602 of the California Fish and Game Code. The CDFW has adopted the same wetland definition as the USFWS, classified by the presence of only one parameter; however, CDFW does not specifically regulate wetlands.

The Porter-Cologne Water Quality Control Act (CA Water Code §§ 13000-13999.10) mandates that waters of the State of California shall be protected. Current policy in California is that activities that may affect waters of the State shall be regulated to attain the highest quality. Waters of the State include any surface water or groundwater, including saline waters, within the boundaries of the State. The Porter-Cologne Act establishes that the State assumes responsibility for implementing portions of the federal CWA, rather than operating separate State and federal water pollution control programs in California. Consequently, the State is involved in activities such as setting water quality standards, issuing discharge permits, and operating grant programs. Pursuant to Section 401 of the Clean Water Act, the USACE cannot issue a federal permit until the State of California first issues a water quality certification to ensure that a project will comply with State water quality standards. The authority to issue water quality certifications in the Phase 2 area is vested with the Los Angeles Regional Water Quality Control Board (LARWQCB).

In April 2019, the State Water Resources Control Board (SWRCB) adopted the State Wetland Definition and Procedures for Discharges of Dredged or Fill Material (Procedures), for inclusion in the Water Quality Control Plan for Inland Surface Waters and Enclosed Bays and Estuaries and Ocean Waters of California. The Procedures took effect in May 2020.

The new Procedures also include a State wetland definition. A State wetland is defined in the new Procedures as an aquatic feature that "…*under normal circumstances has continuous or recurrent saturation of the upper substrate caused by groundwater, shallow surface water, or both; duration of saturation sufficient to cause anaerobic conditions in the upper substrate; and, vegetation that is dominated by hydrophytes or lacks vegetation.*"

If an aquatic feature meets the definition of a wetland it may be considered a water of the State.

<u>California Coastal Act</u>

CCA policies that are applicable to the Phase 2 Alternatives include the following:

- **California Coastal Act, Public Resources Code Section 30230: Marine Resources; Maintenance.** Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all

species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.

- **California Coastal Act, Public Resources Code Section 30231: Biological Productivity; Water Quality.** The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface waterflow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.

- **California Coastal Act, Public Resources Code Section 30233: Diking, Filling, or Dredging; Continued Movement of Sediment and Nutrients**

  (a) The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following (*applicable portions included*):
  (1) New or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities.
  (3) In open coastal waters, other than wetlands, including streams, estuaries, and lakes, new or expanded boating facilities and the placement of structural pilings for public recreational piers that provide public access and recreational opportunities.
  (6) Restoration purposes.
  (7) Nature study, aquaculture, or similar resource dependent activities.
  (b) Dredging and spoils disposal shall be planned and carried out to avoid significant disruption to marine and wildlife habitats and water circulation. Dredge spoils suitable for beach replenishment should be transported for these purposes to appropriate beaches or into suitable longshore current systems.

- **California Coastal Act, Public Resources Code Section 30240: Environmentally Sensitive Habitat Areas, Adjacent Developments:**

  – Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas.

- Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas and shall be compatible with the continuance of those habitat and recreation areas.

4.3.2.2 Local

Ventura County Coastal Area Plan. Local goals, policies, or regulations applicable to this area with respect to biological resources are listed below. Ventura County's Coastal Area Plan (CAP) was prepared in accordance with the CCA (included above), and established goals for future activity in the coastal zone, including:

- Protect, maintain and, where feasible, enhance and restore the overall quality of the coastal zone environment and its natural and man-made resources.
- Assure orderly, balanced utilization and conservation of coastal zone resources taking into account the social and economic needs of the people of the State.

Ventura County General Plan, Conservation and Open Space Element Policies (2020)

- **Policy COS-1.1: Protection of Sensitive Biological Resources**. The County shall ensure that discretionary development that could potentially impact sensitive biological resources be evaluated by a qualified biologist to assess impacts and, if necessary, develop mitigation measures that fully account for the impacted resource. When feasible, mitigation measures should adhere to the following priority: avoid impacts, minimize impacts, and compensate for impacts. If the impacts cannot be reduced to a less than significant level, findings of overriding considerations must be made by the decision-making body.
- **Policy COS-1.10: Evaluation of Potential Impacts of Discretionary Development on Wetlands**. The County shall require discretionary development that is proposed to be located within 300 feet of a wetland to be evaluated by a County-approved biologist for potential impacts on the wetland and its associated habitats pursuant to the applicable provisions of the County's Initial Study Assessment Guidelines.
- **Policy COS-1.13: Partnerships for Protection of Natural and Biological Resources**. The County shall continue to work in partnership with agencies, organizations, and entities responsible for the protection, management, and enhancement of the county's biological resources.

Ventura County Coastal Resources Policies

- **Policy COS-2.8: Coastal Fisheries**. The County shall encourage community programs that are designed to improve the quality of coastal fisheries and marine resources.

- **Policy COS-2.11: Dune Vegetation**. Discretionary development which would result in the removal of dune vegetation shall be conditioned to replace the vegetation.

4.3.3 Applicable Thresholds

According to the Ventura County Initial Study Assessment Guidelines (2011), a project has the potential to create a significant impact to biological resources if it has a direct or indirect physical impact to a plant or animal species because it directly or indirectly:

(a) reduces a species' population

(b) reduces a species' habitat

(c) increases habitat fragmentation

(d) restricts reproductive capacity

Also, with respect to coastal beaches and sand dunes, the following thresholds apply:

- Any project that causes a direct or indirect adverse physical change to a coastal beach or sand dune which is inconsistent with any of the coastal beaches and coastal sand dunes policies of the CCA, corresponding Coastal Act regulations, Ventura County Coastal Area Plan, or the Ventura County General Plan Goals, Policies and Programs, will be considered to result in a significant environmental impact. This project-specific threshold of significance does not apply if the proposed project includes a General Plan Amendment (GPA) that eliminates the inconsistency between the proposed project and the applicable General Plan policy or policies, and the GPA itself would not have a significant impact on any other environmental issue or be inconsistent with any other environmental policy of the General Plan.
- Any project that, when considered together with one or more recently approved, current, and reasonably foreseeable probable future projects, would result in a direct or indirect, adverse physical change to a coastal beach or sand dune will result in a significant cumulative environmental impact.

4.3.4 Environmental Assessment of Potential Alternatives

4.3.4.1 Reuse of Rincon Island and the Causeway; Remediation, Decommissioning, and Improvement of Onshore Sites

Retention of Rincon Island would require the temporary use of construction equipment at the Island to remove the contaminated soil and backfill with clean soil. These activities would result in a temporary disturbance to marine birds that utilize the Island for daytime roosting. Retention of the Island and causeway would not result in any additional permanent biological impacts, other than the potential removal of the existing palm trees. The Island would not be repaved and could support localized habitats and

wildlife communities or reuse. There would be no additional permanent or temporary impacts associated with construction (further discussed in Sections 4.3.4.2 or 4.3.4.3 below).

Remediation of contaminated soils at the Onshore Facility would result in potential temporary impacts to biological resources related to ground disturbance and adjacent wetlands in creek corridors. Suitable habitat for special-status species is marginal or not present within the majority of the Onshore Facility area; however, there are small, isolated areas, such as tree stands and the Los Sauces Creek corridor, that may provide breeding or refuge habitat for special-status species or nesting birds. These habitat areas and species that are present in the area during Phase 2 activities may be impacted by construction noise, ground disturbance, or vegetation removal activities. However, onsite restoration activities could restore a portion of the Onshore Facility to pre-development conditions, which would be a long-term benefit to biological resources.

The SCC Parcel alternatives include the potential for non-native vegetation removal and restoration with native plants on the back of this parcel as well as replacement of armament along the coastline. During construction, equipment would be present that would have the potential to temporarily disrupt biological resources. However, restoration of this parcel would result in a positive impact following establishment of native habitat.

The Onshore Pipeline Connections area is primarily vacant and does not contain significant biological resources, however, abandonment activities would also have temporary impacts during construction related to staging of equipment during pipeline pigging/flushing activities and grouting of the casing and pipelines. The adjacent habitat areas may provide breeding or refuge habitat for special-status species or nesting birds. These habitat areas may be indirectly impacted by equipment staging and construction noise and traffic.

4.3.4.2 Reefing of Rincon Island; Removal of the Causeway; Remediation, Decommissioning, and Improvement of the Onshore Sites

Similar to the Reuse alternative, retention of the Island primarily in its current state in support of the Reefing alternative would require the tempoary use of construction equipment at the Island to remove the contaminated soil and backfill with clean soil. These activities would result in a temporary disturbance to marine birds that utilize the Island for roosting. Retention of the Island would continue to provide the biological benefit of isolated hard-substrates and topography that support localized habitats and wildlife communities.

Removal of the causeway would be performed utilizing a land-based equipment spread. The physical removal of pilings would introduce temporary turbidity and effects to water quality. High levels of sustained turbidity have the potential to affect filter feeding invertebrates and reduce visibility for fish and mammals. In addition, removal of the

causeway pilings would permanently eliminate the hard-substrate surface areas currently used by intertidal and subtidal communities from the shore out to the Island. The causeway pilings also provide habitat for the local prey base and refuge habitat for upper trophic levels (fish and marine mammals).

Potential impacts related to remediation, decommissioning, and improvement of the Onshore Sites are included in the analysis above (refer to Section 4.3.4.1).

4.3.4.3 Complete Removal of Rincon Island and the Causeway; Remediation, Decommissioning, and Improvement of the Onshore Sites

Complete removal of the Island and causeway presents a higher level of potential biological impacts due to the permanent removal of a significant amount of submerged hard-substrate surface area associated with the Island and causeway. Temporary impacts would also increase due to the increased total decommissioning duration (estimated at 3.5 years) and equipment requirements, expanding the time large marine vessels, barges, and support boats are needed for decommissioning. Mobilization of large marine construction equipment (including several vessels large enough to accomplish the Complete Removal Alternative) increases the likelihood of a vessel interaction with migrating marine mammals and turtles. In addition, large decommissioning vessels increase the potential for significant impacts in the event an oil spill or fuel release occurs in the nearshore/offshore study area (area between the Island and the shore).

Excavation and recovery of partially buried riprap around the base of the Island would temporarily increase the local turbidity; moreover, due to the volume, size, and depth of burial of individual riprap boulders/tetrapods, the increased turbidity levels may be present in the water column long enough to affect water quality outside of the area. The size and location of the turbidity disturbance area would depend on the number of tetrapods proposed for removal, their depth of burial, and volume of sediments disturbed. In addition, ocean swells and currents would determine how far turbidity levels may travel outside of the decommissioning area. Increased turbidity levels can affect filter feeding invertebrates and reduce visibility for fish and marine mammals, leading to potential interference with foraging and increased predation for wildlife in the offshore area.

Similar to the removal of the causeway (discussed in Section 4.3.4.2), complete removal of the Island would permanently reduce or completely eliminate the area of hard substrate available within the offshore area. The populations of marine wildlife and complex habitats that surround the Island would consequently be removed, reducing species diversity and densities (UCSB 2021). The removal of riprap above water would also impact valuable roosting habitat for migratory seabirds on the seaward sides of the Island, included roosting habitat for the USFWS-delisted brown pelican.

Complete removal of the Island and causeway would permanently change the topography and oceanographic processes of the area. Alongshore sediment transport may increase between 40 and 60 percent, and cross-shore sediment transport would also increase in areas that are currently blocked by the Island during southerly and westerly ocean swells (NV5 2021). Kelp beds have established within these nearshore areas shadowed by the Island. Kelp holdfast and other algal and invertebrate communities attach to bedrock that is currently exposed on the seafloor. Changes in sediment transport following the complete removal of the Island may affect the exposure of bedrock areas on the seafloor that occur between the Island and the shore. Subsequent burial of bedrock and other hard-bottom seafloor as a result of the increase in sediment transport through the area would directly affect the available attachment surface area for kelp holdfast and other habitat forming algal and invertebrate communities.

Potential impacts related to remediation, decommissioning, and improvement of the onshore sites are included in the analysis above (refer to Section 4.3.4.1).

4.4 CULTURAL RESOURCES/TRIBAL CULTURAL RESOURCES

4.4.1 Tribal Coordination and Consultation

Pursuant to Executive Orders B-10-11 and N-15-19 affirming that state policy requires and expects coordination with tribal governments in public decision making, the CSLC follows its 2016 Tribal Consultation Policy, which provides guidance and consistency for staff in its interactions with California Native American Tribes (CSLC 2016). The Tribal Consultation Policy, which was developed in collaboration with tribes, other state agencies and departments, and the Governor's Tribal Advisor, recognizes that tribes have a connection to areas that may be affected by CSLC actions and "that these Tribes and their members have unique and valuable knowledge and practices for conserving and using these resources sustainably" (CSLC 2016).

For purposes of this Feasibility Study, CSLC staff began providing periodic informal updates and requesting early feedback from geographically and culturally affiliated tribes in the summer of 2021 as follows: the Native American Heritage Commission (NAHC) provided a Sacred Lands File search (negative results) and a Native American Contact list on June 1, 2021. The CSLC Tribal Liaison then sent out two email notifications, one on June 7, 2021, to notify the tribes of the Phase 2 Feasibility Workshop, and one on August 10, 2021, to provide an overview of the Phase 2 process. One email comment was received from the Tribal Chair for the Coastal Band of the Chumash Nation, asking to be part of the outreach to tribal governments. In December 2021, the Chair reiterated interest in coordinating on the decommissioning, particularly as it relates to the Onshore Facility area(s).

After completion of the Feasibility Study and upon initiating the CEQA process for the chosen proposed Project, CSLC will provide formal notification and invitation to consult

to all tribes identified on the NAHC contact list, pursuant to Assembly Bill 52 (Gatto), Chapter 532, Statutes of 2014. Under this law, lead agencies must avoid damaging effects on tribal cultural resources, when feasible, whether consultation occurred or is required. While some information related to cultural heritage and tribal cultural resources is presented below for the three alternatives being considered in this Feasibility Study, the full assessment of potential resources and impacts will be performed during the CEQA process in consultation with interested tribes.

4.4.2 Onshore

4.4.2.1 Archaeological Context

Ventura County is part of a larger regional cultural area that includes most of Santa Barbara and San Luis Obispo counties. Wallace (1955), Warren (1968), and King (1990) have developed chronological sequences that apply to the precontact of Ventura County. Specifically, archaeologists working in the Santa Barbara Channel mainland region of Ventura County have divided the local precontact record into five major chronological time periods: Pre-Millingstone (also known as Paleoindian or Paleocoastal), Millingstone Period, Early Period, Middle Period, and Late Period.

Pre-Millingstone Period (c. 25,000 through c. 8,500 B.P.)

The Pre-Millingstone Period, which is sometimes also referred to as the Paleo-Indian, or Paleo-Coastal (Gamble 2008; Glassow et al. 2007), represents the earliest human occupation in North America, beginning no earlier than 40,000 years before present (B.P.) and perhaps as recently as 25,000 to 20,000 B.P. This period coincides with the entry of people into the Americas during the latter part of the Wisconsin glaciation. At the end of this glacial period, the sea level began rising, submerging and eroding the flat coastal terraces at a rate of up to two meters per year (Barter et al. 1995).

Conclusive evidence of human occupation during the Pre-Millingstone Period has been found at several coastal sites in San Luis Obispo County to the north, which date to the early Holocene, prior to 8,450 B.P. At Diablo Canyon for example, Greenwood (1972) reported two multi-component sites with basal dates of 9,320 and 8,410 B.P. More recently, archaeological evidence has emerged that confirms a human presence on the Channel Islands as early as 13,000 years ago (Johnson et al. 2002), while the earliest evidence of a human presence on the mainland has been dated to 10,000 to 11,000 years ago. During this early time period, Paleoindian groups focused on hunting Pleistocene epoch megafauna species such as the mammoth, giant bison, and possibly camel, among others, although vegetal resources and smaller animals such as rodents and fowl likely remained an important dietary constituent.

Millingstone Period (c. 8,500 through c. 6,500 B.P.)

The first fully definable period of human settlement in the Santa Barbara Channel area is known as the Millingstone Horizon. Appropriately named, the Millingstone Period is

characterized by the predominance of hand stones and milling slabs in the archaeological record, indicating a reliance on hard seeds and other plant foods. Another term for this period is “Oak Grove,” a phrase coined during the 1920s by the archaeologist David Banks Rogers. A variety of flaked stone tools including leaf-shaped bifaces, oval bifacial knives, choppers, and scrapers are also present at Millingstone Period sites. This period was a time of rising sea levels that created additional lagoons and estuaries (Glassow et al. 2007). Although deer are represented in the archaeological record, hunting and fishing contributed little to the diet, with the faunal diet relying heavily on mussels and Pismo clams. Bone gorges occur and *Olivella* spp. spire-lopped shell beads appear in burials (Glassow et al. 2007). Residential bases are presumed to have been comprised of extended families during this period.

Early Period (c. 6,500 through c. 3,200 B.P.)

Archaeological data from the coastal areas of the Santa Barbara Channel indicate that peoples at this time employed a more diversified subsistence strategy that included a broader range of faunal species, both marine and terrestrial, and wider variety of plants for food and other uses (Santa Barbara Museum of Natural History 2002). Archaeological evidence, in conjunction with data relating to the paleoclimate of this period, show that human populations fluctuated as temperatures and precipitation rates changed. Variability of seawater temperatures, which rose and fell during this period, led to further fluctuations in human populations along the Santa Barbara Channel coast as the availability of specific marine species that those peoples had previously depended upon became harder to predict (Glassow 1997; Glassow et al. 2007). In response to these climatic changes, local residential sites appear more settled, but not permanent, with an increase in logistical organization of economic activities (Jones et al. 1994). The greater diversity of site types during this period reflects an increasing number of short-term occupations near labor-intensive resources. Trade and exchange also increased in importance as population mobility decreased, as evidenced by exotic shell beads and obsidian materials in midden deposits (Jones et al. 1994).

By the end of the Early Period, people speaking a “Proto-Chumash” language had become established in the region, but their relationship with earlier peoples is not yet clear (Santa Barbara Museum of Natural History 2002). Anthropologists refer to the peoples who inhabited the Santa Barbara Channel Island and mainland areas during the Early Period as Chumash.

Middle Period (c. 3,200 through c. 800 B.P.)

The artifact assemblage dating to the Middle Period contains shellfish hooks and other fishing gear, saucer-type *Olivella* spp. beads, and contracting-stemmed projectile points. Subsistence practices emphasized fish, sea mammals, and acorns, with a greater use of seasonal resources and the first attempts at food storage (Glassow et al. 1988; King 1990). Continuation of trade relationships is evident in the increased number

and diversity of obsidian items, Catalina Island steatite (soapstone), and beads. Certain technological innovations like the circular shell fishhook and plank canoe (*tomol*), allowed the inhabitants of the coastal regions to catch fish in greater numbers. The advent of the *tomol* brought on the intensification of marine resource exploitation and a corresponding increase in population, which in turn gave rise to larger and more permanent coastal and island settlements (Gamble 2008). This population increase was not restricted to the coast, as evidenced by an increase in the number of inland camps and the presence of larger inland villages.

It has been hypothesized by some researchers that the increased complexity of Chumash society, occurring between 1,150 and 950 B.P., was a response to technological advances and other changes occurring during this period. This complexity is reflected in the archaeological record by objects of “wealth” and status, such as beads and ornaments, decorated hairpins, and ritual items, which appear in considerably greater numbers during this period (Santa Barbara Museum of Natural History 2002). The use of asphaltum in basketry and for other purposes greatly increased in the region around 3,000 B.P. Asphaltum was also used as an adhesive for the hafting of stone projectile points onto arrow shafts and to glue ornaments onto objects as an inlay (Glassow 1997; Glassow et al. 2007).

Late Period (c. 800 B.P. through 1769 Anno Domini [A.D.])

During the Late Period, two-thirds of the people in the Ventura region lived near the coast, although settlements were also located in oak woodland communities and along rivers. A ranked society with hereditary elite was established. Population growth and socioeconomic complexity transpires, along with environmental change (Glassow et al. 2007). The use of shell bead money, often produced on the Northern Channel Islands, emphasizes the importance of trade among Chumash communities, which acted as a buffer against shortages of wild food resources.

Terrestrial and marine resources continued to be exploited. The processing of nuts, and acorns in particular, was performed primarily through the use of mortars and pestles, although the mano and metate were still utilized. Hunting strategies appear to have also shifted during this time, as evidenced by the appearance of smaller and thinner projectile points (Hoover and Sawyer 1977), indicating a greater emphasis on small to medium-sized game. The conversion to concave based projectile points also led to the abandonment of asphaltum for arrow-making.

4.4.2.2 Ethnographic Context

The Phase 2 Facility areas are located within the ethnographic territory of the Chumash, who inhabited an area that extended from Morro Bay to Malibu along the coast (Kroeber 1925), and east to the Carrizo Plain. The Chumash have been divided into several geographic groups, each associated with a distinct language dialect (Hoover 1986). The Chumash living in Ventura County formed the *Ventureño* dialect group of the Chumash

language family. This group was named for their association with the Spanish *Mission San Buenaventura*, founded in 1782. Another dialect of Chumash, *Barbareño*, named for its association with *Mission Santa Barbara,* founded December 4, 1786, was spoken throughout the Santa Barbara Channel region. The site is located near the boundary between these two, adjoining dialect-regions. At the time of Spanish contact in A.D. 1542, the Barbareño population was concentrated most heavily near the mouths of canyons. Major Barbareño Chumash villages include *sukuw* at Rincon Point, *misopsno* at Carpinteria Creek, *helo?* at Mescalitan Island – Goleta Slough, *syuxtun* at Burton Mound, and *mikiw* and *kuyamu* at Dos Pueblos. Alternately, major *Ventureño* Chumash villages include *sisolop* in Ventura*, Matilja* in Ojai*, simiyi* near Simi*,* and *Muwu* at Point Mugu (Grant 1978).

Historically, the Chumash were a non-agrarian culture and relied on hunting and gathering for their sustenance. Archaeological evidence indicates that the Chumash exploited marine food resources from the earliest occupation of the coast since at least 12,000 years ago B.P. (Greenwood 1978). Much of their subsistence was derived from pelagic fish, particularly during the late summer and early fall (Hoover 1986). Shellfish were also exploited, including mussel and abalone from rocky shores and cockle and clams from sandy beaches. Acorns were a food staple; they were ground into flour using stone mortars and pestles and then leached to remove tannic acid. In addition, a wide variety of seeds, including *chia* from various species of sage, was utilized. The Chumash harvested a number of plants for their roots, tubers, or greens (Hoover 1986).

In this area, as elsewhere in California, basketry served many of the functions that pottery did in other places. The Chumash used baskets for cooking, serving, storage, and transporting burdens. Some basket makers wove baskets so tightly that they could hold water while others waterproofed their baskets by lining them with pitch or asphaltum (Chartkoff and Chartkoff 1984).

The coastal Chumash practiced a regular seasonal round of population dispersal and aggregation in response to the location and seasonal availability of different food resources (Landberg 1965). In this way, large coastal villages would have been fully populated only in the late summer when pelagic fishing was at its peak. Through winter, the Chumash depended largely on stored food resources. During the spring and summer, the population dispersed through inland valleys in order to harvest wild plant resources (Landberg 1965).

The Chumash lived in large, hemispherical houses constructed by planting willows or other poles in a circle and bending and tying them together at the top. These structures were then covered with tule mats or thatch. Structures such as this housed 40 to 50 individuals, or three-to-four-member family groups. Dance houses and sweathouses are also reported for the Chumash (Kroeber 1925). Archaeological evidence supports observations that twin or split villages, such as those of *kuyamu* and *mikiw*, existed on

opposite sides of streams or other natural features, possibly reflecting the moiety system of native California (Greenwood 1978).

Chumash political organization was typified by small-scale chiefdoms (Hoover 1986). Chiefs were associated with villages or segments of larger villages. Higher status chiefs controlled entire regions containing several villages. The chiefly offices were normally inherited through the male line with a primogeniture rule, i.e., the custom of the firstborn inheriting the office, in effect (Hoover 1986). Chiefs had several bureaucratic assistants to help in political affairs and serve as messengers, orators, and ceremonial assistants. A number of status positions were associated with specialized knowledge and rituals such as weather prophet, ritual poisoner, herbalist, etc. (Bean 1974).

The protohistoric culture of the Chumash, defined as the time when intermittent trade and contact was experienced between Native Americans and Spanish trading vessels en route to Asia, was disrupted by the arrival of the Spanish expedition led by Gaspar de Portolá in 1769. Historical accounts from the Portolá expedition and subsequent Juan Bautista de Anza expedition in 1774, as well as archaeological evidence, indicate that both expeditions passed through Ventura and Santa Barbara counties, stopping at principal Chumash settlements along the way (Bolton 1926; Browning 1992; Priestley 1937).

The establishment of the Spanish missions of *San Buenaventura* and *Santa Barbara* further disrupted Chumash culture in Santa Barbara and Ventura counties. Archaeological evidence verifies not only that the native population was rapidly decimated by missionization, but also that the culture itself disintegrated rapidly (Greenwood 1978). Chartkoff and Chartkoff (1984) note that Spanish settlement barred many Native Americans from traditionally important resources including clamshell beads, abalone shells, Catalina steatite, shellfish, and asphaltum.

4.4.2.3 Historic Period Context

Contact Period (A.D. 1542 through 1776)

The historic record of the Santa Barbara Channel began with the arrival of four Spanish expeditions between the years of 1542 (Juan Rodriguez Cabrillo) and 1602 (Sebastian Vizcaíño). Both Cabrillo and Vizcaíño described their interactions with the Chumash as generally positive, friendly encounters. After these initial expeditions, which were essentially confined to the coast, a period of 167 years passed without any additional European arrivals. The first Spanish land expedition of Gaspar de Portolá passed through Ventura County and camped near present day Saticoy on August 13, 1769 (Galvin 2011). The expedition continued down the Santa Clara River Valley and camped at the outlet of the Ventura River on August 14, 1769. Fray Juan Crespi, a Franciscan missionary, noted a large and sophisticated Chumash village (likely *Shisholop*) near this campsite (Bolton 1926). In February 1774, Juan Bautista de Anza traveled through Ventura County as leader of the San Francisco colonists. The de Anza

expedition camped near *La Asumpta* and traveled south of the site as it continued north along the Pacific Coast (Galvin 2011).

Mission Period (A.D. 1772 through 1834)

Over the next 3 decades, the Spanish established 21 Franciscan missions and various military presidios and pueblos along El Camino Real between San Diego and Sonoma. The earliest plans for a mission at San Buenaventura date to 1768 when the area was selected for an “intermediate” mission between the existing Mission San Diego and Mission San Carlos. Native American uprisings and political infighting delayed the founding of Mission San Buenaventura until Easter Sunday, March 31, 1782. San Buenaventura became the ninth mission established in Alta California and the last mission founded by Father Junipero Serra. Most of the missions were similar in design and consisted of a church and living quarters for the priests, soldiers, and baptized Indians. Chumash newly instructed in the teachings of the Catholic Church and baptized, provided almost all the labor to construct and maintain the missions (Barter et al. 1995).

Rancho Period (A.D. 1822 through 1845)

In 1821, Mexico declared independence from Spain; a year later, California became a Mexican Territory. After the secularization of the missions in 1834, lands were gradually transferred to private ownership via a system of land grants. The existing Phase 2 Facilities are situated approximately 1.5 miles southeast of the former Rancho El Rincon, a 4,460-acre land grant awarded by Governor Jose Figueroa to Teodoro Arrellanes in 1835 (Hoffman 1862). The grant extended along the Pacific coast from Carpinteria Creek in the north to Bates Beach in the south, and as far inland as present-day Gobernador Canyon Road, in unincorporated Santa Barbara County, near the foothills of the Santa Ynez Mountains.

Anglo-Mexican Period (A.D. 1845 through 1860)

Following the Bear Flag Revolt in 1846, John C. Frémont and the California Battalion marched into Mission San Buenaventura, finding all the inhabitants fled except the Chumash neophytes. The Treaty of Hidalgo formally transferred California to the United States in 1848 and statehood was achieved in 1850. At the time, the area that would become Ventura County was originally the southern portion of Santa Barbara County (Murphy 1979).

Americanization Period (A.D. 1860 to present)

In 1864, a serious drought devastated local livestock, creating financial ruin for many *Californios* (Galvin 2011). Several *ranchos* were divided and sold to east coast capitalists hoping to encounter petroleum deposits (Murphy 1979). By the 1870s, Americans owned most of the former *ranchos* and the economy shifted from cattle and sheep to agriculture and oil exploration (VCBS 2011).

Ventura County was officially split from Santa Barbara County on January 1, 1873, and a dozen communities were established within the next 25 years. The Southern Pacific Railroad came through San Buenaventura in 1887 and shortened the name of the city to “Ventura” for convenience in printing their timetables (Murphy 1979). The railroad connected Saugus, Fillmore, and Santa Paula allowing agricultural products, especially citrus, to ship from Ventura and Port Hueneme (VCBS 2011).

Oil exploration in Ventura County started during the 1880s, yet remained unsuccessful until 1916, when the large South Mountain Oil Field was discovered near Santa Paula. Drilling in the Ventura Avenue Oil Field and the Rincon Oil Field soon followed in 1919 and 1927, respectively. The 1920s oil boom increased development in the cities of Ventura, Santa Paula, and Fillmore. The 1929 stock market crash and subsequent Great Depression slowed this growth; most of the County’s infrastructure, such as roads, post office, fire stations, and schools, were built by New Deal relief programs. At the beginning of World War II, the United States Navy completed deepwater port facilities at Port Hueneme (VCBS 2011).

Completed in 1958, Rincon Island is a man-made island of sand, rock, and pre-cast concrete armor connected to the mainland by a causeway. The Richfield Oil Corporation (later ARCO) financed the design and construction of the Island utilizing the engineering firm of John A. Blume & Associates in direct charge of the overall project. The design included many alternate economic studies, model tests in a wave laboratory, and storm damage and wave runup studies with alternate armor types, materials, densities, and slopes. This construction of Rincon Island included new techniques, storm risks without precedent, and unusual economic considerations in marine and offshore construction. The General Contractor for the Island proper was Guy F. Atkinson Company, founded in 1926, and the general contractor for the causeway was Healy Tibbets Construction Company, founded in 1886. Both firms are still in business today.

During the 1960s and 1970s, many working-class people migrated from east and central Los Angeles to southern and eastern Ventura County. As a result, there was significant population growth in Ventura County along the Highway 101 corridor. Further expansion of Highway 101 has facilitated commuting to Los Angeles and prompted further development to the west (Murphy 1979).

4.4.2.1 Records Search Results

Padre ordered an archaeological records search from the South-Central Coastal Information Center (SCCIC) of the California Historical Resources Information System at California State University, Fullerton on June 29, 2021. The records search included a review of all recorded historic-era and precontact archaeological sites within the potential decommissioning area(s) and a 0.25-mile radius, as well as a review of known

cultural resource surveys and technical reports. Padre received the results on July 30, 2021.

During the records search, the following sources were consulted:

- SCCIC base maps, USGS 7.5-minute series topographic quadrangles for the existing facilities, and other historic maps
- Pertinent survey reports and archaeological site records were examined to identify recorded archaeological sites and historic-period built-environment resources (such as buildings, structures, and objects) within or immediately adjacent to the existing facilities
- The California Department of Parks and Recreation's California Inventory of Historic Resources (1991) and the Office of Historic Preservation's Historic Properties Directory (2007), which combines cultural resources listed on the California Historical Landmarks, California Points of Historic Interest, and those that are listed in or determined eligible for listing in the National Register of Historic Places (NRHP) or the California Register of Historical Resources (CRHR)

The records search indicated that no previously recorded cultural resources are located within the Phase 2 area(s). The records search also indicated that three previously recorded cultural resources are located outside the decommissioning area(s), but within the 0.25-mile search radius. Additionally, Rincon Island is more than 50 years old and should be recorded and evaluated for significance. These resources are listed in Table 4.4-1 and described below.

Table 4.4-1. Previously Recorded Cultural Resources

Primary No.	Trinomial No.	Description	Distance to Existing Facilities
P-56-000141	CA-VEN-141	Possible shell scatter	387 feet east of Onshore Pipeline Connections valve box
P-56-000241	CA-VEN-241	Precontact habitation site, possibly *Mishim* or *shishwashkuy*	130 feet northeast of Onshore Facility
P-56-000644	CA-VEN-644	Precontact midden site, possibly *kashashlalhiwish*	185 feet northwest of Onshore Pipeline Connections valve box

Source: SCCIC 2021

CA-VEN-141 was originally recorded in 1966 by J. Boyer, who described the site as a 50-foot by 20-foot flake scatter with Olivella shell beads and no midden soil, observed north of the UPRR right-of-way. A survey conducted by Compass Rose in 2003 did not observe any flakes; however, archaeologists did observe a sparse shell scatter on the north side of the UPRR right-of-way below a cut bank that contained old beach terraces with shell fragments (some fossilized). Based on the presence of shellfish remains, much of which may be non-cultural in origin, the site dimensions are estimated as approximately 100 meters east-west by 40 meters north-south. CA-VEN-141 has not been formally evaluated; however, if intact buried deposits are found to exist it may qualify for listing on the CRHR and a “historical resource” as defined by CEQA (Romani and Larson 2003).

CA-VEN-241 was originally recorded in 1970 by Chester King and Clay Singer, who described the site as a 600-foot-long area bisected by the UPRR right-of-way that contained stone flakes, chert and quartzite cores, and marine shell fragments (Wlodarski 1988). Subsequent archaeological testing confirmed the presence of intact precontact deposits up to a depth of 1.6 meters within CA-VEN-241 and concluded that the site may represent the disturbed remnants of the Chumash village *Mishim* (Wlodarski 1988). Additionally, King tentatively identified CA-VEN-241 as the ethnographic Chumash village of *shishwashkuy* (personal communication 1992; Peak and Associates 1993). CA-VEN-241 has not been formally evaluated; however, several previous studies (Wlodarski 1988; Peak and Associates 1992; Romani and Larson 2003) have all indicated the potential for intact deposits and possible association with Chumash village sites. Thus, CA-VEN-241 should be assumed eligible for listing on the CRHR and a “historical resource” as defined by CEQA.

CA-VEN-644 was originally recorded by C. S. Desgrandchamp and M. Rondeau in 1979, who described the site as a prehistoric shell midden exposure along both sides of the UPRR right-of-way, located approximately 100 meters southeast of La Conchita. Subsequent testing completed by Peak and Associates in 1992 revealed intact deposits at the northwestern and southeastern extents of CA-VEN-644 (Peak and Associates 1993). Additionally, King tentatively identified CA-VEN-644 as the ethnographic Chumash village of *kashashlalhiwish* (personal communication, 1992, in Peak and Associates 1993). CA-VEN-644 has not been formally evaluated; however, previous studies (Peak and Associates 1992; Romani and Larson 2003) have indicated the potential for intact deposits and possible association with Chumash village sites. Thus, CA-VEN-644 should be assumed eligible for listing on the CRHR and a “historical resource” as defined by CEQA.

In addition, the records search identified 24 previous cultural resources studies within a 0.25-mile radius of the onshore site(s). Of these, 11 studies directly covered some portion of the onshore sites (Table 4.4-2). One study (Craig and Singer 1979) covers the entire alignment of the Onshore Pipeline Connections (OPC) and seven other

studies cross the OPC in narrow swaths at various locations. One study (Pierson et al. 1987) covers a quarter mile of the Rincon Island causeway beginning at the beach. Regarding the Onshore Facility, one study (Maxwell 1976) covered a fraction of the eastern boundary and the other study (Craig and Singer 1979) covered approximately 50 percent of the western portion.

Due to the unique development and construction of Rincon Island, its association with the significant theme of oil exploration, development, and production within the State of California, and its association with significant individuals, this facility has the potential to qualify as a “historical resource” as defined by CEQA.

Table 4.4-2. Cultural Resource Studies Completed within the Phase 2 Facilities Study Area

Study No.	Author, Year	Title
VN-00234	Craig and Singer 1979	*Cultural Resource Impact and Mitigation Analysis Prepared in Support of Chevron USA, Inc. Regional Coastal Permit Application No. 205-17 for Installation of an Onshore Oil Transportation Pipeline in Santa Barbara and Ventura Counties.*
VN-00572	Dames and Moore 1988	*Phase I Cultural Resources Survey Fiber Optic Cable Project, Burbank to Santa Barbara, California for US Sprint Communications Company*
VN-00957	Boyer 1967	*University of California Los Angeles Archaeological Survey Field Project UNCAS-237*
VN-01096	Maxwell 1976	*Rincon Fire Station (STN 25)*
VN-01153	Peak and Associates, Inc. 1991	*Class III Cultural Resource Assessment of the Proposed Carpinteria and Southern Reroutes, Santa Barbara, Ventura, and Los Angeles Counties, California*
VN-01265	Reed 1992	*Consolidated Report: Cultural Resources Studies for the Proposed Pacific Pipeline Project*
VN-02198	Romani and Larson 2003	*Results of an Archaeological Phase I Study for the Proposed La Conchita Lateral Waterline Relocation Project, Casitas Municipal Water District, Ventura County, California*
VN-02504	Arrington and Sikes 2006	*Cultural Resources Final Report of Monitoring and Findings for the Qwest Network Construction Project, State of California: Volumes I and II*

Study No.	Author, Year	Title
VN-02872	Fortier 2009	*TEA-21 Rural Roadside Inventory: Native American Consultants and Ethnographic Study for Caltrans District 7, Ventura County*
VN-02949	Kirkish 2008	*Archaeological Extended Phase I Report for the US-101 HOV Widening Project PM 39.8 (Ventura County) to PM 2.2 (Santa Barbara County) Santa Barbara/Ventura Counties, California*
VN-02974	Pierson et al 1987	*California Outer Continental Shelf Archaeological Resource Study: Morro Bay to Mexican Border, Final Report*

Source: SCCIC 2021

4.4.2.2 Nearshore/Offshore

More than 500 sunken vessels have been reported within the coastal waters of Southern California. Precise locations are usually unknown, with only vague narratives provided for the area in which the ship was last known or thought to have sunk. The most common reasons for shipwrecks were either running aground on natural hazards such as prominent rocks or colliding in harbors during stormy weather. As such, the most probable areas for shipwrecks along the California coast occur where concentrated shipping traffic coincides with navigational hazards such as reefs, headlands, and prevailing bad weather or fog. Some sensitive areas include offshore islands, seaports, and obstructions. Less sensitive areas include open sea and coastline away from established shipping routes.

Approximately 33 shipwrecks have been logged in the CSLC Shipwrecks Database for the area offshore of Ventura County. Except as verified by actual surveys, CSLC data on shipwrecks was taken from books, old newspapers, and other contemporary accounts that do not contain precise locations. The CSLC Shipwrecks database reflects information from many sources and generally does not reflect actual fieldwork. Additionally, not all shipwrecks are listed in the CSLC Shipwrecks database, and their listed locations may be inaccurate, as ships were often salvaged or re-floated. It is also possible that previously unidentified vessels or parts of vessels may be in the offshore near Rincon Island. A review of the NOAA Automated Wreck and Obstruction Information System (AWOIS) indicates the closest electronic navigational chart (ENC) wreck is a visible wreck located approximately 6 miles due southeast of Rincon Island just north of the Ventura River outfall (34.294464N, -119.363525W). The AWOIS does not provide any additional information about this wreck (NOAA 2021).

Hydrographic Survey Results. In March 2021, eTrac completed a hydrographic survey of Rincon Island and the causeway area (offshore). The survey area

encompassed a corridor of approximately 1,000 feet on either side of the causeway and 1,500 feet around Rincon Island. Thirty-two objects (other than rocks) were noted during the multibeam survey ranging from 2 to 462 feet in length, however these objects were noted as circular debris (tires or lobster pots), pipeline-related structure(s), and other angular structures or debris. None of the objects identified were identified as sunken vessels or objects that would be associated with cultural or historical resources (eTrac 2021).

4.4.3 Regulatory

4.4.3.1 Federal and State

Federal and State laws, regulations, and policies pertaining to cultural resources and potentially applicable to the decommissioning alternatives include:

- **National Historic Preservation Act of 1966 (NHPA):** Archaeological resources are protected through the NHPA and its implementing regulation (Protection of Historic Properties; 36 Code of Federal Regulations 800), the Archaeological and Historic Preservation Act (AHPA), and the Archaeological Resources Protection Act (ARPA). This Act presents a general policy of supporting and encouraging the preservation of prehistoric and historic resources for present and future generations by directing federal agencies to assume responsibility for considering the historic resources in their activities. The State implements the NHPA through its statewide comprehensive cultural resource surveys and preservation programs coordinated by the California Office of Historic Preservation (OHP) in the State Department of Parks and Recreation, which also advises federal agencies regarding potential effects on historic properties.

  The OHP also maintains the California Historic Resources Inventory. The State Historic Preservation Officer (SHPO) is an appointed official who implements historic preservation programs within the State's jurisdictions, including commenting on federal undertakings. Under the NHPA, historic properties include "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places."

- **Health and Safety Code Section 7050.5:** This section provides for treatment of human remains exposed during construction; no further disturbance may occur until the County Coroner makes findings as to origin and disposition pursuant to Public Resources Code section 5097.98. The Coroner has 24 hours to notify the NAHC if the remains are determined to be of Native American descent. The NAHC contacts most likely descendants about how to proceed.

- **California Coastal Act, Public Resources Code Section 30244:** Where development would adversely impact archaeological or paleontological resources

as identified by the State Historic Preservation Officer, reasonable mitigation measures shall be required.

4.4.3.2 Local

Ventura County General Plan, Conservation and Open Space Element Policies (2020)

- **Policy COS-4.3, Historical Landmarks Preservation.** The County shall require all structures and sites that are designated, or eligible for designation, as County Historical Landmarks to be preserved as a condition of discretionary development, in accordance with the Secretary of the Interior Standards, unless a structure is unsafe or deteriorated beyond repair. The property owner shall place an appropriate marker on the site to describe the historical significance of the structure, site or event.
- **Policy COS-4.4, Discretionary Development and Tribal, Cultural, Historical, Paleontological, and Archaeological Resource Preservation.** The County shall require that all discretionary development projects be assessed for potential tribal, cultural, historical, paleontological, and archaeological resources by a qualified professional and shall be designed to protect existing resources. Whenever possible, significant impacts shall be reduced to a less-than-significant level through the application of mitigation and/or extraction of maximum recoverable data. Priority shall be given to measures that avoid resources.
- **Policy COS-4.5, Adaptive Reuse of Historic Structures.** The County shall require, in all feasible circumstances, discretionary development to adaptively reuse architecturally or historically significant buildings if the original use of the structure is no longer feasible and the new use is allowed by the underlying land use designation and zoning district.
- **Policy COS-4.7, Cultural Heritage Review Board.** Prior to environmental review of discretionary development projects, the County shall initiate a records search request with the South-Central Coastal Information Center and coordinate with the Cultural Heritage Board to identify sites of potential archaeological, historical, tribal cultural and paleontological significance, to ensure that all known resources have been properly identified. Should a site of archaeological, tribal, architectural, or historical significance be identified, the County shall provide an opportunity for the Cultural Heritage Board to include recommendations specific to the discretionary project and identified resource(s). If it is determined during the review that a site has potential archaeological, tribal, architectural, or historical significance, information shall be provided to the County Cultural Heritage Board for evaluation. Recommendations identified by the Cultural Heritage Board shall be provided to the appropriate decision-making body.

- **Policy COS-4.8, State Historic Building Code.** The Building and Safety Division shall utilize the State Historic Building Code for preserving historic sites in the County.

4.4.4 Applicable Thresholds

According to the Ventura County Initial Study Assessment Guidelines (2011), a project has the potential to create a significant impact to cultural resources if it will:

- Demolish or materially alter in an adverse manner those physical characteristics of an archaeological resource that account for its inclusion in a local register of historical resources pursuant to Section 5020.1(k) requirements of Section 5024.1(g) of the Public Resources Code, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not archaeologically or culturally significant.
- Demolish or materially alter in an adverse manner those physical characteristics of an archaeological resource that convey its archaeological significance and that justify its eligibility for inclusion in the California Register of Historical Resources as determined by a lead agency for purposes of CEQA.
- Demolish or materially alter in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the California Register of Historical Resources.
- Demolish or materially alter in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to Section 5020.1(k) of the Public Resources Code or its identification in a historical resources survey meeting the requirements of Section 5024.1(g) of the Public Resources Code, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant.
- Demolish or materially alter in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility for inclusion in the California Register of Historical Resources as determined by a lead agency for purposes of CEQA.
- Cause a substantial adverse change in the significance of a tribal cultural resource as defined in Public Resources Code Section 21074.
- Result in the disturbance of human remains, including those interred outside of formal cemeteries.

- Result in grading and excavation of fossiliferous rock (identified as “Moderate to High” or “High” on Table D.2 of the ISAG) or increase access opportunities and unauthorized collection of fossil materials from valuable sites.

4.4.5 Environmental Assessment of Potential Alternatives

4.4.5.1 Reuse of Rincon Island and the Causeway; Remediation, Decommissioning, and Improvement of the Onshore Sites

There are no known submerged cultural resources within the vicinity of Rincon Island and the causeway. However, Rincon Island and the causeway were constructed in 1958, which makes the facility more than 50 years old. Due to the Island’s unique development and construction, association with the significant theme of oil exploration, development, and production within the State of California, and association with significant individuals, Rincon Island and the causeway have the potential to qualify as a “historical resource” as defined by CEQA. Therefore, it is recommended that an architectural historian record and evaluate Rincon Island for potential historical significance. If Rincon Island is determined to be CRHR-eligible, reuse of Rincon Island and the causeway may impact any one of the seven aspects of integrity (location, design, setting, materials, workmanship, feeling, association).

In this scenario, remediation and restoration of the Onshore Facility has a slight potential to impact CA-VEN-241 if cultural materials were found within the site. While the site boundary for this resource, as currently depicted on SCCIC maps does not cross into the Onshore Facility, prehistoric deposits or displaced prehistoric materials originating from CA-VEN-241 may extend into the Onshore Facility. In addition, the Coastal Band of the Chumash Nation representatives indicated during early outreach communications that the onshore area is sensitive and involves pre-contact villages and other community use sites. Thus, it is recommended that a survey and testing plan be developed by a qualified archaeologist in coordination with local Chumash representatives for the purpose of identifying archaeological sites and tribal cultural resources that may exist within the portions of the Onshore Facility closest to CA-VEN-241. Such testing plan may include both surface and subsurface evaluation as well as characterization of cultural significance of the onshore area for tribal history and cultural practices in addition to physical cultural materials. Additional analysis of potential cultural impacts will be discussed in the future CEQA document.

With respect to the Onshore Pipeline Connections area, recorded cultural resources are also located near this facility. Due to the distance of known cultural resources from this site, and the fact that no ground disturbance is proposed in this area, no impacts to cultural resources are expected to occur during decommissioning activities; however, consultation with local Chumash and implementation of the above-described testing plan will be necessary to fully characterize the sensitivity of this area.

Additionally, there are no known cultural resources identified within or in close proximity to the SCC Parcel Area. No impacts to cultural resources are expected to occur during restoration activities in this area.

4.4.5.2 Reefing of Rincon Island; Removal of the Causeway; Remediation, Decommissioning, and Improvement of the Onshore Sites

If determined CRHR-eligible, reefing of Rincon Island and removal of the causeway could impact any one of the seven aspects of integrity (location, design, setting, materials, workmanship, feeling, association) as described in Section 4.4.5.1 above.

In this scenario, potential impacts resulting from decommissioning, remediation, or restoration at the Onshore Facility, Onshore Pipeline Connections, and SCC Parcel would be the same as described in Section 4.4.5.1 above.

4.4.5.3 Complete Removal of Rincon Island and the Causeway; Remediation, Decommissioning, and Improvement of the Onshore Sites

If determined CRHR-eligible, complete removal of Rincon Island and the causeway could impact any one of the seven aspects of integrity (location, design, setting, materials, workmanship, feeling, association) as described in Section 4.4.5.1 above.

In this scenario, potential impacts resulting from decommissioning, remediation, or restoration at the Onshore Facility, Onshore Pipeline Connections, and SCC Parcel would be the same as described in Section 4.4.5.1 above.

4.5 GEOLOGY AND COASTAL PROCESSES

4.5.1 Setting

4.5.1.1 Regional Setting

The Phase 2 onshore sites (including the Onshore Facility, Onshore Pipeline Connections, and SCC Parcel) are located within the Transverse Ranges geomorphic province of southern California. The Transverse Ranges province is oriented generally east-west, which is oblique to the general north-northwest structural trend of California mountain ranges. The Transverse Ranges province extends from the Los Angeles Basin westward to Point Arguello and is composed of Cenozoic-to Mesozoic-age sedimentary, igneous, and metamorphic rocks. Near the existing facilities, the Santa Ynez Mountains and adjacent lowlands are comprised of sedimentary rocks and soil materials ranging in age from Cretaceous to Holocene.

Locally, the onshore sites are within the North Coast area which spans approximately 12 miles, from the northern Ventura County line at Rincon Point southward to the Ventura River (Ventura County General Plan CAP 2017). The North Coast is located on the edge of a geologically complex and active area that includes a portion of the Santa Ynez Mountains, formed by thrust faulting and east-west fold. Sedimentary Miocene

marine terraces reach from these mountains to the ocean, where they have been eroded to prominent sea cliffs. The North Coast beaches are highly vulnerable to erosion and wave damage.

The closest fault to the onshore sites is the Pitas Point Fault Hazard Zone located approximately 0.5 mile northeast of the Onshore Facility within the foothills behind the Rincon Field (CDC 2021). The Pitas Point fault is a left-reverse fault with a slip rate of between 0.5 and 1.5 millimeter per year (SCEDC 2021). The United States Geologic Service indicates that the maximum magnitude of the Pitas Point Fault is between 7.10 and 7.30 (USGS 2008). The Pitas Point Fault Hazard Zone is also identified within the Ventura County General Plan CAP as a Special Study Zone (Figure 7A, 2017).

As indicated in the Ventura County CAP, short periods of low to moderate ground shaking are a potential North Coast hazard. Low coastal terraces could be subject to liquefaction where groundwater is less than 15 feet from the surface. In addition, tsunamis could occur along the North Coast where elevations are less than 30 feet above mean sea level. Finally, landslides and mass earth movement pose potentially severe hazards on slopes greater than 25 percent.

4.5.1.2 Phase 2 Specific Setting

Rincon Island Causeway and Abutment, SCC Parcel Areas. The Rincon Island causeway and abutment area are located adjacent to the residential community of Mussel Shoals and the beach area on either side of Punta Gorda. The causeway and offshore access gate are situated on a rocky headland comprised of a hard sandstone member of the Pico formation with sandy beaches located to the east and west (Figure 4.5-1). The area offshore is a gradually sloping coastal plain with isolated rocky outcroppings. The Rincon Island causeway abutment and SCC parcel area are located at a point along the coast that functions like a headland or groin, trapping sand from alongshore transport on both sides (Everest 2014).

The nearshore area of the causeway abutment and SCC Parcel are located in areas underlain by artificial fill, alluvium, beach and sand deposits, and the Pico formation. The artificial fill at the site consists of locally derived earth materials utilized as compacted fill and boulder riprap utilized for coastal protective armoring. The unprotected portion of the upland SCC Parcel area is exposed to tides and waves. In a 2014 study, it was determined that the site has been erosive in recent years, and it is likely that erosion (due to high waves and tides) of the unprotected upland area will continue if left in its current condition. Additionally, this area and the adjacent beach were identified within a California Beach Erosion Assessment Survey performed by the California Sediment Work Group in 2010 as a beach erosion concern area (Everest 2014).

Figure 4.5-1. Onshore Geological Setting (Causeway Abutment and SCC Parcel)

The Quaternary aged alluvium (Qa) in the vicinity of this area is locally present onshore and is described by Dibblee (1988) as unconsolidated floodplain deposits of silt, sand, and gravel. The Holocene aged beach and sand deposits (Qs) are present in the intertidal zone and nearshore areas of the SCC parcel and causeway headlands. These deposits consist of sand, gravel and cobbles that rest on the underlying tilted Pico formation. The beach deposits vary in thickness on a seasonal basis and locale.

Beach Erosion – Mussel Shoals

According to the Ventura County General Plan, Coastal Area Plan (2017), Mussel Shoals exhibits seasonal fluctuations in the amount of sand. A seawall had to be constructed during the 1978 winter storms. Erosion is gradual now but may accelerate later. The California Department of Navigation and Ocean Development (DNOD) has noted the area to be "Present Use Critical," which means that existing shoreline facilities are subject to erosion from wave action.

Onshore Facility. The Onshore Facility is located within an area containing surficial deposits consisting of various layers of artificial fill composed of silt, sand, clay, and aggregate base materials underlain by Quaternary alluvium beach deposits composed of coarse sand, gravel, and cobbles. This area is underlain by upper Pliocene marine sedimentary rocks referred to in the Ventura Basin as the Pico Formation which is composed of siltstone, sandstone, and conglomerate. The Onshore Facility area is further underlain by middle Miocene marine sedimentary rocks referred to as the

Monterey Formation, which is composed of brown, soft, organic silty siliceous shale (Hargreaves 2013). According to the Ventura County Initial Study Guidelines, Paleontological Resources section, deposits within the Pico formation (Pliocene age) have a moderate to high potential for paleontological importance (County of Ventura 2011).

4.5.2 Regulatory

4.5.2.1 Federal and State

Federal and State laws, regulations, and policies pertaining to geology (and soils) and potentially applicable to the Phase 2 Alternatives include:

- **Federal Uniform Building Code (UBC):** designates and ranks regions of the U.S., according to their seismic hazard potential, as Seismic Zones 1 through 4, with Zone 1 having the least seismic potential and Zone 4 having the highest seismic potential. The International Building Code (IBC) sets design standards to accommodate a maximum considered earthquake (MCE), based on a project's regional location, site characteristics, and other factors.
- **Alquist-Priolo Earthquake Fault Zoning Act (Pub. Resources Code, §§ 2621-2630).** This Act requires that "sufficiently active" and "well-defined" earthquake fault zones be delineated by the State Geologist and prohibits locating structures for human occupancy on active and potentially active surface faults. (Note that since only those potentially active faults that have a relatively high potential for ground rupture are identified as fault zones, not all potentially active faults are zoned under the Alquist-Priolo Earthquake Fault Zone, as designated by the State of California.)
- **California Building Code (Cal. Code Regs., tit. 23).** The California Building Code provides a minimum standard for building design, which is based on the UBC, but is modified for conditions unique to California. The Code, which is selectively adopted by local jurisdictions, based on local conditions, contains requirements pertaining to multiple activities, including: excavation, site demolition, foundations and retaining walls, grading activities including drainage and erosion control, and construction of pipelines alongside existing structures. For example, sections 3301.2 and 3301.3 contain provisions requiring protection of adjacent properties during excavations and require a 10-day written notice and access agreements with adjacent property owners.
- **California Coastal Act (Pub. Resources Code, § 30253).** With respect to geological resources, Section 30253 requires, in part, that new development shall: (a) Minimize risks to life and property in areas of high geologic, flood, and fire hazard; and (b) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or

surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs.

- **California Coastal Act (Pub. Resources Code, § 30235): Construction Altering Natural Shoreline.** Revetments, breakwaters, groins, harbor channels, seawalls, cliff retaining walls, and other such construction that alters natural shoreline processes shall be permitted when required to serve coastal-dependent uses or to protect existing structures or public beaches in danger from erosion, and when designed to eliminate or mitigate adverse impacts on local shoreline sand supply. Existing marine structures causing water stagnation contributing to pollution problems and fish kills should be phased out or upgraded where feasible.

4.5.2.2 Local

Ventura County General Plan. Ventura County General Plan, Coastal Area Plan (2017) Policies that are potentially applicable to the Phase 2 Alternatives include the following:

- **Hazard Policy Geology - 2:** New development shall be sited and designed to minimize risks to life and property in areas of high geologic, flood, and fire hazards.
- **Hazard Policy Geology - 3:** All new development will be evaluated for its impacts to, and from, geologic hazards (including seismic safety, landslides, expansive soils, subsidence, etc.), flood hazards, and fire hazards. Feasible mitigation measures shall be required where necessary.
- **Hazard Policy Geology - 4:** The County may require the preparation of a geologic report at the applicant's expense. Such report shall include feasible mitigation measures which will be used in the proposed development.
- **Hazards Policy Erosion – 1:** Proposed shoreline protective devices will only be approved and/or located in conformance with Coastal Act Sections 30235 and 30253.
- **Hazards Policy Erosion – 2:** All shoreline protective structures which alter natural shoreline processes will be designed to eliminate or mitigate adverse impacts on local shoreline sand supply.

Ventura County General Plan, Hazards and Safety Element (2020) policies applicable to this area with respect to geology, soils, and paleontological resources are listed below.

- **Policy HAZ-4.5: Soil Erosion and Pollution Prevention.** The County shall require discretionary development be designed to prevent soil erosion and downstream sedimentation and pollution.

- **Policy HAZ-4.8: Seismic Hazards.** The County shall not allow development of habitable structures or hazardous materials storage facilities within areas prone to the effects of strong ground shaking, such as liquefaction, landslides, or other ground failures, unless a geotechnical engineering investigation is performed and appropriate and sufficient safeguards, based on this investigation, are incorporated into the project design.

Additionally, the Conservation and Open Space Element (2020) includes the following policies that are also applicable:

- **Policy COS-2.1: Beach Erosion.** The County shall strive to minimize the risk from the damaging effects of coastal wave hazards and beach erosion and reduce the rate of beach erosion, when feasible.
- **Policy COS-2.2: Beach Nourishment.** The County shall support activities that trap or add sand through beach nourishment, dune restoration, and other adaptation strategies to enhance or create beaches in areas susceptible to sea-level rise and coastal flooding.
- **Policy COS-5.1: Soil Protection.** The County shall strive to protect soil resources from erosion, contamination, and other effects that substantially reduce their value or lead to the creation of hazards.
- **Policy COS-5.2: Erosion Control.** The County shall encourage the planting of vegetation on soils exposed by grading activities, not related to agricultural production, to decrease soil erosion.

4.5.3 Applicable Thresholds

According to the Ventura County Initial Study Assessment Guidelines (2011), a project has the potential to create a significant impact from geologic hazards if it would (as applicable):

- Result in development within a State of California–designated Earthquake Fault Zone or a County–designated Fault Hazard Area that exposes people or structures to fault rupture hazards or directly or indirectly cause fault rupture.
- Result in development that conflicts with applicable requirements of the Ventura County Building Code and thus have potential to expose people or other structures to potential significant adverse effects, including the risk of loss, injury, or death involving ground-shaking hazards.
- Result in development within a State of California Seismic Hazards Zone that exposes people or structures to liquefaction hazards or directly or indirectly cause potential adverse effects, including the risk of loss, injury, or death involving liquefaction.

- Whether a proposed project will expose people or structures to potential adverse effects, including the risk of loss, injury, or death involving subsidence if it is located within a subsidence hazard zone.
- If a Project is located in a mapped tsunami hazard zone as shown on the County General Plan maps.
- Direct impacts to fossil sites include grading and excavation of fossiliferous rock, which can result in the loss of scientifically important fossil specimens and associated geological data. Indirect impacts include increased access opportunities and unauthorized collection of fossil materials from valuable sites.

4.5.4 Environmental Assessment of Potential Alternatives

4.5.4.1 Reuse of Rincon Island and the Causeway; Remediation, Decommissioning, and Improvement of the Onshore Sites

The Phase 2 Facilities are located within a seismically active area designated under the Alquist-Priolo Act as a special studies zone. Additionally, the Ventura County General Plan indicates that the Mussel Shoals area is subject to liquefaction as groundwater can be found less than 15 feet from the surface. Tsunamis could also impact the area since the adjacent Mussel Shoals site elevation is less than 30 feet above mean sea level, although it was noted within the Coastal Engineering Study (NV5 2021) that Rincon Island provides a certain wave sheltering effect to the nearshore region.

If left in place, the Island and causeway would continue to be subject to the existing potential of geologic impacts from seismic shaking or tsunami. As noted in the Coastal Engineering Study (NV5 2021), Rincon Island was developed with an unusual shape in order to optimize wave protection. The existing seaside armor on the Island is capable of withstanding a 3.5-year storm from the Pacific Ocean, but it may sustain damages and show considerable distressing under attack waves appreciably larger than a 3.5-year storm event. On the other hand, the historical extreme storms that occurred in the past 60 years do not appear to have endangered the Island. This indicates that Rincon Island may remain in place even when subject to rare occurrences of very large storm events. Additionally, there are no structures currently proposed in correlation to Island retention (Reuse, Reefing) that would be subject to or exacerbate geologic hazards. However, the causeway has deteriorated over time and has historically required multiple repairs. The causeway would remain vulnerable to the effects of seismic shaking or tsunamis if left in-place.

Implementation of Component Plan 9B or 9C (see Table 1-1) associated with the SCC Parcel would include improvement of the shoreline protection along this parcel. Additionally, planting of native vegetation on the upland portion of the parcel would reduce potential erosion and sedimentation. However, the addition of riprap or cobble

within the existing gap would stabilize the shoreline from continued erosion, which would result in minimized sediment transport downcoast.

Remediation, decommissioning, and improvement of the Onshore Facility and Onshore Pipeline Connections areas would not be affected by existing geologic conditions or geologic hazards.

4.5.4.2 Reefing of Rincon Island; Removal of the Causeway; Remediation, Decommissioning, and Improvement of the Onshore Sites

Potential impacts from retention of the Island are discussed in Section 4.5.4.1 above. Removal of the causeway would require excavations in the surf zone and offshore which would result in localized turbidity to seafloor sediments during demolition. Additionally, formation rock below the seafloor may be disturbed during vibratory extraction of the causeway pilings. Following causeway piling removal, these areas would quickly fill in due to normal sand deposition and tidal influence. Additionally, as noted within the Coastal Engineering Study (NV5 2021), removal of the causeway revetment is unlikely to result in changes to the overall wave characteristics, circulation pattern, or sediment transport capacity in the study area.

Removal of the causeway would also require partial removal of the rock revetment at the causeway abutment. This revetment in its current configuration, acts as a short sand-retention structure. Since sand moves from upcoast to downcoast in this region, this revetment helps prevent sand in the surf zone from moving downcoast, and thus helps retain more sand on the upcoast. Removal of the abutment and replacement of the revetment at a lower elevation from where it currently exists may cause more sand to be moved from the beach that is immediately north of the causeway to the areas south of the causeway. However, because of the location north of the point in relation to downcoast areas, as well as the large sediment transport capacity (offshore currents), this extra amount of sand would likely be deposited offshore rather than on the south beach areas, and thus the impact to the beaches and shoreline in the south areas are expected to be insignificant (NV5 2021).

SCC Parcel improvements would be similar to those discussed in Section 4.5.4.1 above for the Reefing Alternative. Remediation, decommissioning, and improvement of the Onshore Facility and Onshore Pipeline Connections areas would not be affected by existing geologic conditions or geologic hazards.

4.5.4.3 Complete Removal of Rincon Island and the Causeway; Remediation, Decommissioning, and Improvement of the Onshore Sites

As noted in the Coastal Engineering Study (NV5 2021), Rincon Island provides an appreciable wave sheltering effect for the nearshore region behind (leeside of) the Island. While the wave-sheltered area varies with approaching wave directions, this sheltering effect can extend from Rincon Island to the surf zone behind the Island.

Further, it was concluded within the Coastal Engineering Study that the complete removal of Rincon Island and the causeway would permanently increase the wave height and thus intensify the wave energy in the coastal area behind the Island and leading into shore. Similarly, complete removal would result in a permanent increase in alongshore sediment transport by up to 60 percent in the area just downcoast (east) and offshore of the Mussel Shoals community (actual conditions dependent upon sediment transport capacity and influx), which may cause a long-term retreat of the beach and increase the magnitude of seasonal beach variation in this area (noting that this would not likely impact the stability of riprap or cause additional erosion for the shoreline that has already been armored with revetments adjacent to the Mussel Shoals community).

SCC Parcel improvements would be similar to those discussed in Section 4.5.4.1 above for the Reefing Alternative.

Remediation, decommissioning, and improvement of the Onshore Facility and Onshore Pipeline Connections areas would not be affected by existing geologic conditions or geologic hazards.

4.6 GREENHOUSE GASES

4.6.1 Climate Change Update

As part of the Ventura County General Plan update, a Greenhouse Gas (GHG) emissions reduction strategy (which serves as the County's Climate Action Plan) was prepared and integrated with the General Plan. A baseline GHG inventory was prepared using a baseline year of 2015 and focusing on community-wide emissions. As indicated within General Plan Appendix B (2020) (Figure B-1), transportation (36 percent), solid waste (17 percent), building energy (17 percent), stationary source (16 percent), and agriculture (13 percent) made up the majority of GHGs in unincorporated Ventura County. The County's GHG emissions forecast predicts a 7.8 percent decrease from the 2015 baseline by the year 2050 for unincorporated Ventura County, based on implementation of existing State and Federal regulations. Ventura County GHG reduction goals and targets are similar to the State of California targets, but are focused on the following reductions in the County's GHG inventory:

- 2 percent below 2015 levels by 2020
- 41 percent below 2015 levels by 2030
- 61 percent below 2015 levels by 2040
- 80 percent below 2015 levels by 2050

4.6.2 Regulatory Setting

Applicable goals related to GHGs that are pertinent to Phase 2 Alternatives are found within the Ventura County General Plan, Conservation and Open Space Element (2020b) and include the following:

- **Policy COS-10.4: Greenhouse Gas Reductions in Existing and New Development.** The County shall reduce GHG emissions in both existing and new development through a combination of measures included in the GHG Strategy, which includes new and modified regulations, financing and incentive-based programs, community outreach and education programs, partnerships with local or regional agencies, and other related actions**.**

4.6.3 Applicable Thresholds

4.6.3.1 Ventura County Air Pollution Control District

At the local level, the VCAPCD is the agency primarily responsible for air quality standards attainment as established by CARB and USEPA. However, the VCAPCD has not adopted a GHG significance threshold for construction emissions; therefore, CSLC staff reviewed recommended thresholds for the air districts adjacent to Ventura County and determined that, for the purposes of this analysis, any GHG emissions over the SBCAPCD threshold for stationary sources (see Section 4.6.3.2 below) are considered significant.

4.6.3.2 Santa Barbara County Air Pollution Control District

The SBCAPCD has developed a GHG threshold of significance of 10,000 metric tons CO_2E[12] per year, which applies to stationary air pollutant sources. Although Rincon Island was a permitted stationary source of air pollutants under the jurisdiction of VCAPCD, proposed decommissioning activities are not. Due to the lack of any other threshold, the SBCAPCD's stationary source threshold is used in this environmental analysis to determine the significance of the Project's GHG emissions.

4.6.4 Environmental Assessment of Potential Alternatives

A preliminary estimate of GHG emissions associated with the Complete Removal Alternative indicates peak 12-month period decommissioning (removing the Island core) emissions would be approximately 3,516 metric tons CO_2E. Therefore, the SBCAPCD 10,000 metric ton per year CO_2E threshold would not be exceeded.

More refined calculations of GHG emissions will be completed as part of the CEQA document preparation. GHG emissions associated with peak 12-month decommissioning activities during the Complete Removal Alternative are provided as a

[12] CO_2e is the abbreviation for carbon dioxide equivalent, which is used to measure and compare emissions from greenhouse gases based on how severely they contribute to global warming.

conservative estimate to represent maximum potential GHG emissions. The Reuse and Reefing Alternatives require less equipment during their peak decommissioning phases, and therefore GHG emissions generated by the Reuse and Reefing Alternatives would be less than the Complete Removal Alternative. As the Complete Removal Alternative has not exceeded SBCAPCD thresholds, the Reuse and Reefing Alternatives are also not anticipated to exceed the SBCAPCD thresholds.

4.7 HAZARDS AND HAZARDOUS MATERIALS

4.7.1 Setting

4.7.1.1 Onshore Sites

Onshore Facility. The Onshore Facility is located at the southwestern margin of Ventura County, immediately east of U.S. Highway 101 and the Pacific Ocean. Further, the site is located within the west central portion of the Rincon Oil Field, in Township 3 North, Range 24 West, Section 8 and 17. The elevation at the Onshore Facility ranges from approximately 13.48 feet to 17.65 feet above msl. The site is located within the area of former State Lease No. PRC 145.

Following removal of aboveground storage tanks, processing equipment, and piping, there are no known above-ground sources of hazardous materials at the Onshore Facility. Additionally, the Onshore Facility is not listed on the Department of Toxic Substances Control (DTSC) Hazardous Waste and Substances Site List, Site Cleanup (Cortese List) (DTSC 2021). The Onshore Facility is not located within 0.25 mile of a school.

<u>Soil and Groundwater Assessment</u>

Padre completed soil and groundwater assessment activities at the Onshore Facility and to the west of the area in the U.S. Highway 101 median during the period from August 26, 2019, through November 1, 2021. The objective of the site assessment activities was to determine the potential presence of petroleum hydrocarbon constituents in soil and groundwater resulting from historical petroleum hydrocarbon production and processing activities performed at and in the vicinity of the Onshore Facility (Padre 2021a, Attachment 3).

The scope of site assessment activities completed at the Onshore Facility included the collection of 18 soil samples for chemical analyses from four oil well abandonment excavation areas, a total of 25 drill holes advanced to maximum depths of approximately 31 feet, construction of six groundwater monitoring wells, and collection of a total of 10 groundwater samples. Two of the groundwater samples were collected from drill holes located downgradient from the Site at off-site locations within the southbound median of U.S. Highway 101. A total of 78 soil samples were chemically analyzed for the presence of petroleum hydrocarbon constituents, and a total of 10

groundwater samples were chemically analyzed for the presence of petroleum hydrocarbon constituents.

Earth materials encountered during the course of the soil and groundwater assessment activities completed at the Onshore Facility included artificial fill composed of silt, sand, gravel, clay, and recycled asphaltic base material, as well as Quaternary surficial sediments and weathered Pico Formation clay. Groundwater monitoring activities completed at the Onshore Facility indicated depths to groundwater that ranged from approximately 10.17 feet to 13.85 feet bgs, which correspond to groundwater elevations from approximately 1.95 feet to 3.91 feet msl. The hydraulic flow direction is estimated towards the Pacific Ocean to the southwest. The first encountered groundwater beneath the Onshore Facility is not a source of drinking water.

The laboratory analytical results indicate the presence of petroleum hydrocarbons at concentrations greater than environmental screening levels in soil and groundwater resulting from historical petroleum hydrocarbon production and processing activities performed at and in the vicinity of the Onshore Facility. The results for two groundwater samples collected from offsite locations within the median of the U.S. Highway 101 indicated the presence of petroleum hydrocarbon concentrations that were greater than the applicable ESLs.

The total estimated in-place volume of petroleum hydrocarbon-contaminated soil at the Onshore Facility is approximately 7,500 cubic yards, and the estimated in-place volume of recycled asphalt aggregate base material is approximately 9,360 cubic yards.

SCC Parcel. There are no contaminated materials known to exist within the SCC Parcel area, and this area was not previously used for oil and gas production. As such, no additional site assessment for hazardous materials was conducted at this time. Potential impacts during proposed restoration activities would include use of construction equipment that contains hydrocarbon fuel and lubricants during construction. Following completion of the proposed enhancements, no hazardous materials risk would remain.

Onshore Pipeline Connections. Completion of pipeline pigging, flushing, and abandonment activities associated with the Onshore Pipeline Connections would ensure that these facilities are removed or left clean and cemented in place. No hazardous materials impacts would be possible following completion of decommissioning. Because the Onshore Pipeline Connections area is located within a concrete vault, no additional site assessment for hazardous materials was conducted at this time.

<u>Wildfire Hazard Risk</u>

The onshore sites (Onshore Facility, Onshore Pipeline Connections, and SCC Parcel) are all located within an area designated by the California Department of Forestry and Fire Protection (CAL FIRE) as high to very high risk for fire hazards to occur (Ventura County 2020c).

4.7.1.2 Rincon Island and the Causeway

Rincon Island. Rincon Island is constructed of a perimeter of rock revetments that contain a sand fill core. The sand core is composed of approximately 160,000 cubic yards of medium to fine-grained sand that was obtained from the bluff behind Punta Gorda, north of the site (ASCE 1959). The earth materials within the bluff are composed of marine deposited, Pliocene and Pleistocene-age Pico Formation, which consists of mostly light gray to tan sandstone, in some places pebbly, and includes some interbedded claystone (Dibblee 1988).

The sand core is surrounded with approximately 72,600 cubic yards of locally sourced amor rock composed of Cold-Water Sandstone mined from the Stanley Park Ranch located northeast of the Island and 1,130 concrete tetrapods. The working surface of the Island is approximately 1.2 acres, which is paved with approximately 8 to 14 inches of concrete and asphalt. Prior to completion of Phase 1, the working area of the Island contained an 88-slot well bay, one additional oil well located in a concrete cellar east of the well bay, aboveground storage tanks, sumps, pumps, gas scrubbers, a gas compressor, flare, pipeline systems, electrical supports, and various office and support building space. As part of Phase 1, the oil production and injection wells located in the well bay were permanently abandoned, and the well bay was filled in with soil and paved with concrete. The oil, gas, and water processing and storage facilities were removed. The working area of the Island, including the former well bay, was sealed with concrete and asphalt.

The only remaining source of hazardous materials above-ground at Rincon Island is the non-friable asbestos containing material that was identified during Phase 1 activities in the roofing materials and parapet walls associated with the Operator's Building and Electrical Building.

Additionally, the site is not listed on the DTSC Hazardous Waste and Substances Site List, Site Cleanup (Cortese List) (DTSC 2021). Rincon Island is not located within 0.25 mile of a school.

<u>Soil and Groundwater Assessment</u>

Padre completed initial soil assessment activities on the Island in support of Phase 1 and Phase 2 on March 3 and 5, 2021 (Padre 2021a, Attachment 3). Padre completed the soil, interstitial water, and ocean water assessment activities on Rincon Island on May 4, 5, 11, and 13, and October 4, 2021. The results of the site assessment activities completed by Padre on the Island are included in Attachment 3 and summarized below.

The objective of the site assessment activities was to determine the potential presence of constituents of concern located within the Island core and interstitial water on Rincon Island resulting from historical petroleum hydrocarbon production and processing activities. The site assessment activities also included the collection of ocean water samples from within the revetment wall riprap material immediately adjacent to the

Island perimeter. A total of 21 drill holes were drilled to facilitate the collection of soil samples for chemical analyses to maximum depths of 20 feet bgs. A total of three temporary interstitial water monitoring wells were constructed on the Island. A total of 60 soil samples, four interstitial water samples, and three ocean water samples were collected for laboratory analyses to determine the potential presence of petroleum hydrocarbon contamination. The laboratory analytical results for soil, interstitial water, and ocean water samples collected on the Island were compared to applicable LARWQCB, SFBRWQCB, and SWRCB WQO environmental screening levels.

The depth to interstitial water measured at the temporary monitoring wells ranged from approximately 11.96 feet to 14.61 feet below the surface of the Island, which corresponds to elevations that range from approximately 0.47 feet to 3.18 feet msl.

The laboratory analytical results for 31 of the soil samples collected on the Island identified the presence of petroleum hydrocarbon concentrations within certain areas of the Island core at depths from approximately 1 foot to 16 feet bgs (Padre 2021a, Attachment 3). The estimated total volume of petroleum hydrocarbon-contaminated soil identified within the Island core is approximately 9,605 cubic yards. The laboratory analytical results for the interstitial water samples collected from temporary monitoring wells indicated petroleum hydrocarbon concentrations that were less than the applicable screening levels, and the laboratory analytical results for the three ocean water samples collected at the Island did not indicate the presence of petroleum hydrocarbon constituents.

Rincon Causeway. Although testing has not been performed to confirm at this time, it is suspected that the Rincon Causeway pilings and decking materials will contain wood preservatives (such as creosote); since wooden materials are commonly treated with preservatives to inhibit damage from the marine environment.

4.7.2 Regulatory

4.7.2.1 Federal and State

USEPA. The site is located within the jurisdiction of the USEPA Region 9 – Pacific Southwest, which implements and enforces federal environmental laws in Arizona, California, Hawaii, Nevada, the Pacific Islands, and 148 Tribal Nations. The USEPA is authorized by Congress to write regulations that explain the technical, operational, and legal details necessary to implement law. Regulations are mandatory requirements that can apply to individuals, businesses, state or local governments, non-profit institutions, or others. Regulations are codified annually in the U.S. Code of Federal Regulations (CFR). Title 40: Protection of the Environment is the section of the CFR that deals with EPA's mission of protecting human health and the environment.

LARWQCB. The site is located within the jurisdiction of the California Water Quality Control Board – Los Angeles Region (LARWQCB). The SWRCB and the LARWQCB

enforce regulatory responsibility for the protection of groundwaters, surface waters, and coastal waters in the State of California under the federal Clean Water Act (CWA) and the Porter-Cologne Water Quality Control Act. The Site Cleanup Program (SCP) regulates and oversees the investigation and cleanup of unauthorized discharges of pollutants that affect the quality of waters of the State. The LARWQCB has the legal and regulatory authority under the California Water Code to provide oversight of site investigation and cleanup activities pursuant to restoring and protecting water quality, human health, and the environment.

Based on the results of the site assessment activities, a Remedial Action Plan (RAP) that describes the remediation goals and methods to achieve those goals should be prepared and submitted to the LARWQCB for their approval. The goal in seeking LARWQCB oversight of site remediation activities is to receive a “no further action” designation after the completion of site assessment and remediation activities for Phase 2 facilities.

Stormwater at the site is under the jurisdiction of the LARWQCB Stormwater Program, which is a comprehensive program to manage the quality of discharges from the incorporated and unincorporated areas in Los Angeles and Ventura Counties. Section 402(p) of the Federal Clean Water Act requires industries to fall under certain Standard Industrial Classification (SIC) codes and requires that industries that discharge stormwater into a storm drain system or into surface waters obtain a National Pollution Discharge Elimination System (NPDES) permit. In California, industrial facilities comply with Section 402(p) by applying for coverage under the State’s General Permit for Stormwater Discharges Associated with Industrial Activities (Industrial General Permit). The Industrial General Permit is an NPDES permit that regulates stormwater discharges from any facility associated with ten broad categories of industrial activities. Rincon Island currently manages stormwater under a No Exposure Certification (NEC) as part of the NPDES Industrial General Permit. A condition of “no exposure” means that a discharger’s industrial activities and materials are not exposed to stormwater.

Following the abandonment of the oil production and processing facilities, under Clean Water Act sections 301 and 402(p), 33 U.S.C. Section 1311, 1342(p), the facilities are “conditionally excluded” from stormwater permitting for discharges of stormwater associated with industrial activities if the discharger can certify that a condition of “no exposure” exists at the industrial facility. The discharger must maintain a condition of “no exposure” at the facility in order for the conditional exclusion to remain applicable, and the NEC shall be recertified annually to ensure the conditions of “no exposure” are satisfied.

4.7.2.2 Local

Ventura County Coastal Area Plan (CAP). Policies included within the CAP (2017), in accordance with the CCA, that are applicable to the Phase 2 Alternatives are listed below:

- **Section 30232, Oil and Hazardous Substances Spills.** Protection against the spillage of crude oil, gas, petroleum products, or hazardous substances shall be provided in relation to any development or transportation of such materials. Effective containment and cleanup facilities and procedures shall be provided for accidental spills that do occur.

Ventura County General Plan. Policies included within the Ventura County 2040 General Plan (Adopted September 2020) include the following related to hazardous materials:

- **Policy HAZ-5.2: Hazardous Materials and Waste Management Facilities.** The County shall require discretionary development involving facilities and operations which may potentially utilize, store, and/or generate hazardous materials and/or wastes to be located in areas that would not expose the public to a significant risk of injury, loss of life, or property damage and would not disproportionally impact Designated Disadvantaged Communities.
- **Policy HAZ-5.3: Preventing Contamination of Natural Resources.** The County shall strive to locate and control sources of hazardous materials to prevent contamination of air, water, soil, and other natural resources.
- **Policy HAZ-5.5: Hazardous Waste Reduction at the Source.** The County shall, as part of the discretionary review process, require that hazardous wastes and hazardous materials be managed in such a way that waste reduction through alternative technology is the first priority, followed by recycling and on-site treatment, with disposal as the last resort.
- **Policy HAZ-5.7: Presence of Hazardous Wastes.** Applicants shall provide a statement indicating the presence of any hazardous wastes on a site, prior to discretionary development. The applicant must demonstrate that the waste site is properly closed, or will be closed, pursuant to all applicable state and federal laws, before the project is inaugurated.
- **Policy HAZ-7.1: Oil Spill Prevention.** The County shall review and analyze all proposed oil and gas exploration and production projects and shall condition all County discretionary permits for such projects, to require compliance with local, state, and federal oil spill prevention regulations. The County shall also provide input and comments on permit applications that are under the purview of an outside agency.

Ventura County Environmental Health Division. Ventura County Environmental Health Division, Certified Unified Program Agency (VC CUPA) is the CUPA for all incorporated and unincorporated areas of Ventura County, with the exception of the city of Oxnard. This means VC CUPA has been certified by the CalEPA to implement the following six State environmental programs:

- Hazardous Waste
- Hazardous Materials Business Plan (HMBP)
- California Accidental Release Prevention Program (CalARP)
- Underground Hazardous Materials Storage Tanks (UST)
- Aboveground Petroleum Storage Tanks/Spill Prevention Control and Countermeasure Plans (APSA)
- Onsite Hazardous Waste Treatment/Tiered Permit

The HMBP is required to include a summary of business activities, owner and operator information including emergency contacts, the type and quantity of reportable hazardous materials, a site map, emergency response procedures, and an employee training program. In general, the submittal of an HMBP is required if a business handles or stores a hazardous material equal to or greater than the minimum reportable quantities. These quantities are 55 gallons for liquids, 500 pounds for solids, and 200 cubic feet (at standard temperature and pressure) for compressed gases. Exemptions to filing an HMBP are listed in the Health and Safety Code.

4.7.3 Applicable Thresholds

According to the County of Ventura, a project would have a significant impact on hazards, hazardous materials, and wildfire if it would:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
- Create a significant hazard to the public or the environment through the reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.
- Emit hazardous emissions or handle hazardous materials within 0.25 mile of an existing or proposed school.
- Create a significant hazard due to location on a site which is included on a list of hazardous materials sites.

4.7.4 Environmental Assessment of Potential Alternatives

4.7.4.1 Reuse of Rincon Island and the Causeway; Remediation, Decommissioning, and Improvement of the Onshore Sites

Onshore Facility. Remediation and restoration of the Onshore Facility using soil excavation and disposal and groundwater pump and treat methods would mitigate further impacts to groundwater at the site, improve groundwater quality in the vicinity of the Onshore Facility, and mitigate impacts to the Pacific Ocean. The petroleum hydrocarbon-contaminated soil and asphalt would be excavated using standard commercial excavation equipment (e.g., hydraulic excavator, front-end loader, track-mounted dozer). The excavation area sidewalls would be sloped to provide safe access for the excavating equipment to excavate the vertical and lateral extent of petroleum hydrocarbon-contaminated soil. Groundwater dewatering wells would be installed around the excavation area. The extracted petroleum hydrocarbon-contaminated groundwater would be processed through a series of settling tanks, bag filters, and granular activated carbon vessels to meet the requirements to discharge into the County of Ventura-operated wastewater system.

SCC Parcel. The SCC Parcel area was never used for oil and gas production, and therefore the site has not been assessed for the presence of hazardous materials. Potential impacts during proposed restoration activities would include the use of construction equipment that contains hydrocarbon fuel and lubricants during construction. Following completion of the proposed improvements, no hazardous materials risk would remain.

Onshore Pipeline Connections. Completion of pipeline pigging, flushing, and abandonment activities associated with the Onshore Pipeline Connections would ensure that these facilities are removed or left clean and cemented in place. The potential for impacts from hazardous materials to be present following completion of decommissioning activities would be low.

Rincon Island and the Causeway. The wells located on the Island were previously plugged and abandoned in accordance with California Geologic Energy Management Division (CalGEM) requirements during Phase I activities. The 6-inch-diameter gas pipeline and the 6-inch-diameter oil pipeline have been previously removed from the Island and causeway and are currently terminated with caps at the causeway abutment.

If the causeway remains in place, the potential for impact to the environment would be minimal since the pipelines have been removed from the causeway; however, the remaining causeway structure likely contains wood treated with hydrocarbon preservatives within the causeway pilings and deck material. This material is currently encapsulated within the structure and does not represent a hazardous materials risk until the wood is disassembled and transported from the site.

Retention of Rincon Island would include removal of the contaminated sand and gravel and backfill with clean materials. Removal of the contaminated sand and gravel from the Island core and any residual contamination in the well bay area (to be determined) would require use of construction equipment and handling of petroleum hydrocarbon-contaminated materials during excavation. Contaminated materials removal would be conducted in accordance with the requirements of the LARWQCB Site Cleanup Program (SCP).

Rincon Island currently manages stormwater under a NEC as part of the NPDES/Industrial General Permit. The discharger must maintain a condition of no exposure at the facility in order for the conditional exclusion to remain applicable. The NEC is recertified annually to ensure the conditions of no exposure are satisfied. No hazardous petroleum hydrocarbon-contaminated materials would remain present on the Island if the core was removed and backfilled with clean materials.

The potential for release of asbestos at the Island is considered moderate based on the presence of asbestos in the onsite building materials. All applicable State and Federal rules and regulations should be followed to protect workers, site personnel, residents, the community, and the environment during the course of deconstruction, maintenance, renovation, decommissioning, disposal, or recycling activities of the onsite buildings in accordance with the rules and regulations of the California Division of Occupational Safety and Health, United States Department of Labor Occupational Safety and Health Administration, and the USEPA/National Emission Standards for Hazardous Air Pollutants.

4.7.4.2 Reefing of Rincon Island; Removal of the Causeway; Remediation, Decommissioning, and Improvement of the Onshore Sites

The Reefing Alternative would require removal of the Island's pavement and contaminated sand and gravel and backfill with clean soil (to a lesser degree than the backfill used in the Reuse Alternative). Potential impacts during construction would be similar to those discussed in Section 4.6.4.1 above. Following removal of the contaminated sand and gravel from the Island core and any residual contamination in the well bay area (to be determined), no hazardous materials would remain.

Removal of the causeway under a reefing scenario would also result in minimal risk since the petroleum hydrocarbon-containing pipelines were removed from the causeway during Phase 1. Removal of the wooden deck along the causeway has a low potential to release wood preservatives to the ocean if the deck materials are damaged during removal. The wood decking materials and support pilings should be sampled and chemically analyzed to identify the potential presence of regulated materials prior to removal.

Potential impacts of remediation, decommissioning, and improvement of the Onshore Facility, Onshore Pipeline Connections, and SCC Parcel would be as described in Section 4.7.4.1 above.

4.7.4.3 Complete Removal of Rincon Island and the Causeway; Remediation, Decommissioning, and Improvement of the Onshore Sites

Potential risks for causeway removal are the same as described in Section 4.7.4.1 above.

The Complete Removal Alternative would require removal of the Island's pavement, contaminated sand and gravel, removal of the well casings to 5-feet below the sea floor, and removal of the protective armor revetments (riprap and tetrapods). Potential impacts during construction would be similar to those discussed in Section 4.7.4.1 above. Following removal of the contaminated sand and gravel from the Island core and any residual contamination in the well bay area, no hazardous materials would remain.

Potential impacts for causeway removal, remediation, decommissioning, and improvement of the Onshore Facility, Onshore Pipeline Connections, and SCC Parcel would be as described in Section 4.7.4.1 above.

Complete removal of the Island would be conducted in accordance with the LARWQCB SCP. The LARWQCB has the legal and regulatory authority under the California Water Code to provide oversight of site investigation and cleanup activities pursuant to restoring and protecting water quality, human health, and the environment.

4.8 HYDROLOGY/WATER QUALITY

4.8.1 Setting

4.8.1.1 Onshore

For the purposes of this study, hydrology and water quality within the onshore area encompasses the Onshore Facility, upland portion of the SCC Parcel, and Onshore Pipeline Connections facilities of Phase 2.

The onshore study area is located in the South Coast Hydrologic Region of southern California (CDWR 2019). The nearest drainage feature to the onshore study area (within the Onshore Facility) is Los Sauces Creek, which traverses from northeast to southwest off the eastern flank of Rincon Mountain. Los Sauces Creek drains to the Pacific Ocean located approximately 400 feet southwest.

The nearest rainfall gauges to the onshore study area are the La Conchita – Shaefer Ranch Station (No. 309), located approximately 2.5 miles north of Rincon Island, and Ventura County Fire Station No. 25, located adjacent to the south of the Onshore Facility. These two facilities measured a 2020 through 2021 rainfall total of 3.98 inches and 3.97 inches, respectively, compared with an annual average rainfall total of 14.67

inches for Ventura County (County of Ventura 2021). The Ventura Countywide Stormwater Quality Management Program map (County of Ventura 2015) does not show any existing stormwater infrastructure near the Onshore Facility area. All stormwater generated or flowing through the site would drain from impervious surfaces onto the beach, except for portions of the Onshore Facility which are provided with secondary containment.

The SCC Parcel is within a Federal Emergency Management Agency (FEMA) Regulatory Floodway Zone VE. Zone VE is the flood insurance rate zone that is designated as a Special Flood Hazard area subject to coastal high hazard flooding due to its location in areas potentially affected by wave action.

The Onshore Facility, specifically in the area of Los Sauces Creek, is within Zone A, which is identified as an area that is subject to inundation by a one percent annual chance flood event. The Onshore Pipeline Connections are not located within a designated flood hazard area (FEMA 2021).

4.8.1.2 Nearshore/Offshore

For the purposes of this study, hydrology and water quality within the nearshore/offshore area encompasses Rincon Island and the causeway and the nearshore/intertidal portion of the SCC Parcel facilities of Phase 2.

The California Current is the primary driver for water transport along the northern and central portions of the California coast, including the Ventura County coastline. The California Current is generally characterized as a broad, shallow, slow moving southerly current characterized by cold, low-salinity, high-oxygen water from Alaska. The nearshore manifestations of the California Current can vary in both speed and direction as winds, tides, and surf conditions can dramatically alter local conditions. As indicated during past offshore surveys, turbidity can be high and limit water clarity offshore (UCSB 2021, Attachment 2). The California Countercurrent brings warmer and more saline waters from Baja California north along the Ventura County coastline, and the two currents mix near the surface surrounding the Channel Islands. Habitat for both cold and warm water species occurs where these two currents mix, in the Channel Islands and on the Ventura Coast.

Rincon Island and the causeway are within a FEMA Regulatory Floodway Zone VE. Zone VE is the flood insurance rate zone that is designated as a Special Flood Hazard area subject to coastal high hazard flooding due to its location in areas potentially affected by wave action. Rincon Island is currently utilized by sea birds for roosting and nesting habitat, which results in minor impacts to water quality due to the discharge of bird feces during storm events and large waves.

Surface water temperatures in the offshore area typically range from 55 to 67 degrees Fahrenheit (°F) with a mean value of 62°F. Winds along this section of the coastline are

predominantly from the northwest and promote the surface water mass' offshore movement with subsequent replacement by cold, nutrient-rich water upwelling from deeper layers. Seasonal upwelling plays an important role in temperature and nutrient cycling along the entire coast of California. Upwelling is not restricted temporally and can occur at any time during the year when the necessary wind conditions persist.

Mussel Shoals Beach, encompassing the nearshore area of the SCC Parcel, has not been included on the LARWQCB 303(d) impaired waterbody listing (LARWQCB 2022). Similarly, Ventura County has historically monitored ocean water quality conditions at Mussel Shoals and downcoast at Oil Piers Beach. Based on historical water quality monitoring data (primarily focused on pollution related to total coliform, fecal coliform, enterococcus as public health parameters), weekly sampling conducted at Mussel Shoals Beach throughout 2022 to date has shown to pass water quality tests 95 percent of the time. Sampling conducted downcoast at Oil Piers Beach passed 100 percent of the time (County of Ventura Resource Management Agency 2022).

4.8.2 Regulatory

4.8.2.1 Federal and State

State and federal regulations control water quality in California. The USEPA is the federal agency responsible for water quality management and administers the Clean Water Act. The SWRCB is the agency with jurisdiction over water quality issues in the State of California. The SWRCB regulates activities that can affect ocean water quality due to point source discharges, stormwater discharges, and watershed activities. The SWRCB's Ocean Plan establishes water quality objectives for ocean waters to ensure the reasonable protection of beneficial uses and prevention of nuisance conditions. Water quality objectives and effluent limitations include aesthetic, chemical, and bacterial standards (SWRCB 2019).

The area is under the jurisdiction of the LARWQCB. The LARWQCB has the responsibility to protect ground and surface water quality in the Los Angeles Region, including the coastal watersheds of Los Angeles and Ventura Counties, along with very small portions of Kern and Santa Barbara Counties.

In addition to regional water quality regulation, the Ventura Countywide Stormwater Quality Urban Impact Mitigation Plan (SQUIMP) includes a list of best management practices (BMPs) for new and anticipated development projects. Although the SQUIMP was developed as part of the municipal stormwater program to address stormwater pollution from new development and redevelopment by the private sector, it includes general BMPs which may be used during the construction of projects to limit effluent and the potential for unanticipated discharges.

4.8.2.2 Local

Ventura County General Plan. Local Policies outlined in the County of Ventura General Plan; Water Resources Element (2020d) that are applicable to the Project alternatives are listed below:

- **Policy WR-1.2: Watershed Planning.** The County shall consider the location of a discretionary project within a watershed to determine whether or not it could negatively impact a water source. As part of discretionary project review, the County shall also consider local watershed management plans when considering land use development.
- **Policy WR-1.12/WR-2.2: Water Quality Protection for Discretionary Development**: The County shall evaluate the potential for discretionary development to cause deposition and discharge of sediment, debris, waste and other pollutants into surface runoff, drainage systems, surface water bodies, and groundwater. The County shall require discretionary development to minimize potential deposition and discharge through point source controls, stormwater treatment, runoff reduction measures, BMPs, and low impact development.

As outlined within the Water Resources Element (2020d) of the General Plan, The County of Ventura Coastal Zoning Ordinance (CZO) regulates all proposed development in the Coastal Zone of Ventura County. This ordinance requires development to be undertaken in accordance with conditions and requirements established by the Ventura Countywide Stormwater Quality Management Program, NPDES Permit No. CAS063339 and the Ventura Stormwater Quality Management Ordinance No. 4142 and as these permits and regulations may be amended.

- Construction activity including clearing, grading or excavation that requires a grading permit shall be undertaken in accordance with any conditions and requirements established by the NPDES Permit or other permits which are reasonably related to the reduction or elimination of Pollutants in Stormwater from the construction site.
- Preparation of a Stormwater Pollution Control Plan or Stormwater Pollution Prevention Plan for construction activities.
- Generally new development or redevelopment projects affecting 5,000 square feet or greater must incorporate post-construction stormwater quality design principals; details are provided in the Ventura County Technical Guidance Manual for Stormwater Quality Control Measures.

Additionally, the County of Ventura Building Code states that submittal of grading plans during the permitting process requires an applicant to evaluate soils and geology and site drainage patterns prior to grading. Site design must include measures to detain or retain stormflows so that runoff is not appreciably different post-development. Design

must include measures to prevent erosion of slopes, such as vegetation, soil stabilizers, and riprap. The County of Ventura requires (Building Code Section J112) that BMPs be used to prevent erosion and stormwater flows from discharging offsite.

Coastal Area Plan (CAP). Local policies from the Ventura County CAP (2017) applicable to this area with respect to hydrology and water quality are listed below.

- **Policy 1.3.2.2:** Discretionary development shall comply with all applicable County and State water regulations.
- **Policy 1.3.2.4:** Discretionary development shall not significantly impact the quantity or quality of water resources within watersheds, groundwater recharge areas or groundwater basins.

4.8.3 Applicable Thresholds

According to the Ventura County Initial Study Assessment Guidelines (2011), potential impacts to water quality could result from:

- Any land use or project proposal that will individually or cumulatively degrade the quality of groundwater and cause groundwater to exceed groundwater quality objectives set by the Basin Plan.
- Any land use or project proposal that is expected to individually or cumulatively degrade the quality of Surface Water causing it to exceed water quality objectives contained in Chapter 3 of the three Basin Plans.
- Any land use or project development that directly or indirectly causes stormwater quality to exceed water quality objectives or standards in the applicable MS4 (Municipal Separate Storm Sewer System) General Permit or any other NPDES Permits.

4.8.4 Environmental Assessment of Potential Alternatives

4.8.4.1 Reuse of Rincon Island and the Causeway; Remediation, Decommissioning, and Improvement of the Onshore Sites

Under this alternative, Rincon Island and the causeway would remain in-place.

Rincon Island is currently utilized by sea birds for roosting and nesting habitat, which results in minor impacts to water quality due to the discharge of bird feces during storm events and large waves. Under this alternative, no new impacts would result to hydrology and water quality at the Rincon Island and causeway areas given the baseline conditions.

Decommissioning and remediation activities would occur at Rincon Island and the Onshore Facility, including the demolition of the remaining buildings and concrete foundations (at the Island) and equipment and piping at the Onshore Facility. Soil found to be contaminated with petroleum hydrocarbons, metals, or other contaminants at the

Onshore Facility would be excavated and the soil transported off-site for proper disposal at a licensed facility. Under this alternative, the surface pavement would be removed from the Island, and the contaminated soil on Rincon Island would be excavated and transported off-site for disposal. Hydrology and water quality impacts could result from the discharge of contaminated soils during the demolition and remediation activities occurring on-site; however, the impacts to water quality would be reduced through the preparation and implementation of an agency-approved Remedial Action Plan and Stormwater Pollution Prevention Plan, including BMPs to prevent stormwater from being contaminated during demolition and remediation activities.

The Onshore Pipeline Connections decommissioning would require pigging, flushing, and abandonment activities to remove or leave the pipelines cleaned and grouted in place. These activities would be limited to the existing valve box area and would not require ground disturbance that would have the potential to impact hydrology/water quality in the area.

Potential improvements at the SCC Parcel would result in temporary construction disturbances to facilitate restoration and proposed erosion control measures. This disturbance would result in temporary impacts to water quality in terms of runoff; however, this disturbance would also be minimized through the preparation and implementation of a Water Quality Monitoring Plan (further discussed in Sections 4.8.4.2 and 4.8.4.3 below).

4.8.4.2 Reefing of Rincon Island; Removal of the Causeway; Remediation, Decommissioning, and Improvement of the Onshore Sites

Hydrology and water quality impacts under the Reefing Alternative would be similar to the Reuse Alternative. However, under this alternative the causeway would be removed in its entirety. Removal of the causeway would cause minor turbidity impacts to the ocean water during removal of pilings. These impacts are anticipated to be temporary and can be mitigated through the preparation and implementation of a Water Quality Monitoring Plan that would include measures for monitoring water quality parameters (e.g., pH, temperature, dissolved oxygen, turbidity, and visual assessment for floating particulates), contingency measures for mitigating or reducing water quality impacts, and reporting of findings regularly to the appropriate regulatory agencies.

Potential impacts related to the Onshore Facility, Onshore Pipeline Connections, and SCC Parcel would be similar to what is described in Section 4.8.4.1 above.

4.8.4.3 Complete Removal of Rincon Island and the Causeway; Remediation, Decommissioning, and Improvement of the Onshore Sites

Complete removal of Rincon Island and the causeway would involve the systematic removal of the Island components, including facilities, subsurface piping, and concrete foundations. The Island core would be completely removed, then the removal of riprap

and concrete tetrapod armoring components would occur using marine-based equipment.

Removal of the Island would result in more significant hydrology and water quality impacts than the other alternatives.

Water quality impacts would result during offshore construction activities from the disturbance to the existing structure, potential release of existing contaminants, and disturbance to the seafloor. Substantial turbidity would occur at the Island location and would likely extend some distance based on current direction and velocities occurring at the time. The impacts to water quality would be temporary and could be lessened through the preparation and implementation of a Water Quality Monitoring Plan that contains enforceable measures to monitor and minimize turbidity impacts, as noted under section 4.8.4.2.

Potential impacts related to the Onshore Facility, Onshore Pipeline Connections, and SCC Parcel would be similar to what is described in Section 4.8.4.1 above.

4.9 NOISE

4.9.1 Basis of Environmental Acoustics and Vibration

4.9.1.1 Sound, Noise, and Acoustics

Sound is the mechanical energy from a vibrating object that is transmitted by pressure waves through a liquid or gaseous medium (e.g., air). Noise is defined as unwanted sound (i.e., loud, unexpected, or annoying). Acoustics is the physics of sound. A sound source generates pressure waves, the amplitude of which determines the source's perceived loudness. Sound pressure level is described in terms of decibel (dB), with near-total silence for human hearing corresponding to 0 dB. When two sources at the same location each produce the same pressure waves, the resulting sound level at a given distance from that location is approximately 3 dB higher than the sound level produced by only one source. For example, if one automobile produces a 70 dB sound pressure level when it passes an observer, two cars passing simultaneously do not produce 140 dB; rather, they combine to produce 73 dB.

The perception of loudness can be approximated by filtering frequencies using the standardized A-weighting network. The "A-weighted" noise level de-emphasizes low and very high frequencies of sound in a manner similar to the human ear's de-emphasis of these frequencies. There is a strong correlation between A-weighted sound levels (expressed as dBA) and community response to noise. All noise levels reported in this section are in terms of A-weighting.

In typical noisy environments, noise-level changes of 1 to 2 dB are generally not perceptible by the healthy human ear. However, people can begin to detect 3 dB increases in noise levels, with a 5 dB increase generally perceived as distinctly

noticeable, and a 10 dB increase generally perceived as doubling the loudness. Four sound level descriptors are commonly used in environmental noise analysis:

Equivalent sound level (L_{eq}): The L_{eq} is the sound level corresponding to a steady state noise level over a given measurement period with the same amount of acoustic energy as the actual time varying noise level. Also known as the energy average noise level during the measurement period.

Maximum sound level (L_{max}): The highest instantaneous sound level measured during a specified period.

Day-night average level (L_{dn}): The energy average of A-weighted sound levels occurring over a 24-hour period, with a 10 dB penalty applied to A-weighted sound levels occurring during nighttime hours (10:00 p.m. to 7:00 a.m.).

Community Noise Equivalent Level (CNEL): Similar to L_{dn}, CNEL is the energy-average of the A-weighted sound levels occurring over a 24-hour period, with a 10 dB penalty applied to A-weighted sound levels occurring during the nighttime hours (10:00 p.m. to 7:00 a.m.) plus a 5 dB penalty applied to the A-weighted sound levels occurring during evening hours (7:00 p.m. to 10:00 p.m.). The CNEL is usually within one dB of the L_{dn}.

Sound from a localized source (i.e., point source) propagates uniformly outward in a spherical pattern, and the sound level attenuates (decreases) at a rate of 6 dB each time the distance doubles from a point or stationary source. Roadways, highways, and moving trains (to some extent) consist of several localized noise sources on a defined path; these are treated as “line” sources, which approximate the effect of several point sources. Sound levels attenuate at a rate of 3 dB for each time the distance doubles from a line source. Therefore, noise from a line source decreases less with distance than noise from a point source.

4.9.1.2 Ground-borne Vibration

In contrast to airborne noise, ground-borne vibration is not a common environmental problem. Vibration from sources such as buses and trucks are not usually perceptible, even in locations close to major roads. Some common sources of ground-borne vibration are trains, buses on rough roads, and construction activities such as blasting, pile-driving, and operating heavy earth-moving equipment.

Ground-borne vibration can cause detectable building floor movement, window rattling, items shaking on shelves or walls, and rumbling sounds. In extreme cases, the vibration can cause damage to buildings. Building damage is not a factor for most projects, with the occasional exception of blasting and pile-driving during construction. Human annoyance from vibration can often occur and can happen when the vibration exceeds the threshold of perception by only a small margin. A vibration level that causes annoyance would be well below the damage threshold for normal buildings.

Vibration is an oscillatory motion, which can be described in terms of displacement, velocity, or acceleration. Displacement is the easiest descriptor to understand. For a vibrating floor, the displacement is simply the distance that a point on the floor moves away from its static position. The velocity represents the instantaneous speed of the floor movement, and acceleration is the rate of change of the speed. The peak particle velocity (PPV) is defined as the maximum instantaneous positive or negative peak of the vibration signal. PPV is often used in monitoring of blasting vibration since it is related to the stresses that buildings undergo.

4.9.1.3 Site-specific Existing Noise Environment

Rincon Island, the causeway, and the SCC Parcel are located on the Ventura County coast, adjacent to the Mussel Shoals community, SR 1, U.S. Highway 101, and the UPRR. The Onshore Pipeline Connections are located on the northeast side of U.S. Highway 101, and the Onshore Facility is located approximately 1.3 miles southeastward. Existing ambient noise levels in the vicinity of these areas are largely dictated by traffic noise from U.S. Highway 101/SR 1, surf noise, and occasional rail traffic. The 2040 Projected Noise Levels for the site vicinity (similar environment) are 66.9 dbA (50 feet from SR 1) at the Seacliff Colony community, and 79.5 dbA (50 feet from U.S. Highway 101) at the Ventura/Santa Barbara County Line (Ventura County 2020c).

Ambient (baseline) noise measurements were taken using a Larson Davis LXT noise meter on July 9, 2021, at the Mussel Shoals community area due to its proximity to sensitive noise receptors. Sound levels were measured using an A-weighted frequency for approximately 15-minute intervals (Leq); and therefore, are representative of daytime noise levels within that time frame only. The first reading was taken adjacent to the residences located at the intersection of Ocean Avenue and Breakers Way. The baseline noise level at this location was measured at 53.9 Leq. The second reading was taken near the eastern terminus of Breakers Way. The baseline noise measurement at this location was recorded at 59.6 Leq. This increase in ambient noise was attributed to being closer to the shoreline and noise from waves breaking.

4.9.2 Regulatory

4.9.2.1 Federal and State

There are no major federal laws, regulations, and policies potentially applicable to noise related impacts from the Phase 2 Alternatives.

State laws, regulations, and policies pertaining to noise and potentially applicable to the Phase 2 Alternatives include:

- **State Land Use Compatibility Guidelines from the now defunct California Office of Noise Control.** State regulations for limiting population exposure to physically and/or psychologically significant noise levels include established

guidelines and ordinances for roadway and aviation noise under the California Department of Transportation and the now defunct California Office of Noise Control. Office of Noise Control land use compatibility guidelines provided the following:

- For residences, an exterior noise level of 60 to 65 dBA Community Noise Equivalent Level (CNEL) is considered "normally acceptable;" a noise level of greater than 75 dBA CNEL is considered "clearly unacceptable."
- A noise level of 70 dBA CNEL is considered "conditionally acceptable" (i.e., the upper limit of "normally acceptable" for sensitive uses [schools, libraries, hospitals, nursing homes, churches, parks, offices, commercial/professional businesses]).

- **California Code of Regulation, title 24.** Establishes CNEL 45 dBA as the maximum allowable indoor noise level resulting from exterior noise sources for multi-family residences.

4.9.2.2 Local

Ventura County General Plan. Local goals, policies, or regulations applicable to this area with respect to noise are limited to Ventura County General Plan, Hazard and Safety Element Policies (2020c), which mostly address new development and land use compatibility with respect to noise. However, the following policies are applicable to the Phase 2 Alternatives:

- **Policy HAZ-9.1: Limiting Unwanted Noise**. The County shall prohibit discretionary development which would be impacted by noise or generate project-related noise which cannot be reduced to meet the standards prescribed in Policy Haz-9.2. The policy does not apply to noise generated during the construction phase of a project.
- **Policy HAZ-9.2: Noise Compatibility Standards**. The County shall review discretionary development for noise compatibility with surrounding uses. The County shall determine noise based on the following standards (as applicable):
  - New noise sensitive uses proposed to be located near highways, truck routes, heavy industrial activities and other relatively continuous noise sources shall incorporate noise control measures so that indoor noise levels in habitable rooms do not exceed CNEL 45 and outdoor noise levels do not exceed CNEL 60 or Leq1H of 65 dB(A) during any hour.
  - New noise generators, proposed to be located near any noise sensitive use, shall incorporate noise control measures so that ongoing outdoor noise levels received by the noise sensitive receptor, measured at the exterior wall of the building, does not exceed any of the following standards:

    - Leq1H of 55dB(A) or ambient noise level plus 3dB(A), whichever is greater, during any hour from 6:00 a.m. to 7:00 p.m.;
    - Leq1H of 50dB(A) or ambient noise level plus 3dB(A), whichever is greater, during any hour from 7:00 p.m. to 10:00 p.m.; and
    - Leq1H of 45dB(A) or ambient noise level plus 3dB(A), whichever is greater, during any hour from 10:00 p.m. to 6:00 a.m.
  - Construction noise and vibration shall be evaluated and, if necessary, mitigated in accordance with the Construction Noise Threshold Criteria and Control Plan (Advanced Engineering Acoustics, November 2005).
- **Policy HAZ-9.3: Development Along Travel Routes.** The County shall evaluate discretionary development for noise generated by project-related traffic along the travel route to the nearest intersection which allows for movement of traffic in multiple directions. In all cases, the evaluation of project-related roadway noise shall be evaluated along the travel route(s) within 1,600 feet of the project site.
- **Policy HAZ-9.4: Acoustical Analysis Required.** The County shall require an acoustical analysis by a qualified acoustical engineer for discretionary development involving noise exposure or noise generation in excess of the established standards. The analysis shall provide documentation of existing and projected noise levels at on-site and off-site receptors and shall recommend noise control measures for mitigating adverse impacts**.**

4.9.3 Applicable Thresholds

The Ventura County construction noise thresholds for residences are 50 dBA Leq (or ambient + 3 dBA) for evening and 45 dBA Leq (or ambient + 3 dBA) for nighttime. Vibration thresholds state that “any project that either individually or when combined with other recently approved, pending, and probable future projects, includes construction activities involving blasting, pile-driving, vibratory compaction, demolition, and drilling or excavation which exceed the threshold criteria provided in the Transit Noise and Vibration Impact Assessment (Section 12.2), is considered to have a potentially significant impact.

4.9.4 Environmental Assessment of Potential Alternatives

4.9.4.1 Reuse of Rincon Island and the Causeway; Remediation, Decommissioning, and Improvement of the Onshore Sites

Retention of Rincon Island and the causeway could result in a temporary change to the existing noise environment to the public due to construction noise that would occur during removal of the surface structures, pavement, and contaminated soil on Rincon

Island. Any specific future use of the Island would be discussed and evaluated separately after the conclusion of Phase 2.

Flushing and grouting of the Onshore Pipeline Connections would result in temporary noise impacts during pipeline excavation to residents within the Mussel Shoals community. Operations with the valve box adjacent to Hwy 101 and the UPRR would not be audible to any sensitive receptors.

Improvement of the SCC Parcel would result in the addition of temporary construction noise that would have the potential to affect adjacent residents within the Mussel Shoals community. No permanent noise impacts would result following completion of the restoration activities in this area.

Remediation/restoration of the Onshore Facility would result in the addition of temporary construction noise, however the only sensitive receptor to the area would be the County Fire Station No. 25 located adjacent to the east of the Onshore Facility at 5674 Old PCH or recreational users along the southbound Old PCH corridor. No permanent noise impacts would result following completion of the remediation/restoration activities in Phase 3. Impacts associated with future uses of the site, if any, would be assessed after the completion of Phase 3.

4.9.4.2 Reefing of Rincon Island; Removal of the Causeway; Remediation, Decommissioning, and Improvement of the Onshore Sites

Removal of the surface structures, pavement, and contaminated soil on the Island, and removal of the causeway would result in potentially significant temporary noise and vibration impacts related to removal of the causeway. Removal of the causeway would necessitate the introduction of temporary construction equipment on the causeway for the period of time it takes to complete the removal. Additionally, onshore construction equipment (e.g., a crane, vibratory hammer, and excavators) would be required to disassemble the causeway landing within the beach area at the rocky headlands, including the gated causeway entrance adjacent to the Mussel Shoals community.

There are no sensitive receptors within the vicinity of the Onshore Pipeline Connections that would be affected by decommissioning activities. Improvement of the SCC Parcel and remediation/restoration of the Onshore Facility would have the same potential impacts as discussed in Section 4.9.4.1 above.

4.9.4.3 Complete Removal of Rincon Island and the Causeway; Remediation, Decommissioning, and Improvement of the Onshore Sites

Complete removal of the Island and causeway would necessitate the introduction of large construction equipment spreads both onshore (for the causeway) and offshore (for the causeway and Island) for the duration of these activities. During this time, additional construction noise and vibration would have the potential to impact residents within the Mussel Shoals community as well as the public utilizing beaches adjacent to the Mussel

Shoals community and staying or dining at the Cliff House Inn/Shoals Restaurant. Following removal, no permanent noise or vibration impacts would occur, as the area would return to pre-installation conditions.

There are no sensitive receptors within the vicinity of the Onshore Pipeline Connections that would be affected by decommissioning activities. Improvement of the SCC Parcel and remediation/restoration of the Onshore Facility would have the same potential impacts as discussed in Section 4.9.4.1 above.

4.10 RECREATION

4.10.1 Setting

The Phase 2 facilities are located adjacent to the Pacific Ocean in northern unincorporated Ventura County. Specifically, the Rincon Island causeway and access gate are located adjacent to the residential community of Mussel Shoals and the beach area (including the SCC Parcel) on either side of Punta Gorda. The residential community of Mussel Shoals and the surrounding coastal area provide informal recreational uses including trail-based activities such as biking, walking, and hiking, and water and beach-based activities including swimming, surfing, fishing, boating, jet skiing, sunbathing, and other coastal beach-related activities.

4.10.1.1 Onshore Area

For the purposes of this recreational assessment, the onshore area encompasses the SCC Parcel, Rincon Island causeway and abutment, Onshore Pipeline Connections area, and the Onshore Facility.

The recreational beach area at Mussel Shoals is accessible from individual residences, as well as public access points at the terminus of Ocean Avenue. Parking along the U.S. Highway 101 right-of-way at Mussel Shoals was replaced by a State-managed 210-space parking lot with bike racks at Punta Gorda (located between Mussel Shoals and Mobil Pier Road) as a result of the Highway 101 HOV lane project. The 210-space parking lot at Punta Gorda does not have restrooms, but Caltrans is required to provide a restroom in this area as a condition of the Highway 101 high-occupancy-vehicle (HOV) lane project. Beach access may be gained approximately 50 to 70 feet from the private, gated causeway access area; however, the public primarily access the beach through Hobson and Faria County Parks, Emma Wood State Beach, the State-managed parking lot and accessway at Rincon Point, and the Rincon Parkway. Pedestrian under crossings for Highway 101 are located at La Conchita and at Punta Gorda (Ventura County 2017). At the far eastern portion of the Mussel Shoals community is a commercial area including the Cliff House Inn and Shoals Restaurant, approximately 700 feet from the site.

Accessibility to and along the coastline is required by the CCA. The onshore sites are located within the County CAP’s North Coast Subarea, which contains a Multi-Modal

Route (characterized by several different recreational activity modes) approximately 12-miles-long. This popular North Coast recreation area includes the Highway 101 bike path between Rincon Point and the Mobile Pier Road undercrossing, and beaches along Mussel Shoals, Faria, and Solimar. The Multi-Modal Route starts at Rincon Point (at the Santa Barbara County line) and extends south to Emma Wood State Beach (at the City of Ventura boundary). Half of this trail segment is a stand-alone bike path (Segments N1 and N3), and the remainder (Segment N2) is located within the public right-of-way for Old Pacific Coast Highway. Currently, only Multi-Modal Route segments N1 and N3 are complete Class 1 Pathways. There are also Single-Mode Routes for hikers and walkers along La Conchita Beach, Punta Gorda Beach, and the path on the rock revetment at Seacliff Beach (a return to source-of-origin route).

Segment N1 runs along the north side of Mussel Shoals and crosses traffic for approximately 135 feet at the crosswalk on the south side of the Highway 101 on-ramp and off-ramp which provide access to and from the gated causeway and SCC Parcel area. Segment N2 is located parallel to the parcel north of the Onshore Facility along Old Pacific Coast Highway for approximately 0.4 mile (Ventura County 2017).

There are no other recreational facilities located within the vicinity of the Onshore Facility, Rincon Causeway entrance and abutment, SCC Parcel, or Onshore Pipeline Connections areas.

4.10.1.2 Offshore Area

For the purposes of this assessment, the offshore area includes the ocean and beach-related recreational activities that occur in the offshore area in proximity to Rincon Island, the causeway, and SCC Parcel area. Recreational uses in this area include surfing, fishing, swimming, jet skiing, and boating. Two surf breaks are present: Mussel Shoals/Little Rincon, a popular surf break directly adjacent to the causeway and rocky headlands, and Oil Piers which is located off Beacon's Beach, 0.5 mile south of the offshore area. The surf breaks are likely to be most visited during a rising tide and westerly swell when surf is head high.

Recreational fishing does occur along the beach and in the nearshore area via kayak or charter boats; however, there is no public access allowed on the causeway, so there is no pier fishing occurring. Common landings within three miles of the coast for recreational fishing in Ventura County include Pacific sanddab (*Citharichthys sordidus*), rockfish (*Sebastes* spp.), ocean whitefish (*Caulolatilus princeps*), kelp bass (*Paralabrax calthratus*), and Pacific mackerel (*Scomber japonicus*). Table 4.9-1 below summarizes the total catch during 2019 through 2020 of the top three recreational fisheries present in the area.

Table 4.9-1. 2019 to 2020 Recreational Fishing Summary

Species	Mode	Total Catch (individual fish)
Pacific sanddab	Party/Charter Boat	3,983
Rock fish	Party/Charter Boat	12,769
Ocean whitefish	Party/Charter Boat	18,036

Source: NOAA 2021

4.10.2 Regulatory

4.10.2.1 State

The site is located within the coastal zone of Ventura County under the jurisdiction of the CCC on behalf of the County of Ventura. Under the CCA of 1976, the CCC requires the protection of beach areas, water-oriented resources and the public's right to access those resources. Specifically, Section 30211 of the CCA requires that "development shall not interfere with the public's right of access to the sea where acquired through use or legislative authorization, including, but not limited to, the use of dry sand and rocky coastal beaches."

4.10.2.2 Local

Local goals, policies, or regulations applicable to this area with respect to recreation are listed below.

Ventura County CAP (2017) Access Goals (taken from CCA Policies):

- **Section 30210: Access, Recreational Opportunities, Posting**. In carrying out the requirement of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all the people consistent with public safety needs and the need to protect public rights, rights of private property owners, and natural resource areas from overuse.
- **Section 30211: Development Shall Not Interfere with Coastal Access**. Development shall not interfere with the public's right of access to the sea where acquired through use or legislative authorization, including, but not limited to, the use of dry sand and rocky coastal beaches to the first line of terrestrial vegetation.
- **Section 30220: Protection of Certain Water-Oriented Activities.** Coastal areas suited for water-oriented recreational activities that cannot readily be provided at inland water areas shall be protected for such uses.
- **Section 30221: Oceanfront Land.** Oceanfront land suitable for recreational use shall be protected for recreational use and development unless present and

foreseeable future demand for public or commercial recreational activities that could be accommodated on the property is already adequately provided for in the area.

- **Section 30222: Private Lands.** Priority of Development Purposes. The use of private lands suitable for visitor-serving commercial recreational facilities designed to enhance public opportunities for coastal recreation shall have priority over private residential, general industrial, or general commercial development, but not over agriculture or coastal-dependent industry.
- **Section 30234.5: Economic, Commercial, and Recreational Importance of Fishing.** The economic, commercial, and recreational importance of fishing activities shall be recognized and protected.

Ventura County General Plan (Goals, Policies, and Programs)

- **Policy PFS-10.8: Discretionary Development near Trails.** The County shall require discretionary development near existing trails to mitigate or avoid adverse impacts to the existing trail system. Where appropriate, a condition of approval or other means of permanent dedicated trail access shall be provided.

4.10.3 Applicable Thresholds

According to the Ventura County Initial Study Assessment Guidelines (2011), potential impacts to recreation could result if:

- A project would cause an increase in the demand for recreation, parks, and/or trails and corridors or would cause a decrease in recreation, parks, and/or trails or corridors.

4.10.4 Environmental Assessment of Potential Alternatives

4.10.4.1 Reuse of Rincon Island and the Causeway; Remediation, Decommissioning, and Improvement of the Onshore Sites

Retention of Rincon Island and the causeway would not result in any potential change to recreational opportunities or access at this time. Beach and offshore access to Rincon Island would remain as-is; with the causeway remaining locked and the Island utilized for private purposes only. There would be no temporary or permanent impacts to existing recreational use within the area.

Improvement of the SCC Parcel would require temporary construction equipment and staging adjacent to the beach area. During improvement activities, informal beach access through the parcel may be temporarily obstructed for public safety. No permanent impacts to recreation would result following completion of restoration activities. A beneficial impact from the improvement/restoration would result through the creation of better access within the existing trail(s), an improved public seating area, the addition of stairs to the beach, and creation of an educational sign at the lookout point.

Decommissioning of the Onshore Pipeline Connections is not located within an area of recreational resources; therefore, no potential impact would result during these activities.

Remediation of contaminated soils at the Onshore Facility would result in the potential for temporary recreational impacts from construction traffic and transport trucks intersecting with recreational trail routes at the Onshore Facility entrance (located within the privately owned Coast Ranch Parcel). Both Segment N1 and N2 of the Ventura North Coast Coastal Trail intersect with the Project's proposed access routes. Due to the narrow nature of the coastline in the Phase 2 area and the small number of roads large enough to support trucking, the Phase 2 areas are limited on potential access routes; therefore, traffic and transport trucking activities would have to cross over Segments N1 and N2 of the Ventura North Coast Coastal Trail. Onshore Facility remediation activities would impact access to the North Coast Coastal Trail by temporarily blocking bicycle and pedestrian traffic or temporarily re-routing the trail users to a safer part of the road while traffic and trucking is occurring.

4.10.4.2 Reefing of Rincon Island; Removal of the Causeway; Remediation, Decommissioning, and Improvement of the Onshore Sites

Removal of the causeway and revetment at the base of the causeway landing would require construction vehicles and equipment to access the causeway and beach revetment work areas via U.S. Highway 101 and Old Pacific Coast Highway through Mussel Shoals. During this time, activities may impact access to the North Coast Coastal Trail by increasing vehicle traffic near the trail, temporarily blocking bicycle and pedestrian traffic, or temporarily re-routing the trail users to a safer part of the road while construction traffic and trucking is occurring. In addition, removal of the revetment would require construction crews and equipment to access the beach below the causeway. Activities on the beach would temporarily displace pedestrian traffic along this area.

As discussed above (Section 4.3.4.2), the removal of the causeway pilings would permanently reduce the hard-substrate habitats that support coastal and pelagic fish species, and refuge habitat for upper trophic levels (fish and marine mammals). This may reduce the availability of fishing opportunities in the area for recreational fishers, however significant constraints are not anticipated.

Removal of the causeway and associated revetment may increase sand transport from the beach that is immediately north of the causeway to offshore areas south of the causeway. However, because of existing currents, this extra amount of sand would not likely be deposited in the south area beaches, and thus the impact to the beaches and shoreline in the south areas are expected to be negligible and would not affect access for beach walkers, fisherman, and surfers (NV5 2021).

The surf break, Little Rincon, occasionally breaks through the causeway pilings, which present a potential hazard to surfers who attempt to surf through or "shoot" the

causeway. Removal of the causeway would eliminate the potential hazard and collision between a surfer and a pier piling. As indicated within the Coastal Engineering Study described in Section 3.4 above, the impact of causeway removal on nearshore processes would be negligible because the size of the causeway piles is negligible compared to the wavelength and scale of the nearshore area. Therefore, substantial change to the surf break that currently occurs at Little Rincon/Mussel Shoals is not anticipated following removal of the causeway.

Constraints of implementation related to retention of the Island and remediation/restoration of the Onshore Facility and the SCC Parcel are included in the analysis above (refer to Section 4.10.4.1).

4.10.4.3 Complete Removal of Rincon Island and the Causeway, Remediation, Decommissioning, and Improvement of the Onshore Sites

Similar to the removal of the causeway (discussed in Section 4.10.4.2), complete removal of the Island would permanently reduce or completely eliminate the area of hard-substrate available within the offshore area. The populations of marine wildlife and complex habitats that surround the Island would consequently be removed, significantly reducing the species diversity and densities, particularly target catch species of rockfish and flatfish. The complete removal of the Island and causeway has the potential to reduce the annual catch of recreational fisheries in the area directly around the Island.

Complete removal of the Island and causeway would also permanently change the topography and oceanographic processes of the offshore area. The Coastal Engineering Study (NV5 2021) reported that alongshore sediment transport (sediment movement along the coast or shoreline) may increase between 40 and 60 percent, and cross-shore sediment transport (movement of beach and nearshore sand perpendicular to the shore) would also increase in areas that are currently blocked by the Island during southerly and westerly ocean swells. Further, it was concluded that the full removal of Rincon Island and the causeway would permanently increase the wave height and thus intensify the wave energy in the coastal area behind the Island (including that affecting the coastline of the SCC parcel area, as discussed in Section 3.5, *Geology*, above) (NV5 2021). This effect on wave intensity has the potential to change the size and shape of the waves at the Little Rincon/Mussel Shoals surf break.

Constraints of implementation related to remediation of the onshore sites are included in the analysis above (refer to Section 4.10.4.1).

4.11 TRANSPORTATION/TRAFFIC

4.11.1 Setting

4.11.1.1 Regional Setting

According to the Ventura County General Plan, Circulation Element (2020e), the vast majority of traffic, in terms of volumes and miles traveled within unincorporated Ventura County, takes place on State highways. As previously discussed within Section 3.1 (Aesthetics), U.S. Highway 101/SR 1 (Pacific Coast Highway) are eligible State scenic highways but are not currently designated. SR 1 at postmile 27.67 (Seacliff Colony), Junction U.S. Highway 101 was noted as having 4,500 average annual daily trips (AADT[13]) and a Level of Service measured at A (best); and U.S. Highway 101 was noted at 61,000 AADT/LOS B at Seacliff (postmile 38.976) and 65,000/LOS B at the Ventura/SB County Line (postmile 43.622) (Ventura County: Table 6-12; 2020e).

4.11.1.2 Rincon Island, the Causeway, and the SCC Parcel

Rincon Island, the causeway, and the SCC Parcel are accessible along the southbound lanes of U.S. Highway 101/SR 1 or from U.S. Highway 101 northbound to SR 1 (State Beaches exit). Only three roads are located within the Mussel Shoals community: Old Pacific Coast Highway (Old PCH), Ocean Avenue, and a private roadway, Breakers Way. Access to the site occurs via Old PCH south to Ocean Avenue. Old PCH is a single paved traffic lane which runs parallel to U.S. Highway 101/SR 1 for approximately 600 feet until its terminus near its intersection with Ocean Avenue. Ocean Avenue also provides a single paved lane for approximately 200 feet until its terminus at the private entryway for the Rincon Island causeway. Breakers Way is a private roadway providing access to beach residencies of the Mussel Shoals community which runs perpendicular to the entryway of the causeway at the terminus of Ocean Avenue.

Bicycle/Pedestrian Access. The La Conchita Bike Path (also identified within the Ventura County CAP (2017) as Segment N1 of the Multi-Modal Route in the North Coast Subarea) is a 4-mile path that is located parallel to southbound U.S. Highway 101 along the coast and extends from Rincon Point southbound to Mobil Pier Road in Ventura County. The bike path is partially located along the northern boundary of the Mussel Shoals community and provides connecting access to the area for bikers and pedestrians from Old PCH.

Train Transport. Passenger and freight train transportation occurs north of and adjacent to SR 1; however, no stations or stops occur between the City of Carpinteria (north of the existing facilities) and the City of Ventura (south of the existing facilities).

[13] Average Annual Daily Trips – the volume of traffic passing through a given point during a given time period, divided by the number of days in that time period

Pedestrian Traffic and Parking. The beach areas located adjacent to the causeway landing and SCC Parcel provide recreational opportunities for swimming, surfing, fishing, boating, jet skiing, sunbathing, and other beach-related activities. As such, visitors often park along the northern portion of Old PCH and walk along Ocean Avenue to the coastal access points adjacent to the site.

4.11.1.3 Onshore Facility

Access to the Onshore Facility is from U.S. Highway 101 northbound or southbound to exit 78 (State Beaches), to SR 1 through the private Coast Ranch Parcel to the Onshore Facility. The Onshore Facility is primarily unpaved, with informal dirt roadways within for access. A bike lane is present along both sides of SR 1 which is directly adjacent to the Onshore Facility.

4.11.2 Regulatory

4.11.2.1 Federal and State

There are no major federal laws, regulations, and policies pertaining to transportation/traffic that are potentially applicable to the Phase 2 Alternatives.

State laws, regulations, and policies pertaining to transportation/traffic and potentially applicable to the Phase 2 Alternatives include:

- **Harbors and Navigation Code Sections 650-674.** This code specifies a policy to “promote safety for persons and property in and connected with the use and equipment of vessels,” and includes laws concerning marine navigation that are implemented by local city and county governments. This Code also regulates discharges from vessels within territorial waters of the State of California to prevent adverse impacts on the marine environment. This code regulates oil discharges and imposes civil penalties and liability for cleanup costs when oil is intentionally or negligently discharged to state waters.
- **Senate Bill 743 – Transportation Impacts**. Adopted in 2013, Senate Bill (SB) 743 changes how transportation impacts are evaluated under CEQA. Previously, CEQA analysis in the county was conducted using an LOS measurement that evaluated traffic delay. As specified under SB 743 and implemented under Section 15064.3 of the State CEQA Guidelines (effective December 28, 2018), vehicle miles travelled (VMT) is the required metric to be used for identifying CEQA impacts and mitigation. In December 2018, OPR published a Technical Advisory on Evaluating Transportation Impacts, including guidance for VMT analysis. The Office of Administrative Law approved the updated CEQA Guidelines and lead agencies were given until July 1, 2020, to implement the updated guidelines for VMT analysis.

4.11.2.2 Local

Ventura County General Plan Policies. According to the Ventura County General Plan, Coastal Area Plan (2017) and Circulation Element (2020e), the following policies would apply to Phase 2:

- **Policy CTM-1.1: Vehicle Miles Traveled (VMT) Standards and CEQA Evaluation**. The County shall require evaluation of County General Plan land use designation changes, zone changes, and discretionary development for their individual (i.e., project-specific) and cumulative transportation impacts based on VMT under CEQA pursuant to the methodology and thresholds of significance criteria set forth in the County Initial Study Assessment Guidelines.
- **Policy CTM-2.28: Emergency Access**. The County shall ensure that all new discretionary projects are fully evaluated for potential impacts to emergency access. Mitigation of these impacts shall be handled on a project-by-project basis to guarantee continued emergency service operations and service levels.

4.11.3 Applicable Thresholds

According to the Ventura County Initial Study Assessment Guidelines (2011), a significant impact to transportation would result if a project would:

- Result in a VMT exceeding 11.49-mile average trip length of all home-based-work trips (industrial projects only).
- Result in new trips along roadway facilities with collision or incident rates above Statewide Averages and/or those identified by the Statewide Integrated Traffic Records System (SWITRS) as experiencing a high incident rate.
- Result in inadequate emergency access.
- Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.
- Cause actual or potential barriers to existing or planned pedestrian/bicycle facilities.
- Generate or attract pedestrian and/or bicycle traffic volumes meeting requirements for protected highway crossings or pedestrian and bicycle facilities.
- Cause a substantial interference with existing bus transit facilities and/ or routes.
- Result in substantial increased demand for additional or new bus transit facilities/ services.
- Result in interference with an existing railroad’s facilities and/or operations.

- Generate an increased demand for commercial boat traffic and/or adjacent commercial boat facilities.
- Result in a substantial interference with or affect the operations of an existing pipeline.

4.11.4 Environmental Assessment of Potential Alternatives

4.11.4.1 Reuse of Rincon Island and the Causeway; Remediation, Decommissioning, and Improvement of the Onshore Sites

Retention of Rincon Island and the causeway would not result in any change to existing transportation or roadways within the Mussel Shoals area.

Improvement of the SCC Parcel would result in a slight increase in local roadway traffic for the duration of these activities. Onshore personnel vehicles and construction equipment would access the site through the Mussel Shoals community via Old PCH to Ocean Avenue, and equipment would be staged within the upper SCC Parcel area.

Remediation/restoration of the Onshore Facility would require the temporary addition of personnel vehicles and construction equipment to that area for remediation and restoration. Access to the Onshore Facility is through the privately owned Coast Ranch Parcel, and an access agreement is in place through June 2023. The existing Level of Service for Old PCH and Exit 78 required for access to the Onshore Facility is currently acceptable under County thresholds, and additional traffic generated during construction is not anticipated to add enough traffic to decrease the Level of Service in this area. However, additional construction-related vehicles would have the potential to temporarily interfere with the safety of existing pedestrian and bicycle traffic utilizing the adjacent bike/pedestrian lane along the southbound shoulder of Old PCH. No long-term impacts to traffic would occur following completion of remediation/restoration of the Onshore Facility.

4.11.4.2 Reefing of Rincon Island; Removal of the Causeway; Remediation, Decommissioning, and Improvement of the Onshore Sites

Retention of Rincon Island, but removal of the causeway, would necessitate construction equipment access from both onshore and offshore. Improvements to the SCC Parcel would require access through the Mussel Shoals community via Old PCH to Ocean Avenue; equipment would be staged within the locked and gated causeway entrance for the duration of construction activities. These activities would result in a potential temporary impact to local roadways within the Mussel Shoals area. Staging and transport of heavy debris loads (treated wood and metal) would be required from the Mussel Shoals area following dismantling of the causeway and to import materials in/out for the SCC Parcel improvement(s).

The existing Level of Service for the major roadways/exits in these onshore locations are currently acceptable under County thresholds, however many of the private roadways within the Mussel Shoals community are not assessed as part of the County inventory and are narrow with limited parking. During construction, a significant change in additional traffic would be generated that could have the potential to impact existing roadways, depending on the volume and timing of construction traffic required for decommissioning and waste transport. Potential roadway impacts could include decreased level of service, congestion, ingress/egress, and parking. Additionally, access to these areas during construction would have the potential to interfere with the safety of existing pedestrian and bicycle traffic utilizing the adjacent bike/pedestrian lanes along the southbound shoulder of U.S. Highway 101 and Old PCH.

Additional vehicles and equipment would be required to access the Onshore Facility from Exit 78 for remediation/restoration of that site. Parking and staging would be accommodated within the Onshore Facility area. Staging and hauling of potentially contaminated soil from the Onshore Facility would be required during remediation/restoration activities.

Following removal of the causeway and improvements to the SCC Parcel, and remediation/restoration of the Onshore Facility, there would not be any permanent features that would affect transportation/traffic in the area as part of Phase 2 activities. Impacts due to reuse (if any) of Phase 2 Facilities would be assessed after the implementation of Phase 3.

4.11.4.3 Complete Removal of Rincon Island and the Causeway; Remediation, Decommissioning, and Improvement of the Onshore Sites

Complete removal of the Island and causeway would necessitate construction access both onshore and offshore. Potential impacts would be similar to that described above, but for a much longer duration offshore.

Restoration/Remediation of the Onshore Facility would have similar potential impacts to that described in Section 4.11.4.2 above.

Following removal of the Island and causeway and improvements to the SCC Parcel and remediation/restoration of the Onshore Facility, there would not be any permanent features that would affect transportation/traffic in the area as part of Phase 2 activities. Impacts due to reuse (if any) of Phase 2 Facilities would be assessed after the implementation of Phase 3.

4.12 COMMERCIAL FISHING

4.12.1 Setting

The offshore area is located between shore and the 50-foot isobath (depth). Most of the fishers that use fishing grounds near this area likely hail from Ventura, Channel Islands, and Santa Barbara Harbors. The CDFW maintains the fish block data that is generated

by commercial catch records that are provided to the agency by fish buyers. The location of the catch is reported by fish block, a grid system that has been established by CDFW. The Phase 2 area is located within Fish Block 651; however, due to the small size of Block 651, Block 652 is also included in this assessment to analyze commercial fishing for the region.

Commercial fishing catch data was requested from CDFW to identify the fisheries present in the Phase 2 area; however, due to concerns regarding confidentiality, the value data and catch amounts were redacted and not available for this assessment. The most commonly caught fish species within Fish Block 651 and 652 between 2016 through 2020 includes California spiny lobster, market squid, and halibut. Rockfish, sea urchin, yellow rock crab, and white seabass are also fisheries that reported in Blocks 651 and 652.

UCSB (2021) reported high densities of California spiny lobster and rockfish species within the submerged riprap around the perimeter of the Island. In Block 651, California spiny lobster grossed $28,134 in 2017, while in Block 652, lobster grossed $123,263 in 2018, $77,493 in 2019, and $153,336 in 2020. Due to shallow water depths, large fishing operations are not known to occur around the Island; however, lobster fisherman often deploy lobster pots in large numbers from small fishing vessels in the waters surrounding the Island.

Another high grossing fishery that targets species in soft-bottom habitats is the California commercial halibut fishery. The commercial halibut fishery uses trawling gear to drag across the ocean floor. However, trawling is prohibited within State waters (0 to 3 nautical miles [nm] offshore), except in the designated "California halibut trawl grounds," which encompass the area between Point Arguello (Santa Barbara County) and Point Mugu (Ventura County) in waters beyond 1 nautical mile from shore. Therefore, the offshore area is not located within nearshore halibut trawling grounds.

4.12.2 Regulatory

4.12.2.1 Local

Ventura County General Plan. Local goals, policies, or regulations applicable to this area with respect to commercial fisheries are limited to the Ventura County General Plan, Conservation and Open Space element (2020b). The following policy is applicable to the Phase 2 Alternatives:

- **Policy COS-2.8 Coastal Fisheries**. The County shall encourage community programs that are designed to improve the quality of coastal fisheries and marine resources.

4.12.3 Environmental Assessment of Potential Alternatives

Commercial fishing only occurs offshore; therefore, the following assessment is limited to potential impacts to offshore areas. Remediation/restoration of the Onshore Facility and improvements at the SCC Parcel would not result in a change to commercial fishing.

4.12.3.1 Reuse of Rincon Island and the Causeway; Remediation, Decommissioning, and Improvement of the Onshore Sites

Retention of the Island and causeway would not result in any change to the existing commercial fishing in the region.

4.12.3.2 Reefing of Rincon Island; Removal of the Causeway; Remediation, Decommissioning, and Improvement of the Onshore Sites

Retention of the Island would not result in changes to commercial fishing. As discussed above (Section 4.3.3.2), the removal of the causeway pilings would permanently reduce the hard-substrate habitats that support prey base, coastal and pelagic fish species, and refuge habitat for upper trophic levels; however, the minor reduction in target fish is not anticipated to significantly affect commercial fishing in this area.

4.12.3.3 Complete Removal of Rincon Island and the Causeway; Remediation, Decommissioning, and Improvement of the Onshore Sites

Commercial fishing operations are expected to be limited within the area as proposed activities would occur within an area that is currently outside of the target water depths and habitats for common fisheries. Decommissioning activities would be centralized around the Island and causeway and would require temporary vessels and equipment offshore. During decommissioning activities, vessels would be anchored at various locations around the offshore site, which would have the potential to preclude commercial fishing vessels from these selected (and transient) areas.

The removal of the Island's riprap and associated habitats would reduce the population size of California spiny lobster in the area. This reduction in the local population of California spiny lobster may result in changes to the commercial lobster fishery in the area which would require additional assessment.

4.13 SEA LEVEL RISE/CLIMATE CHANGE

4.13.1 Projected Sea Level Rise and Anticipated Coastal Effects

The California Ocean Protection Council updated the State of California Sea Level Rise Guidance in 2018 to provide a synthesis of the best available science on sea level rise (SLR) projections and rates. The Santa Barbara tide gauge data was used for the projected SLR scenario at the site. Based on this data, the decommissioning area (specifically affecting the coastline including the SCC Parcel and Rincon Island

causeway abutment areas) could see a likely range (66 percent probability) of up to a 0.4 foot of SLR by 2030, 0.4 to 1.0 foot by 2050, 0.7 to 1.7 foot by 2070, and 1.2 to 3.1 feet by 2100 (Ocean Protection Council 2018). The medium to high range (0.5 percent probability) is as extreme as 6.6 feet of SLR by 2100. The range in potential SLR indicates the complexity and uncertainty of projecting these future changes, which depend on the rate and extent of ice melt, particularly in the second half of the century.

4.13.1.1 2014 Study of SCC Parcel Area

A Coastal Hazards Study was conducted at the SCC Parcel area in 2014 (Everest 2014). The conclusions presented in this report indicated that the SCC Parcel is relatively stable during typical oceanographic conditions occurring under existing sea levels (at that time), meaning extreme large storm waves combined with extreme high ocean water levels were not expected to overtop the existing bluff. However, it was noted that the unprotected face of the bluff could experience erosion during such events, thereby threatening the upland area directly behind it. If this were to occur the bluff would likely continue to erode until reaching a point of equilibrium under the forcing storm conditions. If mean sea level increases according to the projections for years 2030, 2050, and 2100, then this potential threat would likely increase in probability.

4.13.1.2 Phase 2 Sea Level Rise Analysis

An analysis of the projected SLR and its effects on the proposed decommissioning area and facilities (including Rincon Island, the causeway, and the SCC Parcel) was included as part of the Coastal Engineering Study (NV5 2021) conducted in support of the Feasibility Study (refer to Section 2.5 for detail). Existing sea surface elevation information (also referred to as “still water level”) was combined with the likely range of SLR increases to determine a range of maximum future sea surface levels. This information was modeled in the Coastal Engineering Study to assess potential conditions (including significant wave height, peak wave period, and annual maximum winds) that the existing site facilities would experience in various SLR and climate change scenarios.

Rincon Island. The analysis results indicated that Rincon Island (in its existing condition) is not anticipated to be inundated (overtopped by ocean water) even considering the highest SLR projection in 2100 of 6.6 feet, as the top of the surrounding armoring (riprap and tetrapods) measure approximately 35.5 feet above sea level. Extreme storms that have occurred over the past 60 years do not appear to have endangered the whole Island, which indicates that Rincon Island may remain in place even when subject to the rare occurrences of very large storm events. However, the Island could be overtopped by waves during a 10-year or larger storm event along the seaward (south) side. The existing protective armors on the north side, leeside, and southeast side of the Island appear to be able to withstand a 100-year storm event.

SCC Parcel and Rincon Island Causeway Abutment. Higher water levels result in greater wave energy reaching higher on the shoreline. Along with higher sea levels, winter storms of greater intensity and frequency resulting from climate change would further affect coastal areas. In open coastal areas and tidally influenced waterways, more frequent and powerful storms can result in storm surge, increased flooding conditions, and damage from storm-generated debris. Climate change and SLR also would affect coastal areas by changing erosion and sedimentation rates. Beaches, coastal landscapes, and near-coastal riverine areas exposed to increased wave force, run up, and total water levels could potentially erode more quickly than before. Any future natural beach loss would be exacerbated by changes in wave direction, occurring from climate change-driven water temperature, wind direction, and ocean current shifts as well as any existing armament along the coastline that would protect the area from wave forces.

4.13.2 Regulatory

4.13.2.1 State

In 2015, Governor Brown issued executive order B-30-15 that established a California GHG reduction target and ordered State agencies to take climate change into account during planning and investment decisions which should be guided by the following principles:

- Priority should be given to actions that both build climate preparedness and reduce GHGs
- Where possible, flexible and adaptive approaches should be taken to prepare for uncertain climate impacts
- Actions should protect the State's most vulnerable populations, and
- Natural infrastructure solutions should be prioritized

4.13.2.2 Local

Ventura County General Plan. Local goals, policies, or regulations applicable to this area with respect to SLR are limited to the Ventura County General Plan, Conservation and Open Space Element (2020b) and CAP (2017), Beach Erosion and Shoreline Structures Element. The following policies are applicable:

- **Policy COS-2.1 Beach Erosion**. The County shall strive to minimize the risk from the damaging effects of coastal wave hazards and beach erosion and reduce the rate of beach erosion, when feasible.
- **California Coastal Act, Public Resources Code Section 30235, Construction Altering Natural Shoreline.** Revetments, breakwaters, groins, harbor channels, seawalls, cliff retaining walls, and other such construction that alters natural

shoreline processes shall be permitted when required to serve coastal-dependent uses or to protect existing structures or public beaches in danger from erosion, and when designed to eliminate or mitigate adverse impacts on local shoreline sand supply. Existing marine structures causing water stagnation contributing to pollution problems and fish kills should be phased out or upgraded where feasible.

4.13.3 Environmental Assessment of Potential Alternatives

4.13.3.1 Reuse of Rincon Island and the Causeway; Remediation, Decommissioning, and Improvement of the Onshore Sites

Sea level rise would not have a substantial impact on the Island if the Reuse Alternative is selected due to their current elevation above sea level. Rincon Island was developed with an unusual plan shape in order to optimize wave protection. Additionally, the Island's elevation has not shown significant change since its original construction. Future SLR should not impact the stability of the existing armor material around Rincon Island because the SLR is small compared to the existing water depth at the toe of these revetments and pilings (NV5 2021). However, an analysis of wave runup and overtopping at Rincon Island showed that the ocean (south) side of the Island will overtop and cause flooding in 2100 during 10-year or larger storm events.

SCC Parcel improvements would have the potential to restore the upland portion of this parcel with native vegetation and complete the shoreline armoring along this section of coastline. This restoration could help reduce shoreline erosion and further protect the adjacent community from anticipated sea level rise in this location.

The decommissioning activities at the Onshore Pipeline Connections and Onshore Facility are not expected to be impacted by SLR due to their upland locations.

4.13.3.2 Reefing of Rincon Island; Removal of the Causeway; Remediation, Decommissioning, and Improvement of the Onshore Sites

Reefing of Rincon Island would not affect the outside armor of the structure, therefore potential impacts of SLR as described in Section 4.13.3.1 above are expected to remain consistent under the Reefing Alternative.

According to the Coastal Engineering Study (NV5 2021), removal of the causeway itself is not expected to affect sediment transport or the intensity of wave action along the beach; therefore, implementation of the Reefing Alternative would not contribute to any beach erosion issues related to SLR. However, the rock revetment at the causeway landing acts as a short sand-retention structure (similar to a short groin). Since sand moves from upcoast to downcoast in this region, removal of the abutment and replacement of the revetment at a lower elevation from where it currently exists may cause more sand being moved from the beach that is immediately north of the causeway to the areas south of the causeway. Due to high levels of existing sediment

transport capacity in the area (due to offshore configuration, tides and currents), this extra amount of sand would likely not be deposited in the southern beach areas, but would likely be deposited offshore, and thus the impact to the beaches and shoreline due to sand transport in the south areas are expected to be insignificant. However, SLR would cause greater erosion in the area north of the causeway compared to existing conditions and induce long-term shoreline retreat for areas of unarmored shoreline.

Additionally, SLR would increase the surface area of sand transport, and removal of the causeway revetment would decrease the distance between the surf zone and the residential properties southeast of the revetment. Further study may be required to assess the extent SLR would affect these properties if the causeway and rock revetment were removed.

Potential impacts to the SCC Parcel would be the same as those discussed under Section 4.13.3.1 above.

The decommissioning activities at the Onshore Pipeline Connections and Onshore Facility are not expected to be impacted by SLR due to their upland locations.

4.13.3.3 Complete Removal of Rincon Island and the Causeway; Remediation, Decommissioning, and Improvement of the Onshore Sites

In order to quantify the impact of complete removal on the nearshore wave conditions, existing wave height profiles were compared to modeled wave heights along the coastline. Under a 100-year storm event, it was concluded that removal of Rincon Island and the causeway and causeway revetment would increase the wave height and thus intensify the wave energy in the coastal area behind (north) of the Island. This impact would lessen with distance from the Island.

Complete removal of Rincon Island and the causeway may cause potentially substantial impacts resulting from long-term retreat of the beach and increase the magnitude of seasonal beach variation, primarily along sections of the beach closest to the historic Mobil Piers location (Reach 3 through 5, see Figure 3-27 in Section 3.5 above, NV5 2021). Any future natural beach loss would be exacerbated by increasing sea levels and wave intensity, occurring from climate change-driven water temperature, wind direction, and ocean current shifts.

Potential impacts to the SCC Parcel would be the same as those discussed under Section 4.13.3.1 above.

The decommissioning activities at the Onshore Pipeline Connections and Onshore Facility are not expected to be impacted by SLR due to their upland locations.

5.0 SUMMARY OF ALTERNATIVES

The following provides a comparative summary of the three Project Alternatives (Reuse, Reefing, and Removal) in terms of potential environmental impacts, potential environmental benefits, schedule, and costs.

5.1 ENVIRONMENTAL IMPACT COMPARISON OF ALTERNATIVES

5.1.1 Potential Environmental Impact Comparison

The screening level environmental assessment provided in Section 4.0 includes preliminary information regarding potential environmental impacts that could result from implementation of the Reuse, Reefing, or Complete Removal Alternatives as outlined in Section 2.5. A summary comparison of the primary potential impacts for each environmental issue area is provided in Table 5-1 below (refer to Section 4.0 for discussion including all potential impacts). If the Commission selects the Reuse Alternative (see Figure 1-2, *Decision Process*), further analysis of environmental impacts will be performed upon receipt of any future applications for use of the Island.

Table 5-1. Comparison of Potential Environmental Impacts

Environmental Resource Area	Reuse*	Reefing	Complete Removal
Aesthetics	• Temporary 2-year decommissioning activities would likely result in negligible impacts to existing visual character • Long-term impacts dependent upon eventual permitted use of the Island and Onshore Facility	• Temporary 3-year decommissioning activities would likely result in temporary, but potentially substantial modifications to existing visual character • Long-term impacts to existing visual character through removal of the causeway and wharf	• Temporary 3.5-year decommissioning activities would likely result in temporary, but potentially substantial modifications to existing visual character • Long-term impacts to existing visual character through removal of Rincon Island and the causeway
Air Quality/ Greenhouse Gas Emissions	• Temporary remediation would likely not exceed VCAPCD's recommendations for construction-related emissions over 2-year period • Temporary remediation would likely not exceed SBCAPCD thresholds for GHGs • Long-term impacts dependent upon eventual	• Temporary remediation and decommissioning may exceed VCAPCD's recommendations for construction-related emissions over 3-year period • Temporary remediation and decommissioning would likely not exceed SBCAPCD thresholds for GHGs	• Temporary remediation and decommissioning would likely exceed VCAPCD's recommendations for construction-related emissions over 3.5-year period and may result in substantial impacts • Temporary remediation and decommissioning would likely not exceed SBCAPCD thresholds for GHGs

Environmental Resource Area	Reuse*	Reefing	Complete Removal
	permitted use of the Island and Onshore Facility	• No long-term emission impacts	• No long-term emission impacts
Biological Resources	• Temporary remediation activities (offshore and onshore) would likely result in negligible impacts to biological resources • Long-term retention of Rincon Island would protect existing biological habitat and species diversity (terrestrial and marine)	• Temporary remediation and decommissioning activities (offshore and onshore) would likely result in negligible impacts to biological resources • Long-term retention of Rincon Island would protect existing biological habitat and species diversity (terrestrial and marine) • Long-term, the removal of the causeway would result in reduction of available hardbottom habitat	• Temporary onshore remediation and decommissioning activities would likely result in negligible impacts to biological resources • Long-term, the removal of Rincon Island and the causeway would eliminate existing biological habitat and species diversity
Cultural/Tribal Cultural Resources	• No temporary or long-term impacts on Rincon Island • Temporary remediation activities could result in substantial impacts on the Onshore Facility site • Long-term impacts on the Onshore Facility site could	• No temporary or long-term impacts on Rincon Island • Temporary remediation activities could result in substantial impacts on the Onshore Facility site • Long-term impacts on the Onshore Facility site could	• Temporary remediation and decommissioning activities could result in substantial impacts on the Onshore Facility site • Long-term impacts on the Onshore Facility site could be potentially substantial

Environmental Resource Area	Reuse*	Reefing	Complete Removal
	be potentially substantial depending on cultural findings and mitigation plans	be potentially substantial depending on cultural findings and mitigation plans	depending on cultural findings and mitigation plans • Assessment of Island's historical significance necessary to determine potential impact
Geology and Coastal Processes	• Temporary remediation activities would result in negligible erosion impacts related to Rincon Island and the Onshore Facility • Long-term impacts related to natural coastal processes dependent on SCC Parcel improvement option chosen	• Temporary remediation and decommissioning activities would result in negligible erosion impacts related to Rincon Island and the Onshore Facility • Long-term impacts related to natural coastal processes dependent on SCC Parcel improvement option chosen	• Temporary remediation of Onshore Facility would result in negligible erosion impacts • Long-term, the removal of Island and the causeway would change wave dynamics and intensity and result in additional beach retreat and changes to sediment transport • Long-term impacts related to natural coastal processes dependent on SCC Parcel improvement option chosen
Hazards and Hazardous Materials	• Temporary remediation activities (offshore and onshore) would likely result in negligible impacts	• Temporary remediation and decommissioning activities (offshore and onshore) would likely result in	• Temporary remediation and decommissioning activities (offshore and onshore) would result in negligible

Environmental Resource Area	Reuse*	Reefing	Complete Removal
	associated with hazardous materials • Long-term impacts dependent upon eventual permitted use of the Island and Onshore Facility	negligible impacts associated with hazardous materials • No long-term impacts	impacts associated with hazardous materials • No long-term impacts
Water Quality/ Hydrology	• Temporary remediation of materials at Rincon Island (soil, interstitial water) and Onshore Facility (soil, groundwater), during decommissioning would result in negligible impacts to water quality • Temporary potential runoff/sedimentation during SCC Parcel Improvements would be negligible • No long-term impacts	• Temporary remediation of materials at Rincon Island (soil, interstitial water) and Onshore Facility (soil, groundwater), and decommissioning would result in negligible impacts to water quality • Temporary potential runoff/sedimentation during SCC Parcel Improvements would be negligible • No long-term impacts	• Temporary impacts during decommissioning of Rincon Island could result in substantial impacts to water quality • Temporary potential runoff/sedimentation during SCC Parcel Improvements would be negligible • No long-term impacts
Noise	• Temporary introduction of construction equipment (offshore and onshore) during remediation activities would result in negligible	• Temporary introduction of construction equipment (offshore and onshore) during remediation and decommissioning activities would result in negligible	• Temporary introduction of construction equipment (offshore and onshore) during remediation and decommissioning activities would result in negligible

Environmental Resource Area	Reuse*	Reefing	Complete Removal
	impacts to sensitive receptors • Long-term noise impacts dependent upon eventual permitted use of Rincon Island and the Onshore Facility	impacts to sensitive receptors • No long-term noise impacts	impacts to sensitive receptors • No long-term noise impacts
Recreation	• Temporary introduction of construction equipment (offshore and onshore) during remediation activities would result in negligible impacts to area recreation • Long-term impacts to recreation dependent upon eventual permitted use of the Island and Onshore Facility	• Temporary introduction of construction equipment (offshore and onshore) during remediation and decommissioning activities would result in negligible impacts to area recreation • Long-term impacts to existing surf break would be negligible	• Temporary introduction of construction equipment (offshore and onshore) during remediation and decommissioning activities would result in negligible impacts to area recreation • Long-term impacts to existing surf break would be substantial as removal of the Island would permanently increase the wave height and energy in the coastal area
Traffic	• Temporary changes to existing traffic patterns within Mussel Shoals during Island soil remediation	• Temporary increase in offshore vessel traffic could result in negligible impacts to traffic	• Temporary increase in offshore vessel traffic would result in negligible impacts to traffic

Environmental Resource Area	Reuse*	Reefing	Complete Removal
	would result in negligible impacts to traffic • Long-term impacts to traffic dependent upon eventual permitted use (if any) of the Island and Onshore Facility	• Temporary changes to existing traffic patterns within Mussel Shoals residential community could result in substantial impacts to traffic • Long-term impacts to traffic would be negligible	• Temporary changes to existing traffic patterns within Mussel Shoals residential community could result in substantial impacts to traffic • No long-term impacts to traffic
Commercial Fishing	• Temporary introduction of offshore construction equipment during remediation activities could result in negligible impacts to commercial fishing • Long-term retention of Rincon Island would result in ongoing fishing opportunities (no impact)	• Temporary introduction of offshore construction equipment during remediation and decommissioning activities could result in negligible impacts to commercial fishing • Long-term retention of Rincon Island would result in ongoing fishing opportunities (no impact)	• Temporary introduction of offshore construction equipment during complete removal activities could result in substantial impacts to commercial fishing • Long-term, the removal of Rincon Island could result in substantial impacts to existing fishing opportunities
Sea Level Rise	• No substantial impacts	• No substantial impacts	• Potentially substantial impacts

* This column reflects potential environmental impacts from Reuse generally and contemplates retention of Rincon Island in its current state. Specific reuse proposals will require further environmental analysis prior to consideration by the Commission.

5.1.2 Potential Environmental Benefit Comparison

The screening level environmental assessment provided in Section 4.0 includes preliminary information regarding potential environmental benefits that could result from implementation of the Reuse, Reefing, or Complete Removal Alternatives as outlined in Section 2.5. A summary comparison of the primary potential benefits is provided in Table 5-2 below (refer to Section 4.0 for full discussion). Further analysis of environmental benefits will be performed on any proposed reuse options during subsequent CEQA review after upon receipt of any future applications for use of the Island.

Table 5-2. Potential Environmental Benefits of Alternatives

Reuse*	Reefing	Complete Removal
• No change to existing visual character • Retention of existing biological habitat • Reduction in hazardous waste due to remediation of Rincon Island and Onshore Facility • Reduction in temporary construction-related impacts compared to other decommissioning alternatives (Air Quality, Noise, Water Quality) • SCC Parcel improvements	• Retention of existing biological habitat • Reduction in hazardous waste due to remediation of Rincon Island and Onshore Facility • SCC Parcel Improvements	• Reduction in hazardous waste due to remediation of Rincon Island and Onshore Facility • SCC Parcel improvements

*This column reflects potential environmental benefits from Reuse generally and contemplates retention of Rincon Island in its current state. Specific reuse proposals will require further environmental analysis prior to consideration by the Commission.

5.2 SCHEDULING

Example Project Execution Plans (PEPs) prepared by the engineering contractor are included for each of the Alternatives (Reuse, Reefing, and Complete Removal) within Attachment 4 (L123 2021b). Each PEP includes a preliminary representative schedule for each Alternative. As indicated, the anticipated timing for completion of the Reuse Alternative is estimated to require approximately 653 days (approximately 2 years), the Reefing Alternative is estimated to require approximately 1,039 days (approximately 3 years), and the Complete Removal Alternative is estimated to require approximately 1,305 days (approximately 3.5 years) to complete. It is important to note that at this time, no anticipated start or finish date can be predicted; as timing would be dependent upon selection of a proposed Project, completion and adoption of a CEQA document, and associated permitting timeframes.

5.3 COST COMPARISON

Table 5-3 provides a cost comparison of the three Alternatives. As shown, the Reuse and Reefing Alternatives (ranging from approximately 15 to 25 million dollars) would require substantially less funding to accomplish than the Complete Removal Alternative (estimated at approximately 287 million dollars). Contributing factors to the increased cost for the Complete Removal Alternative include implementation of Component Plans 5 (Island Core Removal to Seafloor), 6 (Island Protective Armor Removal), and 7A and 7B (Remove Island Causeway and Wharf). Final costs will be scoped out once the Commission has selected a proposed Project and associated Component plans and implementation will be dependent on securing funding for the selected project.

Table 5-3. Cost Estimates for Rincon Phase 2 Decommissioning Alternatives

Alternative	Including Component Plans	Cost Estimate
Reuse	1, 2B, 3, 4B, 8, 9B	$15,220,431
Reefing	1, 2B, 3, 4B, 7A, 8, 9B	$24,898,976
Complete Removal	1, 2B, 3, 4A, 5, 6, 7A, 7B, 8, 9B	$287,318,238

6.0 REPORT PREPARATION AND REFERENCES

6.1 REPORT PREPARATION

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ATTACHMENT 1
Rincon Island and Open Causeway Construction. Journal of Waterways and Harbors Division of the American Society of Civil Engineers (Blume, J. and Keith, J., September 1959)

ATTACHMENT 2
Characterization of Marine Habitat and Associated Species at Rincon Island (UCSB 2021)

ATTACHMENT 3
Rincon Island and Onshore Facility
Site Assessment Reports

ATTACHMENT 4
L123 Example Project Execution Plan(s) for Complete Removal, Reuse, and Reefing Alternatives

Attachment 5
Terrestrial and Aquatic Special-Status Species in and Around the Phase 2 Area