Recirculated Draft Environmental Assessment Cargill, Incorporated Solar Sea Salt System Maintenance and Operations Activities

SCH #2020080442

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EXECUTIVE SUMMARY

This Environmental Assessment (EA) analyzes the environmental impacts of the proposed continued maintenance and operation activities of Cargill, Incorporated's (Cargill's) Solar Salt System in Newark and Redwood City, California (proposed Project). Cargill's continuation of its current maintenance and operation activities in furtherance of production of salt using a systematic process of evaporation along the shoreline of San Francisco Bay and within historic salt flat areas requires, among other authorizations, a permit from the San Francisco Bay Conservation and Development Commission (BCDC). Current maintenance and operation activities are undertaken pursuant to a BCDC permit that was issued in 1995 and has been periodically extended to the present day. Cargill now seeks a new BCDC permit, and other authorizations as needed, for another 10-year period.

With respect to Cargill's proposed Project, BCDC serves as the lead agency for purposes of the California Environmental Quality Act (CEQA). However, BCDC is exempt from typical CEQA requirements of a lead agency to prepare an environmental impact report, negative declaration, or mitigated negative declaration for Cargill's proposed Project because it instead implements a regulatory program that has been certified by the Secretary of Natural Resources as meeting the requirements of CEQA, codified at Public Resources Code section 21080.5. (For BCDC's certified program, refer to Title 14 of the California Code of Regulations section 15251(h) [14 CCR § 15251(h)].) Therefore, pursuant to regulations for implementing CEQA when it acts as lead agency pursuant to its certified program, BCDC has prepared this environmental assessment (EA). However, BCDC has prepared this EA in a manner so that other agencies with permitting/regulatory authority over Cargill's proposed Project may subsequently rely on the EA in order to satisfy their obligations under CEQA as responsible agencies (14 CCR § 15253(b).) Furthermore, subsequent agencies for which Cargill may need entitlements may require project changes or mitigation measures beyond those identified in this document under authority and justification of their own legal regimes beyond CEQA.

BCDC's regulations, contained in 14 CCR sections 11511(c) and § 11521, require that if BCDC is the lead agency and the Executive Director has determined that a proposed activity is not statutorily exempt and is not categorically exempt, he or she shall next determine whether the proposed activity may have any individually or cumulatively substantial adverse impact on the physical environment. If the Executive Director determines that the proposed activity may have a significant adverse impact on the physical environment either individually or cumulatively, BCDC must prepare an EA that complies with section 11521, containing a summary of the following:

- a brief description of the proposed activity;
- all substantial, adverse environmental impacts that the proposed activity may cause;
- all irreversible environmental impacts that the proposed activity may cause;
- any feasible mitigation measures that would reduce such substantial adverse environmental impacts;

- any feasible alternatives, including design alternatives, to the proposed Project that would reduce such substantial adverse environmental impacts; and
- such other information that the Executive Director believes appropriate.
- BCDC must then approve the EA prior to or at the same time as it acts on the permit application for the proposed Project.

Project Purpose and Objectives

The Project purpose is to continue maintenance of and operational activities at Cargill's solar salt systems in Newark/Fremont and Redwood City in a safe and environmentally-protective manner over the next 10 years. The Project objectives include: (1) continue conducting various activities necessary to maintain the integrity and stability of earthen berms, water control structures, and other infrastructure associated with salt-making to ensure continued viability of salt production activities; (2) allow for implementation of preliminary sea level rise adaptation efforts, including studies; and (3) permit Cargill to develop and implement alternative maintenance methods, as discussed herein, that may further reduce the effects of maintenance activities on the environment, improve efficiency, and/or adapt to changing climate conditions, where appropriate.

Organization of the Document

This EA is divided into six sections supported by seven appendices, as follows:

- Section 1 provides the Project background; agency and Cargill, Incorporated (applicant) information; Project objectives and anticipated agency approvals; and a summary of the public review and comment process.
- Section 2 describes the proposed Project including its location, equipment, facilities, level of activity, and an overview of the Project's operations and schedule.
- Section 3 provides the evaluation of environmental effects including the environmental setting, identification and analysis of potential impacts, and discussion of measures that, if incorporated into the Project, would mitigate or avoid those impacts in accordance with 14 CCR sections 11521 and 15253.
- Section 4 presents information on report preparation and the preparers of this document.
- Section 5 presents the reference list of documents cited in this EA.
- Section 6 includes a glossary of key terms used in this document.

The appendices include specifications, technical data, and other information supporting the analysis presented in this EA.

- Appendix A: USACE Approval Letter for Mitigation in Perpetuity
- Appendix B: Example Completion Report
- Appendix C: Soil Import Acceptance Criteria and Quality Assurance Project Plan

- Appendix D: Summary of Applicable Federal and State Regulations
- Appendix E: Special-Status Species Tables
- Appendix F: Noise Calculations
- Appendix G: Project Mailing List

Changes from the Original Public Draft Environmental Assessment

This Draft EA is being recirculated by BCDC to inform the public and decision makers about changes to the project description that could affect potential impacts associated with the proposed Project since the Draft EA was initially circulated on April 30, 2021 (State Clearinghouse No. 2020080442). The primary changes to the project description consist of the following:

1. Proposed construction and operation of fish screens for one or more pumps at Cargill's intake along Alameda Creek (Alameda Flood Control Channel) to minimize potential impacts on special status fish species, and a monitoring plan to evaluate the need for fish protection measures at other intakes and identify appropriate protection measures as needed.
2. Implementation of additional best management practices to further avoid and/or minimize potential effects on sensitive species.
3. Increasing the height of the berms around Ponds P2-12 and P2-13 by up to six inches, as needed, to ensure the berms are at an elevation of 11.5 feet NAVD88 by 2034 to address sea level rise.
4. Placement of up to 7,800 square feet of new riprap (i.e., riprap in areas that were not previously covered by riprap) over the life of the permit.

In addition, this Recirculated Draft EA provides further details regarding the extent of certain activities, such as filling gaps in internal berms and import of soil and riprap for maintenance of berms. This Recirculated Draft EA also provides the most updated estimate of projected quantities for all maintenance activities that would be performed pursuant to a new BCDC permit. The impact assessments for all resource areas have been updated to reflect the changes to the proposed Project.

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LIST OF ACRONYMS AND ABBREVIATIONS

Acronym	Description
2017 Plan	*2017 Clean Air Plan: Spare the Air, Cool the Climate* (BAAQMD 2017a)
ACFC	Alameda County Flood Control and Water Conservation District
ACS	American Community Survey
ACTC	Alameda County Transportation Commission
BAAQMD	Bay Area Air Quality Management District
Basin Plan	*Water Quality Control Plan for the San Francisco Bay Basin* (RWQCB 2017)
Bay Plan	*San Francisco Bay Plan* (BCDC 2020)
BCDC	San Francisco Bay Conservation and Development Commission
BMP	Best Management Practice
BO	Biological Opinion
Cal-IPC	California Invasive Plant Council
CalEEMod	California Emissions Estimator Model
CalEPA	California Environmental Protection Agency
Caltrans	California Department of Transportation
CARB	California Air Resources Board
C/CAG	City/County Association of Governments
CCP	Comprehensive Conservation Plan
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CHRIS	California Historical Resource Information System
CLT	California least tern
CMP	Congestion Management Program
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 equivalents

Acronym	Description
COPC	California Ocean Protection Council
CRHR	California Register of Historic Resources
CRR	California Ridgway's rail
CWA	Clean Water Act
CWCB	California Wildlife Conservation Board
CY	cubic yards
dBA	A-weighted decibels
DPM	diesel particulate matter
DPS	distinct population segment
DTSC	California Department of Toxic Substances Control
EA	Environmental Assessment
EBDA	East Bay Dischargers Association
ECRB	Engineering Criteria Review Board
EIR	Environmental Impact Report
EJ	environmental justice
EO	Executive Order
ES and SNR	Endangered Species and Sensitive Natural Resources
°F	degrees Fahrenheit
FEMA	Federal Emergency Management Agency
FESA	federal Endangered Species Act
FHWA	Federal Highway Administration
FICON	Federal Interagency Committee on Noise
FMC	FMC Corporation (a chemical company)
FTA	Federal Transit Administration
GHG	greenhouse gas
HAPC	Habitat Area of Particular Concern
HI	hazard index
HUD	U.S. Department of Housing and Urban Development
ICLEI	Local Governments for Sustainability
L_{dn}	day-night sound level
L_{eq}	equivalent continuous sound level
Leslie	Leslie Salt Company
LOS	Level of Service

Acronym	Description
MESR	Maximally Exposed Sensitive Receptor
mg/L	milligrams per liter
MHHW	mean higher high water
MLLW	mean lower low water
MM	Mitigation Measure
MND	Mitigated Negative Declaration
MSS	mixed sea salts
MTC	Metropolitan Transportation Commission
MT CO_2e	metric tons of carbon dioxide equivalents
N_2O	nitrous oxide
NaCl	sodium chloride (table salt)
NAHC	Native American Heritage Commission
NAVD88	North American Vertical Datum of 1988
ND	negative declaration
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NO_2	nitrogen dioxide
NO_x	oxides of nitrogen
NRHP	National Register of Historic Places
OEHHA	California Environmental Protection Agency Office of Environmental Health Hazard Assessment
OPR	Office of Planning and Research
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
PM_{10}	particulate matter less than 10 microns in diameter
ppt	parts per thousand
PPV	peak particle velocity
PRC	Public Resources Code
Refuge	Don Edwards San Francisco Bay National Wildlife Refuge
ROG	reactive organic gas
ROW	right-of-way
RWQCB	San Francisco Bay Regional Water Quality Control Board
SACQAPP	Soil Import Acceptance Criteria and Quality Assurance Project Plan

Acronym	Description
SCVWD	Santa Clara Valley Water District
SFBBO	San Francisco Bay Bird Observatory
SLR	sea level rise
SMCFCD	San Mateo County Flood Control District
SMHM	salt marsh harvest mouse
SO_2	sulfur dioxide
SR	State Route
SSC	suspended sediment concentration
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TACs	toxic air contaminants
TDI	toluene diisocyanate
TMP	Traffic Management Plan
TWL	total water level
UCERF3	third Uniform California Earthquake Rupture Forecast
UPRR	Union Pacific Railroad
U.S. 101	U.S. Highway 101
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VdB	vibration decibels
VMT	vehicle miles traveled
WGCEP	Working Group on California Earthquake Probabilities
WSP	western snowy plover

1.0 PROJECT SUMMARY

1.1 PROJECT TITLE

Cargill, Incorporated Solar Salt System Maintenance and Operation Activities Project

1.2 LEAD AGENCY NAME AND ADDRESS

San Francisco Bay Conservation and Development Commission
375 Beale Street, Suite 510
San Francisco, CA 94105

1.3 CONTACT PERSON AND PHONE NUMBER

Name/Title: Sam Fielding, Coastal Program Analyst
Phone: (415) 352-3665
Email: sam.fielding@bcdc.ca.gov

1.4 PROJECT LOCATION

San Mateo and Alameda Counties, California

The Cargill, Incorporated (Cargill) Solar Salt System Maintenance and Operation Activities Project (Project) would be located primarily in Alameda County on the east shore of the San Francisco Bay, with a smaller area on the west shore in San Mateo County (Figure 1-1). Salt production is conducted in three primary areas: Newark Plants 1 and 2, and the Redwood City Plant (refer to Section 2 for information regarding these facilities). In addition to these three primary plant areas, Cargill also operates Baumberg Pond B-3C north of Alameda Creek, as well as the Cargill West Bay areas as part of the salt-making operations. The Cargill West Bay areas include the Redwood City Maintenance Pond at U.S. Fish and Wildlife Service (USFWS) Pond SF-2 (formerly known as the SF-2 Donut) and the West Bay lands overlying the brine pipeline connecting the Redwood City Plant to the Newark plants. The brine pipeline as described in this document also includes the Transbay Pipeline section of the pipeline. The three plant sites, Pond B-3C, and the Cargill West Bay areas together comprise the "Project area." A portion of the Project area is within the USFWS Don Edwards San Francisco Bay National Wildlife Refuge (Refuge). Activities would occur throughout Project area. Table 1-1 presents the latitude and longitude coordinates of the approximate center point of the various components of the Project area.

Table 1-1. Location Coordinates of the Project Area Components

Project Area Component	Latitude	Longitude
Baumberg Pond B-3C	37°34'09"North	122°05'35"West
Newark Plant 1	37°29'50"North	122°11'50"West
Newark Plant 2	37°32'50"North	122°06'00"West
Redwood City Plant	37°29'50"North	122°01'50"West
Cargill West Bay Areas (Redwood City Maintenance Pond Location)	37°29'52"North	122°07'45"West

Note: Coordinates represent approximately the center of each plant or pond.

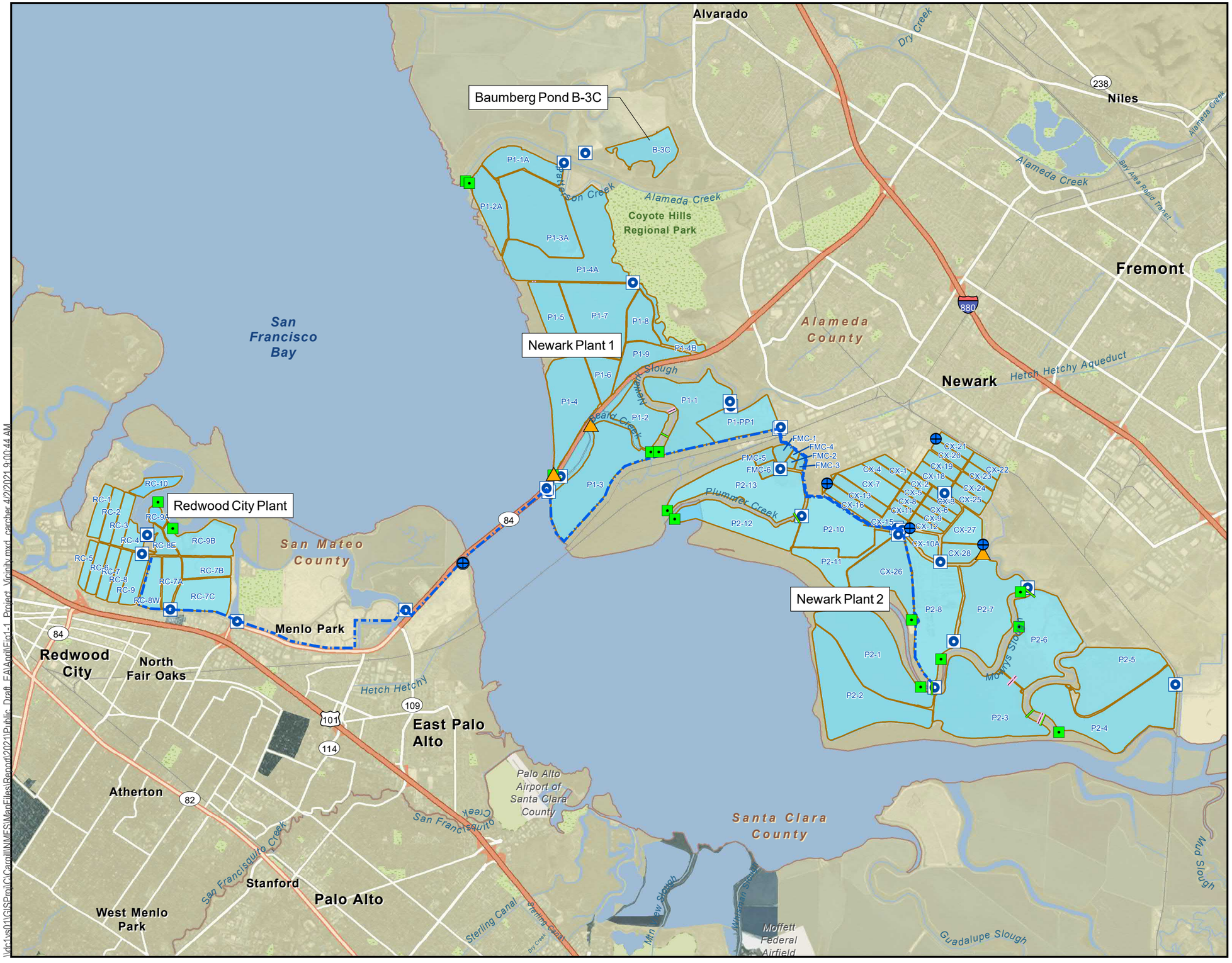
The Project area includes 41 parcels, as summarized in Table 1-2. The Project area includes both parcels that are owned by Cargill and parcels owned by USFWS on which Cargill has the perpetual right to operate in accordance with the 1979 agreement between USFWS and Leslie Salt Company (Cargill's predecessor).

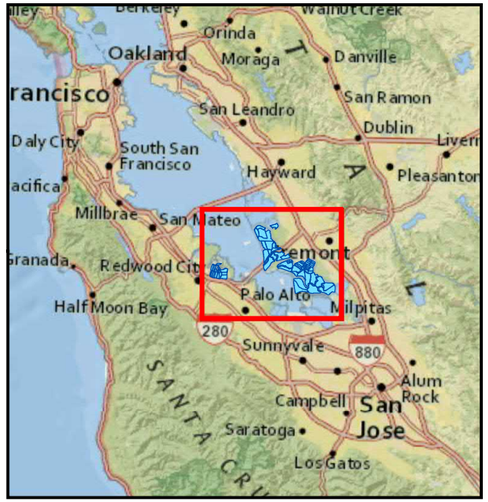
Table 1-2. Parcel Numbers and Associated Ponds/Areas for the Project Area Components

Project Area Component	Assessor's Parcel Number (APN)	Applicable Pond(s)/Areas[1]
Baumberg Pond B-3C	482-80-2-26	B-3C
Newark Plant 1	537-551-5-1	1, PP1
	537-551-6-6	PP1
	537-601-3-3	1
	537-601-3-8	2, 3
	537-601-15-9	4, 6, 9, 4B, 8
	537-601-16-2	4
	543-370-1-8	4, 5, 6, 7, 8, 1A, 2A, 3A, 4A
Newark Plant 2	537-751-10	Cx20, Cx21
	537-751-11	Cx22, Cx23
	537-751-1-1	PP8, Cx18, Cx19, Cx25, Cx1, Cx2, Cx3, Cx4, Cx5, Cx6, Cx7, Cx8, Cx9, Cx11, Cx12, Cx13, Cx15, Cx16, Cx27, Cx28, Cx10a, Cx26, DSP11, DSP10
	537-551-33-2	Cx13, Cx16, DSP10
	537-701-2-10	Cx26, PP8, DSP10, DSP11
	537-801-1-9	PP8, PP7
	537-751-14	Cx27
	537-751-15-2	Cx27, Cx28
	537-751-13	Cx27
	537-751-12-3	Cx24, Cx25, Cx27
	537-701-2-14	1, 2, 3
	537-701-1-1	1
	537-801-1-6	3, 6

Project Area Component	Assessor's Parcel Number (APN)	Applicable Pond(s)/Areas[1]
	537-801-4-5	3, 4, 5, 6
	537-852-12	FMC Ponds
	537-852-14	FMC Ponds
	537-852-15	FMC Ponds
	537-852-16	FMC Ponds
	537-852-17	FMC Ponds
	537-852-18	FMC Ponds
Redwood City Plant	054-131-080	Flood Slough
	055-400-590	Belle Haven Pump Area
	054-300-230	Cx1-4
	054-300-670	Pond 10
	054-310-060	7C
	054-310-100	9A
	054-310-120	9
	054-310-140	9A
	054-310-160	Cx 1-9, 7A, 7B, 7C, 8W, 8E, 9, 9A, 10
	055-400-230	9
	054-400-510	Flood Slough
	054-400-520	Flood Slough
Cargill West Bay Areas	055-400-630	Redwood City Maintenance Pond (former SF-2 Donut), Brine Pipeline

[1] Pond numbers with a "Cx" prefix refer to crystallizers.





Legend

- Pumps
- Locks
- Redwood City Maintenance Pond
- Multipurpose Ditch Intake
- Stockpile Location
- Berms
- Brine Pipeline
- Siphon
- Pipeline
- System Ponds

Note:
Service Layer Credits: ESRI, National Geograhic

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Figure 1-1
Cargill Solar Salt System Vicinity and Project Site
Cargill, Incorporated
Alameda and San Mateo County, CA

Jacobs

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1.5 PROJECT SPONSOR'S (APPLICANT'S) NAME AND ADDRESS:

Cargill, Incorporated
7220 Central Avenue
Newark, CA 94560

1.6 GENERAL PLAN DESIGNATION

The Project is composed of three main areas (Newark Plant 1, Newark Plant 2, and the Redwood City Plant), along with Pond B-3C and the Cargill West Bay areas. Applicable General Plan designations for each of these areas are shown in Table 1-3.

Table 1-3. General Plan Designations for the Project Area Components

Project Area Component	General Plan Designation of Project Area	General Plan Designation(s) of Adjacent Areas
Baumberg Pond B-3C	City of Hayward: Flood Plain	All: City of Hayward: Flood Plain
Newark Plant 1	City of Fremont: OS (Open Space); City of Newark: Resource Production - Salt Harvesting and Refining (allows man-made crystallizer beds used for salt crystallization, and related buildings, facilities, and operations for salt harvesting, stacking, sizing, packaging, and/or distribution)	East: City of Fremont: OS (Open Space), P (Planned District) South: None West: None North: City of Hayward: Flood Plain
Newark Plant 2	City of Fremont: OS (Open Space); City of Newark: Resource Production - Salt Harvesting and Refining (allows man-made crystallizer beds used for salt crystallization, and related buildings, facilities, and operations for salt harvesting, stacking, sizing, packaging, and/or distribution)	East: City of Fremont: OS (Open Space), RR (Railroad Corridor); City of Newark: High Density Residential, Low-Medium Density Residential, Conservation - Parks and Recreational Facilities, General Industrial, Open Space, Low-Density Residential South: City of Fremont: OS (Open Space) West: None North: None
Redwood City Plant	City of Redwood City: Western portion: UR (Urban Reserve) Eastern portion: OS (Open Space - Preservation)	East: City of Redwood City: OS (Open Space - Preservation); City of Menlo Park areas: Parks and Recreation, Baylands South: City of Redwood City: MDR (Residential - Medium Density), LI (Industrial - Light); City of Menlo Park areas: Light Industrial, Office, Residential West: City of Redwood City: IP (Industrial - Port-Related), O (Commercial Office - Professional/Technology), M (Marina) North: City of Redwood City: O (Commercial Office -Professional/Technology), M (Marina), OS (Open Space - Preservation)

Project Area Component	General Plan Designation of Project Area	General Plan Designation(s) of Adjacent Areas
Cargill West Bay Areas	City of Menlo Park: Baylands	East: City of Menlo Park: Baylands South: City of Menlo Park: Light Industrial, Office West: City of Menlo Park: Baylands North: City of Menlo Park: Baylands
Transbay Pipeline Component of Cargill West Bay Areas	City of Menlo Park: Baylands	East: City of Menlo Park: Baylands South: City of Menlo Park: Baylands West: City of Menlo Park: Baylands North: City of Menlo Park: Baylands

Sources:
City of Fremont 2011; City of Hayward 2014; City of Menlo Park 2016; City of Newark 2013, 2019; City of Redwood City 2010d.

1.7 ZONING

The City of Fremont's zoning map designates Newark Plants 1 and 2 as RCP (Resource Conservation/Public). The Land Use Element of the general plan (City of Fremont 2011) recognizes "salt ponds" as an appropriate use in Agriculture areas within the Resource Conservation and Public Open Space designation that encompasses the property. Fremont Municipal Code 18.120.030(a) further recognizes that "[e]xtraction of chemicals from sea water by natural evaporation" is a permitted use in an "A" District (Agriculture district).

The portion of Newark Plants 1 and 2 located in the City of Newark has the zoning designation of OC-A (Conservation-Open Space/Salt Harvesting, Refining, and Production). Section 17.28.030 of the municipal code permits the following uses in the "A" District, "provided that the structure, if any, which the use shall occupy, use, retain or place upon the use's site is of new construction at the time of initial occupancy:

A. Raising of field crops, fruit and nut trees, vegetables, horticultural specialties, poultry and livestock, but not including the raising in excess of five swine or goats;

B. Salt production ponds;

C. One-family dwellings with a minimum site area of one acre;

D. Home occupations, subject to the same conditions as specified for home occupations in the R districts; and

E. Accessory structures and uses located on the same site with a permitted use, including private garages and carports; one guest house or accessory living quarters without a kitchen for each dwelling on the site; barns, stables, coops, tank houses, storage tanks, windmills, silos and other farm outbuildings; storehouses, garden structures, greenhouses, recreation rooms and hobby shops; storage of petroleum products for the use of persons residing on the site."

Pond B-3C is in the City of Hayward and is zoned Flood Plain. The Redwood City Plant is zoned TP (Tidal Plain), and the Cargill West Bay areas are located in Menlo Park and are zoned Flood Plain. Redwood City zoning regulations indicate that the purpose of the Tidal Plain district is "To create a district for the marsh lands adjacent to San Francisco Bay and to permit certain types of development therein of a relatively temporary nature which can ultimately be replaced by permanent development under another more appropriate zoning district." Uses that are allowed in the TP District include:

- Agriculture
- Extraction of chemicals from sea water by natural evaporation and extraction of oyster shells or other deposits from San Francisco Bay
- Public parks and public recreation areas or facilities

Similarly, the Menlo Park Flood Plain zoning allows the following uses:

- Agricultural uses
- Accessory buildings
- Accessory structures
- Extraction of chemicals from sea water, and
- Dredging

1.8 SURROUNDING LAND USES AND SETTING

On the upland side, all three salt production plants are generally bordered by developed areas, including residential and light and general industrial areas. The majority of Newark Plant 1 and much of Newark Plant 2 are located on Refuge lands. Newark Plant 1 is bordered by the California Department of Fish and Wildlife (CDFW) Eden Landing Ecological Reserve to the north, and partially bordered by Coyote Hills Regional Park to the east. Several sloughs bisect Newark Plants 1 and 2, and State Route (SR) 84 crosses Newark Plant 1. Baumberg Pond B-3C is bordered by the CDFW Eden Landing Ecological Reserve to the north and west, and City of Union City open space lands to the east and south.

The Redwood City Plant is bordered by the Refuge to the north and northeast, the City of Menlo Park's Bedwell Bayfront Park to the east, and the Port of Redwood City and an office park to the northwest and west. Residential and light industrial areas are located to the south. The western portion of the West Bay pipeline alignment is located immediately to the south of the USFWS Refuge Ravenswood Unit, and north of U.S. Highway 101 (U.S. 101) and the Facebook (Meta) campus. It then crosses under SR 84 and is bordered by SR 84 to the west and USFWS Pond SF-2 to the east. The Redwood City Maintenance Pond (the former SF-2 Donut) is bordered by USFWS Pond SF-2 to the south, tidal marsh to the east and north, and SR 84 to the north and west.

1.9 PURPOSE AND USE OF THIS ENVIRONMENTAL ASSESSMENT

This Environmental Assessment (EA) has been prepared to evaluate the potential environmental effects of the proposed Project and to identify feasible mitigation measures to reduce any potentially significant impacts. This EA will support decisions made by the San Francisco Bay Conservation and Development Commission (BCDC) as the lead agency and other approval and permitting decisions to be made by responsible agencies in accordance with the California Environmental Quality Act (CEQA).

Under the McAteer-Petris Act, codified at Government Code sections 66600 *et seq.*, BCDC has regulatory authority over statutorily-specified activities that could impact the San Francisco Bay and other statutorily-specified jurisdictions for which BCDC has regulatory authority, including salt ponds. BCDC will serve as the lead agency for compliance with CEQA for the Project because no local discretionary approvals are required for the Project, and BCDC will be the first government agency to act on the project by considering a permit application for the Project. The Secretary for the Natural Resources Agency has certified BCDC's permitting and planning programs under the McAteer-Petris Act as meeting the requirements of CEQA, codified at Public Resources Code section 21080.5. (For BCDC's certified program, refer to 14 CCR § 15251(h).) Thus, in lieu of submitting a document as typically required under CEQA (such as an environmental impact report [EIR], mitigated negative declaration [MND] or negative declaration [ND]), BCDC instead prepares an EA in compliance with its regulations implementing its certified program as codified at 14 CCR sections 11510 to 11525. As the CEQA lead agency for a project that will involve multiple subsequent discretionary government agency approvals, BCDC has decided to prepare its EA in a manner that complies with the requirements of 14 CCR section 15253(b) so that other responsible agencies subject to CEQA can rely on it to fulfill their CEQA obligations.

BCDC and all responsible and trustee agencies will rely on the Final EA when reviewing the Project for any subsequent permits or other approvals. Furthermore, subsequent agencies for which Cargill may need entitlements may require project changes or mitigation measures beyond those identified in this document under authority and justification of their own legal regimes beyond CEQA.

1.10 RECIRCULATION

The Draft EA was originally published for public review in April 2021 (State Clearinghouse No. 2020080442). To ensure the public is fully informed about the proposed Project due to project description changes since original publication of the Draft EA, the Draft EA is being recirculated by BCDC for a subsequent public review. As described further in Section 2, several changes have been made to the project description, and these changes are evaluated in detail as part of this Recirculated Draft EA. An agency may also choose to recirculate a Draft CEQA document as a means of informing the public about important changes to the project description, even if the changes do not result in new significant avoidable impacts.

1.11 PUBLIC REVIEW AND COMMENT

Although CEQA requirements regarding public review of NDs, MNDs, and EIRs are not directly applicable to BCDC's EA process as a certified program, BCDC has decided to maximize public participation in the EA process (14 CCR § 15105). Thus, local and State agencies and the public had the opportunity to comment on the April 2021 Draft EA for a period of 30 days and will similarly have the opportunity to review and comment on this recirculated draft document for a minimum of 30 days. Written comments received by BCDC during the 30-day public review period will be addressed as appropriate in the Final EA.

BCDC will then review and consider the proposed Final EA, together with any comments received during the public review process, prior to or concurrent with the Commission taking action on any permit application for the proposed Project.

1.12 ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

The evaluation of environmental impacts provided in this EA considered all of the resource areas included in the CEQA Guidelines Appendix G Checklist, and focuses on the resource areas relevant to the proposed Project (refer to Section 3.1). Impact levels, as used in this EA, are defined as follows:

- **Potentially Significant Impact.** This impact level is assigned if there was substantial evidence that a Project-related environmental effect may be significant, and no mitigation measures could be identified to reduce the potential effect to a less than significant level.
- **Less than Significant with Mitigation.** This impact level is assigned when the Project may result in a significant environmental impact, but the incorporation of Project-specific mitigation measures into the Project will reduce the identified effect(s) to a less than significant level.
- **Less than Significant Impact.** This impact level is assigned when the Project would not result in any significant effects. The determination that a Project's impact is less than significant is made without the incorporation of any Project-specific mitigation measure.
- **No Impact.** This impact level is assigned when the Project would not result in any impact to the resource.

1.13 PUBLIC AGENCIES WHOSE APPROVAL MAY BE REQUIRED

Multiple permits, entitlements, or other forms of approval from various state- and federal-level governmental agencies will be required to implement the proposed Project. The following list shows the agency and the approval(s) that may be required by that agency. The approval(s) required for a specific maintenance activity will depend in part on the location where the maintenance activity will occur.

BCDC:

- Permit under McAteer-Petris Act authority

National Marine Fisheries Service (NMFS):

- Biological Opinion (BO)

U.S. Army Corps of Engineers (USACE):

- CWA Section 404 Permit
- Section 10 Rivers and Harbors Act Permit
- Section 408 Permission

USFWS:

- BO

CDFW:

- Incidental Take Permit
- Routine Maintenance Agreement
- Lake and Streambed Alteration Agreement

California Department of Transportation (Caltrans):

- Encroachment Permit

California State Lands Commission:

- Master Lease

San Francisco Bay Regional Water Quality Control Board (RWQCB):

- Clean Water Act (CWA) Section 401 Water Quality Certification
- Waste Discharge Requirements issued pursuant to the authority of the State of California's Porter-Cologne Water Quality Act

1.14 TRIBAL CONSULTATION

As of the publication of this Recirculated Draft EA, Native American tribes traditionally and culturally affiliated with the Project area have not requested consultation pursuant to Public Resources Code section 21080.3.1. In June 2020, BCDC initiated tribal consultation by requesting a list of tribal representatives from the Native American Heritage Commission (NAHC), as well as a search of NAHC's Sacred Lands file. On July 20, 2020, BCDC sent letters to the tribal representatives provided by NAHC. The letters notified the tribal representatives of the proposed Project and invited them to provide comments regarding the Project, share any information regarding possible Native American cultural resources which could potentially exist on the Project site, and identify any other potential concerns related to the proposed Project.

BCDC followed up with phone calls to the tribal representatives in August 2020. At that time, the Amah Mutsun Tribal Band of Mission San Juan Bautista indicated that the Project site is outside of their area, and therefore they would have no comment on the Project. Phone calls

were made again in December 2020 and representatives of three tribes were reached for comment. The Amah Mutsun Tribal Band[1] representative indicated at that time that the Project is outside of their area, and therefore they would have no comment on the Project. The representative of the Indian Canyon Mutsun Band of Costanoan commented verbally that she recommends that there be an archaeological monitor and a Native American monitor present during any earth moving activity. The representative of the Ohlone Indian Tribe commented verbally that he affirms and supports the mitigation measures listed in this document.

Due to the changes to the proposed Project addressed in this Recirculated Draft EA, BCDC recontacted the tribes in June 2024. BCDC first obtained an updated list of tribal representatives from the NAHC in May 2024, and subsequently notified the designated contacts by letter regarding the changes to the proposed Project. If further guidance is provided by the tribes, it will be reflected in the Final EA.

[1] While their names are similar, The Amah Mutsun Tribal Band of Mission San Juan Bautista and the Amah Mutsun Tribal Band are separate tribes.

2.0 PROJECT DESCRIPTION

2.1 INTRODUCTION

Under the McAteer-Petris, BCDC has regulatory authority over statutorily-specified activities that could impact the San Francisco Bay and other statutorily-specified jurisdictions for which BCDC has regulatory authority, including salt ponds. Cargill and its predecessor companies have been operating salt ponds for solar salt production in the South San Francisco Bay since the turn of the 20th century, and have performed activities under BCDC permits since 1977. The most recent permit was issued in 1995 and has been extended multiple times. Cargill is proposing to continue operation and maintenance of its existing sea salt production facilities located in South San Francisco Bay (Figure 1-1).

Cargill's South San Francisco Bay facilities were once part of a larger network of solar salt producers. Since 1978 Cargill has been the sole operator of historic solar salt manufacturing plants in the San Francisco Bay area, having consolidated the operations of other plants. Since the issuance of its most recent maintenance and operations permit, Cargill has significantly reduced these operations and transferred significant portions of land where the solar salt manufacturing plants were situated to wildlife conservation agencies and organizations.

Cargill produces sea salt through solar evaporation of sea water. Sea water from San Francisco Bay is introduced into concentrators (also known as evaporation ponds), where a substantial portion of the water evaporates, resulting in a concentrated brine. The concentrated brine is then transferred to "pickle ponds" where evaporation continues until the brine reaches a concentration suitable for harvesting. Harvestable brine is transferred into crystallizers, where additional evaporation results in the precipitation of sodium chloride (NaCl, i.e., table salt).

There are also post-harvesting salt ponds (additional NaCl may be recovered to be recycled back into the pond system and other salt products are harvested), and wash ponds (these receive high salinity water that has been used to wash impurities from the salt). The post-harvesting salt ponds include two ponds storing mixed sea salts (MSS, salts remaining after all commercial products are harvested), and the six small FMC ponds, which store high-salinity magnesium rich brines for harvest of additional salt products. Typically, ponds closest to the crystallizers and within the plant sites have higher salinities. For the purpose of the EA, these five types of ponds are collectively referred to as "salt ponds." The solid and liquid products from the crystallizers are moved to and processed at the salt refining facility. No additives or chemicals are used to produce salt; solar and wind energy alone cause evaporation. In contrast to infrastructure maintenance activities, these specific salt production activities (i.e., the transfer of brine between ponds, and harvesting of NaCl and other salt products) and the final salt processing and refining steps are not subject to the permitting requirements that apply to maintenance and operations activities such as sediment removal, placement of import/natural material, repair and replacement of certain structures, and other activities authorized by the permits Cargill holds and seeks to renew.

Cargill produces approximately 500,000 tons of NaCl along with other salt products on an annual basis. Salts are either sold in bulk or refined into a variety of salt products at the adjacent refinery in Newark. In addition to table salt, other products such as salts for de-icing and dust suppression can be harvested following harvest of the NaCl.

To keep the operation in working condition and meet market demand, Cargill must maintain the existing earthen berms around the various ponds, pond intake and support structures, the salt ponds themselves, and the other various structures in the Project area. The majority of Cargill's maintenance and operations activities involve activities to ensure the continuing operation of these features.

2.2 PROJECT PURPOSE AND OBJECTIVES

The Project purpose is to continue maintenance of and operational activities at Cargill's solar salt systems in Newark/Fremont and Redwood City in a safe and environmentally protective manner over the next 10 years. The Project objectives include (1) continue conducting various activities necessary to maintain the integrity and stability of earthen berms, water control structures, and other infrastructure to ensure continued viability of salt production activities; (2) allow for implementation of preliminary sea level rise (SLR) adaptation efforts, including studies, and (3) permit Cargill to develop and implement alternative maintenance methods, as discussed herein, that may further reduce the effects of maintenance activities on the environment, improve efficiency, and/or adapt to changing climate conditions, where appropriate.

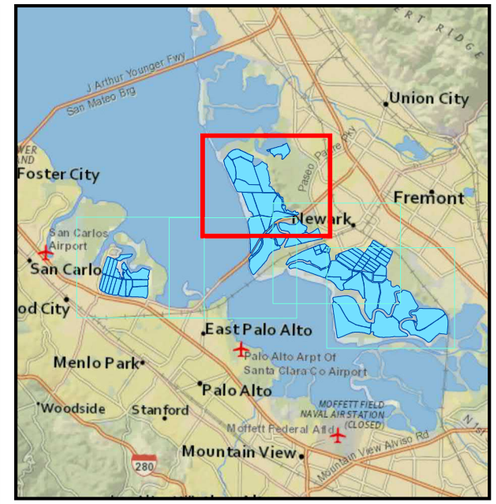
The proposed Project furthers BCDC's San Francisco Bay Plan (Bay Plan; BCDC 2020) Salt Ponds Policy 1, which states:

> *The use and maintenance of salt ponds for salt production should be encouraged. Accordingly, property tax policy should assure that rising property taxes do not force conversion of the ponds and other wetlands to urban development. In addition, maintaining the integrity of the salt production system should be encouraged (i.e., public agencies should not take for other projects any pond or portion of a pond that is a vital part of the production system).*

2.3 FACILITY OVERVIEW

The Project area is composed of three plant locations (Newark Plant 1, Newark Plant 2, and the Redwood City Plant), Pond B-3C, and the Cargill West Bay areas (consisting of the brine pipeline alignment, including the Transbay section of the pipeline, and Redwood City Maintenance Pond[2]) (Figure 2-1) that together comprise approximately 12,100 acres.

[2] The Redwood City Maintenance Pond is the former donut (small access pond) for Pond SF-2. Pond SF-2 has been transferred to the Refuge and restored to wildlife habitat.



Legend

- Pumps
- Locks
- Berm
- Siphon
- Pipeline
- Newark Plant 1 System Ponds
- Railroads
- Bay Trail
- USFWS Trail
- Mean High Water
- CDFW Jurisdiction

Note:
Service Layer Credits: ESRI, National Geograhic

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Figure 2-1
Map 1 of 5
Cargill Solar Salt System Project Area
Cargill, Incorporated
Alameda and San Mateo Counties, CA

Jacobs

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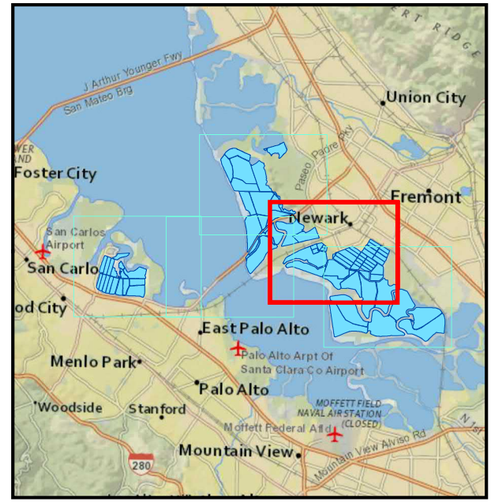

Legend

- Pumps
- Locks
- Intake
- Stockpile Location
- Berm
- Brine Pipeline
- Siphon
- Pipeline
- Newark Plant 1 System Ponds
- Newark Plant 2 System Ponds
- Railroads
- Bay Trail
- USFWS Trail
- Mean High Water
- CDFW Jurisdiction

Note:
Service Layer Credits: ESRI, National Geograhic

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Figure 2-1
Map 2 of 5
Cargill Solar Salt System Project Area
Cargill, Incorporated
Alameda and San Mateo Counties, CA

Jacobs

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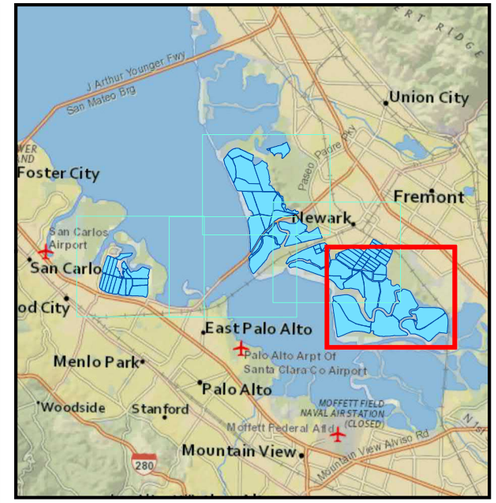

Legend

- Pumps
- Locks
- Intake
- Stockpile Location
- Berm
- Brine Pipeline
- Siphon
- Pipeline
- Newark Plant 2 System Ponds
- Railroads
- Bay Trail
- USFWS Trail
- Mean High Water
- CDFW Jurisdiction

Note:
Service Layer Credits: ESRI, National Geograhic

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Figure 2-1
Map 3 of 5
Cargill Solar Salt System Project Area
Cargill, Incorporated
Alameda and San Mateo Counties, CA

Jacobs

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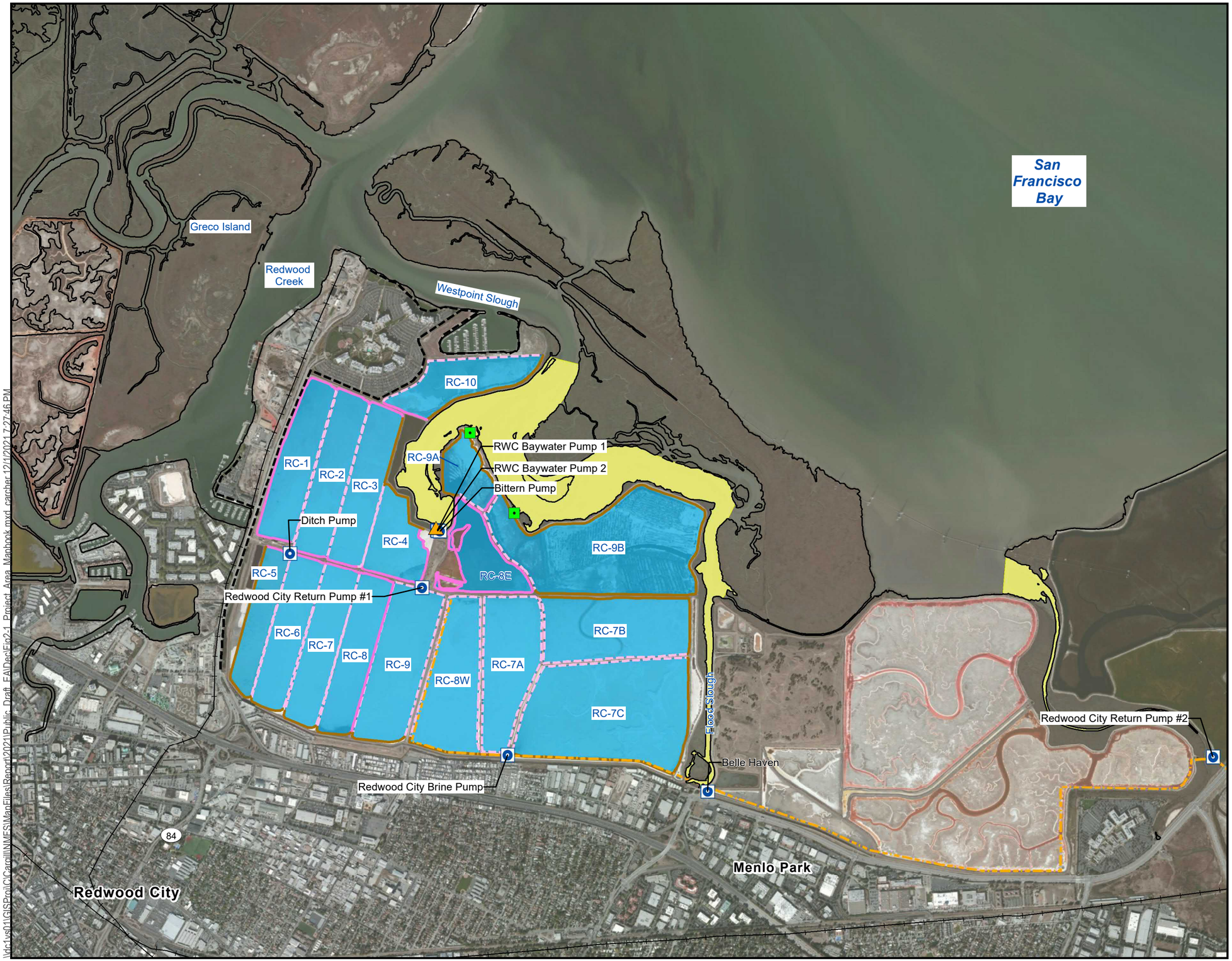

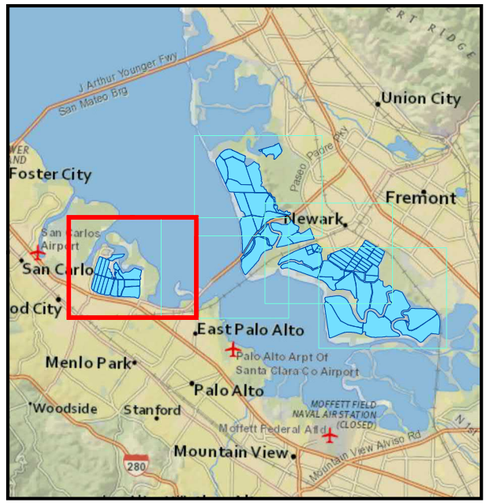

Legend

- Pumps
- Locks
- Intake
- All Weather Drivable Berm (Graveled)
- Drivable Berm
- Other Salt Production System Berm
- Brine Pipeline
- Redwood City Plant System Ponds
- Railroads
- Bay Trail
- USFWS Trail
- Mean High Water
- CDFW Jurisdiction

Note:
Service Layer Credits: ESRI, National Geograhic

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Figure 2-1
Map 4 of 5
Cargill Solar Salt System Project Area
Cargill, Incorporated
Alameda and San Mateo Counties, CA

Jacobs

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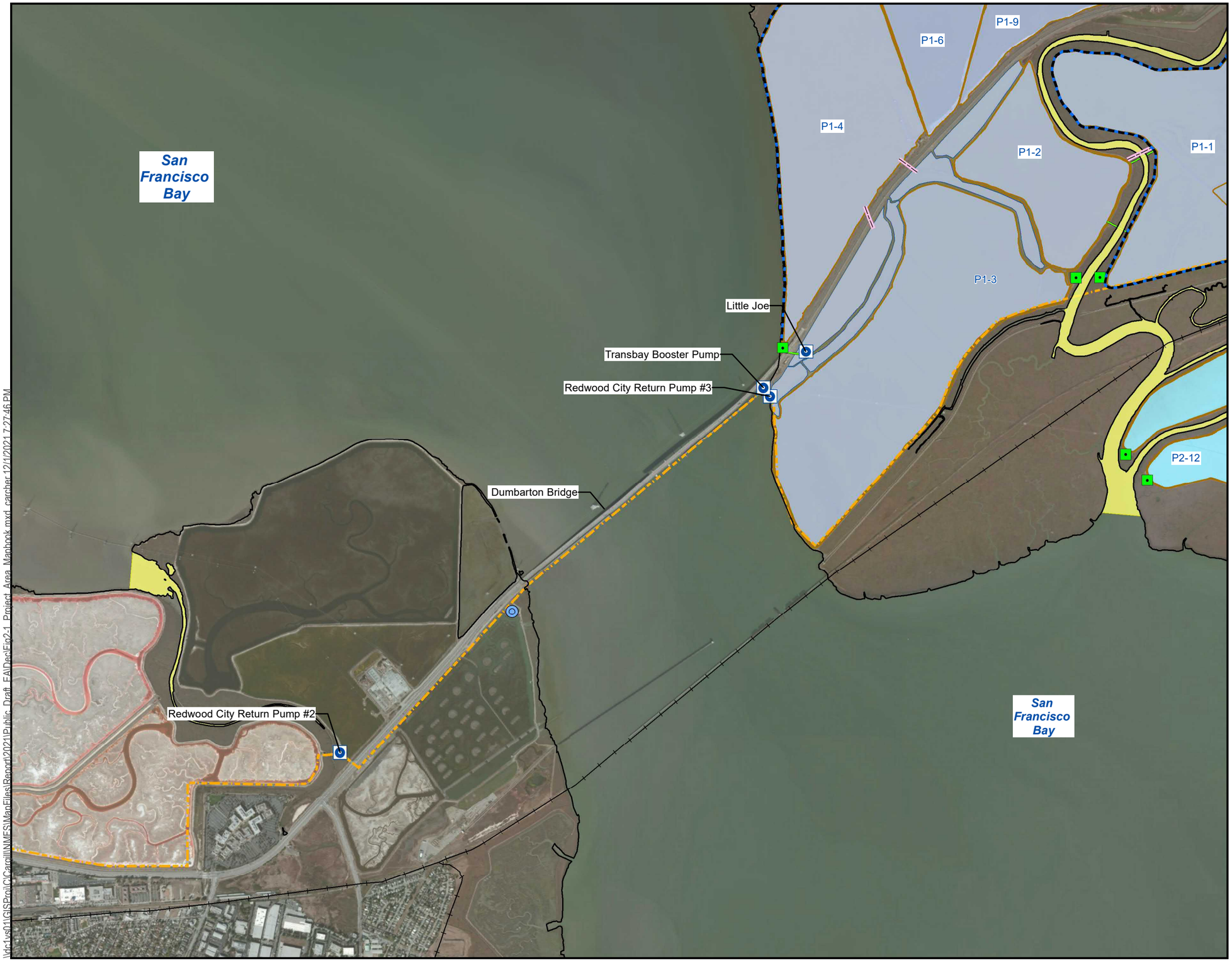

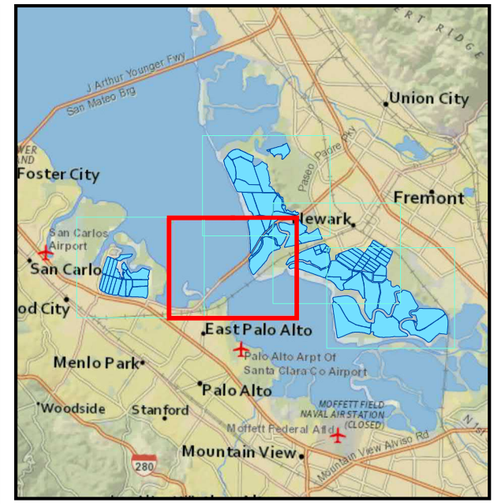

Legend

- Pumps
- Locks
- Redwood City Maintenance Pond
- Berm
- Brine Pipeline
- Siphon
- Pipeline
- Newark Plant 1 System Ponds
- Newark Plant 2 System Ponds
- Railroads
- Bay Trail
- USFWS Trail
- Mean High Water
- CDFW Jurisdiction

Note:
Service Layer Credits: ESRI, National Geograhic

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Figure 2-1
Map 5 of 5
Cargill Solar Salt System Project Area
Cargill, Incorporated
Alameda and San Mateo Counties, CA

Jacobs

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2.3.1 Newark Plant 1 and Baumberg Pond B-3C

The Newark Plant 1 complex is located in western Fremont, extending from Coyote Hills Slough/Alameda Creek (also known as the Alameda Flood Control Channel) on the north to the Union Pacific Railroad (UPRR) right-of-way (ROW) and the lower reach of Newark Slough to the south. The Plant 1 Project area encompasses approximately 4,100 acres and is located within the Refuge. SR 84, the approach to the Dumbarton Bridge, and Newark Slough traverse the southern portion of the complex. Baumberg Pond B-3C, an approximately 166-acre pond, is located north of Alameda Creek, and adjacent to the CDFW's Eden Landing Ecological Reserve.

2.3.2 Newark Plant 2

The Newark Plant 2 complex is located south of Newark Plant 1. It is bounded by the UPRR ROW to the northwest, northeast, and east; by Mud Slough/Coyote Creek to the south; and by the Bay to the southwest. Plummer, Mowry, and Albrae Sloughs traverse or border the Plant 2 complex area. Plant 2 includes concentrators as well as crystallizers and encompasses approximately 6,400 acres. Mixed sea salts (MSS) are currently stored in Ponds P2-12 and P2-13. Approximately 3,020 acres are owned by Cargill and the remainder is within the Refuge.

2.3.3 Redwood City Plant and Cargill West Bay Areas

The Redwood City Plant is on the west shore of the Bay and is bordered by Redwood City to the west and south, Menlo Park to the southeast, and Redwood Creek and commercial/industrial facilities to the northwest. Westpoint Slough and Flood Slough form the northern and eastern borders between the Redwood City Plant and Greco Island and the City of Menlo Park, respectively. Greco Island is part of the Refuge. East of Flood Slough are the City of Menlo Park's West Bay Sanitary District's Flow Equalization Facility and Bedwell Bayfront Park. The Redwood City Plant encompasses approximately 1,430 acres, entirely owned by Cargill.

The brine pipeline alignment connecting the Redwood City Plant to Newark Plant 1 includes a 10-foot wide-ROW extending south and east from the Redwood City Plant to the Redwood City Maintenance Pond, as well as through the Transbay section of the pipeline. The Redwood City Maintenance Pond is a very small pond located at the northeastern corner of USFWS Pond SF-2, immediately southeast of SR 84.

2.3.4 Areas Adjacent to Salt Production Facilities

In this document, the salt pond facilities and brine pipeline alignment are referred to as the "internal" portion of the Project area. The internal portion of the Project area includes the ponds, internal berms, and inboard sides of outboard berms. The "external" portion of the Project area includes the Bay and slough sides of outboard berms and adjacent tidal habitats and sloughs. The Project area boundary is approximate and identifies general areas in which potential direct or indirect environmental impacts are assessed.

2.4 SALT MAKING AND SITE HISTORY

Natural salt pans (shallow areas isolated from the Bay during at least some tidal stages) occurred along the margins of San Francisco Bay prior to the beginning of human-controlled salt making. During the summer, Bay water within these pans evaporated, leaving various salts, including NaCl, known commonly as table salt or salt. Native Americans collected these salts which were used to preserve food and trade with other Native Americans who did not have a ready source of salt. The pans provided an example of how Bay water could be enclosed and how the natural forces of sun and wind evaporated the enclosed water, eventually allowing salts to drop out in a solid form. Food-quality salt is one of the end products of the solar evaporation of salt water (solar salt) process.

The managed solar salt industry began in San Francisco Bay during the mid-1850s. The first operations utilized simple earthen berms around naturally occurring salt pans in Alameda County to increase their natural salt production capacity. At this time, solar salt operations in the Bay were small family enterprises that utilized intensive hand labor for production and harvest. Nearly all of the salt produced in San Francisco Bay during this era was shipped to Nevada to be used for the processing of silver ore. By the late 1800s, approximately 37 salt production facilities had been established throughout San Francisco Bay. Most of these facilities were constructed by diking tidal marshes and installing controlled intake structures that captured Bay waters during extreme high tides to isolate the waters in shallow ponds. Salt operations in the South Bay included construction and maintenance of earthen berms to create and protect ponded areas, siphons, tide gates, pipes, pumps and other facilities for the production of salt.

By the early 1900s, the quality of the salt produced in San Francisco Bay had increased significantly and the market expanded to include fine or "table" salt. In 1936 the Leslie Salt Company (Leslie) arose from the consolidation of 19 small operations. Following this consolidation, Leslie and the Oliver Salt Company were the primary salt producers. The Oliver Salt Company, located at the foot of the San Mateo Bridge, ceased operations in the 1970s.

By the late 1970s, Leslie had acquired approximately 45,000 acres of land consisting of existing salt ponds and a variety of types of near-Bay lands (agricultural lands used for grazing and hay making, marshlands, salt pans and similar low-lying properties adjacent to San Francisco Bay as well as uplands) in support of salt production, and operated in both the North and South Bay. Leslie was producing over one million tons of salt on an annual basis from its entire operation. Leslie believed that its operations were exempt from the jurisdiction of BCDC and filed a claim of exemption.

In 1978, Cargill acquired Leslie and is now the sole producer of solar salt within the Bay area. Cargill currently owns approximately 4,100 acres in fee title and has operating rights on approximately 8,000 acres within the Refuge. In general, Cargill operates the solar salt system in the same manner as it was operated historically.

2.5 OVERVIEW OF SALT-MAKING PROCESS

The salt-making process today, including berm maintenance activities, the movement of increasingly saline brine between ponds, and the crystallization of salt in preparation for harvest, is essentially the same as what has occurred historically for at least the last 100 years. The process consists of eight basic steps.

1. Sea water is taken in from San Francisco Bay (once in the salt-making system it is referred to as brine).
2. The brine moves through a series of evaporation ponds (referred to as concentrators) until it reaches a salinity close to that required for NaCl to precipitate.
3. The highly concentrated, saturated brine is moved into pickle ponds where it is stored prior to harvest and where additional evaporation may occur.
4. During the harvesting operations, saturated brine is moved to the crystallizers, where additional evaporation occurs and NaCl is allowed to precipitate.
5. Brine remaining after NaCl is harvested in the crystallizers is moved to post-harvest ponds where additional NaCl may be recovered, and other salt products are harvested (i.e., the MSS ponds and FMC ponds).
6. Harvested salt is washed with concentrated brine to remove sediment, and then rinsed with fresh or Bay water.
7. The washed salt is processed further into a variety of products.
8. Wash brine is moved to wash ponds to allow sediment to settle out, and then reused.
9. Residual salts that do not have commercial value are stored in the two MSS ponds. The MSS are primarily in solid form, although some liquid brine remains in the solid matrix.

The salt-making process is a one-way system, i.e., all salts are retained within the system. It typically takes about two years from the intake of Bay water to salt harvest. The time required is primarily controlled by net evaporation rates. [3] Annual net evaporation rates vary due to rainfall, wind, temperature, and hours of sun. Evaporation generally occurs from April or May through October or November, with the highest rates during the summer months. A more detailed description of the salt-making process follows.

2.5.1 Salt-Making Process

The solar salt production process begins with the intake of Bay water, which enters the system through pumps or tide gates. Bay water is generally taken into the system during the highest tides in the dry months. Once in the salt production system, the Bay water becomes known as "brine." The brine is moved through a series of sequential concentrators until it reaches a concentration close to the point where NaCl would precipitate. Siphons, pipelines, and brine channels allow brine to be moved through the system and under sloughs and the Bay, as well as

[3] Net evaporation is the difference between the total evaporation that occurs during a given year, and the annual rainfall.

under infrastructure such as roadways. The brine is moved through the system by gravity feed and/or pumping.

Normal South Bay water salinity ranges from 7 to approximately 35 parts per thousand (ppt) (USGS 2023), depending on the time of year, whereas the brines at the point of salt precipitation reach approximately 350 ppt (10 or more times that of Bay water). The sequential process resulting in increasing salt concentration over time is essentially the same as the historic practice; however, weather and production conditions may dictate some changes to avoid brine imbalance in the sequential evaporation process. When the brine reaches saturation, it is transferred to crystallizers where its salt concentration is controlled using "pickle" – brine that is saturated with NaCl. Sodium chloride precipitation occurs within the crystallizers. The precipitated NaCl is harvested from the bottom of the beds.

As managed historically and as is the case with all solar salt plants, the goal of salt pond operations is to maintain liquid brines through the ponds on a scale of increasing salinity as the brine moves toward the harvesting facilities, but to avoid the precipitation of mineral salts before the brine becomes saturated with NaCl. Precipitation of mineral salts prior to the pickle ponds can cause operational problems. In addition, sufficient brine must be continuously contained in each pond so that a hydraulic connection is maintained from pond to pond. (In solar salt making vernacular, ponds must remain "covered.") This allows the brines to be gravity fed or pumped toward the plant site (toward crystallizers).

Controlling brine densities and brine movements throughout the system, while accounting for changing weather conditions, is the essence of solar salt making operations. To prevent salt from precipitating prior to its desired location, the brine concentration may be lowered, usually by adding less saline brine from concentrators or additional Bay water.

In addition to the salt ponds themselves, the key infrastructure required for salt production includes earthen berms, intake structures, pipes, brine channels, borrow ditches, and locks. These infrastructure components are described in more detail in the following subsections.

2.5.1.1 Post-Harvest Operations

After the majority of the NaCl is precipitated, the remaining brine, which primarily contains salts that are more soluble than NaCl, is referred to as mixed sea salts (MSS), or historically "bittern." The MSS contain chloride, bromide, sulfate, sodium, potassium, and magnesium, as well as residual NaCl. These remaining MSS continue through the salt production process, where further NaCl may be recovered and additional commercial products used for road de-icing and dust suppressant are harvested. Excess MSS that has not been sold as an alternative salt product is stored in Ponds P2-12 and P2-13. MSS was also formerly stored at the Redwood City Plant; however, Cargill has consolidated storage of MSS at P2-12 and P2-13.

2.5.1.2 MSS Project

Facing increasingly limited markets for the MSS-based products, Cargill has recently begun preparations to develop and seek entitlements for a separate project, the Enhanced Processing and Removal of Mixed Sea Salts project (the "MSS Project"). The MSS Project, if approved,

would deploy new technology to achieve enhanced recovery of commercial product from the MSS.

As part of the MSS Project, residual salts would then be blended into the East Bay Dischargers Association (EBDA) wastewater conveyance system to be ultimately discharged into the Bay, in compliance with EBDA's National Pollutant Discharge Elimination System (NPDES) permit. The EIR for the MSS project was certified by EBDA on June 15, 2023. However, subsequent discussions with the City of Union City indicated that the City was concerned that the route for the MSS pipeline alignment would likely require cutting through very recent bike path and other roadway improvements. Therefore, Cargill is currently working with EBDA to refine the design for an alternative alignment (Alternative 2: Bayside Parallel Pipe Alternative) also evaluated in the EIR. If ultimately pursued, this alignment, rather than running primarily through public ROWs, would run along the edges of Cargill salt ponds and then along the eastern edge of the Eden Landing Ecological Reserve prior to passing under Highway 92 and only then entering public ROWs. Cargill currently anticipates that refining the Alternative 2 design will require approximately 2 years, after which Cargill and EBDA would seek appropriate permits and initiate construction. Because MSS is currently stored in two ponds, removal of MSS would be phased. The EIR indicates that Pond P2-12 (at 247 acres) would require between approximately 3.6 and 6.5 years to process (Phase 1), and Pond P2-13 (at 397 acres) would require between 6.4 and 11.5 years to process (Phase 2) (EBDA 2023) following project approval.

In addition to extracting additional salts from the MSS inventory, another purpose of the MSS Project would be to proactively address a potential long-term threat from SLR in the Project area by reducing the volume and salinity of brines stored in ponds closest to the Bay. The proposed MSS Project is a separate, independent project from the Project that is the subject of this EA, but the MSS Project is considered only in the cumulative impact analysis section of this EA (Section 3.15). Consideration and implementation of the present Project that is the subject of this EA is not dependent on consideration of the MSS Project. Should the MSS Project not be permitted, Cargill intends to continue to manage MSS in the same way as the salts are managed today. However, given the uncertainty of the pursuit and realization of the MSS Project, this EA addresses the need to maintain the integrity of the berms surrounding the MSS-containing ponds (Ponds P2-12 and P2-13), as described in Section 2.10.1.5.

2.5.1.3 MSS Physical Behavior and Biological Effects

As described previously, MSS are the salts remaining after NaCl is harvested. The majority of the MSS stored at Ponds P2-12 and P2-13 is in solid form; a small percentage remains as a brine. MSS brine typically has a salinity of more than 10 times sea water. This elevated salinity means that MSS brine does not instantly mix into regular sea water if it is released. Instead, because the liquid brine is much denser than sea water, it will tend to flow below the sea water and gradually mix with the overlying seawater. As further described in Section 2.10.1.5, the density difference between the MSS brine and the less dense rainfall entering the ponds also means that rainwater collects/remains primarily on top of the MSS solids and any associated brine.

MSS have no added constituents of any kind. The salt mixture differs from what is found in sea water because the sodium chloride (NaCl) and other salt precipitates have been removed from solution. None of the components of MSS are inherently toxic; and no protective equipment are required for Cargill operational staff to handle it. However, the difference in composition relative to sea water creates a temporary ionic imbalance that could result in adverse effects on aquatic organisms at lower concentrations than a typical mixture of sea salts. An example of testing of MSS brine occurred for MSS formerly stored at the Pond 7 at CDFW's Napa Sonoma Marshes Restoration Project in the North Bay. Chronic toxicity tests, which evaluate potential effects on specific test organisms' ability to survive and grow, were conducted for MSS (300 – 310 ppt total salinity) collected in April and May 2002 (GAIA 2002). These results for the Napa-Sonoma Marshes MSS pond indicated that a concentration of up to 2.5% by volume did not exhibit statistically significant effects on biomass (growth) or mortality during chronic toxicity testing. Prior chronic toxicity testing conducted in 1993, on samples collected in August, showed that a concentration of up to 1% by volume did not exhibit statistically significant effects on biomass or mortality. Although the salinity of the August 1993 samples was not recorded, it is believed to be considerably higher than the April 2002 samples, because Pond 7 typically had very little liquid brine in August, whereas there were approximately 2 feet of brine present during the April and May 2002 sampling.

Based on the testing conducted, the RWQCB issued a permit for discharge of diluted MSS (bittern) from the Napa Sonoma Marsh Restoration Project Pond 7 (RWQCB 2011, 2017a). The goal of the discharge was to remove bittern from the restoration area. The allowable discharge rate was 1% MSS by mass, which was later modified to an average of 1% by mass with a maximum concentration of 2.5% by mass. Discharge has been on-going since 2017, and to date there has been no evidence of adverse effects to wildlife (pers. comm. Karen Taylor, CDFW 2023). Monitoring of the bittern also indicated that it required approximately 0.75 miles of travel distance in a brine channel leading to the discharge point to fully mix with the ambient (dilution) water.

2.5.1.4 MSS Quantity

Cargill stores MSS in Ponds P2-12 and P2-13. Currently, these ponds contain an estimated 6 million tons of MSS (EBDA 2023), which includes MSS formerly stored at the Redwood City Plant. Using the density of NaCl (2.16 g/cm^3) as a surrogate for the MSS[4] this corresponds to a volume of approximately 2,043 acre-feet. The area of Ponds P2-12 and P2-13 totals approximately 650 acres, meaning that there is an estimated average 3.1-foot layer of MSS in the two ponds (assuming the MSS is distributed so that the thickness of the material is the same for both ponds). The MSS slopes to one side of each pond so that any surficial liquid (e.g., rainwater, brine) can be properly managed and contained. MSS is generated at a rate of approximately 60,000 tons per year (i.e., 1% of the existing mass) (EBDA 2023). This would result in an increase of approximately 0.36 inches per year, or 3.6 inches over the 10-year permit period.

[4] For comparison, the density of MgCl is 2.32 g/cm^3.

2.5.2 Earthen Berms

Cargill's solar salt system is separated from the Bay and from local streams and flood control channels by a system of approximately 123 linear miles of earthen berms, of which approximately 47.2 miles are outboard berms abutting the Bay, sloughs, and tidal marsh habitats (refer to Table 2-1). The earthen berms were constructed at various times and by various salt production companies from the 1860s to the 1950s. They were constructed of mostly native materials and completed prior to modern civil engineering standards. Earthen berms are maintained using native materials from borrow ditches adjacent to the inboard toes of the berms or imported clean material. The berms were built for the exclusive purpose of producing salt in shallow ponds. The berms were not constructed for flood control purposes, and flood control standards are not directly applicable for regulatory purposes. However, the berms enclose the salt ponds, whose wide expanse does act as a buffer between the Bay and urban areas. The outboard berms are generally owned by USFWS. Cargill maintains these outboard berms, which is a benefit to USFWS. Table 2-1 presents key features of the current facilities utilized for salt production.

Table 2-1. Key Features of Project Area Plants

Plant	Total Facility Acreage	Berms (linear miles)	Locks
Baumberg Pond B-3C	166	5	1
Newark Plant 1	4,100	40	4
Newark Plant 2	6,400	58	8
Redwood City Plant (including Cargill West Bay Areas)	1,433	20	2
Total	**12,099**	**123**	**15**

2.5.3 Intake Structures

Cargill pumps Bay water to start the salt making process and to regulate salinity levels and concentrations within the salt ponds. Intake structures are located at the beginning of the salt pond system where Bay water enters the pond system and begins the concentration process, as well as throughout the system to support the salt production process. Water intake structures and the associated pumps are located along tidal sloughs adjacent to the outboard salt pond berms. Intake structures consist of tide gates and pumps to bring Bay water into the system under controlled conditions. Cargill's water intakes are either directly connected to Bay water or connected to Bay water via tide gates that let water into a pumping area. Figure 2-1 shows the locations of all pump and tide gate intakes with connection to Bay water. Table 2-2 summarizes the various pumps and water conveyance structures within the Cargill system.

Table 2-2. Water Intakes for the Cargill Solar Sea Salt System

Intake Type	Pump	Approximate Volume of Water Pumped Per Year (Acre-feet)	Associated Slough/Creek	Usage Period (Typical)
Tide Gate	Bay Water Pump for Green Hornet #1	500	Plummer Slough	June to November
	Bay Water Intake Gate	3,000	Plummer Slough	May to September
	Multipurpose Pump #1 and #2 (Bay Water)	5,500	Mowry Slough	All Year
	Mowry Siphon Bay Water Pump	500	Mowry Slough	All Year
	Bay Water for Wash Water Ditch Pump	500	Mowry Slough	All Year
	Redwood City Bay Water Pumps 1 and 2	5,000	First Slough	Rarely Used
	Bay Water Pump for Green Hornet #3	500	Newark Slough	June to October
Active Mechanical Pump	3-inch to 8-inch Temporary Pump	500	Plummer Slough/Mowry Slough/ Newark Slough/ Alameda Flood Creek/ First Slough	As-Needed, Used Infrequently
	Bay Water Pump for Bittern Pond 12-13 Siphon	100	Plummer Slough	June to October
	Mowry Intake 1 and 2	8,000	Mowry Slough	June to November
	Coyote Intake 1, 2, and 3	18,000	Alameda Creek	April to May (1 pump) June to October (3 pumps)

Note: Volume of water pumped in any given year varies based on weather and operational needs.

The primary use of the intakes is to provide Bay water to concentrate for salt production. Bay water is allowed to flow or is pumped into the intake ponds, primarily in the summer and early fall when it is usually at its highest salinities. Water is typically taken in during high tides. The main intake is on Coyote Hills Slough/Alameda Creek. The lower portion of Alameda Creek is a flood control channel (Alameda County Flood Control Channel) that was constructed to receive water diverted from the Old Alameda Creek east of I-880. Smaller quantities of Bay water are used to support salt making operations, such as removing precipitated salt from pumps, controlling salinities in the system, and near crystallizers as part of the harvesting effort. Intake periods for these types of uses would typically target lower salinity water. Bay water is currently taken in primarily between April and October.

2.5.4 Pipes

Brines are conveyed between some ponds by pipes. Pipes may be located either above or below ground, or underwater. There is also a 7,000-foot, 20-inch-diameter steel pipeline slip-lined with 16-inch PVC that crosses the Bay from the Redwood City Plant to Plant 1 in Newark, referred to as the Transbay Pipeline. The pipeline has multiple pumps in series that provide the capacity to transfer brine in both directions between the two plants.

2.5.5 Brine Channels and Internal Donuts

Brine channels (also known as brine ditches) are narrow, earthen, unvegetated channels used to convey brines between salt ponds. They serve the same purpose as pipes. The majority of brine flow occurs by gravity feed, although some pumping also occurs to move brine. Brine channels are typically located immediately adjacent to the salt ponds, and are connected to the salt ponds via "donuts" (small ponds with berms, similar to locks) that are internal to the salt pond system. Because the majority of the brine flow is by gravity feed, brine channels are constructed and maintained to ensure that flow occurs. Cargill also periodically has to construct or repair internal donuts to ensure that flow between brine channels can be maintained.

2.5.6 Borrow Ditches

As discussed previously, the earthen berms surrounding the salt ponds were constructed from native soils, and were also maintained in the past using native materials. These native materials were typically obtained from borrow ditches along the inboard (pond side) toe of the berm. Borrow ditches have only been constructed on the inboard sides of salt ponds, never outboard. As an excavator removes material adjacent and parallel to the toe of the berm a shallow channel or ditch is created ranging from approximately 4 to 6 feet in depth. With the exception of the MSS ponds, desalting ponds, and pickle ponds,[5] Cargill continues to use these borrow ditches during berm maintenance to provide a source of sediment to maintain or repair or strengthen sections of the berm, where needed. Borrow ditches can be up to approximately 200 feet wide.

2.5.7 Locks

Locks are small ponds, generally less than 1 acre in size, that are used by water-borne equipment to access salt ponds. Use of the locks prevents a direct connection between a salt pond and external (Bay or slough) waters. To enter a salt pond, a barge-mounted excavator cuts through the outboard berm of the lock, then the equipment enters the lock, and then the excavator fills in the cut, once again sealing off the lock from the surrounding waters. The excavator then cuts through the internal berm of the lock to enter the salt pond, enters the salt pond, and reseals the internal berm of the lock. Amphibious excavators may cross over berms without needing to make a cut.

[5] Only clean imported material is used to maintain the berms of the MSS ponds, pickle ponds and crystallizers.

2.6 CURRENT SALT-MAKING PROCESS

Maintenance and operations methods have not changed substantially over the last 50 years. Cargill continues to use the same natural, solar- and wind-powered evaporation process for making salt, except that the area being used for salt production has been decreased by approximately 55 percent since 1995 due to the transfer of land to federal and state governments and land trusts (as discussed in Section 2.7). By 2005, Cargill owned in fee title approximately 4,100 acres and retained operational rights for 8,000 acres owned by the federal government.

During the 1995 to 2005 timeframe, Cargill undertook a comprehensive evaluation to improve efficiency and production reliability in the overall system. This led to various infrastructure modifications and improvements, including the construction of infrastructure to allow the Redwood City Plant to be operated in support of solar salt operations at Plants 1 and 2 in Newark. These improved facilities (including the pipeline between the Redwood City Plant and Newark Plant 2) allowed brines and other liquids to be transported between plants. The ability to move specific volumes of brines where needed in the evaporation sequence was greatly enhanced with the installation of new high-density polyethylene pipelines throughout the system. The newly-installed pipes allowed the interconnection of Newark Plants 1 and 2 as part of the consolidation following the sale of 15,000 acres of South Bay salt ponds to the USFWS and State of California in 2003.

At the same time, various small gaps were constructed within internal berms to improve the flow of brines and provide enhanced access for maintenance of internal berms. Other system improvements included installation of redundant pumps to allow for routine scheduled maintenance, standardization of pumps to improve reliability and to reduce maintenance costs, and upgrades to pump platforms to meet current Occupational Safety and Health Administration (OSHA) standards. In addition, Cargill developed techniques to increase the harvest of commercial products from mixed sea salts.

2.6.1 Changes to Salt-Making Facilities

Cargill filed an application in 1993 for a BCDC Permit that was first issued in March 1995 as Permit 4-93. Maintenance of and certain operational activities at the current salt making system were formally permitted in the March 1995 permit (activities were permitted “within and adjacent to currently-operating salt ponds”) and have continued to be authorized by a series of permit extensions since 2005.

The permitted activities included maintenance of the infrastructure used to operate the salt production facilities, and infrastructure used to maintain the salt production system. In 1995, the “currently-operating salt ponds” encompassed approximately 26,100 acres, which consisted of approximately 145 ponds with over 200 miles of berms. Within that 26,100-acre South Bay salt production system, Cargill produced an average of one million tons of NaCl per year. Over the past few decades, a reduction in the amount of land needed to produce salt has occurred due to changes in market demand, land transfers requiring facility reconfigurations, and infrastructure improvements that enabled Cargill to produce salt more efficiently (through

replacements authorized by the maintenance permit and new infrastructure authorized by permit amendments). Thus, although by 2005 there was a significant reduction in acreage utilized to produce salt and other products, annual production rates only decreased to approximately 500,000 tons. Table 2-3 presents approximate total acreages associated with the system in 1995 and 2005.

Table 2-3. Dimensions of Cargill Solar Salt System, 1995 and 2005

Complex	1995 Total Acreage	1995 Berm Mileage[1]	1995 Locks	2005 Total Acreage	2005 Berm Mileage	2005 Locks
Alviso	8,300	Not available	Not available	Not available	Not applicable [2]	Not applicable
Baumberg (Pond B-3C) [3]	4,800	Not available	Not available	166	5	1
Newark Plant 1	3,900	Not available	Not available	4,100	40 (15 outboard)	4
Newark Plant 2	6,400	Not available	Not available	6,400	58 (28 outboard)	8
Redwood City (including Cargill West Bay Areas) [4]	2,700	Not available	Not available	1,433	20 (4.2 outboard)	5
Total	**26,100**	**200**	**38**	**12,099**	**123 (47.2 outboard)**	**18**

Note:
[1] Berm mileage is based on data collected as part of Cargill's Sea Level Rise Adaptation Assessment (AECOM 2021).
[2] The entire Alviso complex was sold as part of the 2003 property sale/donation.
[3] The entire Baumberg complex, with the exception of Pond B-3C, was sold as part of the 2003 property transfer.
[4] The Ravenswood complex, formerly part of the Redwood City Plant, was also sold as part of the 2003 property transfer.

Cargill has continually reduced the footprint of its salt-making operations, and then transferred the available land to resource agencies and open space organizations. Following the improvements made to salt production facilities from 1999 to 2005, more than half of the land previously used by Cargill was made available for transfers. Section 2.7 summarizes the various land transfers from Cargill to the resource agencies and open space organizations.

Because Cargill now operates on a substantially reduced footprint compared to earlier periods (i.e., by more than half compared to the system when initially permitted in 1995), Cargill's maintenance efforts are similarly reduced. Consequently, effects from Cargill's maintenance activities are expected to be reduced. In addition, Cargill has made other changes to improve the efficiency of its operations, reduce environmental effects of operations, and reduce energy consumption. These changes include use of amphibious excavators and investing in new, more-energy-efficient equipment such as pumps and motors. For example, Cargill has switched over to using variable speed pumps, which conserve energy and also lower ponds brine levels more gradually, which is expected to be more beneficial to biological resources.

2.6.2 Existing Mitigation

As part of its compensatory mitigation for the original project permitted in 1995, Cargill completed a 49-acre tidal restoration to provide habitat for the California clapper rail (now known as California Ridgway's rail [*Rallus obsoletus obsoletus*] [CRR]) and the salt marsh harvest mouse (*Reithrodontomys raviventris*) (SMHM). The restoration was undertaken to provide, for the purposes of USACE, USFWS, NMFS, RWQCB and BCDC requirements, mitigation in perpetuity for impacts associated with dredge lock maintenance activities over approximately 30,000 acres (as stated, Cargill now operates on only approximately 12,100 acres, and maintains 123 miles of berms). The USACE's letter approving the mitigation project further provided that the mitigation was "intended to satisfy the compensatory mitigation requirement for activities associated with the ongoing solar salt production in south San Francisco Bay" including, "if the nature of the work remains the same,... to subsequent permits as well." As explained in BCDC's current permit, the compensatory mitigation was designed to conservatively replace up to 17 acres of wetlands that might, at any given time, be in some state of restoration after being disturbed by Cargill's dredge lock maintenance or operations (.

2.7 PROPERTY TRANSFERS

Over the last 40 years, Cargill has transferred approximately 40,000 acres of its lands historically used for salt making for habitat restoration. As a result, approximately 90 percent of the salt ponds in the Bay Area have come under public ownership since the late 1970s. The following is a summary of the land transfers:

- 1979: 15,350 acres subject to retained rights in the South San Francisco Bay to the U.S. Government. Congress then designated the area as part of the Refuge. (Although Leslie transferred the fee title of this property to the federal government and reduced the property to public ownership, Leslie retained perpetual rights to produce salt on approximately 12,000 acres of the property.) Cargill purchased Leslie in 1978 and all rights within the agreements between Leslie and the USFWS transferred to Cargill.
- 1980: 110 acres to Shoreline Park in Mountain View and 200 acres to the State of California for the Dumbarton Bridge and access roads.
- 1981: 50 acres to Peninsula Open Space Trust and 80 acres to Hayward Area Recreation District.
- 1982: 150 acres to Mid-Peninsula Regional Open Space District.
- 1985: 70 acres to the Santa Clara Valley Water District (SCVWD) for flood control and 1,000 acres to the Marine Science Institute.
- 1992: 30 acres to the California Wildlife Conservation Board (CWCB).
- 1994: 10,000 acres to the CWCB, which increased California's state-owned wetland inventory by 30 percent.

- 1996: 860 acres to CWCB, located in the Baumberg area of Plant 1 (north of the current Plant 1 footprint). This property is part of what is now known as the Eden Landing Ecological Reserve.
- 2000: approximately 320 acres to SCVWD in the Alviso area located in San Jose. The purchase was made for future restoration and compensatory mitigation due to impacts associated with the Water District's Lower Guadalupe River Flood Protection Project (SCVWD 2002).
- March 16, 2003: 16,500 acres to the USFWS and the CDFW. Under the terms of this agreement, 5,500 acres of the Baumberg complex north of the current Plant 1 footprint, and 1,400 acres of the Napa Plant Site were transferred to CDFW; 1,600 acres of the Redwood City complex and 8,000 acres of the Alviso complex were transferred to the USFWS. The state and federal agencies, with Cargill's assistance, implemented an Interim Stewardship Plan for the salt ponds under their ownership until a final restoration plan was approved. Maintenance responsibilities and implementation of BMPs for these ponds and berms were transferred to CDFW and USFWS.
- 2005: 860 acres (Pond A18 in Alviso) to the City of San Jose to create a land banking opportunity and potential to restore the salt ponds.
- 2007: 250 acres (Pond SF-2) to the Refuge.[6]
- 2010: 20 acres to provide a critical link of the Bay Trail to the National Aeronautics and Space Administration, connecting 26 miles of trail from San Jose to East Palo Alto.

2.8 2008 TO 2023 MAINTENANCE EFFORTS

Specific maintenance activities and the extent of maintenance activities vary year to year, and are influenced by annual weather patterns, among other factors. The baseline used for impact analysis in this Recirculated Draft EA is the average annual level of activities completed between April 2008 and May 2023.This period was chosen to reflect the level of existing maintenance conducted on the current Project area footprint, and following the completion of the interim stewardship activities associated with the 2003 salt pond purchase by USFWS and CDFW. Cargill's maintenance year currently runs from June through May, meaning that the baseline data represent 15 years of maintenance operations.

The majority of maintenance activities over the past 15 years have been related to maintaining the tops of berms to ensure vehicular access to monitor salt ponds and the maintenance and replacement of infrastructure elements. Tables 2-4 through 2-7 at the end of this section present summaries for various activities and their frequencies since April 2008. Proposed activities and completed activities are detailed in annual reports (called Completion Reports) submitted to pertinent agencies (an example of these annual Completion Reports is provided in Appendix B).

[6] Cargill retained the SF-2 Donut, and the land overlying its brine pipeline.

As explained in more detail in Section 2.9.1, all earthen berms are inspected regularly to identify areas requiring repairs, grading, riprap addition, and, for all-weather drivable berms, gravel replacement. Typically, only a small portion of the berms requires repairs each year. Repairs include placing "lifts" or layers of soil within lower surface areas of berms to ensure elevations across the berms are uniform, and repairing erosion where it is noted. In the 2018-2019 maintenance period, for example, Cargill repaired approximately 6,540 linear feet of berms (i.e., 1 percent of the total 123 miles of berms). Grading is typically required for all drivable berms each year; other berms are graded as needed. Gravel replacement on all-weather drivable berms is conducted as needed and reported in the Completion Reports.

Drivable berms are accessible by vehicles during dry weather. All-weather drivable berms are accessible year-round. Cargill does not anticipate an increase in the extent of all-weather drivable berms. Maintenance conducted in areas adjacent to drivable berms is conducted entirely from the top of the berm; there is no access through outboard habitat.

Historically, Cargill also periodically modified internal pond connection locations (gaps in the internal berms) to allow it to modify flow patterns between ponds and increase vehicle access to a greater portion of the salt pond complex. Cargill would fill gaps in the internal berms under the proposed Project. Modifications could include replacing existing gaps in the internal berms with culverts to support vehicle traffic and making more of the berms accessible by vehicles. This would reduce the need to deploy equipment though the locks, and thereby decreases potential effects on outboard habitat. The Project proposes grading/improving of berms, up to one mile per year, to a drivable condition. The length of berms graded and maintained each year is likely to increase slightly (by an estimated 1 mile per year) until the addition of drivable berms is complete.

Drivable berms are distinct from salt roads. Certain internal berms adjacent to and between the crystallizers are covered with salt to reduce dust and prevent soil from entering the crystallizers and contaminating the harvestable salt. These salt roads are much wider than typical berms. While vehicle speeds on drivable berms are held to a maximum of 15 miles per hour (mph) in accordance with established BMPs, higher vehicle speeds up to 35 mph are considered safe on the salt roads.

The repairs and replacements shown in Table 2-6 are for all infrastructure other than berms, and cover those events for which equipment entry into outboard areas is required. Repairs and replacements included items such as pumps, pipes, platforms, pilings, and tide gates. Multiple items may be included with one repair - for example, if an intake structure is overhauled, a new pump may be installed, the platform may be repaired, and new piping could be installed.

Maintenance and operations activities that are currently performed regularly under authorization of the existing permit and are expected to be performed pursuant to a new permit include, but are not limited to:

- Outboard and internal earthen berm maintenance and improving berms to drivable condition
- Access to or egress from locks

- Creation and use of material stockpiles
- Sediment removal from intake structures
- Maintenance of other infrastructure, which can include installation, repair or replacement of the following:
    - Riprap
    - Brine channels and internal donuts
    - Pumps, siphons, culverts, pipelines, other /brine control structures
    - Existing walkways, piers, trestles, or platforms, intake channels, and tide gates
    - Fences, trash racks, vehicle gates, and access points from the berms into the ponds
    - Electrical distribution lines for service operations
    - Pumping donuts and internal coffer dams
- Minor fill and excavation
    - Minor excavation to provide access to repair and replace existing facilities
    - Other minor fill or excavation in the Bay, in managed wetlands and in salt ponds for purposes consistent with berm maintenance, access to salt ponds, use of locks, salt making, the placement of pipes, siphons, power, tidal control structures, and the prevention of erosion and repairs related to storm damage
- Modifications to internal flow patterns within the ponds, including re-establishing vehicle access on some internal berms by replacing existing gaps with culverts (referred to as filling berm gaps)

Table 2-4. Miles of Berms Maintained/Graded, 2013 – 2023

Year	Newark Plant 1	Newark Plant 2	Redwood City Plant	Baumberg Pond B-3C	Cargill West Bay Areas	Total
June 2022 through May 2023	0.5	14.4	0	0	0	14.9
June 2021 through May 2022	2.9	14.2	0	0	0	17.1
June 2020 through May 2021	8.0	29.3	1.4	0	0	38.7
June 2019 through May 2020	14.9	29.4	1.1	0	0	45.4
June 2018 through May 2019	12.8	23.5	0.9	0	0	37.2
June 2017 through May 2018	7.3	12.5	0	0	0	19.8
June 2016 through May 2017	11.9	15.5	5.6	1.9	Not recorded*	34.9
June 2015 through May 2016	11.9	16.1	5.6	1.9	Not recorded*	35.5
June 2014 through May 2015	11.9	16.1	5.6	1.9	Not recorded*	35.5
June 2013 through May 2014	11.9	16.1	5.6	1.9	Not recorded*	35.5
TOTAL	**94**	**187.1**	**25.8**	**7.6**	**0**	**314.5**
Annual Average (Rounded)	9.4	18.7	2.6	0.8	0	31.5

Note: prior to the 2013 to 2014 maintenance season, miles of berms graded were not recorded.
*Until 2017, all maintenance activities on the west side of San Francisco Bay were included with data for the Redwood City Plant.

Table 2-5. Locks Entered or Exited, 2008 – 2023

Year	Number of Times
June 2022 through May 2023	0[2]
June 2021 through May 2022	0[2]
June 2020 through May 2021	0[2]
June 2019 through May 2020	0[2]
June 2018 through May 2019	0[2]
June 2017 through May 2018	0[2]
June 2016 through May 2017	0[1]
June 2015 through May 2016	0
June 2014 through May 2015	0
June 2013 through May 2014	0
June 2012 through May 2013	0
June 2011 through May 2012	3
June 2010 through May 2011	2
October 2008 through September 2010	3
April 2008 through September 2008	0
TOTAL	**9**

[1] The Mallard dredge was decommissioned in 2016. A lock access/egress was mistakenly reported in the 2016 Annual Completion Report; this was a planned event that did not occur.
[2] In the absence of the Mallard no lock access events occurred in the 2017-2023 maintenance periods. Other equipment, as described in the text, will be used to access locks in the future.

Table 2-6. Number of Repairs, Replacements and Minor New Construction by Year, 2008 -- 2023

Year	Newark Plant 1	Newark Plant 2	Redwood City Plant	Baumberg Pond B-3C	Cargill West Bay Areas	Total
June 2022 through May 2023	2	4	2	0	1	9
June 2021 through May 2022	1	4	3	0	1	9
June 2020 through May 2021	0	5	0	0	0	5
June 2019 through May 2020	2	0	0	0	0	2
June 2018 through May 2019	0	1	0	0	0	1
June 2017 through May 2018	2	1	0	0	0	3
June 2016 through May 2017	2	0	0	0	Not recorded*	2
June 2015 through May 2016	1	0	0	0	Not recorded*	1
June 2014 through May 2015	0	0	0	0	Not recorded*	0
June 2013 through May 2014	1	0	0	0	Not recorded*	1
June 2012 through May 2013	1	1	0	0	Not recorded*	2
June 2011 through May 2012	1	2	0	1	Not recorded*	4
June 2010 through May 2011	1	0	0	0	Not recorded*	1
October 2008 through September 2010	0	0	0	0	Not recorded*	0
April 2008 through September 2008	0	0	0	0	Not recorded*	0
TOTAL 2008 through 2023	**14**	**18**	**5**	**1**	**2**	**40**
Average Annual Quantities (Rounded)	**1**	**1**	**0.3**	**0**	**0.3**	**3**

*Until 2017, all maintenance activities on the west side of San Francisco Bay were included with data for the Redwood City Plant.

Table 2-7. Summary of Volume and Area of Work Conducted, 2008 to 2023[1]

Facility	Year	General Berm Maintenance lf	General Berm Maintenance CY	Riprap Repairs Inboard lf	Riprap Repairs Inboard CY	Riprap Repairs Outboard [4] lf	Riprap Repairs Outboard [4] CY	Lock Access/ Egress lf	Lock Access/ Egress CY	Sediment Removal at Intakes lf	Sediment Removal at Intakes CY
Newark Plant 1[2]	April to September 2008	3,500	3,000	0	0	0	0	0	0	0	0
	October 2008 to September 2010	3,500	3,000	0	0	0	0	0	0	0	0
	2010 to 2011	0	0	0	0	0	0	0	0	0	0
	2011 to 2012	150	200	0	0	0	0	0	0	0	0
	2012 to 2013	0	0	0	0	0	0	0	0	0	0
	2013 to 2014	21,000	0	0	0	0	0	0	0	0	0
	2014 to 2015	0	0	0	0	0	0	0	0	0	0
	2015 to 2016	420	300	0	0	0	0	0	0	0	0
	2016 to 2017	100	40	300	250	250	420	0	0	0	0
	2017 to 2018	2,700	0	200	500	500	0	0	0	0	0
	2018 to 2019	540	350	225	1,300	125	175	0	0	0	0
	2019 to 2020	74,400	2,350	0	0	300	50	0	0	0	0
	2020 to 2021	42,340	506	0	0	0	0	0	0	200	405
	2021 to 2022	15,410	1,510	610	260	225	120	0	0	20	10
	2022 to 2023	2,660	275	0	0	60	120	0	0	0	0
	TOTAL	**166,720**	**11,531**	**1,335**	**2,310**	**1,460**	**885**	**N/A**	**N/A**	**220**	**415**
	Annual Average (Rounded)	**11,100**	**800**	**100**	**200**	**100**	**59**	**N/A**	**N/A**	**15**	**28**
Newark Plant 2	April to September 2008	6,600	0	500	750	0	0	0	0	0	0
	October 2008 to September 2010	48,400	1,000	0	0	0	0	0	0	0	0

Facility	Year	General Berm Maintenance lf	General Berm Maintenance CY	Riprap Repairs Inboard lf	Riprap Repairs Inboard CY	Riprap Repairs Outboard [4] lf	Riprap Repairs Outboard [4] CY	Lock Access/ Egress lf	Lock Access/ Egress CY	Sediment Removal at Intakes lf	Sediment Removal at Intakes CY
	2010 to 2011	10,400	1,000	0	0	0	0	0	0	0	0
	2011 to 2012	1,900	0	5,000	1,800	0	0	0	0	0	0
	2012 to 2013	0	0	0	0	0	0	0	0	0	0
	2013 to 2014	13,200	11,025	0	0	0	0	0	0	0	0
	2014 to 2015	18,000	9,320	0	0	0	0	0	0	0	0
	2015 to 2016	5,400	2,440	0	0	0	0	0	0	0	0
	2016 to 2017	3,200	1,500	0	0	0	0	0	0	0	0
	2017 to 2018	25	0	0	0	0	0	0	0	0	0
	2018 to 2019	1,000	120	500	700	0	0	0	0	0	0
	2019 to 2020	155,330	3,450	0	0	0	0	0	0	0	0
	2020 to 2021	154,572	30,306	0	0	0	0	0	0	150	3,234
	2021 to 2022	75,200	10,555	0	0	0	0	0	0	140	120
	2021 to 2022	75,915	2,902	0	0	0	0	0	0	2,570	720
TOTAL		**569,142**	**73,618**	**6,000**	**3,250**	**0**	**0**	**0**	**0**	**2,860**	**4,074**
Annual Average (Rounded)		**37,900**	**4,900**	**400**	**200**	**0**	**0**	**0**	**0**	**190**	**270**
Redwood City Plant[3]	April to September 2008	2,600	800	0	0	0	0	0	0	0	0
	October 2008 to September 2010	2,200	0	0	0	0	0	0	0	0	0
	2010 to 2011	0	0	0	0	0	0	0	0	0	0
	2011 to 2012	0	0	0	0	0	0	0	0	0	0
	2012 to 2013	0	0	0	0	0	0	0	0	0	0
	2013 to 2014	5,500	1,365	0	0	0	0	0	0	0	0
	2014 to 2015	0	0	1,050	1,050	0	0	0	0	0	0

Facility	Year	General Berm Maintenance lf	General Berm Maintenance CY	Riprap Repairs Inboard lf	Riprap Repairs Inboard CY	Riprap Repairs Outboard [4] lf	Riprap Repairs Outboard [4] CY	Lock Access/ Egress lf	Lock Access/ Egress CY	Sediment Removal at Intakes lf	Sediment Removal at Intakes CY
	2015 to 2016	5,000	0	500	625	0	0	0	0	0	0
	2016 to 2017	0	0	0	0	0	0	50-	400	0	0
	2017 to 2018	0	0	0	0	0	0	0	0	0	0
	2018 to 2019	5,000	350	0	0	0	0	0	0	0	0
	2019 to 2020	5,600	660	0	0	470 [5]	325	0	0	0	0
	2020 to 2021	7,330	80	0	0	0	0	0	0	0	0
	2021 to 2022	0	0	0	0	0	0	0	0	2	<1
	2022 to 2023	0	0	0	0	0	0	0	0	0	0
TOTAL		**33,230**	**3,255**	**1,550**	**1,675**	**470**	**325**	**50**	**400**	**2**	**0**
Annual Average (Rounded)		**2,200**	**200**	**100**	**100**	**31**	**22**	**3**	**27**	**0**	**0**
GRAND TOTAL		**769,092**	**88,404**	**8,885**	**7,235**	**1,930**	**1,210**	**50**	**400**	**3,082**	**4,489**
Annual Average (Rounded)		**51,300**	**5,900**	**590**	**480**	**30**	**80**	**3**	**27**	**210**	**300**

Notes:
[1] The quantities reflected in this table are taken from the Annual Completion Reports documenting the actual repair and maintenance activities conducted each year.
[2] Includes Baumberg Pond B-3C quantities.
[3] Includes Cargill West Bay quantities.
[4] Prior to 2019, Cargill did not distinguish between new outboard riprap placement and repair of existing outboard riprap, but estimates that the new riprap quantity comprised approximately 10% on average.
[5] New riprap placement comprised 120 lf/150 CY of the total outboard quantities.
lf = linear feet; CY = cubic yards

2.9 PROJECT COMPONENTS

Cargill will continue to maintain its facilities as it has in the past. Production rates are anticipated to continue at approximately 500,000 tons of NaCl, in addition to other salt products, annually – salt making activities which themselves are not subject to the current permit and not part of the proposed Project. Elements of the solar salt system will age, and repair and replacement of older structures is expected to be necessary. Berm maintenance is required throughout the salt pond system due to erosion, subsidence and consolidation. Minor new construction, such as installation of new pipes or access platforms may also be required. Maintenance of the following elements/structures is required:

- Earthen berms: Outboard and internal berms that contain the system and are used to access the salt ponds. Berms may also be used by mosquito control districts to access areas on and adjacent to the plant sites for mosquito control activities.
- Intake structures: Tide gates and pumps to bring Bay water into the system under controlled conditions, and the associated intake channels.
- Pumps: Multiple pumps are located throughout each Plant. Typically, they are located between ponds and salt plants and are used to move brines within the system. The pumps used range in capacity from 2,000 to 30,000 gallons per minute.
- Siphons: Siphons are used to connect ponds beneath water courses such as sloughs and flood control channels.
- Pipes and brine channels: Brines are conveyed from one pond to another by pipes and brine channels located between salt ponds, and the Transbay Pipeline conveys brine between Newark Plants 1 and 2 and the Redwood City Plant.
- Borrow ditches: Borrow ditches are utilized during berm maintenance to provide a source of sediment to maintain or repair or strengthen sections of the berm where needed.
- Platforms, walkways, and bridge structures: These structures provide safe access for employees to pumps and other infrastructure elements of the solar salt system.
- Miscellaneous infrastructure such as fences, gates, and electrical systems.

The extent of some of these activities would increase or decrease relative to the existing need of maintenance. In addition to continuing with existing maintenance activities, Cargill would undertake some maintenance activities that are not addressed in the existing permit. These activities are considered new activities for purposes of assessing their potential environmental impact and include the following:

- Filling in some existing gaps in internal berms
- Implementation of a pilot study to evaluate the effectiveness of vinyl sheet piles to protect against potential seepage through the berms, and
- Installing and operating fish screens on one or more pumps of the Coyote Intakes on Alameda Creek (Section 2.10.5).

In addition, as part of its existing berm maintenance activities Cargill plans on increasing the height of the berms around MSS Ponds P2-12 and P2-13 to 11.5 feet North American Vertical Datum of 1988 (NAVD88) to prevent possible overtopping due to sea level rise. This type of berm maintenance activity is similar to current maintenance activities; however, Cargill would focus close to half of its typical berm maintenance activities on Ponds P2-12 and P2-13. Unanticipated work, which would typically be in response to an urgent need, would be prioritized over other berm maintenance work, including the work at Ponds P2-12 and P2-13.

Figure 2-1 shows where existing key infrastructure components are located in the Project area. The proposed maintenance and operations activities, including new activities, are described in subsequent subsections and analyzed in detail in Section 3. Section 2.10.9 provides a summary of the changes in the proposed activities from the current baseline, including proposed new activities.

2.10 PROPOSED WORK

Cargill has developed estimates of the projected annual maintenance efforts that would be required during the term of the proposed permit (10 years), as shown in Table 2-8. These maintenance activities include both ongoing activities as well as several new activities. Table 2-9 provides a comparison between existing levels of activity and proposed levels of activity. During any given year specific activities and their frequency may vary depending on need. The need for maintenance will continue beyond the projected 10-year permit term (i.e., will continue as long as Cargill's system is in production). Cargill will apply for future permit renewal(s) to authorize maintenance beyond the proposed 10-year period under the current authorization effort when it becomes necessary. Berm maintenance will likely increase slightly each year as the extent of drivable berms increases. In addition, there may be a temporary increase in lock access and egress, as well as the yearly number of repairs and/or replacements of infrastructure. Lock access/egress events are expected to decline over time as more of the berms are made drivable and more work on the berms can be accomplished from the tops of the berms and/or implementation of alternative technologies, such as use of amphibious excavators, which are proving to be feasible.

All of the berms are inspected regularly to identify where maintenance is needed. Locks are accessed on a rotating schedule approximately every 2 to 15 years, depending on the maintenance needs of the berm system. Locks would be taken out of service when it is determined that they are no longer required for berm maintenance.

Cargill must also replace or repair various structures such as pipes, pumps, gates, and platforms. Based on past work it is anticipated that up to 12 repairs or replacements on average need to be conducted per year.

Cargill develops an annual proposed maintenance work plan (Annual Work Plan) which sets forth anticipated maintenance activities for the coming maintenance year. Cargill's maintenance year runs from June 1 to May 31. The Annual Work Plan is submitted to the BCDC, RWQCB, CDFW, NMFS, USACE, USFWS, and the U.S. Environmental Protection Agency (USEPA) as well as other interested parties by March 1st of each year. Cargill coordinates with BCDC,

RWQCB, and USACE for final approval of the Work Plan before initiating maintenance activities. A Completion Report of activities actually conducted is submitted by August 1st. An example of a Completion Report is provided as Appendix B.

Table 2-8. Projected Annual Average Maintenance Activity Quantities, 2025-2034

Activity	Newark Plant 1[1]	Newark Plant 2	Redwood City Plant[2]	Pond B-3C and Cargill West Bay	Yearly Total	10-Year Total
Berms to be Maintained/ Graded (mi/CY)[3]	11.2/724	18.6/7,120	3.1/457	incl. with Plant 1	37/8,301	370/83,010
Soil placement to increase berm height at Ponds P2-12 and P2-13 (lf/CY) – Part of Berm Maintenance/ Grading Shown in Previous Row	0	2,510/ 2,560	0	0	2,510/ 2,560[4]	25,100/ 25,600
Lock Access/Egress	1	1	0.25	0	2.25	22.5
Repairs/Replacements of Various Structures	4	7	0.5	0.5	12	120
Existing Riprap Repairs, Outboard Slopes (lf/CY)	328/708	0	182/342	0	510/1,050	5,100/10,500
Existing Riprap Repairs and New Riprap Placement, Inboard/ Interior Slopes (lf/CY)	138/100	50/70	5/5	0	193/175	1,930/1,750
New Riprap Placement on Outboard Slopes, (lf/sqft/CY)	19/380/62	0	20/400/42	0	39/780/104	390/7,800/ 1,040
Sediment Removal at Intakes (lf/CY)	52/142	297/216	<2/<1	0	351/ 359	3,510/3,590
Berm Gap Filling (no/sqft/CY)	3/2,250/833	1/750/ 278	0	0	4/3,000/ 1,111	40/30,000/ 11,110
Making Berm Drivable (lf/CY)	5,280/5,500	0	0	0	5,280/5,500	52,800/ 55,000
Soil Excavation for Fish Screens (sqft/CY)[4]	21,200/ 1,600	0	0	0	21,200/ 1,600	21,200/1,600
Soil Placement for Fish Screens (lf/CY)[4]	24,200/ 4,700	0	0	0	12,100/ 2,350	24,200/4,700
Keying (mi/CY)	0.09/430	0.09/430	0.02/90	0	0.2/950	2/9,500
Total Soil/Riprap Import (CY)						**176,610**

Notes:
[1] Includes Baumberg Pond B-3C quantities.

[2] Includes Cargill West Bay quantities.
[3] Includes amount for soil placement to increase berm height at Ponds P2-12 and P2-13, which will be completed as part of general berm maintenance with no net increase in berm maintenance quantities.
[4] Fish screen construction is expected to occur over a 2-year period, with all excavation and 50% of soil placement occurring in Year 1, and the remainder of soil placement occurring in Year 2.

Table 2-9. Comparison of Current and Projected Annual Average Maintenance Activity Quantities

Activity	Current Annual Average 2008-2023	Projected Annual Average 2025-2034	Average Annual Increase or (Decrease)
Berms to be Maintained/ Graded (mi/CY)	31.5/7,940	37/8,301	5.5/361(1)
Lock Access/Egress (No.)	1	2.25	1.25
Repairs/Replacements of Various Structures (No.)	3	12	9
Existing Riprap Repairs, Outboard Slopes (lf/CY)	30/80	510/1,050	480/970
Existing Riprap Repairs and New Riprap Placement, Inboard/Interior Slopes (lf/CY)	590/480	193/175	(397/305)
New Riprap Placement on Outboard Slopes, (lf/sqft/ CY)	Not available	39/104	104
Sediment Removal at Intakes (lf/CY)	210/300	351/359	141/59
Berm Gap Filling (no/sqft/CY)	Not available	4/3,000,1,111	1,111
Making Berm Drivable (lf/CY)	5,280/5,500	5,280/5,500	0
Soil Excavation for Fish Screens (sqft/CY)	Not available	21,200/1,600	21,200/1,600
Soil Placement for Fish Screens (lf/CY)	Not available	12,100/4,700	12,100/4,700(2)
Keying (mi/CY)	0.44/1,900	0.2/950	(0.2/950)
Soil placement to increase berm height at Ponds P2-12 and P2-13 (lf/CY)	Not available	25,100/25,600	0(3)
Total Average Annual Increase in Soil/Riprap Import			**1,820**

Notes:
(1) Because the increased mileage of berms to maintained is primarily in Newark Plant 1 and at the Redwood City Plant, areas where the maintenance quantities have typically been lower than at Plant 2, the total increase in berm maintenance soil placement is not directly correlated with the increased length.
(2) Short-term activity, excluded from average annual totals.
(3) To be completed as part of the general berm maintenance, no net increase in berm maintenance quantities.

Table 2-10. No. of Locks by Plant Site

Facility	Number of Locks
Newark Plant 1[1]	4
Newark Plant 2	8
Redwood City Plant[2]	2
Total	**14**

Notes:
[1] Includes Baumberg Pond B-3C quantities.
[2] Includes Cargill West Bay quantities.

2.10.1 Earthen Berm Maintenance

Maintenance of earthen berms is conducted to restore low spots in berms up to the height of adjacent berm segments, fortify, and prevent degradation of the berms, which protect the salt ponds. In addition, maintenance is required to maintain berms in drivable condition and to make some non-drivable berms drivable. Maintenance typically includes grading, providing access for maintenance equipment, and weed management. As shown in Table 2-8, an annual average of 37 miles of berms will need maintenance over the next 10-year period.

Addition of material to berms is required periodically to maintain each berm's integrity and ancillary uses (e.g., vehicle/equipment access). This material may be placed from the landside (top of berm) or from within the ponds by an amphibious or barge-mounted excavator. Material for berm maintenance would be obtained either from borrow ditches inside the ponds, or from landside equipment transporting clean imported material from off-site sources from designated stockpile areas. Sediment from the borrow ditches is used on the interior slopes of the ponds; imported material is typically used to maintain the tops of berms, outboard berms, and for berm keying. Cargill requires documented testing data demonstrating that imported material meets its standards for clean material (refer to discussion of the Soil Import Acceptance Criteria and Quality Assurance Project Plan [SACQAPP] for soil import in Section 2.10.3.1).

Maintenance of berms occurs on an as-needed basis and predominantly involves placement of material on the top and inboard slopes of berms to restore subsided areas and repair areas that are showing signs of erosion. Erosion may occur on both internal berms and outboard berms. An annual average of 31.5 miles of berms needed maintenance work over the last 10 years (refer to Table 2-4). While the original construction activities in the 1800s throughout the 1950s took place well before modern civil engineering standards went into effect, the berms have been observed to demonstrate continued functionality. However, layers of organic material observed within removed sediment during berm keying indicate that organic material in some berms may be decaying and creating a preferential pathway for fluids. Bare patches in areas of vegetation have been noted in several locations outboard of the MSS ponds, as well as outboard of other ponds, including low-salinity ponds (Hyman, pers. com. 2023). These bare patches could be a potential indicator of seepage through the berm (i.e., hypersaline conditions killing or stunting vegetation), but may also be due to the presence of naturally occurring salt pannes that occur in marshes throughout the Bay.

Cargill addresses potential indicators of seepage by partially removing, replacing, and compacting the earthen cores of certain berm sections. This process, referred to as berm keying or keying, reduces the permeability of the berms and the potential for seepage, and works to contain the brines in the salt ponds.

The rate at which berm maintenance work can be accomplished ranges from about 50 linear feet of berm per hour to hundreds of linear feet of berm per hour depending on weather, wind,

brine levels, traffic on the berm, access to the berm, bird usage, public use (most of the berms on Refuge lands are open to public access), whether the pond is open to hunting, and other factors. In addition to the routine maintenance of berms, including restoring the areas of berms that have subsided, the Final Sea Level Rise Assessment and Assessment Update developed for the Project area (AECOM 2021, 2024) identify high priority berms that could be overtopped by a combination of 6 inches of SLR and a 100-year storm event. Cargill will continue to monitor conditions of the system and will focus efforts on these high priority berms as needed to minimize the risk of overtopping. Cargill anticipates conducting a separate project to develop strategies and methods for Long-term Adaptation and Management of the entire system with respect to sea level rise. This separate project would be in addition to routine maintenance, and is not evaluated as part of the maintenance and operations activities considered in this EA. Cargill is initiating its SLR adaptation activities as part of routine maintenance of the berms. During the term of the proposed permit, Cargill intends to increase the height of the berms around the two MSS ponds (P2-12 and P2-13). The initial work on these ponds was prioritized given the potential risk posed to Bay resources posed by an unanticipated release of MSS. Increasing the height of the berms around the MSS ponds is described in Section 2.10.1.5. The work on these two ponds would be conducted as part of routine berm maintenance activities.

2.10.1.1 Top and Inboard Side of Berms and Inboard Top of Slope

Top and inboard sides of berms (including all interior berms) are maintained by using material excavated from inside the ponds and imported clean material provided by outside contractors implementing non-Cargill projects who are seeking a soil reuse opportunity. All imported material must meet the criteria presented in Cargill's SACQAPP (Appendix C). Consistent with current practices, the imported material would be stored in a designated stockpile area and moved to the maintenance location by trucks. Dozers and graders and other equipment would be used to place the material.

To prevent material from moving onto the outboard side of the berm on bayfront berms, a choker berm is constructed. A choker berm is a very small berm (typically 6 inches high or less, and less than 1 foot wide) on the outer side of the berm top. Figure 2-2 shows a typical choker berm and Figure 2-3 presents a typical cross section. As shown on Figure 2-3, the historic inboard slope (on the left side of the berm depicted in Figure 2-3) of a berm is 3:1. Outboard slopes are typically 4:1 or greater; outboard berms with riprap typically have slopes of 3:1 or 2:1. These typical dimensions would be restored in areas where inboard and outboard berm repairs are made.

The choker berm would be built up before the main work on the top of berm is conducted. Material would then be added to the top of the berm and graded so that the berm top slopes inward from the outboard edge toward the inboard/salt pond side of the berm. If any material accidentally falls into the marsh, despite of the use of the choker berm, it would be removed as soon as possible, unless removal would be more impactful to habitat than leaving the material in place.

Figure 2-2. Example of Choker Berm and Inward Slope on Berm
Note: The outboard side of the berm is to the right (vegetated tidal marsh); the open water on the left is a salt pond.

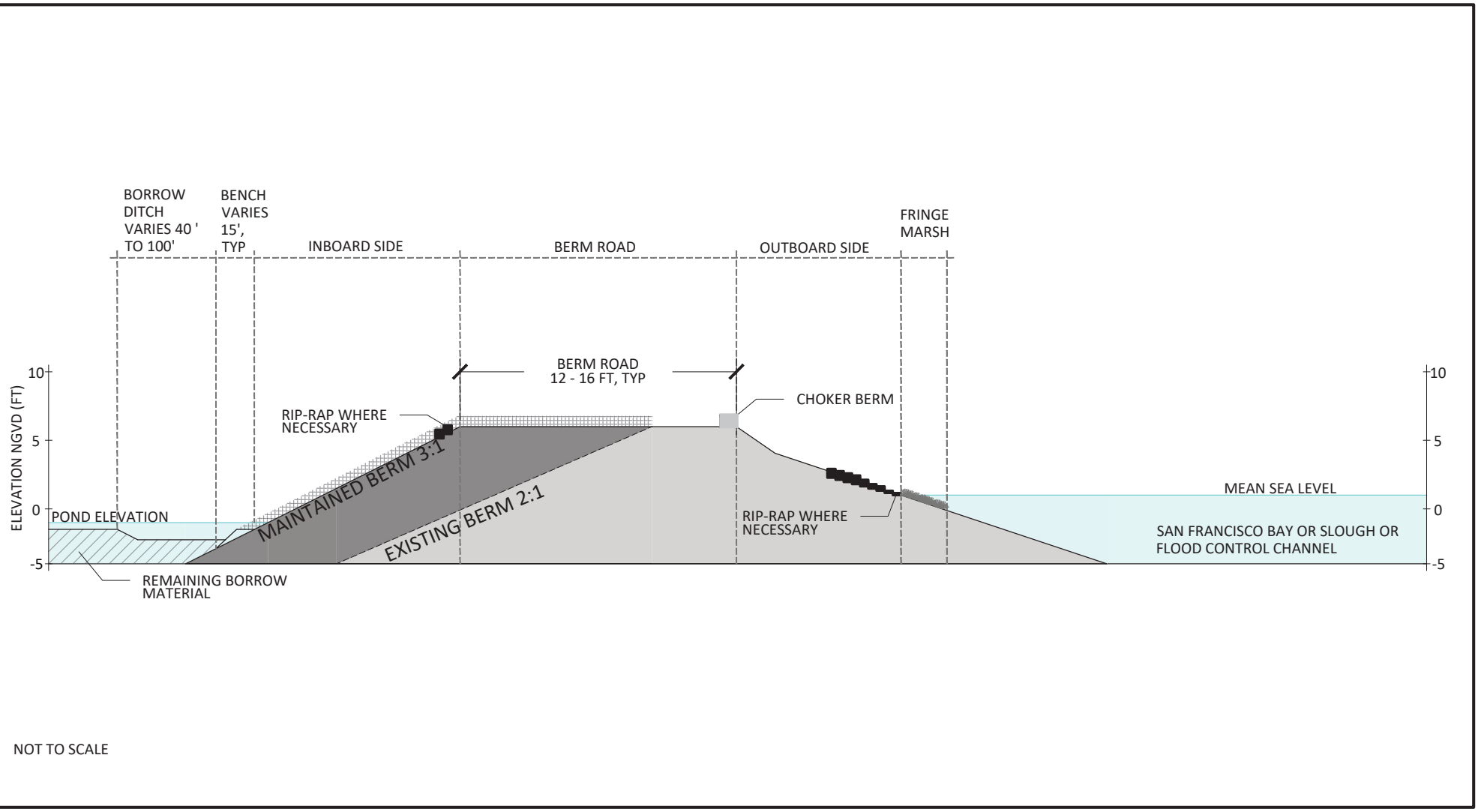


Figure 2-3 Salt Pond Berm: Typical Cross Section

As detailed in Section 2.13 (Best Management Practices for Maintenance Work), staff and/or contractors must complete required environmental training to recognize sensitive species and implement the pertinent best management practices, and would document all activities in daily logs.

To ensure access to all locations within the Project site, some earthen berm tops must be graded to support vehicle and equipment traffic. All-weather berms are topped with gravel and can be driven on during the rainy season, whereas the other berms that are not graveled cannot be driven on within several days of a rain event. The gravel on the all-weather roads must be replenished periodically. Making a berm drivable for dry weather access simply requires appropriately grading and weeding the berm top. To make berms all-weather drivable, Cargill typically grades the berm and places sufficient soil to bring the berm up to its typical elevation (soil is placed in 6-inch lifts if more than 6 inches of soil are required), compacts the soil, and then places 6 inches of gravel on top of the soil. Cargill does not anticipate making any additional berms all-weather drivable.

Driving on wet berms that are not all-weather can cause extensive damage to the berm and vehicle involved. To address this safety concern, four-wheel drive vehicles are not allowed on wet, non-graveled berms and there must be several days without any rain in order to drive on non-graveled berms.

Making berms drivable would occur primarily on internal berms; almost all outboard berms are currently drivable, allowing for access during dry weather. Access during wet weather, if required, would most likely occur using amphibious equipment. Only a short section of the outboard berm located in Plant 1 Concentrator 3 along the south side would require maintenance to make it drivable, but it would not require any widening of the road. The internal berms in most instances would not require widening to make them drivable. For the majority of internal berms, the road base would only need to be repaired back to original (baseline) width, not widened beyond the original width. For those areas in which the turning radius for a truck is not sufficient, internal berms may need to be widened into the salt ponds. Internal berms are not subject to SLR because they are part of a closed system, but they are subject to similar erosive forces, such as wind and wave action, as outboard berms. Making berms drivable would also require filling gaps in some berms (refer to Section 2.10.5.13). These gaps were created to permit brine flow between ponds, and would be replaced by culverts.

Cargill currently increases the extent of berms that are drivable by about 1 mile per year, and anticipates continuing to do so each year over the next 10 years; this will continue to require approximately 5,500 cubic yards (CY) of imported material each year.

During ongoing maintenance, which only requires placement of material, berm tops are disked and graded after placement of the material. If native materials are used, disking typically occurs two to four years after material is placed on the top side of a berm. This allows the material to consolidate and dry prior to disking and grading. The length of time required for drying depends on the composition of the material; higher salinity material takes longer to dry. The top of the berm usually requires two to three passes over the material to properly disk. Stakes are used along the length of the berm to set the grade level (as shown in Figure 2-4) and may require the

use of a laser to ensure the top of the berm is level and has the proper slope. Stakes are also used to delineate sensitive habitat to clarify for workers which areas must be avoided. When imported material is used to maintain a berm, it can typically be graded and disked immediately.

For keying, Cargill excavates an approximately 30-inch-wide section of the center of the berm to a depth of up to 9 feet. The excavated core section is backfilled with clean imported material with limited organic material that is compacted in place. The soil excavated from the core of the berm is placed on the inboard (salt pond) side of the berm. In the past 10 years, Cargill has completed approximately 4 miles of berm keying; Cargill anticipates completing 2 miles of berm keying over the next 10 years. The reduced keying effort would reduce imported soil requirements by approximately 9,500 CY, or about 1,000 CY per year.

Placement of riprap on the inboard side of the berms will be necessary in some locations due to continued erosion from high wind/wave energy. Riprap would be maintained (replenished) on an annual basis, as needed. The amount of riprap placed would be the minimum required to provide the necessary protection. Riprap repair and maintenance would only occur in areas free of vegetation. When erosion requires that riprap be placed in a new area (i.e., an area that has not previously had riprap), a few linear feet of vegetation, if present, may have to be removed on one side of the new riprap placement to ensure adequate coverage of riprap over the eroded area (Cargill 2021a, Anchor QEA 2024). Cargill staff utilize an excavator with a "claw/thumb" attachment to work with pieces of riprap. Staff experienced in use of the equipment and shoreline stabilization use the excavator claw/thumb to pick up a piece of riprap and place it on the slope such that it is stable. Each following piece is placed in the same manner to ensure stability and minimize voids. Minimization of voids lends to the overall strength and stability of the riprap and ensures slope integrity.

Figure 2-4. Example of Stakes Being Placed to Set the Grade Level

In some areas with severe erosion, the berm itself would be repaired before riprap is put in place. Typically, clean imported material would first be placed within the zone of erosion, then filter fabric would be placed over the imported material and then riprap would be placed as the final erosion prevention layer. Staff would record the dimensions of the riprap area as well as the volume of material used to repair the area of erosion.

As indicated in Table 2-7, in the past the need for riprap placement events on the inboard sides of berms has been variable year to year, as has the size of any specific event. This pattern is expected to continue for the proposed Project. The Annual Work Plan would provide detail on areas proposed to be maintained.

The quantities of material and riprap shown in the Work Plan would be the best information available to Cargill at the time the Work Plan is submitted. Nonetheless, it may be possible that additional work not shown in the Work Plan would be required in specific areas. When unanticipated work is required, a revised Work Plan or unanticipated work request would be submitted to the pertinent regulatory agencies, and any necessary regulatory approvals would be obtained prior to commencing the work or as required by the applicable permits. BCDC and the other regulatory agencies would review and respond in accordance with the permit conditions and review and response timeframes.

If work is deemed to be an emergency, work would be completed in accordance with governing agencies' emergency work regulations, as applicable. As per the current permit conditions, there would continue to be specific procedures for emergency work notifications to the agencies.

2.10.1.2 Inboard Slopes of Outboard Berms

Consistent with current operations, inboard sides of outboard berms would be serviced by either land-based equipment (from the top of the berm) or from inside the pond. Instead of the Mallard, which was retired in 2016, Cargill would use a barge-mounted excavator or other alternative equipment used in the industry, such as an amphibious excavator for work from inside of a pond. Cargill uses land-based equipment wherever possible to minimize the potential effects on outboard (tidal marsh and/or mudflat) habitat. Any equipment used would be capable of reaching the full extent of the slope. Material delivered by truck from the designated stockpiles would be placed on the top portion of the inboard side of the berm. Figures 2-1 provide locations of locks and land launching areas; Figure 2-5 provides the view of a typical outboard berm abutting marsh habitat. The lock access and exit process is described in Section 2.10.2.

Figure 2-5. Typical View of Salt Pond Outboard Berm Abutting Marsh Habitat

In some cases, material for berm maintenance may come from the borrow ditch at the toe of the berm. The excavator would remove material from the borrow ditch parallel to the berm section being maintained. The excavated material from the borrow ditch would be placed on top of the berm or along the inside top of slope of the berm. The process then continues by placing material from the top of the slope and slowly working down to the pond elevation.

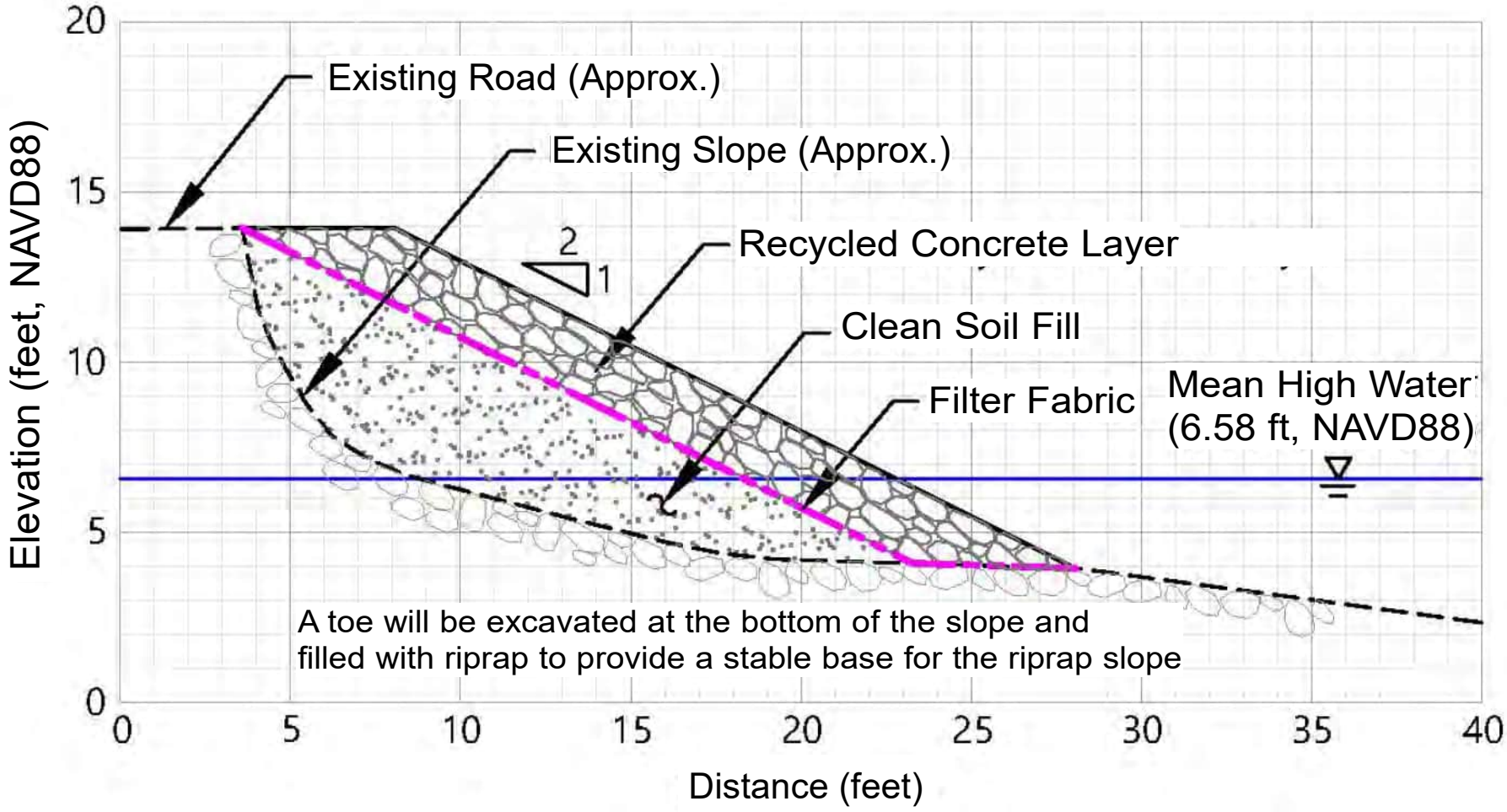
2.10.1.3 Outboard Sides of Outboard Berms

Other than lock access/egress, berm repair work on outboard berms would not be conducted from the Bay side where sensitive habitat may be present. Typically, maintenance work conducted on the outboard portions of the berms would be conducted using land-based equipment from the tops of berms. As noted earlier, virtually all outboard berms are drivable (i.e., usable for vehicle traffic during dry weather); amphibious, special light weight, or barge-based equipment would be required to access the berms if emergency repairs are required during the wet season for inaccessible locations that cannot be reached by standard equipment. Cargill either has at hand, or can quickly acquire (typically within 24 hours), equipment to respond to emergency situations if they arise.

Placement of riprap on the outboard side of the berms will be necessary in some locations due to continued erosion from high wind/wave energy. Riprap placement would occur both in areas where there is existing riprap (referred to as riprap repairs in this EA) or in new locations (referred to as new riprap placement). Natural high wind/wave energy can result in erosion of existing habitat or other vegetation causing a need to repair and protect the outboard berms at new locations. Existing riprap would be maintained as needed (Figure 2-6). Typically, riprap repairs would only require repositioning and/or replenishing the riprap, unless erosion is severe. If erosion is severe, the existing riprap would be removed and replaced in-kind (Figure 2-7). If during maintenance activities, riprap accidentally falls, it would be removed as soon as possible unless removal would be more impactful, or cause a health and safety risk.

Figure 2-6. Riprap Placed on Outboard Side of Berm

In severely -eroded areas clean, imported material would first be placed within the zone of erosion, then filter fabric would be placed over the imported material and riprap would be placed as the final erosion prevention layer. This is the same methodology as used on interior berm slopes. In areas where new riprap placement is required, eroded portions of the berm would first be repaired in the same way as for severely eroded areas that previously contained riprap, and riprap would be placed over the repaired section of the berm in the same way as for all other riprap placement. Cargill would not use any concrete pieces that are defined as slabs.



2-foot Thick Recycled Concrete berm Protection

Figure 2-7
Riprap Placement Schematic
Cargill, Incorporated
Alameda and San Mateo County, CA

Jacobs

\\Dc1vs01\gisproj\C\Cargill\NMFS\MapFiles\Report\2024\Public_Draft_EA\08_August\Figure2-7_Riprap_Placement_Schematic.mxd carcher 8/12/2024 7:26:07 PM

Historically, the riprap used by Cargill has consisted of repurposed concrete from construction-related demolition. BCDC required Cargill to develop site-specific riprap specifications to ensure consistency with BCDC policies (e.g., stability of fills). Cargill completed a technical engineering analysis to determine the appropriate specifications for use of concrete rip rap (Anchor QEA 2024). The analysis evaluated a range of wind/wave conditions that could potentially impact the outboard berms at the site and assessed the wind-generated wave growth along the longest potential wave paths from multiple directions. The 10-year zero moment wave height and peak wave period were calculated and ranged from 1.2 ft to 4.9 ft and 2.6 ft to 4.6 ft respectively. Based on this evaluation, the stable minimum average riprap dimensions were calculated for each Plant within Cargill's overall system (Anchor QEA 2024) (refer to Section 2.10.3.3). The stable mean riprap diameter (if the riprap pieces were rounded) was calculated to be 1.8 feet for the Newark Plant 1 area, and 0.8 feet for the Newark Plant 2, Redwood City Plant and all inboard riprap areas. The pieces would be of sufficient weight to avoid slippage while not creating large voids. Potential concrete riprap material is inspected to ensure that it is clean, does not contain debris or any rebar or wire, and is of the appropriate size to prevent erosion.

BCDC Shoreline Protection Guidance (BCDC 1988) describes the problems with using concrete pieces shaped like slabs for shoreline protection. Cargill would avoid using concrete pieces that could be considered as slabs. Cargill preprocesses the imported concrete to break up slabs and cut off exposed rebar, including any rebar exposed by breaking up slabs. Areas needing riprap would be staked in advance of any work to delineate the area for placement.

The amount of riprap placed would be the minimum required to provide the necessary protection as per the Anchor study and associated riprap specification developed at the request of BCDC. All placement on outboard slopes of berms would be conducted such that an outboard slope of no steeper than 2:1 vertical to horizontal would be maintained (Anchor QEA 2024). As previously stated, riprap material would be inspected to ensure that it is clean, does not contain debris or any rebar or wire, and is of the appropriate size to absorb wave energy. As for riprap repairs on inboard slopes, the need for riprap repairs and placement of new riprap on outboard slopes also varies greatly year-to-year (Table 2-7). Scheduled repairs and placement of new riprap for outboard berms are included in the Annual Work Plan. Cargill estimates that the average annual amount of riprap repairs on outboard slopes over the duration of the proposed permit would increase from the average annual amount of around 80 CY/year for the 15-year baseline period to around 1,050 CY/year during the 10-year permit period. New riprap placement on outboard slopes is estimated to total approximately 780 lf and 1,040 CY over the 10-year permit period with an estimated maximum of 7,800 square feet of placement during the permit period.

Sidecast material from the Bay, generated for example from excavating a toe for a new riprap slope, would not be utilized to stabilize the Bay side of outboard berms. If work must be conducted on the outboard side of a berm, a silt fence would be installed surrounding and in close proximity to the eroded area to prevent resuspension of sediments or dispersion of sediment into Bay waters.

2.10.1.4 Sea Level Rise Adaptation

Cargill evaluated the SLR vulnerability of the salt production system and identified preliminary potential adaptation and management strategies to address the findings of the vulnerability assessment. The study and its 2024 addendum (AECOM 2021, AECOM 2024a) evaluated various aspects of the Project area's vulnerability to existing flooding, potential future flooding, and other potential future SLR hazards. Cargill's Sea Level Rise Assessment (SLR Assessment; AECOM 2021) concludes that inundation due to daily high tides and sea level rise does not pose a near-term threat to Cargill's facilities. Except for several short segments of berms, future daily high tides are not projected to substantially overtop Cargill's external berms until end-of-century SLR projections (36 to 83 inches of SLR).

AECOM updated the SLR Assessment to include analysis of wave run-up (AECOM 2024b) in addition to the storm surge, SLR, and extreme high tides considered in the 2021 study. The Assessment concluded that with wave run-up some portions of the berms at all three plant sites (Newark Plant 1, Newark Plant 2, and the Redwood City Plant) could experience overtopping every 2 to 10 years under baseline (2010) and near-term (with up to 6 inches of SLR) conditions. The study assumed that average current elevations for the different segments of berms would remain unchanged and as a consequence the length of berms in the category with potential overtopping every 2 to 10 years increased substantially from the baseline to the scenario with 6 inches of SLR. Other portions of berms were projected to overtop much less frequently (approximately once every 50 to 100-years or more on average). Cargill would continue to monitor and maintain the berms, including increasing the height of the berms around Ponds P2-12 and P2-13. As noted previously, Cargill anticipates conducting a separate project to develop strategies and methods for Long-term Adaptation and Management of the entire system.

The 2021 AECOM SLR Assessment projected that in the short term (between now and 2030) there would be a 6-inch rise in sea level due to climate change from a 2010 baseline.[7] The study combined this projected SLR with the maximum height of a potential 100-year storm tide (42 inches above mean higher high water [MHHW][8]) to identify berms that are considered vulnerable to overtopping in the short term (i.e., by a combined 48-inch increase in sea level over MHHW). The 2024 Addendum to the 2021 SLR Assessment evaluated more recent SLR guidance to conclude that 6 inches of SLR would be most likely to occur by 2035 (AECOM 2024a).

Proposed SLR Adaptation Activities

As part of the SLR Assessment, Cargill identified potential adaptation strategies to incorporate into ongoing and future maintenance and operations. In the near-term Cargill would prioritize and manage berm maintenance through the lifetime of the proposed permit. In the foreseeable future, maintenance of berms would be primarily focused on segments that are incrementally lower than adjacent segments, thereby eliminating localized low spots most susceptible to

[7] More recent studies suggest that sea level rise between 2020 and approximately 2035 would be around 3.6 inches (Section 3.6.3.2)

[8] The San Francisco Bay Area has two daily tidal cycles of unequal height. Mean higher high water is the average of the higher of the two daily high tides.

overtopping. In these targeted areas, Cargill would increase the height of the existing berms up to approximately 12 inches in places as part of routine maintenance operations. Cargill would utilize the same maintenance methods to place lifts on the berms around the two MSS ponds (refer to Section 2.10.1.5). Cargill anticipates that this effort would require the same average annual volume of soil placement as existing berm maintenance activities.

The potential sea level increase of 48 inches over MHHW could cause Bay water levels to overtop large sections of the outboard berm network. The SLR Assessment estimated that under these conditions, up to 18 miles of the outboard berms could be overtopped. As a separate project Cargill will develop a SLR Long-term Adaptation Management Plan that will evaluate methods to address vulnerable areas identified within the SLR study.

Also, while Cargill is formulating a plan to address vulnerable berm segments, special considerations apply to the Redwood City plant perimeter berms facing Seaport Boulevard and U.S. 101 (referred to in the SLR Assessment as the inland external berm portions). These approximately 4 miles of berms would be maintained at their current elevations. These berms are located inland of shoreline segments owned by other entities. Strategies to address shoreline overtopping in this area will need to be coordinated through a broader collaborative effort among other stakeholders and landowners.

As described previously, riprap would continue to be used where needed to enhance berm integrity based on the specific location where erosion may occur. In addition, Cargill may evaluate potential alternative management methods including, but not limited to:

- Alternatives for material used in repairing eroded areas, such as using concrete mats or other new technologies to control erosion on internal berms
- Vinyl sheet piling berm inserts to provide more permanent mobility control and reduce the risks of overtopping
- Nature-based solutions, if feasible

These alternate methods would first require approval of a pilot study workplan, as described in the following sections.

Field Tests of Alternative Methods

Cargill may evaluate various alternative approaches for ensuring berm integrity to assess their viability and their effectiveness with regard to projected SLR. To justify field tests of these new methods, Cargill would submit a workplan for the field test, and evaluate the potential impacts associated with those methods in the context of this EA and any applicable permit conditions (including, for example, post-implementation evaluation of the new method field tests). The workplan would also address the steps Cargill would take should the field test result in unexpected significant impacts. If any potentially more significant or new impacts are initially identified during preparation of the workplan, revisions may be required to the workplan to address the identified impacts. If necessary, supplemental or subsequent environmental analysis would be performed and submitted to the regulatory agencies for review to authorize the proposed field testing. This authorization may require amending or otherwise modifying

existing permits; the specific permits that may require modification would depend on the nature and location of the proposed field test. Should the field tests be successful, Cargill would evaluate more extensive use of the new methodology in the context of this EA, and would use either methods already addressed in this EA, or the new method if associated effects would be less than or equivalent to the methods already addressed in this EA, or a combination of multiple appropriate, approved methods.

Specifically, as part of the proposed Project, Cargill may initiate a field test of vinyl sheet pile (Figure 2-8) on the pond side of berms at vulnerable locations and monitor the effectiveness of this approach relative to historical keying activity. Should the field test prove the vinyl sheet piles are effective, Cargill may propose that the vinyl sheet piles replace a portion of the keying activities proposed in this EA as the standard method improving berm integrity, taking into account SLR. Any such more extensive use of vinyl sheet pile would be subject to additional environmental review and potential permitting processes.

While the full range of potential field tests is unknown at this point, Cargill is proposing to field test the use of vinyl sheet piles because they are currently used in the Bay Area for multiple purposes including addressing potential, waterfront bulkhead or retaining walls, and protection from waves or stormwater floods. The use of vinyl sheet piling for various levee/berm structures has been implemented in multiple San Francisco Bay area and California coastal projects (e.g., Redwood Shores, Marin County Stinson Beach, and the Las Gallinas levee system in San Rafael). They also have a very long service life (50 years or more) and can be removed when required. Vinyl sheet piles are corrosion resistant and are largely maintenance free once installed. Compared to use of steel and concrete sheet piles, which require heavy equipment at the jobsite for unloading and staging, vinyl sheet piles are relatively light and easy to handle. Use of vinyl sheet piles would therefore require lighter weight equipment on the berms. Due to their strength to weight ratio vinyl sheet piles are considered a better choice than heavy concrete or steel in the typical high silt sediments of the Bay by USACE. USACE has analyzed long term applications of vinyl sheet piles and found them to be a reliable material for various applications which also provides for lower construction cost alternatives (USACE 2003).

Cargill currently estimates that the pilot sheet pile wall would be approximately 500 to 600 feet in length. There would be no work on the outboard sides of the berms. The vinyl sheet piles would be installed using a vibratory driver with a special attachment to push the sheet piles into the ground, or equivalent technology. The sheet piles would be sealed with a low ecotoxicity, solvent-free sealant (EOA, Inc. 2019). The purposes of the evaluation would be to determine the effectiveness of the sheet piles against potential seepage and overtopping relative to existing methods; evaluate the ability to install the vinyl sheeting over an extended length of the berm in an efficient manner; observe the flow of rain water around the barrier to confirm that the design avoids creating saturated zones after rain events; monitor durability of the vinyl sheet pile to confirm that it resists wear and tear due to weather and vehicular traffic; and evaluate the ability to easily extract the vinyl sheet piling in an efficient manner. Should the sheet piles prove to be ineffective, Cargill will remove them, most likely by pulling them out of

Legend

- Vinyl Sheet Pile Test Locations
- Pumps
- Locks
- Multipurpose Ditch Intake
- Stockpile Location
- Berms
- Brine Pipeline
- Pipeline
- System Ponds

Note:
Service Layer Credits: ESRI, National Geograhic

N

0 1,000 2,000
Feet

Figure 2-8
Vinyl Sheet Pile Test Locations
Cargill, Incorporated
Alameda and San Mateo County, CA

Jacobs

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the ground with the same special attachment used to install them. Cargill would monitor the installation location to ensure that the sheet piles do not result in adverse effects (e.g., increased erosion). If adverse effects are identified, the sheet piles would be removed immediately, and Cargill would initiate any required repairs. The workplan for the pilot study would identify potential adverse effects and appropriate monitoring. Specific details regarding the activities to be completed as part of this study would be provided by Cargill in a Sheetpile Pilot Test Workplan, reviewed and approved by the permitting agencies.

2.10.1.5 Increased Outboard Berm Height for Ponds P2-12 and P2-13

Cargill stores mixed sea salts in Ponds P2-12 and P2-13. The solid MSS is currently several feet below the lowest elevations of the berms, providing room for collecting and managing rainwater, and Cargill enters the rainy season with primarily solid MSS and several feet of freeboard in the ponds. Both P2-12 and P2-13 have adjustable gates so as brine levels rise to a certain point, the brine from P2-12 and P2-13 moves through the gate via gravity into the adjacent Ponds P2-10 and P2-11. In addition, other pipes can be opened to move brine from P2-12 and P2-13 into adjacent ditches allowing brine to be moved to other locations in the pond system. Rainwater has a much lower density than MSS brine, and therefore collects primarily on top of the MSS solids and any associated brine. Brine flow occurs primarily by gravity, but some brine can also be pumped off, if necessary (Cargill 2024).

Cargill's brine technicians closely monitor water levels and additional rainfall being forecasted. The gate structures in the ponds have a marking representing the "trigger level." If brine levels are projected to rise to the trigger level, Cargill brine technicians will carry out the Rain Management Plan (Rain Plan). The trigger level is several feet below the top of the Pond P2-12 and P2-13 berms. The trigger level was set based on Cargill's extensive experience managing water levels throughout the facility.

Cargill prepares a Rain Plan in October of each year, with a focus on the winter rainy season. Cargill uses National Oceanic and Atmospheric Administration projections for rainfall to develop the yearly Rain Plan. The Plan lays out sequencing for moving water between ponds for each group of ponds. Cargill staff continually monitor the pond system and weather patterns, and may modify the Rain Plan to address and/or respond to current rainfall patterns and intensities (Cargill 2023b). If needed in emergency weather conditions, Cargill can discharge water to other ponds or the Bay under the terms of its Storm Water Pollution Prevention Plan (SWPPP). Water that is discharged back into the Bay comes from the ponds with the lowest salinities in that plant. Lowering the water levels in the lower salinity pond provides capacity to receive water from adjacent ponds, which have only a slightly higher salinity. This cascading process of moving water from higher salinity ponds to lower salinity ponds allows Cargill to manage water levels in Ponds P2-12 and P2-13, and throughout the facility (Cargill 2024).

Unless the quantity released is small, release of concentrated MSS would adversely affect aquatic wildlife in the vicinity of the release (refer to Section 2.5.1.3). To minimize the risk of a release of MSS and address sea level rise, Cargill would increase the height of the berms around Ponds P2-12 and P2-13 to 11.5 feet NAVD88 (corresponding to the 100-year storm tide plus 6 inches of sea level rise between 2000 and 2035). This would require work on an estimated

25,000 linear feet of the berms, and placement of an estimated 25,600 CY of material. As discussed in Section 2.5.1.2, Cargill intends to ultimately remove the MSS with the MSS Project; however, completion of that effort could take up to 20 years, following approval. In the meantime, Cargill proposes to undertake appropriate interim environmental protection measures, including increasing the berm height. Increasing the berm height would also provide more freeboard within the MSS ponds, and would be expected to compensate for any additional accumulation of MSS during the permit period.

2.10.1.6 Weed Management

San Francisco Bay tidal marshes and adjacent habitats have been invaded by a number of highly invasive, non-native weeds, which can outcompete native plants and make the habitat less suitable for native wildlife. When left unattended, invasive weeds can require major efforts to control. Cargill originally developed a Weed Management Plan in 2009 (Cargill 2009). Subsequently, the USACE Clean Water Act permit for Cargill's maintenance and operations activities, dated 2010, required that Cargill implement the USACE-approved 2013 Refuge *South San Francisco Bay Weed Management Plan* (USFWS 2013). Cargill updated its 2009 Weed Management Plan in 2021.

The updated 2021 Cargill Weed Management Plan (Cargill 2021b) provides focused guidance for Cargill's management of weed species encountered during operations and maintenance within the Project area. Cargill also cooperates with the Refuge's weed management program (Cargill and the Refuge seek to meet quarterly) and other programs such as the Invasive Spartina Control Plan and the newer Algerian Sea Lavender Control Program to make their control efforts more effective. Where possible, Cargill provides access to invasive species management programs to support these regional control efforts and would continue to do so in the future.

The USFWS Weed Management Plan for the Refuge identifies seven species of invasive weeds that are present within Cargill's operational area on the Refuge. They are:

- Algerian sea lavender (*Limonium ramosissimum* var. *provincial*)
- Glasswort/ Russian thistle (*Salsola soda*)
- Hybrid smooth cordgrass (*Spartina alterniflora x foliosa*)
- Perennial pepperweed (*Lepidium latifolium*)
- Purple starthistle (*Centaurea calcitrapa*)
- Stinkwort (*Dittrichia graveolens*)
- Yellow starthistle (*Centaurea solstitialis*)

Cargill aligns its weed management efforts with the Refuge's, and therefore Cargill's 2021 Weed Management Plan also addresses these seven weeds. Another weed of potential concern, seaside alkaligrass (*Puccinellia maritima*) was identified in public comments (Citizens Committee to Complete the Refuge 2021). This weed does not have an invasive rating and is not included in the Refuge's Plan. Fennel (*Foeniculum vulgare*), which is also present in the Project area, is rated moderately invasive, but is also not included in the Refuge's Weed Management Plan. If the Refuge's Weed Management Plan or weed management strategy changes to include either or both of these weeds, Cargill would modify its plan accordingly. As

noted in Section 2.13, Best Management Practices for Maintenance Work, Cargill meets with Refuge staff quarterly, and would be specifically checking in on any modifications to the Refuge's Weed Management Plan or management strategy.

Cargills's approach to weed management within its operational area differs slightly from the Refuge's because Cargill is required to maintain high standards consistent with the use of salt in food and other products. This limits the ability to use chemical methods for weed management, and Cargill's Weed Management Plan does not include chemical control methods. In addition, much of the operational area is remote, and difficult to access with vehicles and equipment, especially in the rainy season when many berms are not drivable or only intermittently drivable. Therefore, access to certain areas for weed management can be limited during certain times of year.

Cargill's weed management plan includes specific information about each of the seven weeds listed previously, including applicable management methods. The plan also includes BMPs specific to weed management, including education, operational procedures and cooperation with other weed management efforts. These BMPs are reflected in the weed management BMPs shown in Section 2.13.

Cargill provides species identification cards and briefings on control methods to operations staff so that they can identify and appropriately address weed species of concern. Staff are briefed on why these species are of concern and the steps that can be taken to reduce their occurrence. In addition, Cargill operations staff are provided with procedures for how to report observed populations of invasive weeds for recording in Cargill's weed inventory, building on information collected by the Refuge and made available to Cargill.

Cargill would prioritize control of invasive weed species when conducting planned operations and maintenance activities. The general practice for weed management within an active area of maintenance would be to identify any weeds with the weed identification cards, and, depending on the specific type of work location, the specific weed, and the growth phase of the weed, mow or remove the weeds by hand. Weeds that are removed would be bagged and hauled off-site for composting or disposal.

During grading or scraping operations on the tops of berms, operators would remove weeds of concern from areas where grading is occurring. Berm maintenance activities would be prioritized to the extent feasible to occur during periods where mowing and hand removal of invasive weeds is most effective. When conducting work around existing facilities such as pump stations or inlet works, workers would note the occurrence of weed species and report to their supervisor on the extent and species of concern.The supervisor would advise on appropriate measures to control weeds around these facilities including mechanical or hand removal, bagging and offsite composting.

Baseline data regarding the presence of targeted weed species is presented in the 2021 Weed Management Plan, and primarily covers Newark Plant 1. Cargill would provide updates on its weed management efforts as part of the Annual Completion Reports. Cargill would continue to coordinate its weed management plan with pertinent resources agencies on a regular basis to

ensure that it is current with regard to recognized invasive weeds that may be present within the Project area.

Based on a review of the effectiveness of Cargill BMPs, weed management at lock access locations has generally not been a concern. The sediment/soil deposit areas as well as the access cuts areas were observed to be revegetating with native vegetation following temporary disturbance. In fact, revegetated stockpiles were generally covered by pickleweed. Field inspections and vegetation signatures visible in aerial imagery suggested that among the species colonizing temporarily disturbed areas, invasive species such as perennial pepperweed (*Lepidium latifolia*) were absent and/or not problematic. Invasive species control BMPs were generally unnecessary at locks (WRA 2016).

2.10.2 Lock Access/Egress

A lock is a small pond, typically less than 1 acre in size, surrounded by a berm. Locks are located adjacent to outboard pond berms within areas surrounded by salt marsh. Use of locks is required periodically to allow equipment to enter salt ponds for maintenance. Locks allow the passage of a barge and other floating equipment from the Bay or adjacent sloughs into a pond and out again. The locks prevent saline pond brines from escaping during access and provide storm and high-water protection for the small portion of the salt pond berm that will be removed and replaced on each access or exit. Although locks are used infrequently, they are still subject to the natural processes of subsidence and erosion and must be maintained as long as they are needed to provide access to the salt pond system. Figure 2-1 provides the locations of the 14 locks that may be utilized during the 10-year permit period.

From 1952 until 2016, Cargill utilized the excavation vessel “Mallard” to maintain the pond berms when using land-based equipment was not feasible. The Mallard has since been decommissioned. During the 8-year period prior to decommissioning, the Mallard completed 9 lock access/egress events, for an average of just over 1 per year. There have been no lock access/egress events during the period from June 2016 through May 2023 (the most recent complete maintenance years). In the future, Cargill would either use its own amphibious equipment or hire a contractor to use a barge-mounted or amphibious excavator for any lock access or egress. Amphibious excavators could also “walk” over the lock berms to enter the salt ponds, or could enter the salt ponds from the land side utilizing drivable berms for access. As the extent of drivable berms or use of amphibious equipment, which provide pond access from the either the land side or waterway, increases, the use of locks would decrease.

Locks are accessed on a rotating schedule approximately every 2 to 15 years, depending on the maintenance needs of the berm system. An average of approximately two locks per year could be accessed during the 10-year permit period. In some cases, some locks may be accessed twice during the 10-year period while others may be accessed only once or not at all. (One lock access is defined as one entry plus one exit through the same or another lock.)

The lock access/egress procedures are designed to minimize the amount of sediment and habitat disturbance. Use of amphibious excavators and making berms drivable both help eliminate needs for lock access. All access and egress activities would be consistent with the

BMPs provided in Section 2.13, as well as applicable permit conditions. This would ensure that potential effects on sensitive species and habitat are minimized.

Figure 2-9 provides a plan view of the components of the process of accessing a lock. The lock access and egress process consists of the following steps:

1. Working during a high tide, an excavator would dig an access channel about 40 to 50 feet wide through salt marsh vegetation and/or mudflats from a slough to the outboard side of the lock berm and cut an opening into the outboard lock berm.

2. For the portion of the access channel where the lock berm is within reach of the excavator, the excavator would place the material on the berm. For any remaining portion of the access channel, the excavated material would be sidecast onto a pre-approved stockpile area near the access cut.

3. To enter the lock, the excavator would then remove approximately 200 to 400 CY of the outboard lock berm and place the material in a designated stockpile area on the top of berm adjacent to the access location and then enter the lock through the opening.

4. Once the excavator is within the lock, dry stockpile material from past lock entries would be placed in the berm cut area to reseal the outboard lock berm to enclose the lock.

5. The excavator would then remove sediment that has accumulated within the lock. A maximum of 2,000 CY of sediment within the lock basin would be placed on the inside and top of the lock berms, on a nearby salt pond berm, or into a nearby salt pond.

6. Once the inside of the lock has been "cleaned," the excavator would cut an opening into the adjacent salt pond to allow the excavator barge to enter the salt pond. The excavator would remove approximately 400 to 1,000 CY of material and place it on the inside and top of the lock berms, on a nearby salt pond berm, or into a nearby salt pond.

7. Once the excavator has entered the salt pond, it would seal the opening in the lock berm using salt pond material and/or previously stockpiled material.

   Sediment that is used to close lock entries has a high-water content and typically sloughs on a slope until stabilized. To achieve the original lock berm height, it is sometimes necessary to place additional sediment/soil onto the berm access and egress cuts. Re-useable sheet piles may be placed on the outboard side of a lock to expedite consolidation of material used to seal the access cut, which in turn expedites revegetation in the vicinity of the cut. The sheet pile would be placed at the mouth of the access cut to the lock. Then material would be placed behind the sheet pile so that highly saturated material that was removed from the access cut would be contained. The inert sheets would remain in place while the sediment consolidates and integrates with the adjacent marsh. The sheets would remain in place until the work is complete or they are needed at another site to help seal another lock. As noted in past Work Plans and Completion Reports, Cargill has used both fiberglass and vinyl sheet piles to seal access cuts.

8. To exit through a lock, the previous steps are reversed. In addition, upon exiting the lock, a small pipe (culvert) may be placed into the outboard lock berm cut to allow tidal water levels to equilibrate between the lock and the Bay.

9. Material placed in the temporary placement areas along the access cut would then be used to fill the access cut so that pre-existing marsh elevations are restored.

In the past, Cargill sometimes excavated small sumps in the outboard marsh, placing the material from the sump excavation onto the lock berm, and placing sediment excavated from the access cuts into the sumps. This practice is no longer in use.

2.10.3 Materials Stockpiles

Ongoing maintenance requires interim storage of clean imported materials at designated, approved, dry land locations. The proposed Project would include the continued use of the four existing stockpile locations (Figure 2-1) as well as identified stockpile areas around the locks (Figure 2-9). Stockpile locations are re-used; thus, any disturbance would generally occur in the same area. For work around locks, a lock entry plan would be developed prior to lock entry and would be submitted to the regulatory agencies before work is conducted. The actual area and volumes of material excavated and then replaced for lock access are reported in the Completion reports.

Historically, Cargill has imported small volumes of soil multiple times per year, as soil became available from suitable sources. With the change in soil acceptance criteria and the soil acceptance process described in the next subsection, Cargill now anticipates importing larger quantities of soil and concrete less frequently, although smaller quantities of materials may continue to be imported when available, provided the materials meet the requirements of the SACQAPP. The total volume of soil to be imported for berm maintenance is expected to increase approximately 10 percent over the current baseline, thereby increasing the stockpiling activity required by the same amount.

Depending on the work that is being conducted, sometimes temporary stockpiles, on upland areas, would be utilized to hold clean material immediately before use on a specific task. The trucks would place their loads as close as possible to the repair location. All applicable BMPs as well as the 2021 Weed Management Plan would be implemented prior to the use of any temporary stockpiles. Stockpiled material would be used to maintain the berms throughout the Project site.

Legend

- Access Cut
- Stockpile

Note:
Service Layer Credits: ESRI, National Geograhic

N

0 25 50
Feet

Figure 2-9
Example of Lock Access/Exit Process Components
Cargill, Incorporated
Alameda and San Mateo County, CA

Jacobs

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2.10.3.1 Soil Acceptance Criteria

Cargill requires the supplier of imported material to meet several specifications for material to be accepted for use. Imported material is soil not originating within areas owned or controlled by Cargill. Appendix C contains Cargill's Soil Import Acceptance Criteria and Quality Assurance Project Plan. Applicable acceptance criteria outlined in Cargill's SACQAPP must be met prior to import of any material. The SACQAPP may be refined during the agency review and approval process.

The SACQAPP provides the framework for review, approval, and documentation of suitable soil import activities for the proposed Project. The SACQAPP defines procedures for review of potential imported material sources, sampling and analysis of potential import soils, site-specific soil screening levels (numerical acceptance criteria), and procedures for evaluating soil sampling results against the site-specific acceptance criteria. The SACQAPP includes risk-based criteria for imported soils. These site-specific risk-based acceptance criteria are intended to be protective of human health and ecological habitat within and surrounding the Project area. Any material that would be classified as hazardous waste is prohibited.

The acceptance criteria for imported soil/material are the same as those specified in the RWQCB-approved Revised Master Quality Assurance Project Plan (Master QAPP) for the Refuge, (USFWS and H.T. Harvey & Associates, 2021, as cited in the SACQAPP). The contaminant screening levels in the Refuges' Master QAPP are based on the following sources:

- San Francisco Bay RWQCB's Beneficial Reuse of Dredged Materials: Sediment Screening and Testing Guidelines (RWQCB 2000, as cited in the Master QAPP) for use in wetland environments
- RWQCB-approved QAPP for Inner Bair Island Fill Import and Placement (USFWS 2008, as cited in the Master QAPP)
- RWQCB's Environmental Screening Levels (RWQCB 2019, as cited in the Master QAPP), and
- 2020 updated screening levels for metals approved by RWQCB for the South Bay Shoreline Project (Lichten 2020, as cited in the Master QAPP)

As stated in the Refuge's Master QAPP, these screening levels may be updated periodically, and the Master QAPP will be updated to reflect these changes. Cargill will incorporate applicable changes in the Master QAPP screening levels for soil imports into its SACQAPP when they are approved by the RWQCB. The Master QAPP allows for wetland surface material and wetland non-surface material, which have different screening levels, to be used in Refuge projects, depending on the depth of soil placement. Cargill intends to use only soil the acceptance standards that apply to wetland surface material, as the majority of the material would be placed within 3 feet of the existing soil surface.

Excess excavated material initially placed on pond berms would either be placed in approved dry land stockpiles or used to re-establish the lock berm or salt pond berms. Excavated materials would typically be placed on the tops or sides of existing berms to ensure integrity and stabilize berms.

2.10.3.2 Imported Material Acceptance Process

The SACQAPP describes the role of each person involved in approving the import of material. Proposed import of soil must be reviewed and approved in advance by the Environmental Manager designated by Cargill, and must meet the soil acceptance criteria described previously. The Environmental Manager or their designee will work with the borrow site proponent to ensure that the required site screening and chemical testing is completed and reviewed by a qualified peer reviewer. The soil must also be free of debris (wood, metal, filter fabric, garbage/trash, etc.). In addition, the soil volume used and the linear feet or square footage of the area being repaired must be documented in the daily log and monthly reports.

2.10.3.3 Riprap Requirements

To help determine the appropriate concrete riprap size, Anchor QEA evaluated a range of wave conditions that could potentially impact the site. The analysis assessed wind-generated wave growth along the longest potential wave paths from multiple directions. For the 10-year return period for wind,[9] estimated maximum wave heights ranged from 1.2 to 4.8 feet. The calculated stable riprap mean diameter (assuming a generally spheroid-shaped piece of concrete; rock is denser and could be smaller) is 1.8 feet for the Newark Plant 1 area, and 0.8 feet for the Newark Plant 2 and Redwood City areas exposed to waves. The following information provides the riprap requirements that will be incorporated into the riprap specifications. The riprap specifications are subject to further review by BCDC's Engineering Design Criteria Review Board (ECRB). Acceptable specifications achieving these requirements will be determined through the BCDC permitting process.

Imported Riprap Requirements

Imported riprap would have to meet all requirements described in this subsection, without exception. The imported riprap, if approved by Cargill,[10] would be used by Cargill personnel for maintenance activities where riprap is being placed for the first time in new locations (e.g., where tidal marsh no longer exists and has been eroded, referred to as new riprap placement in this EA) and areas where existing riprap is being replaced, supplemented, or repositioned (referred to as riprap repairs in this EA).

Riprap Material Source

Riprap material would consist of specially cast or carefully selected concrete pieces free of exposed reinforcing steel and other extraneous material. The riprap would not be allowed to contain bricks, stepping stones, garbage, asphalt, or rubbish of any kind. Concrete pieces with exposed Rebar or exposed hogwire contained in the concrete would have to be cut flush to the concrete surface or the concrete would not be accepted. Soil and gravel would be prohibited from comprising more than 10 percent of a riprap load.

[9] A 10-year return period identifies the probabilities of specific conditions, in this case wind conditions leading to specific wave heights, occurring within a 10-year period.

[10] Cargill approves all riprap sources.

Riprap Material Size and Weight

Table 2-11 summarizes the sizes and weights of concrete riprap that would be accepted for use by Cargill personnel in different areas of the site and under different planned conditions. Average dimensions and weights are listed; accepted material and individual pieces would not deviate significantly from these averages. Riprap material would be of sufficient weight to avoid slippage, while not creating large voids.

Accepted riprap is intended for placement on berms exposed to wave action, so it is essential that the individual pieces meet the minimum average weight specified. The requirements are based on anticipated exposure to wave action, and therefore are different for the outboard berms at Newark Plant 1, versus the outboard berms at Newark Plant 2 and the Redwood City Plant, and all inboard berms.

Table 2-11. Dimensions and Weights for Imported Concrete Riprap

Berm Location Based on Wave Exposure	Average Dimension (feet)	Average Weight (lbs.)
Newark Plant 1 Outboard	1.8	870
Newark Plant 2 Outboard and Redwood City Plant Outboard; All Inboard	0.8	60

Historically, the majority of the riprap used by Cargill consisted of concrete from construction-related demolition activities. Currently, Cargill is revising its riprap sourcing process to obtain pieces of concrete to meet the new engineering specifications for outboard riprap. Cargill would not use any concrete pieces that could be considered slabs, and would follow specifications prepared by Anchor QEA based on their engineering analysis.

As noted in Section 2.10.1.1, all concrete is preprocessed prior to use as riprap, to ensure that it meets the size specifications, slabs are broken up, and any exposed rebar or hog wire is cut flush with the concrete. For outboard berms, concrete pieces will be selected from the stockpile areas to ensure that the size distribution used at specific locations within the Project Area meets the recommendations in the 2024 Anchor QEA analysis as well as the permit requirements. Reuse of concrete reduces GHG emissions by reducing the distance that riprap material needs to be transported, diverts material from landfills, and avoids the need for quarrying virgin rock. Due to the size requirements for Cargill's riprap needs, local quarries would be unable to supply the correct material. Any rock riprap would have to be imported from areas east of the East Bay Hills (Hyman, pers. comm 2024).

For outboard slopes, Cargill would also evaluate the feasibility of implementing nature-based solutions instead of using riprap, as required by the best management practices for riprap placement described in Section 2.13. Because the majority of the riprap placement is for riprap repairs, and new riprap placement typically occurs for very short sections of berms, nature-based solutions are not expected to be feasible for most outboard riprap placement. As discussed earlier, nature-based solutions would be considered alternative methods of berm maintenance, and would be subject to the same analysis requirements as other alternative berm maintenance methods.

2.10.4 Sediment Removal from Intake Structures

Over time, sediment accumulates around intake structures and along intake channels (small sloughs or side channels leading up to a culvert or other intake structure). Bay water contains sediment that settles out when the velocity of the water slows. Natural morphological processes, as well as human activities such as flood control channel maintenance and invasive weed eradication, can also lead to sediment accumulation on the bayward/slough side of the intakes. During much of year (i.e., when no water is being taken in), conditions near the slough side of the intakes are relatively quiescent allowing sediment to accumulate. Over time, sediment accumulation on either side of the intakes can limit or even block the flow through the intakes. Due to the location and operation of the intake structures access is difficult for traditional sediment removal equipment (dredge, barges, and cranes).

For this Project, Cargill would typically remove the accumulated sediment on the outboard side of the intakes manually. Divers using 4 to 6-inch hoses and low velocity pumps would carefully suction sediment from around the intake. Removing the sediment in this way would minimize potential turbidity from operations. In addition, because a diver is directing the head of the hose this method provides precision in movement and enables the divers to avoid any visible fish/biota. The diver would submerge the end of the hose into the sediment before engaging the pump and would keep it submerged whenever the suction pump is in operation (disengaging the pump when the hose has to be repositioned), which would further reduce the exposure of fish to entrainment.

The pumps would be located on top of the berm or on the intake platform, and would be provided with a sufficient length of hose for divers to access sediment blocking the intake on the outboard side of the berms. The suctioned sediment and water would be pumped into a screened area within the salt pond. Once all the sediment has been removed and settled within the screened area an excavator would be used to remove the fine material and place it in trucks for transport to an off-site reuse location or disposal facility. Alternate methods would include using a hydraulic suction hose similar to that proposed but mounted from a small skiff or low profile/draft barge. Sediment would be transferred in the same fashion to the adjacent screened area within the salt pond.

If the sediment removal methods cited are not feasible or cannot achieve the necessary removal of sediment, Cargill would use mechanical amphibious equipment such as amphibious excavators. In this case, the excavator would be accompanied by a low-draft barge into which the excavator would load the sediment. A suction hose would then be used to transfer the sediment from the container barge to the adjacent screened area within the salt pond. Both hydraulic suction and mechanical removal are more protective of the environment than use of the dredge vessel Mallard, which was the process used previously when sediment removal was required at the intakes.

Sediment removal for each intake would typically be required every 3 to 5 years. Cargill estimates that the amount of sediment requiring removal at any one time would range from less than 30 CY up to approximately 1,800 CY, depending on the intake location and specific

structure. The total volume that would require removal during the anticipated 10-year permit period is estimated to be approximately 3,600 CY.

An alternative sediment management method would be to pump the sediment into a filter box stationed on top of the berm. The filter box would be positioned adjacent to where sediment removal is occurring and would be used to collect and temporarily contain the sediment and water. Time would be allotted to allow the sediment to settle within the filter box and then the overlying decant water would be discharged to the salt pond. The remaining sediment within the filter box would be reused or disposed of as described previously.

Sediment removal activities on the bayward/slough side of any intake structure would occur during work window periods when listed species are anticipated to be less likely to be present. Section 3.4 provides detail on environmental work windows for various species.

Intake channels also require maintenance. Maintenance of intake channels may include vegetation and debris removal as well as sediment removal. Vegetation and debris removal may require use of heavy equipment on mats.

Historically, Cargill used the dredge vessel Mallard to remove sediment from in front of the intakes and intake channels. The Mallard has been retired and Cargill has transitioned to the sediment removal methods described previously. The volume of any sediment removed, and its disposition would be described in the annual Completion reports.

2.10.5 Installation and Operation of Fish Screens

In 2022 the Alameda County Water District and a number of Bay Area agencies completed a long-term effort to restore fish passage for steelhead trout to the Alameda Creek watershed. This effort included removing a dam, installing fish ladders, and adding fish screens (ACWD 2023a). This allows steelhead, salmon and other anadromous fish to migrate from the Bay upstream to reach spawning and rearing habitat in the Alameda Creek watershed. Within the first two months of the fish ladder's operation, upstream migrating adult Chinook Salmon and Pacific Lamprey were observed using the new ladder (ACWD et al, 2023). Further fish passage improvements are being conducted in the lower portion of Alameda Creek below the BART weir. The low flow channel, which is the deepest part of the Creek, is relatively shallow and ACFCD is modifying several grade control structures to further facilitate fish passage and adding vegetation and boulders to improve habitat (Alameda Creek Alliance 2024).

The re-establishment of fish passage between lower Alameda Creek and the watershed indicates that endangered salmonids may reestablish a run in Alameda Creek. This creates a changed condition from that considered in the 2021 Public Draft EA.

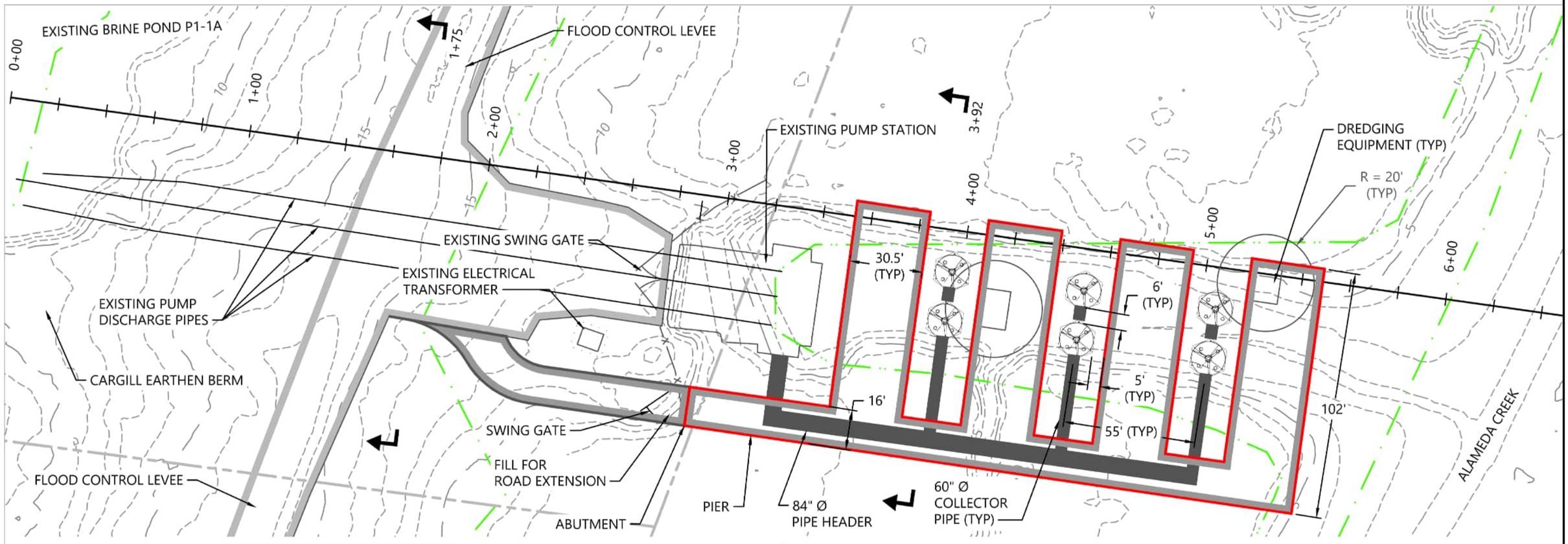
In addition to salmonids, the state-listed longfin smelt may also be present in the slough portion of lower Alameda Creek where the Coyote Intake is located, during times when salinity and temperature conditions are suitable for these fish (refer to Section 3.4). USFWS is expected to issue a final ruling on a petition to list longfin smelt as threatened or endangered at the federal level in fall 2024. A proposed rule has been published; the final rule expected in fall 2024 would include designated critical habitat.

As discussed in Section 3.4, in addition to the BMPs listed in Section 2.13, Cargill may take a variety of measures to minimize and/or avoid impacts to fish during intake of water. Cargill has been working with regulatory and resource agencies to determine appropriate options for minimizing potential impacts to listed species from the operation of Cargill's Coyote intake, Cargill's main intake just off of the main Alameda Creek channel, as well as Cargill's other 10 smaller Bay water intakes.

In February 2023 Cargill (Cargill 2023a) completed a preliminary design concept for fish screens at the Coyote intake. The concept consists of placement of up to six conical 6.5-foot diameter fish screens supported by new pilings, specifically within the side spur of the channel currently used for supplying Bay water to the Coyote pumps. Two fish screens would be required to supply adequate flow for each of the three pumps comprising the Coyote intake. Cargill may choose to install only two fish screens (i.e., providing sufficient water to fully operate one pump), or may install sufficient fish screens to fully supply all three pumps. Only Bay water taken in through the fish screens would be used during the periods when listed species may be present in lower Alameda Creek. The fish screens would discharge through piping to a common sump created by placing sheet piles around the existing pump platform. As the pumps draw from this sump, keeping the water level in the sump low, the difference between the tidally-driven water level at the fish screens and the water level in the sump would drive water through the fish screens. The proposed fish screens would have a self-cleaning mechanism to remove sediment, algae, and other miscellaneous debris during routine operation and would be designed to meet CDFW and NMFS criteria for protection of longfin smelt and steelhead. They would require routine maintenance on approximately an annual basis. Cargill would therefore need to construct access to the fish screens to conduct the annual maintenance and any needed repairs. Cargill is evaluating two access design options: wooden piers (Option 1) or earthen embankments (Option 2). Some design alternatives that were also initially considered have been eliminated from further consideration due to potential residual effects on listed fish species.

A preferred access option has not been selected nor has a complete fish screen design, including access, been approved by the relevant resource agencies. Both options have undergone preliminary review by the USACE Readiness Branch to ensure that they would not unduly interfere with the flood flow capacity of the channel, and are also acceptable to the Alameda County Flood Control District.

Figures 2-10a and 2-10b show the potential location of the new fish screens and the two access designs (referred to as Option 1 and Option 2). For the purposes of this EA, different aspects of the two designs could result in different impacts. Option 1 includes more pile-driving, Option 2 would involve more extensive construction activities, including placing more soil.



PLAN:
SCALE: 1" = 50'

Figure 2-10a
Fish Screen Access Option 1
Cargill, Incorporated
Alameda and San Mateo County, CA

Jacobs

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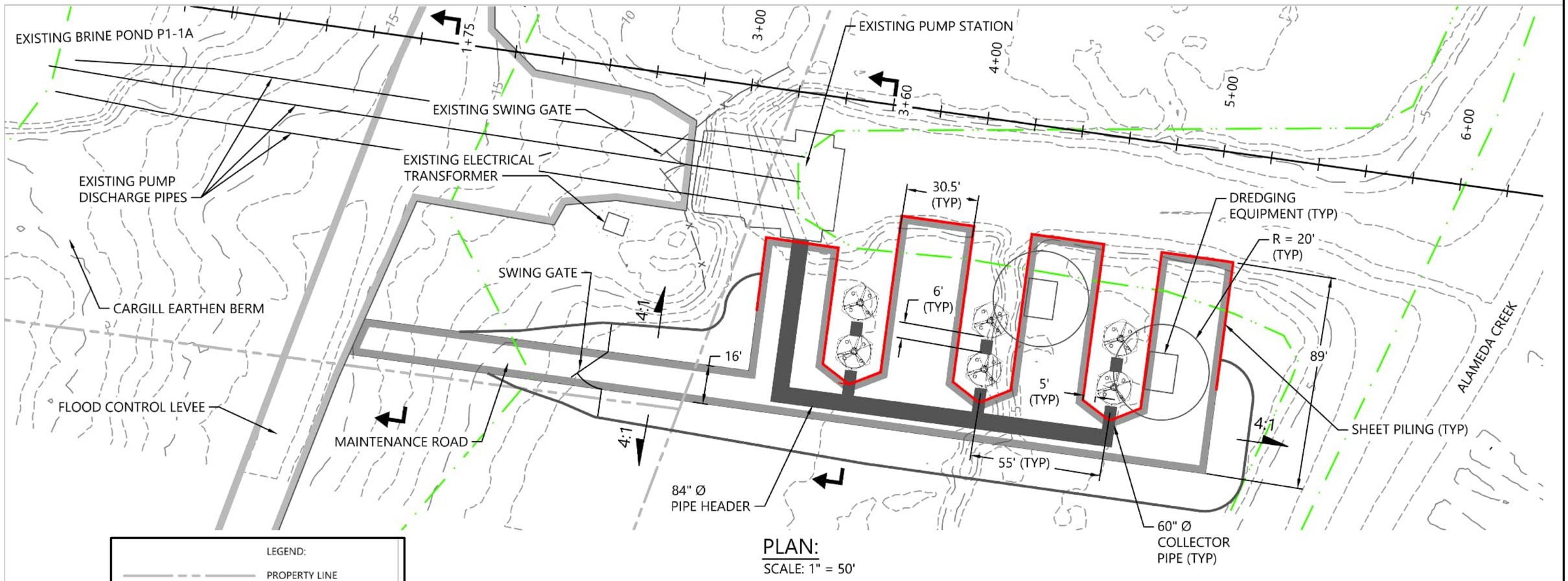


LEGEND:

- PROPERTY LINE
- PROPOSED ROAD
- EXISTING ROAD
- INDEX CONTOURS
- INTERMEDIATE CONTOURS
- EXISTING FENCE
- PROPOSED FENCE
- EXISTING FEATURE
- PROPOSED FEATURE
- NWI WETLANDS
- PROPOSED SHEET PILING RETAINING WALL
- ESTIMATED TIDE LEVEL IN YEAR 2050, EXCLUDING STORM SURGE

Figure 2-10b
Fish Screen Access Option 2
Cargill, Incorporated
Alameda and San Mateo County, CA

Jacobs

\\Dc1vs01\disproj\C\Cargill\NMFS\MapFiles\Report\2024\Public_Draft_EA\05_Mxd\Figure2-10b_Fish_Screen_Access_Option2.mxd carcher 5/4/2024 2:55:33 PM

Construction of Option 1, assuming all six fish screens are installed, would require the installation of up to 80 piles to support the pier access road. An additional 24 piles would be required to support the fish screens. The piles for the fish screens would be 12-inch square micropiles; the pier support piles would be 18 inches square. Both piles would be embedded approximately 40 feet into the underlying sediment. The piles would be driven with a vibratory hammer for the initial 30 to 35 feet. The bottom 5 to 10 feet of sediment underlying the pier support and fish screen areas is relatively firm, and would likely require the use of impact pile drivers. On average, each pile is expected to require 10 to 15 minutes for installation, of which 5 minutes would be impact pile driving. Thus, the total duration of pile driving would be up to 26 hours, with up to 8.7 hours of impact pile driving.

Constructing Option 2, assuming all six fish screens are installed, is estimated to require approximately 1,600 CY of excavation to enable the fish screens to be set at an elevation of 3 feet NAVD88 (i.e., near the invert of the small side spur in which they would be located). Excavation would affect approximately 21,200 square feet of intertidal areas consisting of mudflat and tidal marsh. Filling the area to allow for vehicle access and ensure that the access piers remain above the typical high tide levels would require an estimated 4,700 CY of soil, including imported material to support the pipes from the fish screens to the pumps and to replace excavated material that is not suitable for reuse due to geotechnical considerations.

This estimate assumes that the piers and access road would have a top elevation of 11.7 feet NAVD88. The soil would cover an estimated surface area of 24,200 square feet, which includes the footprint of the piers, the footprint of the fish screens, the footprint of the pipe and access road, and the footprint of the slopes at the edges of Piers 1 and 4 and along the access road. For Access Option 2, impact pile driving would be limited to the installation of the 24 micropiles supporting the fish screens, or approximately 2 hours of impact hammer use.

Complete fish screen design, permitting, and installation is likely to require several years. In the interim, Cargill will implement the BMPs listed in Section 2.13 to minimize potential effects to salmonids if listed salmonids reestablish a run in Alameda Creek. If fish screens prove to be technically infeasible, Cargill would implement alternative means of protecting endangered fish and/or implement mitigation (refer to Section 3.4).

Once installed, the fish screens would need periodic inspections to remove accumulated debris and repairs to ensure that all components are operating properly. Although the screens would be equipped with automatic sweepers to remove sediment, and woody and plant debris, some accumulation is still likely. Approximately annually, the fish screens would need to be lifted out of the water for a complete mechanical inspection. This would require the use of a crane. In addition to routine maintenance of the fish screens, the channel in which they would be placed would also accumulate sediment that would need to be periodically removed, as described for sediment removal at intake structures in Section 2.10.4. The piers or earthen embankments for access would also require maintenance.

2.10.6 Other Infrastructure Maintenance

Cargill also must maintain numerous other infrastructure components that support the salt production system. Over time these components break down and require either repair or

replacement. These structures would be maintained on an as needed basis to ensure the overall function of the structure will be in good working order to support the system. The overall future level of maintenance related to other infrastructure is expected to be very similar to current levels. Any maintenance activity conducted would follow established BMPs (Section 2.13) and would only use the minimum fill necessary.

The following list describes various components that may be repaired, replaced, or serviced on an annual basis.

A. Maintenance and repair of brine channels and internal donuts to maintain design capacity and elevations

B. Repair and replacement, and in some instances relocation, of existing structures and related facilities (such as motors, pumps, gates, pipelines, and culverts) as well as existing bridges, bridge foundations and abutments within the network of salt pond berms

C. Maintenance and repair of wooden trash racks

D. Repair and replacement of other existing infrastructure, such as existing or temporary fences, vehicle gates, electrical distribution lines for service operations, crystallizer access ramps, and pumping donuts and cofferdams

E. Repair and replacement of siphons in non-tidal areas and of siphons that cross salt marsh, sloughs and channels

F. Removal of algae from ponds

G. Minor fill and excavation

- Minor excavation to provide access to repair and replace existing facilities, and to make berms maintainable with heavy equipment
- Other minor fill or excavation in the Bay in managed wetlands and in salt ponds for purposes consistent with:
    a. Berm maintenance
    b. Access to salt ponds
    c. Use of locks
    d. Salt making
    e. Placement of pipes, siphons, power, or tidal control structures, and
    f. Prevention of erosion and repairs related to storm damage, including clearing of sediment that blocks pumps or gates.

H. Modification of internal flow paths (including filling of berm gaps)

These tasks are described briefly in the subsections that follow.

2.10.6.1 Brine Channels and Internal Donuts

Additional brine conveyance occurs through multiple brine channels adjacent to ponds throughout the salt system. These channels are the primary method of brine conveyance through the system and must be maintained to ensure proper function. Maintaining correct channel slopes is crucial because flow in the salt-making system is largely gravity driven. Salt solids may precipitate out into the brine channels when brines are moved between ponds. Accumulated salts are removed by flushing the brine channel with Bay water or lower salinity brines; and moving the flushed water or brine into a nearby salt pond.

Removal of accumulated sediment from the brine channels occurs between every 5 to 10 years and involves removal of the sediment with an excavator. Material within the ditches is predominantly silty with high water content. The excavator would transfer sediment from within the ditch to the adjacent inboard side of the salt pond. This material can be used for maintenance of the salt pond berms or could potentially later be transferred with an excavator to a truck for transport to other areas where maintenance is needed. Cargill estimates that the amount of sediment requiring removal at any one time would range from less than 5,000 CY up to approximately 10,000 CY, depending on the extent of linear feet being maintained within each ditch. The estimated total volume anticipated over the next 10-year period is approximately 60,000 CY of sediment removed from ditches within the system, consistent with the average rate of removal during the past 15 years. Because this sediment removal is internal to the salt pond system, it would not impact tidal habitat, and therefore does not warrant specific tracking for purposes of identifying significant environmental impacts.

As part of the maintenance of the brine channels, Cargill also maintains the internal donuts by removing accumulated sediment and maintaining the sidewalls of the donuts. Periodically, Cargill constructs new internal donuts as needed to enable it to manage flow between the ponds. Construction of new donuts consists of adding new berms in or adjacent to an existing salt pond or adjacent to an existing brine channel, and then connecting one or more existing brine channels and one or more ponds to the donut via culverts.

2.10.6.2 Existing Structures and Walkways

Existing structures include platforms, trestles and tide gates. Excavated material generated during repair or replacement of existing structures would be placed in an identified upland area unless specified otherwise in the Work Plan. Pile driving may be required for piers and platforms. In soft soils, piles could be driven by pushing them into the ground. In denser soils, a vibratory pile driver may be required.

- Platforms: Platforms are repaired from either the top of the platform or from below. If the platform is over brine or water, then workers use small boat(s). Typically, the wood and metal components are replaced as pieces show signs of failure. Platform repairs are typically accomplished using manual, battery-powered, and/or air-driven tools.
- Trestles: A trestle is a framework used to support a platform or elevated structure. Trestles are installed similarly to piers and can be permanent supports to pipelines, decking, walkways, platforms, pump structures, etc. They can also be temporary supports for cranes, heavy equipment, scaffolding, etc.

- Tide gates: Tide gates consist of two gates: a lift/gear/slide gate and a flap gate. Supporting structures are driven into the soil with heavy equipment and built up around the berms to prevent erosion and undermining. Some excavation and replacement of soil is required to place the supporting structures. Heavy equipment, such as an excavator, is required to lift and drive the supporting structure and hang the gates.
- Bridges, bridge foundations and abutments: Bridges in the salt production areas span culverts and pipes that connect the ponds. When these pipes or culverts need repair, the bridges may have to be removed to allow access. Following repair of the pipe or culvert, the bridge is reconstructed using wood, concrete, or clean soil material, as needed. Bridge foundation repairs may require minor excavation to access footings.
- Walkways: Cargill maintains walkways made of soil, gravel, and salt. Cargill uses heavy equipment to maintain the walking surfaces by repairing pitting, erosion, rutting, etc. Typically, a thin layer of material is placed on the walkway, graded, watered to achieve the proper moisture content, and then compacted.
- Salt roads: Certain internal berms adjacent to and between the crystallizers are covered with salt to reduce dust and prevent soil from entering the crystallizers and contaminating the harvestable salt. These salt roads are much wider than typical berms, are primarily used during salt harvest, and are maintained by replenishing the salt cover.

2.10.6.3 Trash Racks

Trash racks are installed on the outboard sides of berms at some of the pumps/intake structures to prevent debris from entering the pump/intake. The trash racks require periodic maintenance and repairs. Maintenance would include removing accumulated debris, typically using hand tools. Typical repairs would require access by boat or placement of matting for workers to reach the trash rack. Repairs would include use of manual, battery powered, or pneumatic tools. Repairs may involve use of heavy equipment if the pieces being replaced are heavy or awkward to handle.

2.10.6.4 Perimeter Fences

Perimeter fences provide security to keep the public out of designated areas. Most fences are built of posts as supports and a barrier such as chain-link. Post holes are dug with equipment such as a post-hole digger, mini excavator, or manual tools. Materials such as soil, sand, gravel, or concrete are used to set the posts.

2.10.6.5 Retaining Fences

Retaining fences are wooden supporting structures that act similar to a retaining wall or barrier. They are found in ponds, crystallizers, and brine channels. Retaining fences consist of large wooden posts and laths attached to the posts with connections such as lag bolts or screws. The posts are driven into the ground with heavy equipment such as an excavator. Lath joints are fully glued to prevent leaking due to hydrostatic pressure. Trenches are dug so the laths begin below the final ground level; then the trenches are backfilled and compacted to prevent undermining. Fences exposed to higher horizontal pressures have angled structural wooden

braces attached to each post to prevent rotation of the fence. Repair or replacement of a retaining fence involves the use of heavy equipment such as an excavator.

2.10.6.6 Vehicle Gates

Gates can be made of many materials, including wood or metal, and can have many designs. Vehicle gates can be manually-operated or powered. All gates require supports. Repair of vehicle gates may require placement of supports, which is similar to installing fence posts.

2.10.6.7 Crystallizer Access Ramps

To access crystallizers, ramps are made of rock, salt, and a drain pipe. Some ramps are temporary, built before harvest and removed after all harvest activities are complete. Cargill also maintains some permanent ramps. These ramps require repairs due to erosion from rain runoff and wave impacts. Repairs include replacing the drain pipe at the toe of the ramp, resalting the top surface, and grading and compacting the ramps as needed.

2.10.6.8 Electrical Distribution Lines

Pumps and some other types of equipment require electrical power. The majority of the lines used to support salt-making operations are high voltage lines. The lines connect to transformers that step down the voltage. The transformers feed power to equipment such as pumps or lights. The lines and other transformers need to be replaced or upgraded over time. Some lines may need to be buried or raised for safety reasons.

Above-ground power lines are supported by large wooden poles that are partially buried into the ground. Power poles are typically driven in with heavy equipment. Transformers are either located on concrete pads on the ground, are supported on an elevated structure, or are attached to the power pole.

2.10.6.9 Pumping Donuts and Internal Coffer Dams

Pumping donuts are small ponds with berms, similar to locks. Pumping donuts have tidal gates that collect Bay water. The Bay water is then pumped from within the donut to large pumps and is used in the packing of the large pumps. The Bay water is also used to flush precipitated salt from larger pumps to prevent cavitation. Coffer dams are temporary structures used to isolate gates, sections of ponds, pumps, etc. They can be made of soil, salt, sand bags, gravel bags, vinyl sheeting, or other materials.

2.10.6.10 Siphons

Siphon repairs may include clearing the siphons of accumulated salts and sleeving the siphon to support its structural integrity. Cargill may also need to remove accumulated sediment in front of the inlet and outlet of siphons. Excavated sediment would be placed on top of internal berms or into salt ponds. Siphons in non-tidal areas would typically be replaced by first constructing coffer dams to minimize water entry into the work area, and then excavating and replacing the siphon. Replacement siphons that cross salt marsh, sloughs and channels would typically be installed using directional drilling to minimize effects on the environment. Directional drilling could also be used to replace siphons in non-tidal areas.

2.10.6.11 Removal of Algae from Ponds

Cargill uses booms to control algae within the ponds. The collected algae have to be removed periodically. Cargill typically uses airboats and a floating harvester to collect the algae. Land-based equipment (such as excavators and haul trucks) is used to dry the algae and haul off the dried algae.

2.10.6.12 Minor Fill and Excavation

Not all required repairs and maintenance activities can be predicted in advance. Other minor fill and excavation would continue to be needed periodically, as has been the case under the current permit. These minor fill events would consist of maintenance and/or replacement of small existing structures. These minor fill events are not included in the annual Work Plan due to their incidental and minor nature. Common examples of these types of events include replacing wood piles for docks or gate access structures, replacement of gates where the ground around a gate needs to be removed and replaced as the new gate is installed, and replacing the supporting retaining walls for these structures. Depending on location, the fill removed may have a large amount of salt content and will need to be replaced with clean fill. Specific criteria would be defined in the permit; these quantities and scope of these minor fill and excavation events would be consistent with or less than the baseline period.

2.10.6.13 Modification of Internal Flow Patterns/Filling Berm Gaps

Cargill regularly adjusts the brine levels in the ponds as part of its existing operations. For example, brine levels are adjusted before the rainy season in anticipation of increased precipitation, and to manage pond levels so erosion is controlled inside the pond. Brine levels also change in response to annual rainfall and evaporation.

In certain locations, Cargill needs to change the mechanism for transferring the brine from one pond to another. Some internal berms currently have gaps for brine flow between ponds. Gaps within the internal berms are predominantly in Plant 1. When Cargill improves berms to make them drivable as part of the proposed Project, the gaps would need to be filled; most gaps would be replaced by culverts to maintain flow between ponds. This is the same design that is currently implemented throughout the salt pond system. Each segment would be identified as a task in the annual Work Plan and reported in the Completion Reports. Cargill currently anticipates filling an average of up to 4 gaps per year (some years this could be less or up to 10 gaps), for a maximum of up to 40 gaps filled over the life of the permit. The length of the gaps ranges between 20 - 60 ft depending on the location. This EA assumes that berm gaps will average 50 lf with a gap width of 15 ft and overall depth (including side slope) of 10 ft. This would equate to a work area of approximately 750 sqft, and 278 CY of imported material placed to repair each gap. In total, filling of 40 berm gaps would equate to 0.69 acres of soil placement in interior berms and approximately 11,100 cubic yards of imported material over the 10-year permit period. The berms, which do not currently serve as roads, would then be graded to allow the berm tops to serve as roads, reducing the need for pond access through locks.

2.10.7 Work Plan Development

Under the existing permit Cargill develops and submits an Annual Work Plan to BCDC, RWQCB, CDFW, NMFS, SLC, USACE, USFWS, and USEPA that describes the anticipated work that may be

conducted on an annual basis. The Work Plan is submitted for evaluation and approval prior to any work being undertaken in any given maintenance year as authorized under the permit. Through the Work Plan and Completion Report process, which would also be implemented for the proposed Project, resource and regulatory agencies ensure that maintenance activities actually undertaken are in accordance with the level of effort analyzed in the EA and permitted in the applicable permits. This includes ensuring that the activities are compliant with the conditions of the final permit, and in accordance with the scope of the proposed Project and proposed BMPs as reflected in the environmental analysis of this EA. The Work Plan process provides needed inter-annual flexibility in the amount of specific types of maintenance conducted, while ensuring regulatory and resource agency management of the level of activities consistent with governing laws and policies applicable at the time that the Project is authorized.

Work amounts proposed for any given year would be variable, and the impact assessment in this EA is based on calculated average of work to be undertaken in any given year. The requirement to submit an annual Work Plan to the regulatory agencies before work is undertaken in any given year ensures that the specific work for any given year will be consistent with the impact evaluation conducted in this EA, while maintaining needed flexibility to adjust maintenance activities in response to weather and other factors. The Work Plan would also serve as a review vehicle for any proposed changes in maintenance methods consistent with the parameters of performance criteria to be established by the governing BCDC permit, as discussed. For example, as noted earlier, Cargill has retired the dredge vessel Mallard, and now relies on other equipment to access locks.

To provide for better planning, Cargill implements berm monitoring. An annual aerial inspection of the berms is conducted by helicopter, or may be by drone or other method, between December and January when king tides[11] typically occur. The inspection seeks to identify any low spots or indications of erosion. Monitoring also includes extent and recovery of disturbance over time. Cargill also conducts berm monitoring for specific work activities affecting sensitive habitat. Itemization and prioritization of these observations provides the basis for developing the annual Work Plan. In addition, Cargill staff inspect berms and ponds on a regular basis to assist in identifying any debris removal or preventive maintenance needs.

As noted previously, at the end of each year of maintenance, Cargill prepares a Completion Report that documents the actual work performed, and includes the results of applicable monitoring activities. In addition to applicable monitoring and reporting actual work performed, Cargill would also report the following:

- Incidents of minor fill exceeding the de minimis thresholds allowed in the permit
- Documentation regarding species presence and protective actions taken, in accordance with the BMPs outlined in Section 2.13
- Updates on its weed management efforts

[11] King tides are the highest high tides of the year.

- Extent of berm keying performed
- Information on indicators of potential seepage noted outboard of the MSS ponds, and any associated seepage control work done to address the potential seepage location
- Follow-up assessment of previously noted indicators of potential seepage 3 years after completion of any related seepage control efforts

2.10.8 Monitoring Program and Supplemental Fish Protection Measures

As discussed in Section 2.10.5, one of the changed conditions that would be addressed by the proposed Project is the potential presence of sensitive salmonid species in Alameda Creek, the CESA listing of longfin smelt as a threatened species, and the FESA listing of longfin smelt as an endangered species. [12] Salmonids are primarily expected to be present in Alameda Creek when transiting to and from their spawning grounds in the upper watershed. None of the other sloughs and creeks in the project area currently have or would be expected to have salmonid runs. Based on the available information, longfin smelt, however, could be present at low densities throughout the Project area when temperature and salinity conditions are suitable. The available data are insufficient to determine the presence or absence of this species at or near Cargill's various intakes (as discussed in more detail in Section 3.4). Green sturgeon and white sturgeon may also use the Project area.

To assess the potential for longfin smelt and other sensitive fish species to be present in the vicinity of its other intakes, Cargill intends to develop and implement a monitoring program. The purpose of the monitoring program would be to assess physical conditions (such as intake approach velocities, and temperature and salinity in outboard waters) in key locations in the Project area. Monitoring activities would most likely occur over a multi-year timeframe. In addition, monitoring of physical parameters may be supplemented by targeted fish monitoring. Fish monitoring, if needed, would occur in locations initially identified as potentially being suitable for sensitive fish species of interest during the time that Bay water intake would occur at these locations. The monitoring program would be reviewed by and would have to be accepted by CDFW, NMFS, USFWS, and the RWQCB.

The results of the monitoring program would be used to prioritize the implementation of other fish protection measures, if needed. These measures could include, among others, installation of additional fish screens, rerouting piping systems to reduce the number of intake locations or modify the locations of intakes, modifying the time period during which intake occurs. Any fish protection measures implemented pursuant to the monitoring program would first be assessed to determine whether further CEQA analysis would be required to evaluate potential impacts to the environment. Subsequent or supplemental CEQA analysis would be conducted as needed.

2.10.9 Supplemental Maintenance Work Not Included in the Work Plan (Unanticipated and Emergency Work)

It is likely that at some time during any given year, Cargill would need to conduct maintenance work not reflected in the Work Plan, but that falls under the purview of the permit. The need

[12] Longfin smelt were listed as endangered under the Federal Endangered Species Act on July 30, 2024.

for such unanticipated work, including emergency work, may be driven by damage caused by events such as:

- Severe weather and flooding related events
- Various types of large debris colliding with a berm

In addition, new opportunities for improving maintenance and operations efficiencies may arise. Cargill would continue to evaluate new maintenance approaches that could potentially reduce overall environmental impacts while still ensuring the integrity and safety of the berms/system for operation and maintenance in the future. This evaluation process may include assessing new methods and technology that could improve future practices. Any such assessments would be implemented using applicable BMPs (presented in Section 2.13) and may be authorized through annual Work Plan submittals if the new methods and technologies are in accordance with the scope of the proposed Project and proposed BMPs as reflected in this EA and within the parameters of performance criteria to be established by the governing BCDC permit.

Before performing any unanticipated work, Cargill staff would notify and be required to receive approval from Cargill's Environmental Manager. Cargill would typically submit a notification (request for approval of the proposed work) to the USACE, RWQCB and BCDC, which would include a description of the proposed unanticipated work and appropriate BMPs that would be utilized. Cargill anticipates that the agencies would respond in writing within in a timely manner, as indicated by the permit conditions, regarding their approval of any requested modifications as within the scope of the existing governing permits, and Cargill would then conduct the unanticipated work if approved. In the case of emergency work, Cargill's request would follow the procedures laid out for BCDC's emergency permits. BCDC typically responds to emergency permit requests within 24 – 72 hours, depending on urgency. Any such emergency work would be documented as part of the Completion Reports.

2.10.10 Summary of Proposed Changes in Maintenance and Operations Activities

In general, activities that would be undertaken pursuant to the proposed Project would be similar in nature and extent to the maintenance and operations activities carried out under the current permit (i.e., a continuation of current activities). As discussed, Cargill anticipates some limited changes in the level of existing activities, as follows:

- Berm Keying: Reduction from approximately 4 miles over a 10-year period to 2 miles over a 10-year period.
- Lock access: Increase from approximately one event per year to up to slightly more than two events per year.
- Maintenance of drivable berms: As more berms are made drivable, increased maintenance of drivable berms is required. The average amount of maintenance is anticipated to increase from an average of 31.5 miles per year to an average of 37 miles per year over the

proposed 10-year Project term (at the end of the 10-year permit period, up to 41.5 miles of drivable berms would require maintenance annually).

- Repair of structures: Increase from approximately three major repairs per year to a total of up to 12 major and minor repairs combined per year.
- Increase from an average of approximately 80 CY of outboard riprap placement per year to up to approximately 1,050 CY per year.
- Decrease from an average of 480 CY per year of riprap placement on interior berm slopes to approximately 175 CY per year.
- Placement of up to approximately 100 CY per year of new riprap (riprap in areas that previously did not have riprap) on outboard berm slopes. This quantity was not tracked separately from riprap repair on outboard berm slopes in the past.

Cargill also plans to focus a portion of its existing berm maintenance on the berms at Ponds P2-12 and P2-13. Cargill would Increasing the height of the Pond P2-12 and P2-13 berms, to an elevation of 11.5 feet NAVD88 by 2034, in anticipation of SLR, requiring an estimated 25,600 CY of imported material (approximately 30% of all berm maintenance material). In addition, Cargill anticipates the implementation of three new activities. These activities would be:

- Conducting a study of the use of vinyl sheet pile for possible future (beyond the 10-year term for the proposed Project) SLR adaptation efforts.
- Filling gaps in internal berms: up to 4 gaps filled per year; up to 40 gaps total over the proposed 10-year permit term, requiring an estimated 1,100 CY of soil placement per year, and extending up to 50 linear feet per gap, with an average width of 15 feet, or 750 square feet per gap.
- Installation of up to 6 fish screens at the Coyote intake immediately along Alameda Creek, a common sump for fish screen discharge, and construction of maintenance access to the fish screens. The access and common sump may require up 1,600 CY of excavation, up to 4,700 CY of new soil placement, or installation of up to 104 piles.

A summary of the proposed work that would differ from current activities and/or activity levels is provided in Table 2-8.

As noted earlier, Cargill also proposes to modify its maintenance methods and implement methods that reduce the potential for impacts to the environment, increase efficiency, and/or address effects of climate change. Alternative or new methods proposed would be proposed and approved as part of the Annual Work Plan process described in Section 2.10.7 to the extent that the new methods and technologies satisfy the authorizations and conditions in the governing BCDC permit in reliance on the environmental analysis of this EA. More specifically, to the degree that these alternative methods are very similar to existing methods, or the result of new technology improving equipment and materials that would result in otherwise similar impacts to the authorized methods, impacts associated with implementation of these alternative methods would be expected to be equivalent to or less than those associated with the current maintenance methods being analyzed in this EA.

2.11 EQUIPMENT

Cargill continually evaluates new technologies and equipment to improve and increase efficiency of maintenance activities. Currently, the landside equipment for maintenance is likely to include, but is not limited to:

- Dump trucks with 5 to 10 CY capacity
- Haul trucks with 20- to 40-ton capacity
- Water trucks for dust control
- Backhoes
- Excavators
- Bulldozers
- Graders
- Sheep's foot compactors (to consolidate material where repairs have been made)
- Front end loaders
- Tractors with attachments for vegetation control
- Tracked low-ground-pressure vehicles
- Cranes
- Trenching equipment

Water-borne equipment may include, but is not limited to:

- Barge-mounted excavators
- Barges
- Amphibious excavators
- Mats
- Small aluminum or fiberglass boats powered by small motors
- Air boat and amphibious harvester
- Diver-assisted suction hoses and pumps
- Framed silt curtains

The amount and specific types of equipment to be used for each maintenance activity would depend on the specific activity, and the extent of the activity.

2.12 MAINTENANCE SCHEDULE AND STAGING

2.12.1 Maintenance Schedule

Maintenance activities would preferentially be scheduled to occur during work windows for sensitive species (as discussed in Section 3.4) potentially present in a specific work area, but may occur at any time of year based on specific maintenance needs, weather, and other factors. All applicable avoidance and minimization measures (as identified through resource agency consultation) and BMPs would be employed for each maintenance episode. The types of BMPs to be implemented would depend in part on whether work was occurring during the species' work window or when sensitive species could be present. All work would be conducted

in accordance with biological opinions and permits issued for the proposed Project (including applicable BMPs).

2.12.2 Noise and Glare Control

With the possible exception of emergency work, maintenance activities would typically occur during the daytime. The Project would also avoid nighttime lights as much as possible except when necessary to support nighttime and early morning work (such as salt harvest and salt reclaiming activities)[13]. Any required lights would be oriented to minimize glare to adjacent land uses, especially residences and sensitive habitat.

2.12.3 Staging

Temporary staging areas for maintenance work would be located along the tops of berms near the work area, if needed and feasible. Any necessary staging areas would generally be designed to allow traffic and recreational access to move past the staging locations. If there are no suitable staging locations in the vicinity of the work area, staging may also occur at upland locations inland of the salt ponds. The needed equipment would access the maintenance areas via the roadways on the tops of berms, or from the water side (for locks), as described in Section 2.10.2.

All stockpiles would be managed in accordance with the BMPs (Section 2.13). Following completion of maintenance work within a given area, all remaining materials would be removed from the staging area and any remaining excess soil or debris would be removed.

2.12.4 Water Management

Water generated from dewatering during maintenance activities is retained within the salt ponds. Only very rarely is water from the salt ponds released to surrounding water bodies. Precipitation which falls within the system is not discharged to surrounding water bodies. However, if necessary during extreme storm events, if there are high pond water levels coupled with high rainfall, controlled discharge through pumps and/or gravity drains may be directed into Alameda Creek and into Mowry Slough in accordance with the Rain Plan Cargill prepares each year.

Cargill reviews and updates its Rain Management Plan annually, taking into consideration long-range precipitation forecasts. The Plan is reviewed and approved by Cargill's Solar Plant Manager and the Brine Department Manager, and it covers the entire Newark facility. If needed in emergency weather conditions, Cargill can discharge water to the Bay under the terms of its SWPPP and in coordination with RWQCB authorization. When Cargill needs to lower water levels throughout the system of ponds, water is first released from the lowest salinity ponds so that excess pond capacity is created in those ponds. Brine from ponds with slightly higher salinity can then be partially transferred to the lowest salinity ponds. This process continues through the system until brine from the highest salinity ponds can be partially moved into

[13] Note that the salt harvest/reclaiming activities themselves are not covered by the proposed maintenance and operations permit; however, maintenance of ancillary facilities such as salt roads and ramps into the salt ponds would be covered by the proposed permit.

adjacent ponds. Essentially, brine is moved back towards the Bay from the higher salinity ponds to the lower salinity ponds. This cascading process of moving water from higher salinity ponds to lower salinity ponds allows Cargill to manage water levels in MSS Ponds P2-12 and P2-13, and throughout the facility (Cargill 2024y). No discharge to the Bay occurs from high salinity ponds.

During the past 5 years, Cargill has had two such events, during the 2018 – 2019 and 2022 – 2023 maintenance years. During the most recent event, the excess rainwater was discharged from the lowest-salinity pond in each plant per Cargill's SWPPP.

2.12.5 Traffic Control

Maintenance activities may require delivering heavy equipment and materials to specific work areas, as well as potentially removing excess soil and other materials, such as trash, from the work areas. To ensure that the public is protected, that trucks are moved efficiently in and out of the work area, and that traffic congestion both on the berms and on nearby surface streets is minimized, contractors may in some cases be required to prepare a Traffic Management Plan (TMP). A TMP would be required if access to a work location involves on-going heavy equipment access or numerous truck trips via a berm that receives frequent public use.[14] The TMP would address how trucks and other equipment would be moved into the work area, any required safety measures such as signs and flaggers, and any necessary lane or road closures. Any closures of public roads would have to be permitted, and closures of any berms to established recreational access would be coordinated with USFWS or East Bay Regional Park District, which manages Coyote Hills Park.

2.13 BEST MANAGEMENT PRACTICES FOR MAINTENANCE WORK

In coordination with the resource agencies BMPs have been refined since the last permitting period. The BMPs developed during the last permitting period have proven effective (as documented in Section 2.13.7), and the refined BMPs presented in this section are anticipated to further enhance protection of sensitive resources.

To avoid and/or minimize potential impacts to jurisdictional waters, water quality, and biological resources, the BMPs presented in the following subsections would be implemented by the Project. These measures would be subject to modification and additions based upon regulatory and resource agency review, and Cargill would implement BMPs in accordance with the requirements of these agencies.

The proposed BMPs address specific maintenance activities, as well as protection of endangered species and sensitive natural resources (ES and SNR). Measures for the protection of ES and SNR may be applicable to any maintenance activity, depending on its location and the time of year during which it is conducted. All relevant work windows would be adhered to in accordance with resource agency requirements. In accordance with BCDC requirements, the feasibility of nature-based solutions to address erosion on outboard would be evaluated when

[14] Some of the berms serve as public trails.

applicable. Nature-based solutions are typically only feasible in relatively quiescent environments.

2.13.1 Berm Maintenance

- **Berm Maintenance–1: Choker Berm.** Build choker berms on the outboard side of the tops of berms abutting the Bay or sloughs, including areas with outboard tidal marsh.
- **Berm Maintenance–2: Berm Slope.** Slope outboard berm tops inward toward the salt pond when viable.
- **Berm Maintenance–3: Spills.** If spillage occurs onto the marsh plain, staff will notify the Supervisor and Environmental Manager. Spillage will be removed unless it is deemed by consulting experts that the spillage removal would create more impacts than leaving the material in place.
- **Berm Maintenance–4: Berm Work.** Perform berm work, where possible, from land-based equipment on the tops of berms to avoid or minimize the use of locks.
- **Berm Maintenance–5: Excess Material.** Place any material in excess of what will be needed to top a berm, be stockpiled, or provide access cut backfill, in the salt pond.
- **Berm Maintenance–6: High Tides.** During high tides (greater than +6.8 ft NAVD88 at the Golden Gate Bridge) minimize activities along outboard berms.
- **Berm Maintenance–7: California Ridgway's Rail Avoidance During Emergency Berm Maintenance.** The typical 700-foot buffer for CRR would preclude accessing berms for maintenance during much of the year if a CRR were to be nesting in many areas of the marsh habitat outboard of the outboard berms. Thus, it may be infeasible for Cargill to strictly follow this general guideline in the case of emergency berm maintenance, which is defined as berm maintenance that is required to avoid a serious threat to wildlife habitat and/or human health. During emergency berm maintenance Cargill will avoid, to the extent practical, creating disturbances adjacent to tidal marsh habitat. This includes removing vegetation when necessary and working as quickly as possible.
- **Berm Maintenance–8: Dust, Light, and Noise.** To the extent practicable minimize dust, light, and noise levels when working near or on outboard berms near vegetated marsh.
- **Berm Maintenance–9: Material.** For maintenance of the tops of berms, use only clean imported material (as defined in Section 2.10.3) or, if suitable, native borrow material.
- **Berm Maintenance–10: Vehicular Traffic.** Confine vehicular traffic to berm roads that have been graded or have been maintained for all weather traffic. Vehicles driving on berms, depending on the area and conditions, shall not exceed 15 mph. Vehicles driving on salt roads shall not exceed 35 mph.
- **Berm Maintenance–11: Notification of Mosquito Abatement District**. Coordinate with Alameda County Mosquito Abatement District or San Mateo County Mosquito and Vector Control District, as applicable, regarding planned work on berms.

2.13.2 Riprap Placement

- **Riprap Placement–1: Nature-Based Solutions.** Wherever feasible, nature-based solutions will be used for shoreline repair and protection on outboard berm slopes.
- **Riprap Placement–2: Riprap Amount.** Where nature-based solutions are not feasible for outboard berm slopes, the minimum amount of riprap necessary will be placed to protect the existing berm, in accordance with the draft specifications for riprap shoreline protection by Anchor QEA (2024. Riprap pieces will be sized in accordance with the dimensions provided in Section 2.10.3.3, and/or as specified in the proposed permit.
- **Riprap Placement–3: Minimize Voids.** To the extent feasible, riprap will be placed to minimize voids[15] to limit habitat opportunities for predators and non-native species.
- **Riprap Placement–4: Riprap Placement.** Riprap will only be placed in areas generally free of marsh vegetation.
- **Riprap Placement–5: Erosion.** In areas of high erosion and other areas where riprap is absent, geotextile fabric and any necessary soil will be placed first to support overlying to maximize its effectiveness against erosion the geotextile fabric will be nonwoven, needle-punched and UV-deterioration resistant.
- **Riprap Placement–6: Agency Notification.** Any proposed rip rap placement will be included in the Annual Work Plan which is submitted to all pertinent agencies.

2.13.3 Weed Management

- **Weed Management–1: Weed Management Plan.** Implement procedures described in the 2021 Cargill Weed Management Plan (Cargill 2021b).
- **Weed Management–2: Weed Identification Materials and Briefings.** Staff will be provided with pocket “weed identification” cards that will be kept in vehicles. In addition, Cargill will provide periodic training and brief staff on applicable weed control measures.
- **Weed Management–3: Weed Infestation.** Staff will notify supervisors of areas of weed infestation.
- **Weed Management–4: Clean Equipment.** All earthmoving equipment will be cleaned prior to going to a new location for maintenance.
- **Weed Management–5: Invasive Cordgrass.** Cargill will coordinate management of invasive cordgrass with the Invasive Spartina Project. [16]

[15] As described earlier, Cargill staff utilize an excavator with a “claw/thumb” attachment to work with pieces of riprap. Staff experienced in use of the equipment and shoreline stabilization use the excavator claw/thumb to pick up a piece of riprap and place it on the slope such that it is stable, each following piece(s) are placed in the same manner to ensure stability and minimize voids which enhances stability.

[16] The San Francisco Estuary Invasive Spartina Project is a coordinated regional effort among local, state and federal organizations dedicated to preserving California's coastal biological resources through the elimination of introduced species of Spartina (cordgrass).

- **Weed Management–6: Cooperative Weed Management.** Cargill will coordinate with USFWS regarding invasive weed management on USFWS-owned property, and will collaborate with other adjacent landowners and local and regional weed management programs to control weeds in maintenance areas.
- **Weed Management–7: Weed Removal Prior to Work.** Cargill will survey and remove or appropriately control any species identified in the Weed Management Plan prior to initiation of proposed work to minimize the spread of non-native invasive species. Weed removal will be timed to prevent or avoid flowering weeds to minimize the potential for seed dispersal and propagation.
- **Weed Management-8: Weed Management Plan Updates.** Cargill will continue to coordinate its weed management plan with pertinent resources agencies on a regular basis, including quarterly check-ins with the Refuge, to update the plan with new invasive weeds that may be present within the Project area. If new weeds are identified, Cargill will provide updated weed ID cards to its workers.

2.13.4 Lock Access/Egress

- **Lock Access/Egress–1: Environmentally Sensitive Areas Identified in Work Plan.** Areas of high environmental sensitivity in each lock and pond complex will be identified and described in the annual Work Plan. Options for temporary placement of sidecast material will be proposed in the Work Plan.
- **Lock Access/Egress–2: CRR Surveys.** In areas where California Ridgway's rail have the potential to nest, protocol-level CRR surveys will be conducted between February 1 and April 15 in the year of planned lock access and egress. Current survey protocol requires a minimum of four surveys completed within this period, and this BMP includes an allowance to follow an updated procedure if the formal protocol is modified by USFWS. If surveys do not find nesting rails within 700 feet of the lock, lock access and egress may occur upon acceptance of the survey results by the USFWS. If nesting rails are observed within 700 feet of a lock access point, lock access and egress will be delayed until the period between September 1 and January 31, as specified in the current USFWS BO (USFWS 2012b), or the updated BOs to be prepared in support of the USACE permit. If no protocol-level surveys were conducted for an area of lock access and egress in the spring of a given year, work in tidal marsh in that year will be initiated after September 1 of that year and be completed prior to February 1 of the following year.
- **Lock Access/Egress–3: Marsh Vegetation Removal for Salt Marsh Harvest Mouse Exclusion.** If lock access and egress will impact the outboard marsh, marsh vegetation within the area will first be removed using hand tools (e.g., weed-whackers) in the presence of a qualified biologist. The biologist will inspect the vegetation for salt marsh harvest mouse nests prior to removal and monitor the careful removal of vegetation to assist in the avoidance of individual mice. After the area has been inspected for mouse nests, the vegetation immediately ahead of the hand tool removal will be agitated (e.g., depressed with a push broom) to flush any adult mice potentially in the work area, and then will be

immediately and carefully removed down to bare ground or stubble. Cut vegetation will be removed from the work area to eliminate onsite cover for mice. Removal of vegetation is not required if the vegetation is fully submerged at the time of disturbance because the SMHM is not present in submerged vegetation.

- **Lock Access/Egress–4: SMHM 100-Foot Buffer.** If a SMHM or its nest is observed, no work will occur within 100 feet of the observation until the mouse moves away of its own volition, or the USFWS is contacted and gives approval to proceed. The mouse will not be harassed or moved out of the way.
- **Lock Access/Egress–5: Seal Pupping 500-Foot Buffer.** Work activities will maintain a 500-foot buffer at active seal pupping locations such as Mowry Slough, unless the buffer is decreased with specific concurrence from NMFS. Cargill will check for pupping activity prior to work being conducted within 500 feet of any known haul out location. Cargill will report any pupping activity noted in the Completion Report.
- **Lock Access/Egress–6: High Marsh Preservation.** Work will preserve high marsh features created at previous lock access events, such as vegetated mounds, to the maximum extent feasible.
- **Lock Access/Egress–7: Excavated Material.** Excavated material will be placed into existing stockpile areas, into locks or salt ponds, or onto berms, to the maximum extent feasible to avoid or minimize side-casting into salt marsh habitat. If sidecasting into tidal marsh is unavoidable, sidecast material will be placed into pre-staked temporary stockpile areas adjacent to the access cut. The material will be returned to the access channel when the excavator exits the lock to restore the pre-access elevations to the degree feasible so salt marsh vegetation can regenerate.
- **Lock Access/Egress–8: Excess Sediment.** Sediment from the lock interior in excess of that required for berm fortification will be placed into the salt pond borrow ditches or on the salt pond berm.
- **Lock Access/Egress–9: Silt Reduction.** Upon exiting a lock, Cargill will place a small pipe in the lock berm or provide another means to equalize hydraulic pressure.
- **Lock Access/Egress–10: Sediment within the Access Cut.** If additional sediment is needed to achieve the optimal elevations for reestablishing vegetation within the access cut, sediment will be removed from the slough channel and placed in the access cut once the barge has exited.
- **Lock Access/Egress–11: Vegetation Recruitment and Monitoring.** Following construction in an outboard marsh, vegetation will be allowed to recruit naturally, and the impact area will be monitored for non-native invasive plant species. If target non-native invasives become established, they will be removed in accordance with the Weed Management Plan.
- **Lock Access/Egress–12: Perennial Pepperweed Prevention.** Following lock egress, Cargill will take steps to prevent the establishment and growth of perennial pepperweed (*Lepidium*

latifolia) on newly topped berms removing plants by hand during the season immediately following barge egress.

- **Lock Access/Egress–13: Emergency Access.** If emergency lock access or egress is required to avoid other adverse environmental effects to tidal marsh areas, and/or for human health or safety reasons, Cargill will follow BCDC's emergency permit process to obtain clearance to conduct the emergency work. Notification will be provided to the USFWS and CDFW prior to any emergency access/egress, including the location and reason for the access/egress.
- **Lock Access/Egress–14: Pre- and Post-Disturbance Photographs.** Pre- and post-disturbance photographs will be taken at lock access locations. The photographs will be included in the monitoring report prepared by the biologist monitoring the lock access/egress event.

2.13.5 Endangered Species and Sensitive Natural Resources (ES and SNR)

- **ES and SNR–1: Speed Limit.** Vehicles driving on berms near tidal marsh or other listed species habitat will travel at speeds which minimize noise and dust disturbance, and allow time to avoid encounters with species on the berms, depending on the berm conditions (also refer to Berm Maintenance–10).
- **ES and SNR–2: Vehicular Traffic.** Vehicular traffic will be confined to berm roads, designated staging areas, salt roads, and the proposed Project footprint.
- **ES and SNR–3: Seasonal Work.** Work within suitable CRR breeding habitat outboard of the berms will be completed during the non-nesting season (i.e., from September 1 through January 31) for CRR, if feasible. If it is not feasible to complete work in tidal marsh during non-nesting season, protocol-level CRR surveys will be conducted between February 1 and April 15 in the year of planned outboard maintenance activities.
- **ES and SNR–4: Emergency Access.** If emergency maintenance or repair work is required to avoid other adverse environmental effects to tidal marsh areas, and/or for human health or safety reasons, Cargill will follow BCDC's emergency permit procedures to obtain clearance for the proposed work. Notification will be provided to the USFWS and CDFW prior to any emergency access, including the location and reason for the access.
- **ES and SNR–5: Lock Access.** Locks will be accessed at the time of the highest tides of the month, to the degree practical, to minimize excavation of Bay mud and the duration of time at the lock. If CRR are found to be present based on surveys of the work area, work would be rescheduled to occur between September 1 and January 31.
- **ES and SNR–6: Predator Control.** Cargill will provide funding for predator control on an annual basis, pursuant to the Memorandum of Agreement dated February 1996 between USFWS and Cargill (USFWS and Cargill 1996). Cargill will continue to cover the expenses of predator control, prorated to the acreage of the current salt system.
- **ES and SNR–7: Special-Status Species Notification.** Cargill will notify USFWS and/or CDFW within 24 hours of the finding of any injured or dead sensitive species, or eggs of sensitive species associated with Project activities.

- **ES and SNR–8: Nesting Western Snowy Plover and California Least Tern Nesting Survey, Buffer, and Tracking.** During the WSP and CLT nesting seasons, prior to conducting work on berms, Cargill, or a qualified biologist, will perform pre-construction nesting survey. If nesting WSP or CLT are encountered, Cargill will maintain a 600-foot buffer around the nesting area(s). Cargill will record the locations of the nesting birds, and report that information to pertinent agencies. In addition, Cargill will notify pertinent employees if the Refuge or the San Francisco Bay Bird Observatory (SFBBO) provides updates about WSP and CLT nesting activities. The notification will provide the approximate location of the nest(s), as well as applicable road closures or other buffers.
- **ES and SNR–9: Seal Pupping Buffer.** Cargill will maintain a 500-foot buffer when active seal pupping is occurring at the Mowry Slough pupping site, or any other location within the Project area where pupping is noted, unless the buffer is decreased with specific concurrence from NMFS. Cargill will check for pupping activity prior to work being conducted within 500 feet of any known haul out location. Cargill will report any pupping activity noted in the Completion Report.
- **ES and SNR–10: Endangered or Threatened Species Observed.** If an endangered or threatened species is observed, work will be stopped and staff will note the location and species observed. Staff will be trained to back away safely and inform the supervisor and others to avoid the area. Staff will inform the Environmental Manager or designee who will instruct staff if any additional actions are necessary.
- **ES and SNR–11: Environmental Training.** Cargill will train new maintenance staff and annually conduct training for maintenance staff on protection of sensitive species. This training will be conducted by Refuge biologists, or other qualified wildlife biologists approved by USFWS, and is intended to minimize effects to these species. As part of this training, Cargill will ensure that maintenance staff are familiar with: (1) the description and status of the species and the timing of their lifecycle; (2) the importance of their associated habitats; and (3) a list of measures being taken to reduce effects to these species during maintenance activities. A packet describing this information has been prepared by Cargill and will be made available to all Cargill personnel.
- **ES and SNR-12: Nesting Birds.** To minimize the potential for impacts to nesting birds, pre-activity nesting bird surveys will be conducted for maintenance activities with the potential to disturb nesting habitat that occur between February 1 and August 31. A qualified biologist will survey for active bird nests within 14 days prior to starting the activity. Nest surveys will include all areas within 500 feet of the activity footprint for nesting raptors, 250 feet for special-status passerines, and within 100 feet for passerines. If active nests are detected, buffers around nests will be established to ensure breeding is not likely to be disrupted or adversely impacted by maintenance activities. Species-specific nest buffers will be applied considering the location of the nest, topography, visual screening, and habituation to human presence. Buffers will be maintained and maintenance activities in the area will be avoided until young have fledged or the nests become inactive.

- **ES and SNR–13: Debris Boom.** A debris boom will be deployed during demolition work on outboard structures. Any debris captured by the boom will be collected daily at minimum.
- **ES and SNR–14: Pile Driving.** If pile driving is necessary, it will be preferentially completed using either heavy equipment to push the pile into the sediment, or a vibratory driver if necessary.
- **ES and SNR–15: Biological Monitoring of Impact Pile Driving.** A biological monitor will be present during impact pile driving activities to monitor the area for the presence of Pacific harbor seals and California sea lion. If a seal or sea lion is observed within 1,000 feet of impact pile driving activities, pile driving will cease until the individual(s) has left the buffer area.
- **ES and SNR–16: Concrete.** Concrete will be allowed to cure for at least 30 days prior to coming into contact with water within tidal areas. Poured concrete will be completely contained within forms created for construction. If any concrete is accidentally released into tidal areas, it will be removed immediately.
- **ES and SNR–17: Pumping.** The majority of pumping for the system occurs between April and October when salinity and temperature of adjacent bay waters are higher, partially coinciding with the salmonid work window (June 15 – October 31) within San Francisco Bay. Use of unscreened intakes during sensitive periods for threatened and endangered fish species will be avoided to the maximum extent feasible.
- **ES and SNR-18: Avoidance of Pumping During Pulse Flow.** During dry years, ACWD is required to provide 7-day pulse flow releases in April and May to aid in the outmigration of salmonids. ACWD will notify Cargill when pulse flows are expected. Cargill will coordinate with ACWD to minimize taking in water through the Coyote intakes during pulse flow periods.
- **ES and SNR-19: Turbidity Control During Sediment Removal at Intakes.** If sediment removal at intakes is completed using an *amphibious excavator or barge-mounted excavator*, work will either be conducted at low tide, when no water would leave the work area, or Cargill will use a coffer dam to isolate the work area.
- **ES and SNR-20: Work Window for Sediment Removal at Intakes:** Sedimental removal of intakes will be scheduled to occur between June 15 and October 31 at the Coyote intake when salmonids are less likely to be present, and June 1 through October 31 for all other intakes.
- **ES and SNR-21: Monitoring and Treatment of Potential MSS Seepage**. Cargill will record locations of potential seepage from the MSS ponds. Cargill will use the Annual Work Plan to describe how it intends to address areas with potential seepage. A summary documenting each location and any seepage control work done will be submitted as part of the Annual Completion Report to the agencies. Cargill will recheck affected locations 3 years after the completion of seepage control work and document the condition of the area.

2.13.6 Employee Training

All employees attend mandatory environmental training annually. New hires receive environmental training prior to commencing their duties. The training provides instruction on implementation of all BMPs as well as required documentation, communications, and reporting. Employees are trained to understand the permit conditions as further detailed in the various plans developed for conducting maintenance activities. Plans that have been developed to ensure implementation of BMPs as well as compliance with permit conditions include the following:

- Annual Work Plan
- Weed Management Plan and weed identification cards
- SWPPP
- Predator Management Plan (USDA 2019)
- Special-status species packet

When conducting any maintenance work, staff document activities in a daily log. Information includes linear feet of activity, volume of material used, and observation of any sensitive biological species.

2.13.7 Effectiveness of BMPs

Cargill conducted an assessment to monitor the effectiveness of BMPs implemented as part of the previous permitting period (WRA 2016). Monitoring was conducted from 2010 to 2015. The results of the monitoring indicated that BMPs were effective at minimizing maintenance-related impacts on the environment, and that BMPs were implemented consistently (WRA 2016). Some examples of the effectiveness of the BMPs described in the study include:

- Cargill reduced the estimated area impacted by cuts, sidecasting and slipouts by more than 40 percent from the benchmark established in 1995.
- Choker berms were effective in reducing slipouts of sediment from the berms into the adjacent marsh. During the period of the assessment, Cargill achieved 100 percent compliance with the prohibition against slip-outs.
- Revegetation of the lock access cuts improved significantly by carefully replacing dredged sediment into the access channel as the equipment leaves a pond system after the berm maintenance program has been completed.
- The use of berms, chokers and moving stockpiles closer to the berms reduced the resulting "footprint" of stockpiled sediment.
- Lock access during the assessment period was conducted between October and January to avoid impacts to sensitive species during their breeding seasons.
- Sensitive species buffers were implemented when needed (e.g., maintaining a suitable distance from seal pupping sites, and establishing a 600-foot buffer when snowy plovers were noted on a berm).
- Riprap was added to existing riprap areas only and sensitive habitats were avoided.

The improved BMPs for the proposed Project discussed previously would further avoid or minimize environmental effects.

3.0 ENVIRONMENTAL IMPACT ANALYSIS

This section contains the evaluation of environmental effects that was completed for the proposed Cargill, Incorporated Solar Salt System Maintenance and Operations Activities Project in accordance with both the requirements of the BCDC's regulations as a Certified Regulatory Program under CEQA and Section 15253 of the CEQA Guidelines in order for other public agencies with permitting jurisdiction for the Project to rely on this EA when acting as a responsible agency to determine whether to approve the Project. Subsequent agencies for which Cargill may need entitlements may require project changes or mitigation measures beyond those identified in this document under authority and justification of their own legal regimes beyond CEQA.

In determining whether there is a potential for an adverse change in the environment, continuance of existing activities is here considered part of the baseline (and would not be expected to result in a significant impact absent a relevant change in circumstances). The analyses in this section therefore focus on the potential changes to existing operations, as outlined in Section 2.10.9. In some instances, however, it was difficult to separate the new from existing activities. Where this was the case, because considering the impact of the new and existing operations together did not alter the conclusion that impacts would be less than significant or less than significant with mitigation that Cargill already implements under its existing permits, an inclusive consideration of Project activities (i.e., new and existing operations) was used for the environmental impact analysis.

While Cargill largely seeks only to re-authorize its existing operations, it proposes limited changes in its maintenance and operations activities going forward to facilitate enhanced berm maintenance and other activities for the purpose of mitigating the projected impacts of sea level rise on proposed continuation of existing operations. This may include modifications to existing maintenance methods to reduce environmental effects, increase efficiency, and/or adapt to changing climate conditions. Other operational changes are additionally considered to accommodate changes in other regulatory requirements.

3.1 SUMMARY OF ENVIRONMENTAL EFFECTS

Although not directly applicable to BCDC's EA process as a Certified Regulatory Program, a preliminary assessment of potential Project effects, using the CEQA checklist contained in Appendix G of the CEQA Guidelines, was completed prior to the initiation of this EA to evaluate whether the Project could have potentially significant effects on any environmental resources. Based on the analysis conducted, no impacts are expected to nine resource areas: aesthetics, agriculture and forest resources, energy, land use and planning, mineral resources, population and housing, public services, recreation, and wildfire. These resource areas are not further analyzed in this EA. The Project has the potential for impacts to eleven other resource areas, as described in the subsections that follow. Detailed analyses were conducted for resource areas identified as having a greater potential for substantial impacts (air quality, biology, hydrology/water quality, and noise); a streamlined analysis is presented for the resource areas identified as only having the potential for minor impacts.

3.2 EVALUATION OF ENVIRONMENTAL EFFECTS

BCDC developed significance criteria to evaluate the potential for significant impacts from the new and increased activities. Although not directly applicable to BCDC's EA process as a Certified Regulatory Program, BCDC considered the environmental impact questions contained in Appendix G of the State CEQA Guidelines in formulating the significance criteria. The analysis for each resource area identifies applicable significance criteria, describes site-specific conditions, analyzes potential impacts, evaluates the potential significance of identified impacts, and, where applicable, discusses ways to avoid or lessen impacts that may be potentially significant.

Table D-1 in Appendix D summarizes many of the federal and state laws, regulations and policies applicable to the Project, by resource area (these laws and regulations are cited, as applicable, in the regulatory setting for each resource area analyzed in this EA). As appropriate, local laws, regulations, and policies are described in the resource evaluation subsections.

3.3 AIR QUALITY

3.3.1 Environmental Setting

The San Francisco Bay Area has a Mediterranean climate. Its sub-areas closest to the Pacific Ocean and San Francisco Bay, which are strongly influenced by the marine environment and its steady onshore winds, have mild summers (i.e., average temperatures in the 70s degrees Fahrenheit [°F]) and cool winters (i.e., average temperatures in the 50s°F with rare occurrences of below-freezing temperatures (except in the higher elevations of the Santa Cruz Mountains). Sub-areas farther from the Ocean and Bay experience a somewhat wider seasonal temperature range.

3.3.1.1 Climatological and Topographical Influences on Local Air Quality

The Southwestern Alameda County climatological sub-region is mostly flat and is bordered to the east by the East Bay Hills and to the west by San Francisco Bay. The climate of this sub-region is influenced by Bay breezes, particularly at its western edge where the Project's Newark Plant 1 and Plant 2 areas are located, which have a moderating effect on temperatures. Winds are predominantly out of the northwest during the summer months. Winter winds are equally likely to be from the southeast. The Peninsula climatological sub-region, where the Project's Redwood City Plant and Cargill West Bay areas are located, includes the entire San Francisco peninsula from the Golden Gate south to San Jose. In Redwood City and environs, the climate is warmer and less foggy than the rest of the Peninsula, because the Santa Cruz mountain range to the west blocks the free movement of cooler air from the Pacific (BAAQMD 2017b).

The air pollution potential of both sub-regions is relatively high in the summer and fall when regional winds can transport air pollutants from the more urbanized northern areas and where the confining terrain of the Santa Cruz Mountains and the East Bay Hills can concentrate them locally.

3.3.1.2 Criteria Air Pollutants and Toxic Air Contaminants

Criteria air pollutants are a group of pollutants for which federal or state regulatory agencies have adopted ambient air quality standards. The major criteria air pollutants include ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and particulate matter (both PM_{10} and $PM_{2.5}$[17]). Most of the criteria pollutants are directly emitted. Ozone, however, is a secondary pollutant that is formed in the atmosphere by chemical reactions between oxides of nitrogen (NO_x) and reactive organic gases (ROG). Many other chemical compounds, generally termed toxic air contaminants (TACs), pose a present or potential hazard to human health through airborne exposure. Diesel particulate matter (DPM), the PM_{10} and $PM_{2.5}$ emitted by diesel engines, accounts for more than 80 percent of the inhalation cancer risk from TACs in the Bay Area (BAAQMD 2006), and is estimated to contribute about 70 percent of total known cancer risk related to air toxics statewide (CARB 2021).

[17] PM_{10} is particulate matter less than 10 microns in diameter and $PM_{2.5}$ is particulate matter less than 2.5 microns in diameter.

3.3.1.3 Sensitive Receptors

People who are more susceptible to the effects of air pollution within the general population, referred to as "sensitive receptors," include children, the elderly, and those that suffer from certain illnesses or disabilities. Therefore, schools, convalescent homes, and hospitals are considered to be typical locations of sensitive receptors. Residential areas are also considered sensitive receptors because people (including children, the elderly and the sick) usually stay home for extended periods of time, which results in greater exposure to localized air pollutants.

3.3.1.4 Local Air Quality Monitoring

Ozone and suspended particulate matter are of particular concern in the Bay Area, which is currently designated "nonattainment" for state and national ozone ambient air quality standards, for the state PM_{10} standards, and for state and national $PM_{2.5}$ standards. It is in "attainment" or "unclassified" with respect to the other major criteria air pollutants: NOx, CO and SO_2 (BAAQMD 2020a).

The Bay Area Air Quality Management District (BAAQMD) operates an ambient air monitoring system consisting of over 30 local stations. The nearest air quality monitoring stations to the Project areas are in Hayward and Redwood City. The monitoring data in Table 3.3-1 summarize recent air monitoring data for the Hayward and Redwood City stations compared to those of the overall San Francisco Bay Area (CARB iADAM Air Quality Data Statistics).

Table 3.3-1. Summary of Criteria Air Pollutant Annual Monitoring Data

Pollutant	Standard	Monitoring Sites	Days Standard Exceeded 2020	Days Standard Exceeded 2021	Days Standard Exceeded 2022
Ozone	State 1-Hour	Hayward	3	1	2
		Redwood City	1	0	0
		San Francisco Bay Area	6	5	4
Ozone	State 8-Hour	Hayward	5	3	2
		Redwood City	1	0	0
		San Francisco Bay Area	10	10	6
Ozone	Federal 8-Hour	Hayward	4	3	2
		Redwood City	1	0	0
		San Francisco Bay Area	4	9	2
PM_{10}	State 24-Hour	Hayward	Not available	Not available	Not available
		Redwood City	Not available	Not available	Not available
		San Francisco Bay Area	10	0	0
PM_{10}	Federal 24-Hour	Hayward	Not available	Not available	Not available
		Redwood City	Not available	Not available	Not available
		San Francisco Bay Area	1	0	0
$PM_{2.5}$	Federal 24-Hour	Hayward	Not available	Not available	Not available
		Redwood City	9	0	0

Pollutant	Standard	Monitoring Sites	Days Standard Exceeded 2020	Days Standard Exceeded 2021	Days Standard Exceeded 2022
		San Francisco Bay Area	25	2	3

Source: CARB iADAM Air Quality Data Statistics https://www.arb.ca.gov/adam/

3.3.1.5 Sources of Emissions

The primary sources of emissions associated with the proposed Project are the various types of equipment that would be used to conduct the maintenance activities (Section 2.11). All types of mobile equipment are subject to increasingly more stringent emissions requirements, and provided that the level of activity remains the same, emissions from maintenance equipment would generally be expected to decline over time as equipment is replaced with lower-emission models. Cargill also formerly operated a small dredge vessel, the Mallard, to maintain its salt pond berms. The Mallard was first put into service in 1952 (WRA 2007) and was taken out of service in 2016.

3.3.2 Regulatory Setting

Federal and state laws and regulations pertaining to this issue area and relevant to the Project are described in Table D-1. Air quality is governed by the federal Clean Air Act and California Clean Air Act. Many of the cities and counties near the Project area have adopted general plans containing strategies and policies regarding air quality and emissions. Local goals, policies, and/or regulations applicable to this issue area are summarized in the subsections that follow.

In the Bay Area, CEQA air quality issues are typically evaluated using the BAAQMD methodologies and significance thresholds as specified in the *CEQA Air Quality Guidelines* (BAAQMD 2022). The major air pollutant emissions needing evaluation are the ozone precursors, ROG and NO_x, and PM_{10} and $PM_{2.5}$. Health risks from Project and cumulative airborne exposures to TACs also need evaluation, especially regarding DPM (small-diameter particulate emissions from off-road, diesel-powered construction equipment), the TAC responsible for most of California's cumulative cancer risk from airborne TAC exposures.

According to the *CEQA Air Quality Guidelines*, any project would have a significant potential for causing a local air quality standard violation or making a cumulatively considerable contribution to a regional air quality problem if its pollutant/TAC emissions would exceed any of the thresholds presented in Table 3.3-2 during construction or operation. The *Guidelines* also recommend the evaluation of the health risks of project TACs or $PM_{2.5}$ impacting any local sensitive receptors within 1,000 feet of the project site.

Table 3.3-2. BAAQMD CEQA Air Quality Thresholds of Significance

Criteria Air Pollutants and Precursors	Average Daily Construction Emissions (lbs./day)	Average Daily Operational Emissions (lbs./day)	Maximum Annual Operational Emissions (tons/year)
ROG	54	54	10
NO_X	54	54	10

Criteria Air Pollutants and Precursors	Average Daily Construction Emissions (lbs./day)	Average Daily Operational Emissions (lbs./day)	Maximum Annual Operational Emissions (tons/year)
PM_{10} (equipment exhaust)	82	82	15
$PM_{2.5}$ (equipment exhaust)	54	54	10
$PM_{10}/PM_{2.5}$ (fugitive dust)	Best Management Practices	None	None
Risks and Hazards for New Sources and Receptors (Individual Project)	Same as Operational Thresholds	Compliance with Qualified Community Risk Reduction Plan or Increased cancer risk of >10.0 in a million Increased non-cancer risk of > 1.0 Hazard Index (HI) (Chronic or Acute) Ambient $PM_{2.5}$ increase: > 0.3 µg/m^3 annual average Zone of Influence: 1,000-foot radius from fence line of source or receptor	
Risks and Hazards for New Sources and Receptors (Cumulative Threshold)	Same as Operational Thresholds	Compliance with Qualified Community Risk Reduction Plan or Increased cancer risk of >100 in a million (from all local sources) Increased non-cancer risk of > 10 Hazard Index (HI) (from all local sources) (Chronic) Ambient $PM_{2.5}$ increase: > 0.8 µg/m^3 annual average (from all local sources) Zone of Influence: 1,000-foot radius from fence line of source or receptor	
Odors	None	Complaint History—5 confirmed complaints per year averaged over three years	

Source: California Environmental Quality Act Air Quality Guidelines (BAAQMD 2017b).

BCDC's San Francisco Bay Plan (BCDC 2020) does not have any policies pertaining directly to air quality relevant to this Project. Local policies pertaining to air quality are summarized in the following subsections.

3.3.2.1 City of Fremont General Plan

- Policy 7-7.1: Cooperation to Improve Regional Air Quality - Support and coordinate air quality planning efforts with other local, regional and State agencies to improve regional air quality.

- Policy 7-7.2: Reduce Air Pollution Levels - Reduce City of Fremont air contaminant levels and particulate emissions below BAAQMD attainment levels, in particular, ozone and particulate matter levels.
- Policy 7-7.4: Air Quality Impact of Industry - Reduce the air quality impacts created by truck traffic, hazardous materials and industry.

3.3.2.2 City of Hayward General Plan

- NR-2.1 Ambient Air Quality Standards. The City shall work with the California Air Resources Board (CARB) and BAAQMD to meet State and Federal ambient air quality standards in order to protect all residents from the health effects of air pollution.
- NR-2.3 Emissions Reduction. The City shall require development projects that exceed Bay Area Air Quality Management District reactive organic gas (ROG), nitrogen oxide (NOX) operational thresholds to incorporate design or operational features that reduce emissions equal to at least 15 percent below the level that would be produced by an unmitigated project.
- NR-2.7 Coordination with BAAQMD. The City shall coordinate with the BAAQMD to ensure projects incorporate feasible mitigation measures to reduce greenhouse gas emissions and air pollution if not already provided for through project design.
- NR-2.16 Sensitive Uses. The City shall minimize exposure of sensitive receptors to TACs, $PM_{2.5}$, and odors to the extent possible, and consider distance, orientation, and wind direction when siting sensitive land uses in proximity to TAC- and $PM_{2.5}$-emitting sources and odor sources in order to minimize health risk.
- NR-2.17 Source Reduction Measures. The City shall coordinate with and support the efforts of the Bay Area Air Quality Management District, the CARB, the U.S. Environmental Protection Agency, and other agencies as appropriate to implement source reduction measures and best management practices that address both existing and new sources of TACs, $PM_{2.5}$, and odors.
- NR-2.19 Exposure Reduction Measures for both Existing and New Receptors. The City shall work with area businesses, residents and partnering organizations to provide information about best management practices that can be implemented on a voluntary basis to reduce exposure of sensitive receptors to TACs and $PM_{2.5}$.

3.3.2.3 City of Menlo Park General Plan

Policy OSC5.1 - Air and Water Quality Standards. Continue to apply standards and policies established by the BAAQMD, San Mateo Countywide Water Pollution Prevention Program, and City of Menlo Park Climate Action Plan through the CEQA process and other means as applicable.

3.3.2.4 City of Newark General Plan

- Policy HW-1.1 Air Quality Plans. Work with appropriate state, federal, and regional agencies to develop and implement programs that help the San Francisco Air Basin meet state and federal air quality standards.
- Policy HW-1.5 Cleaner Fuels. Encourage the use of cleaner burning fuels and low-emission vehicles.
- Policy HW-1.7 Odors. Reduce the emission of undesirable odors from manufacturing and commercial activities.

3.3.2.5 Redwood City General Plan

- Policy PS-1.1: Work with neighboring jurisdictions and regional agencies—including the Association of Bay Area Governments (ABAG), the Bay Area Air Quality Management District (BAAQMD) and the Metropolitan Transportation Commission (MTC)—to reduce motor vehicle emissions.
- Policy PS-1.3: Pursue efforts to reduce air pollution and greenhouse gas emissions by promoting the use of renewable energy (e.g., wind, and hydroelectric power), and implement effective energy conservation and efficiency measures.
- Policy PS-2.5: Encourage the development and/or implementation of new technologies that address or mitigate pollutant emissions at the Port, transportation facilities, and industrial use locations.

3.3.3 Impact Analysis

Potential impacts to air quality would be considered significant if implementation of the proposed Project would do any of the following:

- Conflict with or obstruct an applicable air quality plan
- Create a cumulatively considerable net increase of one or more criteria pollutants for which the Project region is in non-attainment, or
- Expose sensitive receptors to substantial pollutant concentrations

These significance criteria are the basis for the following impact analysis.

3.3.3.1 Impact AQ-1: Conflict with or Obstruction of an Applicable Air Quality Plan

Less than Significant Impact. In the Bay Area, the current applicable regional air quality plan is the BAAQMD's (2017a) *2017 Clean Air Plan: Spare the Air, Cool the Climate* (2017 Plan), which focuses on two closely related goals: protecting public health and protecting the climate (the latter is addressed in Section 3.7). The 2017 Plan defines an integrated, multipollutant control strategy to reduce emissions of particulate matter, TACs, ozone precursors, and GHGs based on four key priorities:

- Reduce emissions of criteria air pollutants and TACs from all key sources.
- Reduce emissions of "super-GHGs" such as methane, black carbon and fluorinated gases.

- Decrease demand for fossil fuels (i.e., gasoline, diesel and natural gas).
- Decarbonize the energy system.

The purpose of the Project is to continue existing maintenance and operation activities of the existing salt system in Newark and Redwood City. The Project would allow Cargill to continue in operation at about the same salt production level as at present. It would not have the potential to substantially increase regional population, employment or transportation levels in Alameda or San Mateo Counties, or the Bay Area, all of which are the bases of the 2017 Plan's regional emission inventories and the emission control policies they support. Therefore, the Project would not impede attainment of 2017 Plan goals as it would not increase emissions on the basis of any of the identified contributory sources (population, employment, transportation).

Also, compliance with all CEQA air quality significance thresholds is a necessary condition for determining that a project would not interfere with the attainment of air quality plan goals. As the additional analyses that follow demonstrate, the Project would not interfere with the 2017 Plan because even if it proposed a new or expanded source of emissions, it would meet all CEQA limits on regional air pollutant emissions and TAC health risks to the local population. As it is, most of the facility's operations and maintenance emissions will not change and are part of the environmental baseline. Therefore, Project impacts to/conflicts with the 2017 Plan would be less than significant.

3.3.3.2 Impact AQ-2: Cumulatively Considerable Net Increase of Criteria Pollutant for which the Project Region is in Non-Attainment

Less than Significant Impact. The *CEQA Air Quality Guidelines* recommend quantification of construction and operational air pollutant and GHG emissions using the California Emissions Estimator Model (CalEEMod Version 2022.1) (CAPCOA 2022). This was done for sixteen identified maintenance activities essential to the existing and proposed future operation of the salt system. Off-road equipment and vehicular pollutant emission rates were taken from CalEEMod (Version 2022.1, Appendix G). Marine emission factors were taken from *Emissions Estimation Methodology for Commercial Harbor Craft Operating in California* (CARB 2012).

Baseline emissions were estimated for the thirteen identified maintenance activities associated with the existing permitted salt works during a typical year, as shown in Table 3.3-3 (in lbs./average day) and Table 3.3-4 (in tons/year).

Table 3.3-3. Cargill Solar Sea Salt System Maintenance - Baseline Air Pollutant Emissions (in lbs./annual average workday)

Activity	Emission Source	NO_x	ROG	PM_{10}	$PM_{2.5}$
Berm Grading	Off-Road	1.26	0.12	0.05	0.04
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	1.26	0.12	0.05	0.04

Activity	Emission Source	NO_x	ROG	PM_{10}	$PM_{2.5}$
Maintain Berm Height/Width	Off-Road	1.65	0.19	0.07	0.06
	On-Road	0.01	0.01	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	1.66	0.20	0.07	0.06
Berm Keying	Off-Road	1.45	0.19	0.05	0.05
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	1.46	0.19	0.05	0.05
Making Berms Drivable	Off-Road	1.61	0.19	0.09	0.08
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	1.61	0.19	0.09	0.08
Outboard Erosion Repair	Off-Road	0.86	0.11	0.05	0.04
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	0.86	0.11	0.05	0.04
Interior Erosion Repair	Off-Road	0.86	0.11	0.05	0.04
	On-Road	0.03	0.00	0.00	0.00
	Marine	4.79	0.86	0.12	0.12
	Total	5.68	0.97	0.17	0.16
Lock Access	Off-Road	0.09	0.01	0.00	0.00
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.61	0.11	0.02	0.02
	Total	0.70	0.12	0.02	0.02
Minor Earthmoving Activities	Off-Road	0.44	0.05	0.02	0.02
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	0.44	0.05	0.02	0.02
Repair of Water Control Structures	Off-Road	0.69	0.08	0.03	0.02
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.01	0.00	0.00	0.00
	Total	0.70	0.08	0.03	0.02
Repair of Access Structures	Off-Road	0.18	0.02	0.01	0.01
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	0.18	0.02	0.01	0.01

Activity	Emission Source	NO_x	ROG	PM_{10}	$PM_{2.5}$
Minor Maintenance and Repair	Off-Road	0.09	0.01	0.00	0.00
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	0.09	0.01	0.00	0.00
Algae Removal from Ponds	Off-Road	0.02	0.00	0.00	0.00
	On-Road	0.01	0.00	0.00	0.00
	Marine	0.07	0.01	0.00	0.00
	Total	0.11	0.02	0.00	0.00
Sediment Removal from Intakes	Off-Road	0.11	0.01	0.00	0.00
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.13	0.02	0.00	0.00
	Total	0.24	0.04	0.01	0.01
Silt Curtain Placement and Maintenance	Off-Road	0.00	0.00	0.00	0.00
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.01	0.00	0.00	0.00
	Total	0.01	0.00	0.00	0.00
All Existing Maintenance Activities	**Off-Road**	**9.36**	**1.08**	**0.42**	**0.44**
	On-Road	**0.07**	**0.03**	**0**	**0**
	Marine	**5.6**	**1**	**0.14**	**0.14**
	Grand Total	**15.03**	**2.11**	**0.56**	**0.58**

Table 3.3-4. Cargill Solar Sea Salt System Maintenance - Baseline Air Pollutant Emissions (in tons/year)

Activity	Emission Source	NOx	ROG	PM_{10}	$PM_{2.5}$
Berm Grading	Off-Road	0.15	0.01	0.01	0.01
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	0.15	0.01	0.01	0.01
Maintain Berm Height/Width	Off-Road	0.20	0.02	0.01	0.01
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	0.20	0.02	0.01	0.01
Berm Keying	Off-Road	0.17	0.02	0.01	0.01
	On-Road	0.00	0.00	0.00	0.00

Activity	Emission Source	NOx	ROG	PM_{10}	$PM_{2.5}$
	Marine	0.00	0.00	0.00	0.00
	Total	0.17	0.02	0.01	0.01
Making Berms Drivable	Off-Road	0.19	0.02	0.01	0.01
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	0.19	0.02	0.01	0.01
Outboard Erosion Repair	Off-Road	0.10	0.01	0.01	0.00
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	0.10	0.01	0.01	0.01
Interior Erosion Repair	Off-Road	0.10	0.01	0.01	0.00
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.58	0.10	0.01	0.01
	Total	0.68	0.12	0.02	0.02
Lock Access	Off-Road	0.01	0.00	0.00	0.00
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.07	0.01	0.00	0.00
	Total	0.08	0.01	0.00	0.00
Minor Earthmoving Activities	Off-Road	0.05	0.01	0.00	0.00
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	0.05	0.01	0.00	0.00
Repair of Water Control Structures	Off-Road	0.08	0.01	0.00	0.00
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	0.08	0.01	0.00	0.00
Repair of Access Structures	Off-Road	0.02	0.00	0.00	0.00
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	0.02	0.00	0.00	0.00
Minor Maintenance and Repair	Off-Road	0.01	0.00	0.00	0.00
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	0.01	0.00	0.00	0.00
Algae Removal from Ponds	Off-Road	0.00	0.00	0.00	0.00
	On-Road	0.00	0.00	0.00	0.00

Activity	Emission Source	NOx	ROG	PM_{10}	$PM_{2.5}$
	Marine	0.01	0.00	0.00	0.00
	Total	0.01	0.00	0.00	0.00
Sediment Removal from Intakes	Off-Road	0.01	0.00	0.00	0.00
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.02	0.00	0.00	0.00
	Total	0.03	0.00	0.00	0.00
Re-establishing Vehicle Access on Internal Berms	Off-Road	0.12	0.01	0.01	0.01
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	0.12	0.01	0.01	0.01
Silt Curtain Placement and Maintenance	Off-Road	0.00	0.00	0.00	0.00
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	0.00	0.00	0.00	0.00
All Maintenance Activities	**Off-Road**	**1.36**	**0.15**	**0.06**	**0.06**
	On-Road	**0.01**	**0.00**	**0.00**	**0.00**
	Marine	**0.68**	**0.12**	**0.02**	**0.02**
	Grand Total	**2.05**	**0.27**	**0.08**	**0.08**

Net new Project incremental emissions above baseline were estimated for the expansion of several maintenance activity category and the addition of five new identified maintenance activities associated with continued maintenance and operation under a proposed new BCDC permit, as shown in Table 3.3-5 (in lbs./average day) and Table 3.3-6 (in tons/year).

Table 3.3-5a. Cargill Solar Sea Salt System Maintenance – Project Incremental Air Pollutant Emissions (in lbs./annual average workday)

Existing Activities	Emission Source	NOx	ROG	PM_{10}	$PM_{2.5}$
Berm Grading	Off-Road	1.32	0.12	0.05	0.04
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	1.32	0.12	0.05	0.04
Maintain Berm Height/Width	Off-Road	1.72	0.20	0.07	0.06
	On-Road	0.01	0.01	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	1.73	0.20	0.07	0.06
Berm Keying	Off-Road	0.73	0.10	0.03	0.02

Existing Activities	Emission Source	NOx	ROG	PM_{10}	$PM_{2.5}$
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	0.73	0.10	0.03	0.02
Making Berms Drivable	Off-Road	1.61	0.19	0.09	0.08
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	1.61	0.19	0.09	0.08
Outboard Erosion Repair	Off-Road	11.26	1.41	0.59	0.55
	On-Road	0.03	0.03	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	11.29	1.44	0.59	0.55
Interior Erosion Repair	Off-Road	0.31	0.04	0.02	0.02
	On-Road	0.01	0.00	0.00	0.00
	Marine	1.75	0.31	0.04	0.04
	Total	2.07	0.35	0.06	0.06
Lock Access	Off-Road	0.20	0.02	0.01	0.01
	On-Road	0.00	0.00	0.00	0.00
	Marine	1.38	0.25	0.04	0.04
	Total	1.58	0.27	0.04	0.04
Minor Earthmoving Activities	Off-Road	0.44	0.05	0.02	0.02
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	0.44	0.05	0.02	0.02
Repair of Water Control Structures	Off-Road	2.77	0.31	0.11	0.10
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.03	0.01	0.00	0.00
	Total	2.80	0.32	0.11	0.10
Repair of Access Structures	Off-Road	0.73	0.09	0.03	0.03
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	0.73	0.10	0.03	0.03
Minor Maintenance and Repair	Off-Road	0.09	0.01	0.00	0.00
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	0.09	0.01	0.00	0.00
Algae Removal from Ponds	Off-Road	0.02	0.00	0.00	0.00

Existing Activities	Emission Source	NOx	ROG	PM_{10}	$PM_{2.5}$
	On-Road	0.01	0.00	0.00	0.00
	Marine	0.07	0.01	0.00	0.00
	Total	0.11	0.02	0.00	0.00
Sediment Removal from Intakes	Off-Road	0.13	0.01	0.01	0.00
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.16	0.03	0.00	0.00
	Total	0.29	0.04	0.01	0.01
Silt Curtain Placement and Maintenance	Off-Road	0.00	0.00	0.00	0.00
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.01	0.00	0.00	0.00
	Total	0.01	0.00	0.00	0.00

Table 3.3-5b. Cargill Solar Sea Salt System Maintenance – Project Incremental Air Pollutant Emissions (in lbs./annual average workday)

New Activities	Emission Source	NOx	ROG	PM_{10}	$PM_{2.5}$
Filling Gaps in Internal Berms	Off-Road	0.68	0.07	0.03	0.02
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	0.68	0.08	0.03	0.03
Re-establishing Vehicle Access on Internal Berms	Off-Road	1.03	0.12	0.07	0.06
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	1.03	0.12	0.07	0.06
Vinyl Sheet Pile Installation	Off-Road	1.02	0.11	0.04	0.04
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	1.02	0.11	0.04	0.04
Stockpile Replenishment	Off-Road	0.32	0.03	0.01	0.01
	On-Road	0.77	0.01	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	1.09	0.04	0.02	0.02
Fish Screen Installation	Off-Road	9.04	0.93	0.38	0.35
	On-Road	0.02	0.02	0.00	0.00
	Marine	0.31	0.04	0.01	0.01

New Activities	Emission Source	NOx	ROG	PM_{10}	$PM_{2.5}$
	Total	9.36	1.00	0.40	0.37
Net New and Additional Emissions from New/Modified Existing Project Maintenance Activities	**Off-Road**	**12.01**	**1.47**	**0.60**	**0.56**
	On-Road	**0.01**	**0.03**	**0.00**	**0.00**
	Marine	**-2.23**	**-0.40**	**-0.06**	**-0.06**
	Total	**9.79**	**1.10**	**0.55**	**0.50**
Significance Thresholds		**54**	**54**	**82**	**54**
Significant Impact?		**No**	**No**	**No**	**No**
Increase from Baseline Maintenance Activities Emissions		**65%**	**52%**	**99%**	**96%**

Table 3.3-6a. Cargill Solar Sea Salt System Maintenance – Project Incremental Air Pollutant Emissions (in tons/year)

Existing Activities	Emission Source	NO_x	ROG	PM_{10}	$PM_{2.5}$
Berm Grading	Off-Road	0.16	0.01	0.01	0.01
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	0.16	0.01	0.01	0.01
Maintain Berm Height/Width	Off-Road	0.21	0.02	0.01	0.01
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	0.21	0.02	0.01	0.01
Berm Keying	Off-Road	0.09	0.01	0.00	0.00
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	0.09	0.01	0.00	0.00
Making Berms Drivable	Off-Road	0.19	0.02	0.01	0.01
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	0.19	0.02	0.01	0.01
Outboard Erosion Repair	Off-Road	1.35	0.17	0.07	0.07
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	1.35	0.17	0.07	0.07

Existing Activities	Emission Source	NO_x	ROG	PM_{10}	$PM_{2.5}$
Interior Erosion Repair	Off-Road	0.04	0.00	0.00	0.00
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.21	0.04	0.01	0.01
	Total	0.25	0.04	0.01	0.01
Lock Access	Off-Road	0.02	0.00	0.00	0.00
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.17	0.03	0.00	0.00
	Total	0.19	0.03	0.01	0.00
Minor Earthmoving Activities	Off-Road	0.05	0.01	0.00	0.00
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	0.05	0.01	0.00	0.00
Repair of Water Control Structures	Off-Road	0.33	0.04	0.01	0.01
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	0.34	0.04	0.01	0.01
Repair of Access Structures	Off-Road	0.09	0.01	0.00	0.00
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	0.09	0.01	0.00	0.00
Minor Maintenance and Repair	Off-Road	0.01	0.00	0.00	0.00
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	0.01	0.00	0.00	0.00
Algae Removal from Ponds	Off-Road	0.00	0.00	0.00	0.00
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.01	0.00	0.00	0.00
	Total	0.01	0.00	0.00	0.00
Sediment Removal from Intakes	Off-Road	0.02	0.00	0.00	0.00
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.02	0.00	0.00	0.00
	Total	0.03	0.01	0.00	0.00
Silt Curtain Placement and Maintenance	Off-Road	0.00	0.00	0.00	0.00
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00

Existing Activities	Emission Source	NO_x	ROG	PM_{10}	$PM_{2.5}$
	Total	0.00	0.00	0.00	0.00

Table 3.3-6b. Cargill Solar Sea Salt System Maintenance – Project Incremental Air Pollutant Emissions (in tons/year)

New Activities	Emission Source	NO_x	ROG	PM_{10}	$PM_{2.5}$
Filling Gaps in Internal Berms	Off-Road	0.08	0.01	0.00	0.00
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	0.08	0.01	0.00	0.00
Re-establishing Vehicle Access on Internal Berms	Off-Road	0.12	0.01	0.01	0.01
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	0.12	0.01	0.01	0.01
Vinyl Sheet Pile Pilot Study	Off-Road	0.12	0.01	0.01	0.00
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	0.12	0.01	0.01	0.00
Stockpile Replenishment	Off-Road	0.04	0.00	0.00	0.00
	On-Road	0.09	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	0.13	0.00	0.00	0.00
Fish Screen Installation	Off-Road	1.08	0.11	0.05	0.04
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.04	0.01	0.00	0.00
	Total	1.12	0.12	0.05	0.04
Net New and Additional Emissions from New/Modified Existing Project Maintenance Activities	**Off-Road**	**1.44**	**0.18**	**0.07**	**0.07**
	On-Road	**0.00**	**0.00**	**0.00**	**0.00**
	Marine	**-0.27**	**-0.05**	**-0.01**	**-0.01**
Total		**1.18**	**0.13**	**0.07**	**0.06**
Significance Thresholds		**10**	**10**	**10**	**10**
Significant Impact?		**No**	**No**	**No**	**No**
Increase from Baseline Maintenance Activities Emissions		**65%**	**52%**	**99%**	**96%**

Increases in average daily and average annual criteria pollutant emissions are well below the CEQA thresholds of significance, as documented in Tables 3.3-5 and 3.3-6. Therefore, the potential impact due to increases in criteria pollutants is less than significant.

3.3.3.3 Impact AQ-3: Exposure of Sensitive Receptors to Substantial Pollutant Concentrations

Less than Significant Impact. Ambient TAC concentrations produced by Project sources in combination with other substantial TAC sources within 1,000 feet of a Project site (i.e., the "zone of influence") are considered significant if they exceed the Project-level and/or cumulative BAAQMD CEQA health risk thresholds, respectively, at sensitive receptors within the zone.

The Project has two main locations: one in Newark, the other in Redwood City. Areas surrounding both sites are largely occupied by commercial/industrial land uses or recreational open space uses, and thus are not considered sensitive to TAC exposures. But there are exceptions for both sites. At Newark, there are existing residential uses at the end of Central Avenue near the Project site's western boundary. At Redwood City, there are existing residential uses (i.e., the RC Mobile Home Park, Redwood Mobile Estates, Harbor Village Mobile Home Park, and Trailer Rancho) in the strip of land between that plant's southern boundary and U.S. 101. Each of these residential uses are within the local zones of influence requiring evaluation and are considered the Maximally Exposed Sensitive Receptors (MESRs).

Cancer risk is the lifetime probability of developing cancer from exposure to carcinogenic substances. Following health risk assessment (HRA) guidelines established by the BAAQMD (2023) in *Recommended Methods for Screening and Modeling Local Risks and Hazards*, incremental cancer risks are estimated by applying established toxicity factors to modeled TAC concentrations, while other chronic adverse health impacts unrelated to cancer are measured by hazard indexes (HIs), defined as the ratio of a project's incremental TAC exposure concentration to a published reference exposure level (REL). CEQA significance thresholds for TACs are based on assumptions of exposure duration of a year or longer (i.e., a year for $PM_{2.5}$ concentrations and chronic non-cancer health impacts; 70 years for cancer risk).

Ambient DPM (the primary Project-related TAC evaluated in this EA) produced by off-road earth-moving equipment, motor vehicles, and marine sources associated with the identified Project maintenance activities could substantially affect sensitive receptors near the activity locations if such emissions were strong enough and/or lasted long enough. Annual DPM emissions from all baseline and Project incremental maintenance activities were estimated as shown in Table 3.3-4 and Table 3.3-6, respectively (note: essentially all $PM_{2.5}$ from diesel-powered equipment is DPM). Over the 10-year period covered by the proposed Project, maintenance activities could occur at many on-site locations, possibly extending over the entire area of the Newark Plant and Redwood City Plant sites (i.e., Newark Plant 1 – 4100 acres; Newark Plant 2 – 6400 acres; Redwood City Plant – 1430 acres; Total Project area – about 12,000 acres).

It is not feasible to determine in advance exactly where Project-related activities would occur in any given year. However, it is reasonable to expect that they would occur over an extended portion of the Project area. Some activities may occur within 1,000 feet of the MESRs, while other activities would be located more than 3 miles away. Because it is not feasible to determine the exact locations of all activities in advance, the air quality evaluation considered a worst-case scenario where all of the Project-related activities would occur close to the MESRs. To estimate worst-case annual risk/hazard/$PM_{2.5}$ levels at each MESR, it was assumed that all baseline and Project incremental maintenance emission sources during an exposure year would be located for that year in a 5,000-foot-long/500-foot-wide strip of land on either Plant site adjacent to the MESR. Dispersion of DPM emissions and annual concentrations were then estimated by using the USEPA's SCREEN3 model. Using these assumptions, the worst-case cancer risk from baseline and Project-incremental maintenance DPM at either MESR would be 0.270 additional cancer cases per million people exposed, which is well below the project-level CEQA threshold for cancer risk (100); the HI from baseline and Project-incremental maintenance DPM would be 0.007, which is well below the threshold for chronic hazard (10); and the annual $PM_{2.5}$ concentration from baseline and Project-incremental maintenance would be 0.035 µg/m^3, which is well below the threshold for an annual $PM_{2.5}$ increment (0.8 µg/m^3). Thus, Project-related TAC health risk/hazard/ $PM_{2.5}$ increment to the MESRs near the Newark or the Redwood City sites would be less than significant.

Determining the cumulative TAC health risk/hazard/ $PM_{2.5}$ increments requires the tallying of risks/hazards/ $PM_{2.5}$ levels from Project sources, from permitted stationary sources of TACs within 1,000 feet of a project site (and for project sites of large area, also within 1,000 feet of the MESR), and from major local roadway/railroad sources and then adding them for comparison with the BAAQMD cumulative thresholds. A database of risk/hazard/ $PM_{2.5}$ from permitted stationary emissions sources and major roadway/railroad sources is available online (BAAQMD *Stationary Source Screening Map* and *Mobile Source Screening Map*). The Google Earth aerial photographs in Figures 3.3-1 and 3.3-2 show all the listed stationary TAC sources and the major roadways in the zone of influence of the Project's Newark Plant and Redwood City Plant sites, respectively. Only the relatively few stationary TAC sources within 1000 feet of the MESRs (i.e., for Newark, the residential area adjacent to and northwest of the site; for Redwood City, the residential area adjacent to and south of the site) would contribute substantially to the cumulative impact at the MESRs.

As shown in Table 3.3-7, the cumulative cancer risk, HI, and $PM_{2.5}$ levels at the MESRs near the Newark site would all be below all the BAAQMD cumulative significance thresholds.

Figure 3.3-1. Locations of Listed Stationary and Mobile Sources Near the Cargill Newark Plant Sites

Source: BAAQMD

Table 3.3-7. Project Incremental and Cumulative TAC Impacts at the MESR in Cargill Newark's Zone of Influence

Source	Description	Cancer Risk*	Hazard Index*	$PM_{2.5}$ Concentration*
Permitted Stationary TAC Sources	Source Number: 15307 Sanmina -- 8455 Cabot Court	0	0.004	0
	Source Number: 202196 ATUM Bio – 8484 Central Avenue	2.45	0.001	0.003
Roadway TAC	Mean value from BAAQMD Mobile Source Screening Map	2.075	0.005	0.05
Railroad TAC	Mean value from BAAQMD Mobile Source Screening Map	5.115	0.002	0.04
Project Sources	Project incremental from Maintenance Activities	< 0.270	< 0.007	< 0.035
Total Cumulative Impacts		9.910	0.019	0.128
Significance Thresholds		100	10	0.8
Significant Cumulative Impact?		No	No	No

* The BAAQMD stationary source cancer risks, hazard indexes, and $PM_{2.5}$ concentrations represent maximum TAC impacts at locations close to the sources while the values for roadway and railroad sources represent mean TAC impacts at the MESR location. Thus, the total cumulative TAC impacts shown in the table are worst-case levels at the MESR location.

As shown in Table 3.3-8, the cumulative cancer risk and HI at the MESRs near the Redwood City sites are below their cumulative significance thresholds. But the cumulative PM2.5 level just exceeds the cumulative significance threshold, primarily due to the influence of TACs emitted from local roadway sources (predominantly U.S. 101). All other local stationary TAC sources, including the Project's, amount to a few percent of the mobile source contribution to the total. And, in actuality, since Project maintenance activities would occur at many locations distributed over both the Newark and Redwood City Plant sites over the 10-year period proposed by the Project, the Project TAC risk/hazard/$PM_{2.5}$ levels would be even less than the values shown in the tables. Thus, the Project's contribution to cumulative TAC impacts at any location in the zones of influence would also be less than considerable and the overall cumulative TAC impacts including Project impacts would be less than significant.

Figure 3.3-2. Locations of Listed Stationary and Mobile TAC Sources Near the Cargill Redwood City Plant
Source: BAAQMD

Table 3.3-8. Project Incremental and Cumulative TAC Impacts at the MESR in Cargill Redwood City's Zone of Influence

Source	Source/Description/Address	Cancer Risk*	Hazard Index*	$PM_{2.5}$ Concentration*
Permitted Stationary TAC Sources	Source Number 7505 Porta's Auto Body & Towing Inc. 3020 Rolison Road	0	0	0
	Source Number 17482 City of Redwood City (Generator) 3011 East Bayshore Road	0.166	0	0

Source	Source/Description/Address	Cancer Risk*	Hazard Index*	$PM_{2.5}$ Concentration*
	Source Number 23017 Sequoia Union High School District (Generator) 1090 Mills Way	3.198	0.001	0.004
	Source Number 23966 Carbon Inc. (Generator) 1089 Mills Way	0	0.001	0
	Source Number 109814 Dept. of Transportation Redwood City (Gas Station) 2501 East Bayshore Road	0.508	0.002	0
	Source Number 200064 Sequoia Union High School - Transportation & Maintenance Facility (Gas Station) 1061 Douglas Avenue	0.487	0.002	0
	Source Number 18462 Stanford Medicine Outpatient Center 430 Broadway	6.038	0.011	0.008
Roadway TAC	Mean value from BAAQMD Mobile Source Screening Map	39.88	0.11	0.78
Railroad TAC	Mean value from BAAQMD Mobile Source Screening Map	0	0	0
Project Sources	Project Incremental from Maintenance Activities	< 0.270	< 0.007	< 0.035
	Total Cumulative Impacts	**50.547**	**0.134**	**0.827**
Significance Analysis	Significance Thresholds	**100**	**10**	**0.8**
	Project Considerable Contribution to a Significant Cumulative Impact?	**No**	**No**	**No**

* The BAAQMD stationary source cancer risks, hazard indexes, and $PM_{2.5}$ concentrations from its database represent maximum TAC impacts at locations close to the sources while the values for roadway and railroad sources represent mean TAC impacts at the MESR location. Thus, the total cumulative TAC impacts shown in the table are worst-case levels at the MESR location.

3.3.4 Mitigation Summary

The Project would not result in significant impacts to air quality; therefore, no mitigation is required.

3.4 BIOLOGICAL RESOURCES

This section describes the biological resources (vegetation, fish, wildlife, and their habitats) in the Project area, and identifies potential impacts on sensitive biological resources that could result from implementation of the Project. The analysis concludes that the Project would have less-than-significant impacts to biological resources with incorporation of mitigation.

3.4.1 Environmental Setting

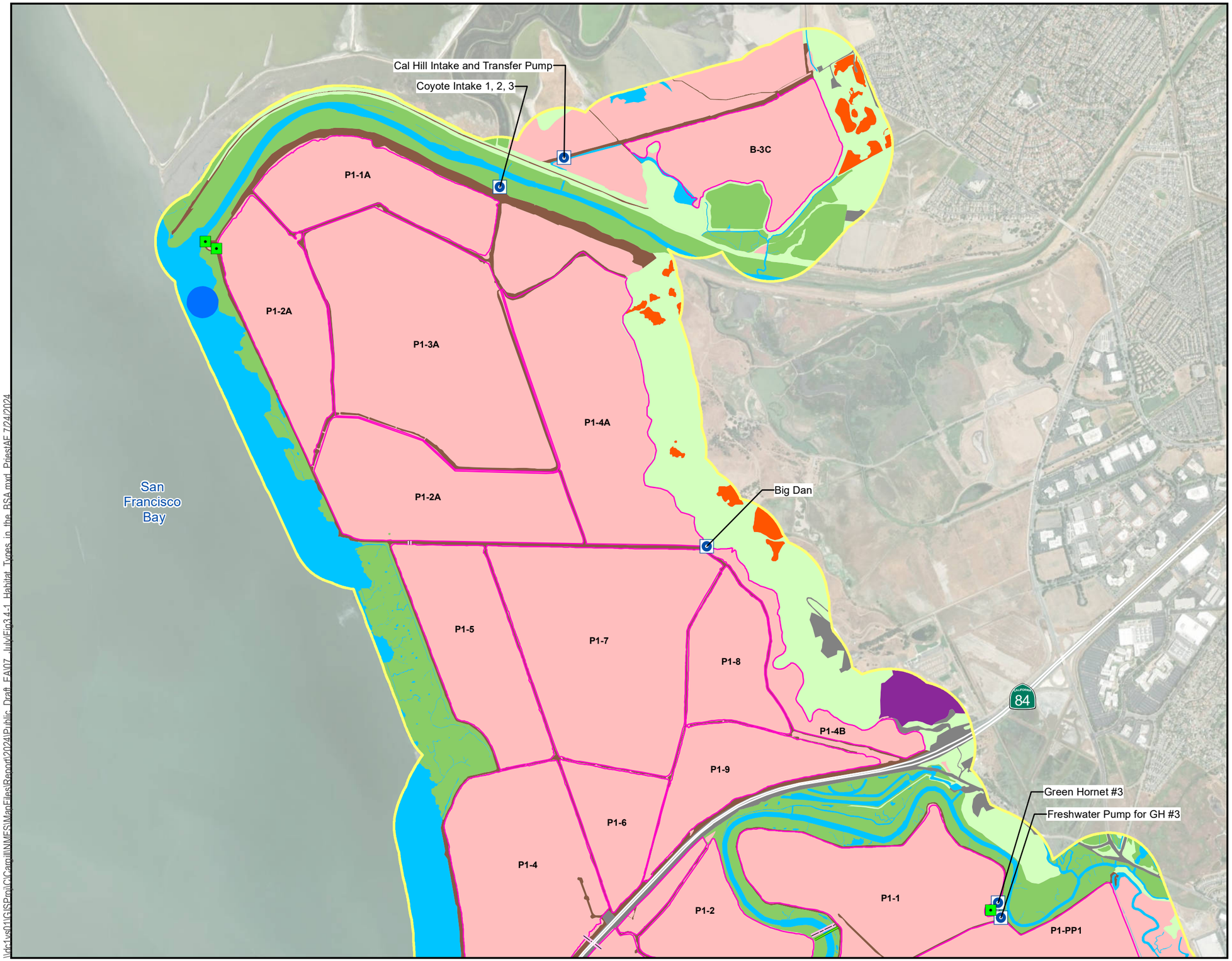
The scope of analysis consists of the Project area totaling approximately 12,100 acres, as well as a 1,000-foot-wide buffer around those features to account for potential effects to adjacent species and habitats (e.g., California Ridgway's rail [CRR; *Rallus obsoletus obsoletus*] nesting outside of the Project area). The Project area and surrounding 1,000-foot-wide buffer are referred to as the Biological Study Area (BSA), encompassing approximately 19,482 acres. Within the BSA, habitat generally consists of salt ponds, tidal marsh, intertidal mudflat, and tidal open water (Figure 3.4-1). The essential features of these habitats and associated biological conditions are discussed in the following subsections. The habitat types can generally be grouped as "internal" or "external" to the salt production system (as defined in Section 2.3.4), and species habitat values are addressed under these terms within this assessment.

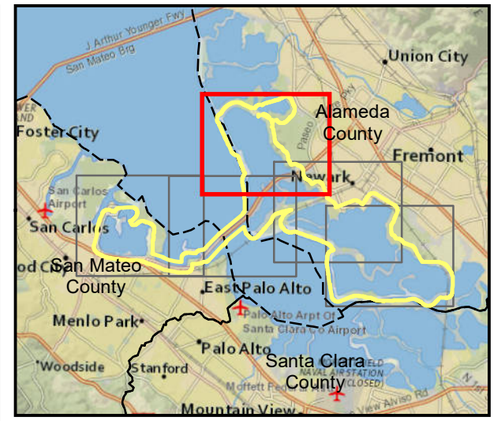
The majority of work relating to salt production is confined to internal areas of the salt production system. Internal areas can provide roosting and foraging habitat for birds, as well as limited habitat for certain fish, brine shrimp, and other species depending on the level of saline and hypersaline conditions. Some work occurs outside of the salt production system in outboard areas. Outboard areas may contain a suite of organisms that typically do not occur within the internal areas, including a number of special-status species considered in this assessment.

3.4.1.1 Internal Areas - Salt Ponds, Internal Berms, and the Inboard Sides of Outboard Berms

Salt Ponds

Salt ponds are shallow, and salinity concentrations within them range from levels similar to Bay water to levels that are too high to support most aquatic life. Salt ponds in the South Bay are characterized by expanses of non-tidal open water, bare mud, or bare salt flats surrounded by barren to sparsely vegetated berms. Vegetation, where it is present in inboard areas, is limited primarily to narrow bands along the berms. Pond conditions, including salinity, dissolved oxygen, turbidity, temperature, and depth, vary throughout the year depending on the pond function, evaporative stage, season, and management actions. Open channel brine conveyances adjacent to the salt ponds are used to move brines around as necessary during operations and maintenance activities. The open channel brine conveyances may be dry or flooded depending on brine transfer activities, and the majority of brine flow occurs by gravity feed although some pumping also occurs to move brine.





Legend

- Biological Study Area
- Newark Plant 1 System Ponds
- Pumps
- Locks
- Siphon
- Pipeline

Habitat Types

- Developed
- Off-Site Undeveloped
- Open Water and Intertidal Mudflat
- Quarry
- Salt Panne
- Salt Pond
- Tidal Marsh
- Upland Earthen Berms and Roads
- Eelgrass

Note:
Service Layer Credits: ESRI, National Geograhic
Source:
Bay Area Aquatic Resource Inventory (BAARI) (SFEI 2015)
from California Wetland Monitoring Workgroup (CWMW) 2009
San Francisco Bay Conservation & Development Commission
BCDC 2020

N

0 1,000 2,000 3,000 4,000
Feet

Figure 3.4-1
Map 1 of 5
Habitat Types in the Biological Study Area
Cargill
Alameda and San Mateo County, CA

Jacobs

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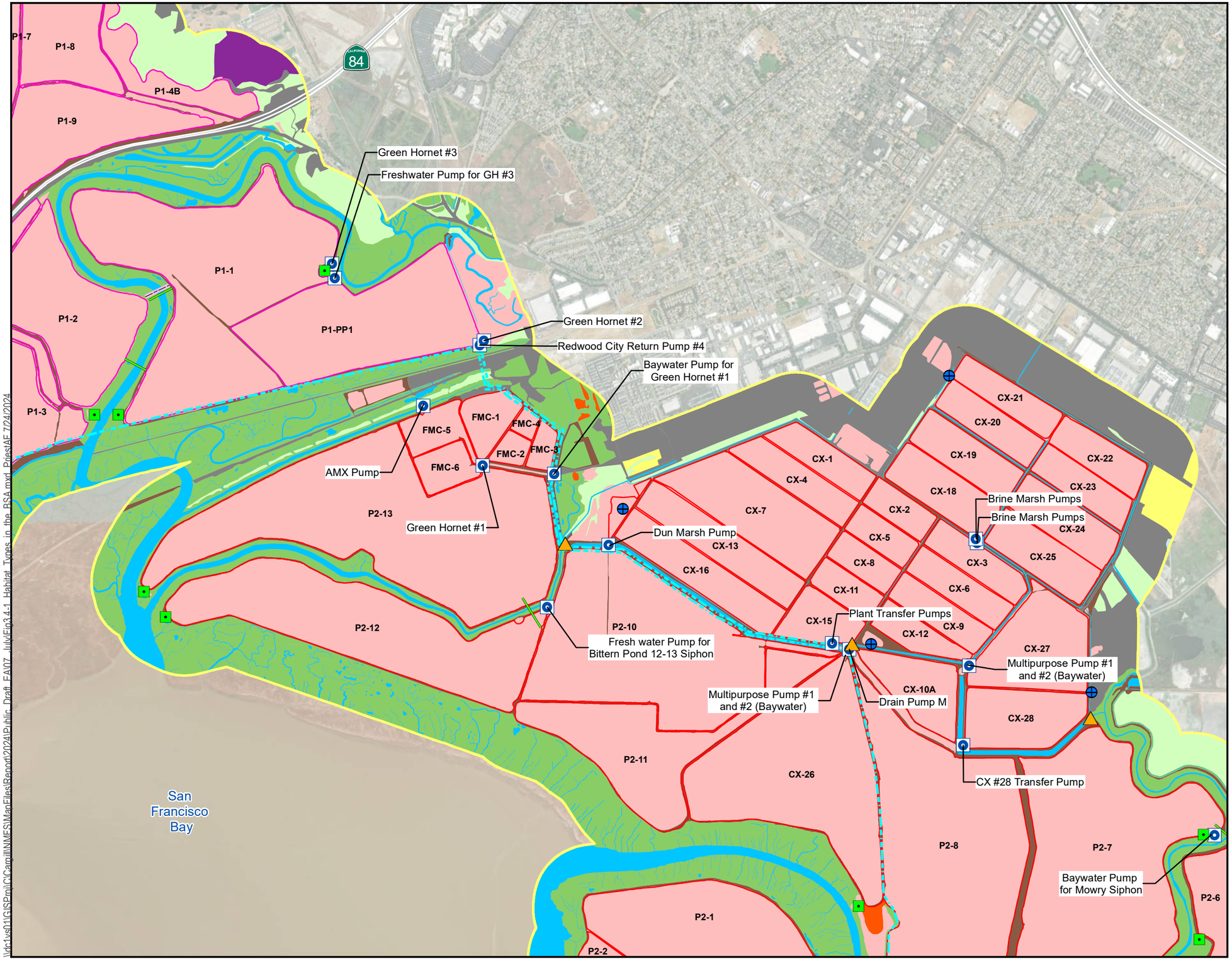

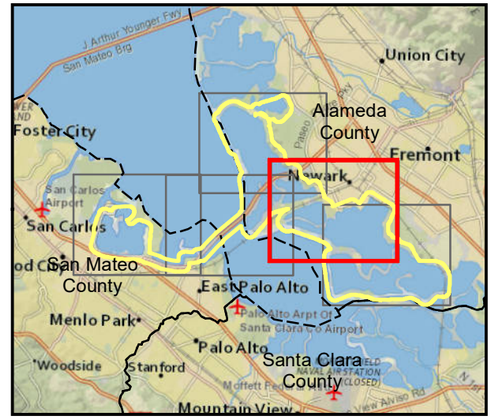

Legend

- Biological Study Area
- Newark Plant 1 System Ponds
- Newark Plant 2 System Ponds
- Pumps
- Locks
- Multipurpose Ditch Intake
- Stockpile Location
- Brine Pipeline
- Siphon
- Pipeline

Habitat Types

- Developed
- Developed Pond
- Grassland
- Off-Site Undeveloped
- Open Water and Intertidal Mudflat
- Quarry
- Salt Panne
- Salt Pond
- Tidal Marsh
- Upland Earthen Berms and Roads

Note:
Service Layer Credits: ESRI, National Geograhic
Source:
Bay Area Aquatic Resource Inventory (BAARI) (SFEI 2015)
from California Wetland Monitoring Workgroup (CWMW) 2009
San Francisco Bay Conservation & Development Commission
BCDC 2020

N

0 1,000 2,000 3,000 4,000
Feet

Figure 3.4-1
Map 2 of 5
Habitat Types in the Biological Study Area
Cargill
Alameda and San Mateo County, CA

Jacobs

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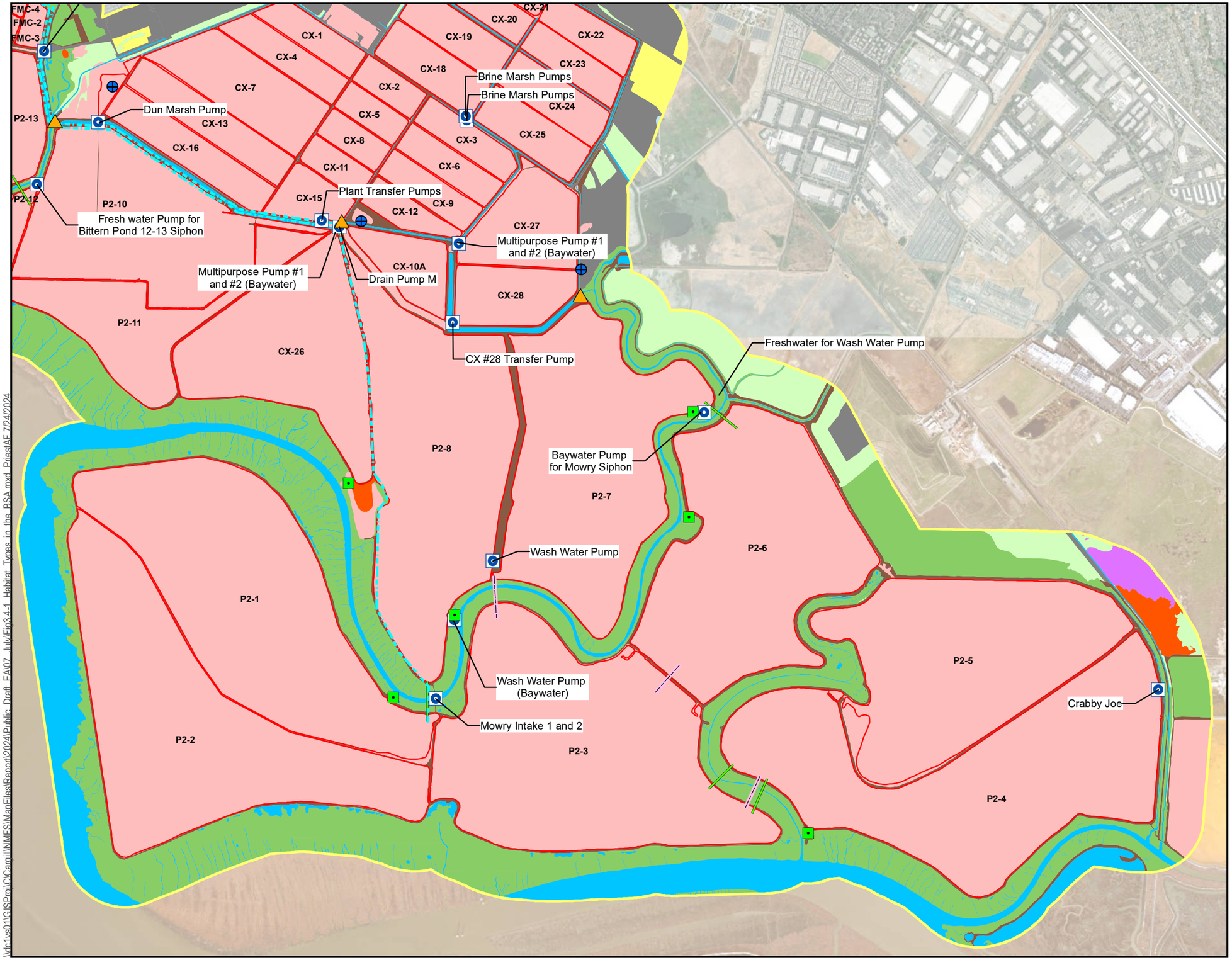
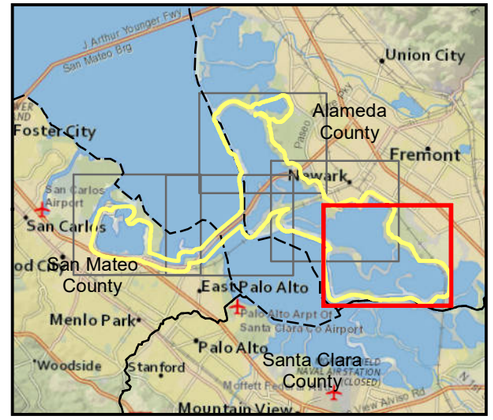




Legend

- Biological Study Area
- Newark Plant 2 System Ponds
- Pumps
- Locks
- Multipurpose Ditch Intake
- Stockpile Location
- Brine Pipeline
- Siphon
- Pipeline

Habitat Types

- Developed
- Developed Pond
- Grassland
- Off-Site Undeveloped
- Open Water and Intertidal Mudflat
- Salt Panne
- Salt Pond
- Tidal Marsh
- Upland Earthen Berms and Roads
- Vernal Pool

Note:
Service Layer Credits: ESRI, National Geograhic
Source:
Bay Area Aquatic Resource Inventory (BAARI) (SFEI 2015)
from California Wetland Monitoring Workgroup (CWMW) 2009
San Francisco Bay Conservation & Development Commission
BCDC 2020

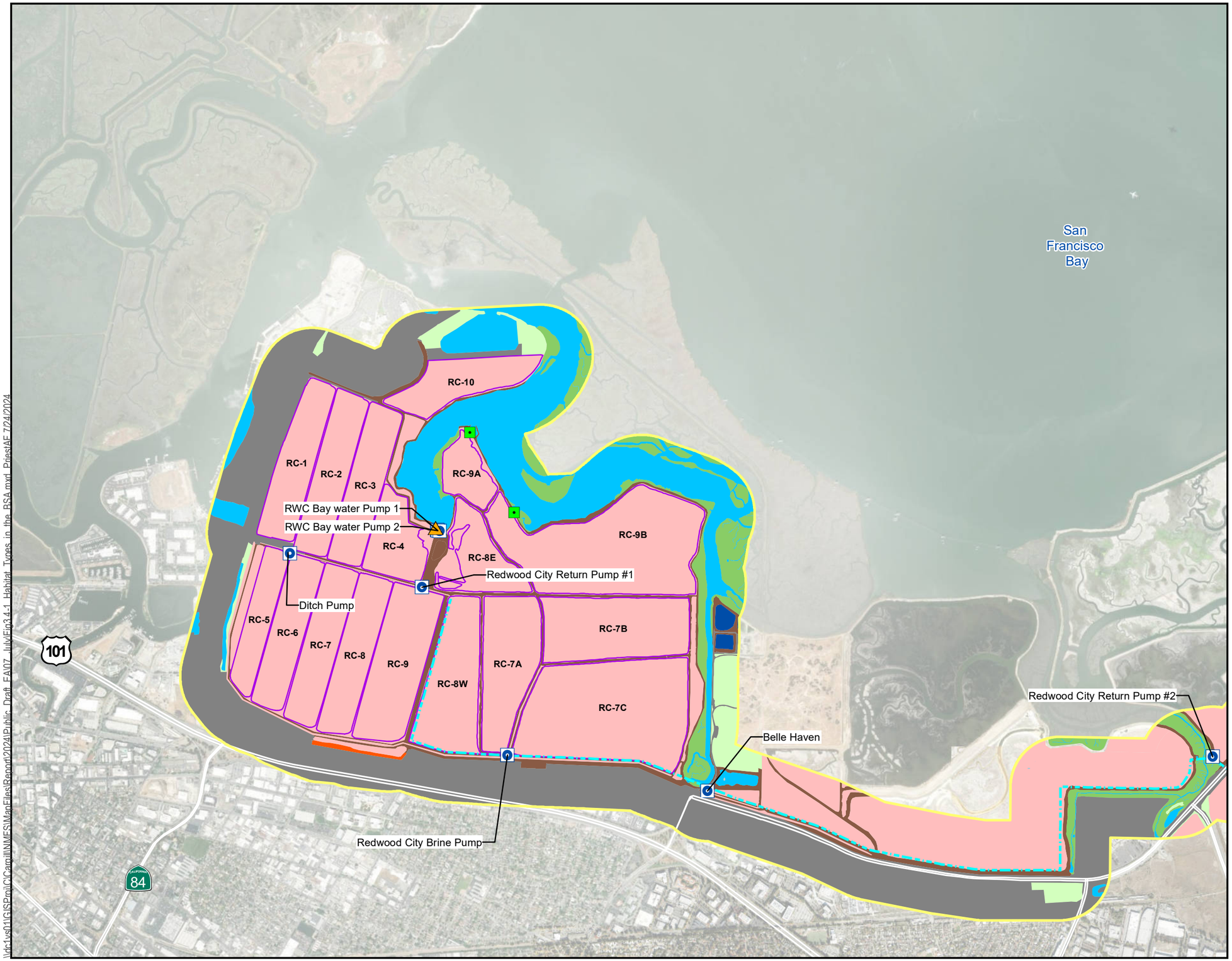
N

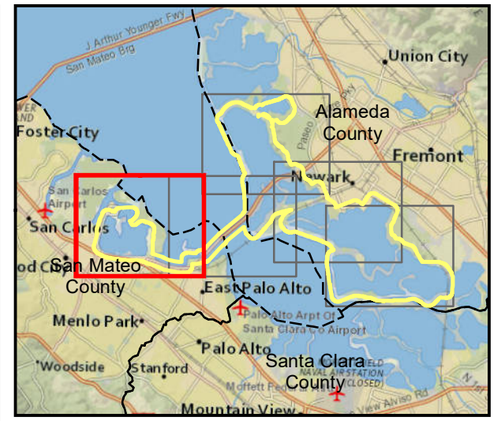
0 1,000 2,000 3,000 4,000
Feet

Figure 3.4-1
Map 3 of 5
Habitat Types in the Biological Study Area
Cargill
Alameda and San Mateo County, CA

Jacobs

\\dc1vs01\GISProj\Cargill\NMFS\MapFiles\Report\2024\Public_Draft_FA\07_July\Fig3.4-1_Habitat_Types_in_the_BSA.mxd PriestAF 7/24/2024





Legend

- Biological Study Area
- Redwood City Plant System Ponds
- Pumps
- Locks
- Multipurpose Ditch Intake
- Brine Pipeline

Habitat Types

- Developed
- Off-Site Undeveloped
- Open Water and Intertidal Mudflat
- Salt Panne
- Salt Pond
- Tidal Marsh
- Upland Earthen Berms and Roads
- Waste Water Treatment Pond

Note:
Service Layer Credits: ESRI, National Geograhic
Source:
Bay Area Aquatic Resource Inventory (BAARI) (SFEI 2015)
from California Wetland Monitoring Workgroup (CWMW) 2009
San Francisco Bay Conservation & Development Commission
BCDC 2020

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Figure 3.4-1
Map 4 of 5
Habitat Types in the Biological Study Area
Cargill
Alameda and San Mateo County, CA

Jacobs

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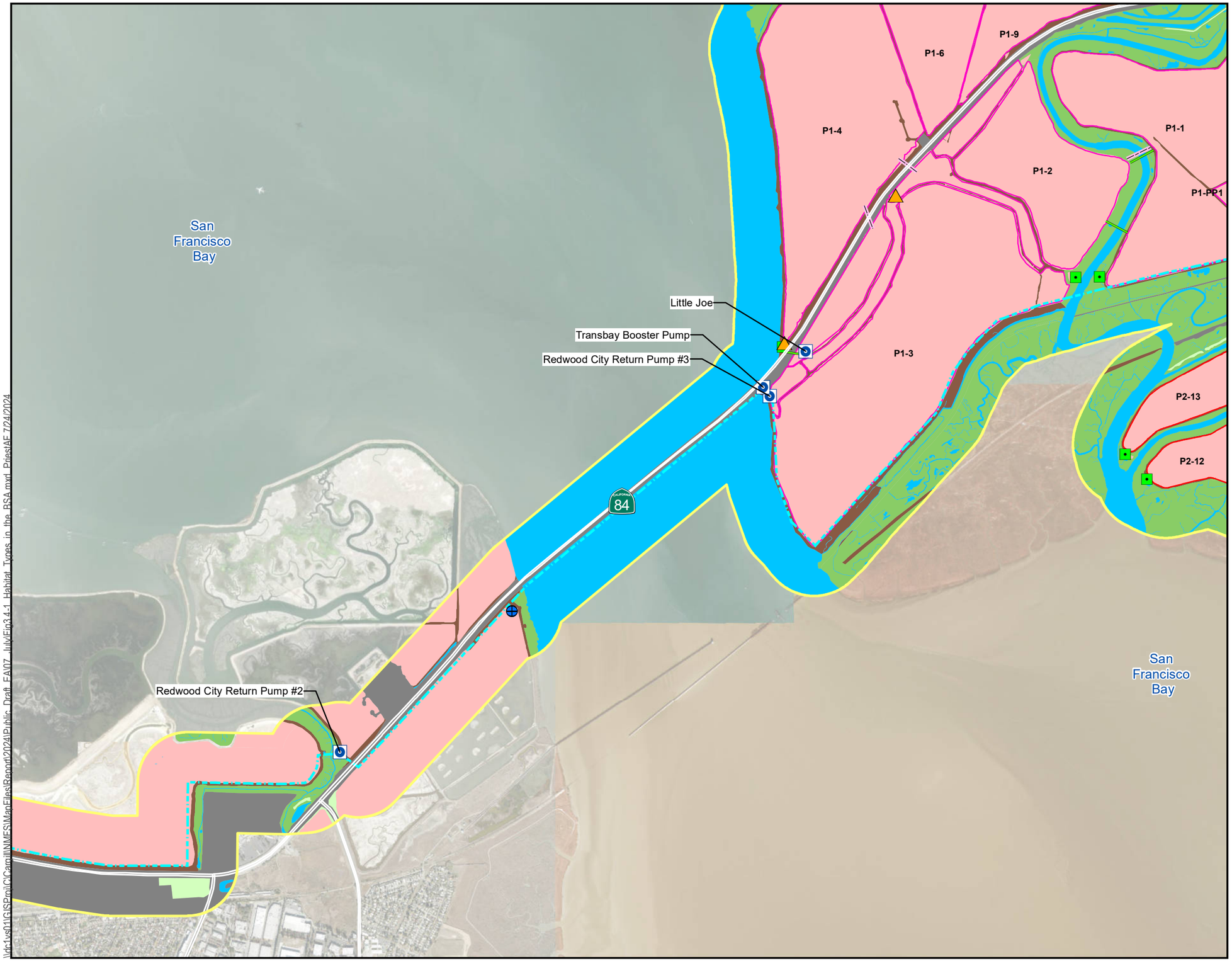

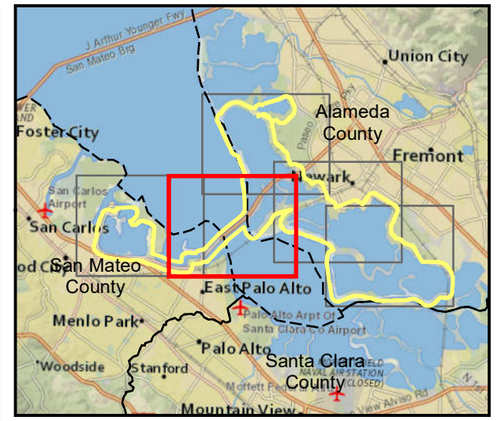

Legend

- Biological Study Area
- Newark Plant 1 System Ponds
- Newark Plant 2 System Ponds
- Pumps
- Locks
- Multipurpose Ditch Intake
- Stockpile Location
- Brine Pipeline
- Siphon
- Pipeline

Habitat Types

- Developed
- Off-Site Undeveloped
- Open Water and Intertidal Mudflat
- Salt Pond
- Tidal Marsh
- Upland Earthen Berms and Roads

Note:
Service Layer Credits: ESRI, National Geograhic
Source:
Bay Area Aquatic Resource Inventory (BAARI) (SFEI 2015)
from California Wetland Monitoring Workgroup (CWMW) 2009
San Francisco Bay Conservation & Development Commission
BCDC 2020

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Figure 3.4-1
Map 5 of 5
Habitat Types in the Biological Study Area
Cargill
Alameda and San Mateo County, CA

Jacobs

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Salt ponds generally decrease in water depth and increase in salinity from the summer through the fall (Takekawa et al. 2001). The greatest levels of evaporation (and increases in pond salinity) occur during the dry season of April through October. During the remaining portion of the year, seasonal rainfall dilutes pond brines, resulting in a decrease in salinity and increase in water depth. Changes in salinity and depth contrary to these patterns may occur when management actions take place such as the transfer of brines between ponds.

Temperature, pH, and dissolved oxygen fluctuations in the ponds are additional significant factors regulating salt pond ecosystems. Dramatic shifts in temperature and/or salinity can influence the ability of the ponds to support aquatic photosynthetic organisms, invertebrate populations, and animals that use these organisms as food.

Marine macroalgae such as sea lettuce (*Ulva* spp.), *Enteromorpha* spp., *Cladophora* spp., and sometimes *Fucus* spp. and *Codium* spp. occur in only a few of the lowest salinity ponds, along with some fish and invertebrate species. Fish and most invertebrates cannot survive in the medium- to high-salinity ponds, and the dominant photosynthetic organism of these ponds is a single-celled green algal species, *Dunaliella salina*, which, along with other species of halobacteria, cyanobacteria, dissolved organics, and organic particulates, produces the rich pigments characteristic of the San Francisco Bay salt ponds. Invertebrate species richness declines progressively with increasing salinity, especially above 35 ppt; species abundance also shows an inverse relationship with salinity (WRA 1994, 2007). The invertebrate communities of South Bay salt ponds are characterized by amphipods, decapods, polychaetes, oligochaetes, and mollusks in the lower-salinity ponds, and Franciscan brine shrimp (*Artemia franciscana*), brine flies (*Ephydra* spp. and *Lipochaeta slossonae*), and calanoid copepods in the medium- to high-salinity ponds.

The salt pond invertebrate communities are a significant food source for shorebirds visiting the ponds. Invertebrate species tolerant of hypersaline brines, including brine shrimp and brine flies, are a key component of the salt pond food web and enable hypersaline salt ponds to serve as quality feeding habitat for shorebirds.

Salt ponds provide important habitat for wildlife, particularly for shorebirds, with lower salinity ponds also providing habitat for waterfowl. Their importance has been recognized by regional agencies, such as BCDC and CDFW, as well as federal agencies such as the USFWS, that have created special policies for the protection and management of salt ponds. Salt ponds contribute to the value of nearby tidal mudflats by providing undisturbed high tide refuge areas and foraging habitat for shorebirds. Over one million shorebirds of 30 species use salt ponds during fall and spring migration (Takekawa et al. 2001) and salt ponds are a valued component of shorebird habitat in San Francisco Bay. The low- to moderate-salinity ponds are also important habitat for migratory and wintering waterfowl. Monthly water bird surveys conducted by the San Francisco Bay Bird Observatory at 22 Cargill-managed salt-evaporation ponds recorded 69 species of birds, including virtually every species of waterbird found in the Bay, that use the salt ponds (SFBBO 2013), and 10,094 California gull (*Larus californicus*) nests were documented within Cargill properties in 2019 (SFBBO 2020a). Dry portions of ponds also provide nesting habitat for WSP, American avocet (*Recurvirostra americana*), and California gull.

MSS (bittern) is currently stored in ponds P2-12 and P2-13 (Figure 3.4-1). The salinity and ionic imbalance of these MSS ponds makes them unsuitable habitat for aquatic organisms, and aquatic life is expected to be very sparse or non-existent within these ponds (Siegel and Bachand 2002). Further, the internal berms of the MSS ponds are barren or sparsely vegetated with weeds such as crystalline iceplant (*Mesembryanthemum crystallinum*) and ruderal grasses and forbs. This lack of cover precludes regular use by many wildlife species of the terrestrial portions of the ponds as well. Dead salt marsh vegetation that may have been caused by seepage was observed by BCDC staff in two small patches, each less than one square yard in size, one outboard of Pond P2-12 and the other outboard of Pond P2-13, in a site visit on June 7, 2023 (Hyman, pers. Com 2023). As discussed in Section 2.10.1, while bare patches may indicate seepage, they could also represent natural salt pannes.

Internal Berms and Inboard Sides of Outboard Berms

As detailed in Section 2.4 and 2.5.2, berms were built using native material for the exclusive purpose of producing salt in shallow ponds. Cargill currently maintains approximately 123 miles of earthen berms, of which approximately 47.2 miles are outboard and abut the Bay and tidal marsh habitats. The quality of habitat on the earthen berms varies greatly throughout the BSA. The inboard sides of the outboard berms and all internal berms are mostly barren due to high soil salinity. These areas provide roosting and nesting habitat for birds that require or prefer open areas devoid of vegetation, including WSP, American avocet, California gull, double-crested cormorants (*Phalacrocorax auritus*), and black-necked stilt (*Himantopus mexicanus*) as well as species whose populations are declining elsewhere, such as Caspian tern (*Sterna caspia*) and Forster's tern (*Sterna forsteri*).

Non-native mammalian predators including red fox (*Vulpes vulpes*), feral cats (*Felis catus*), Virginia opossums (*Oidelphis virginiana*), and Norway rat (*Rattus norvegicus*) are the primary invasive wildlife species of concern in the South Bay. They have been observed in and in the vicinity of the Project area, and are assumed to be present (Goals Project 2015, USDA 2022, USDA 2023). These non-native predators may be present throughout both internal and external areas of the Project area. In addition, striped skunks (*Mephitis mephiti*s) and raccoons (*Procyon lotor*), which are native to the region but prey on locally rare species, are included in the predator management program implemented by USDA (USDA 2023).

3.4.1.2 Outboard Sides of Outboard Berms and Adjacent Habitats

Tidal Marsh

Over 90 percent of tidal marsh habitat in the San Francisco Bay has been lost as a result of diking and filling since the mid-1800s (Williams and Faber 2001). The Project area is bordered by roughly 3,500 acres of natural tidal marsh, with the largest areas located at Dumbarton Point, Newark Slough, Mowry Slough, and Greco Island. Most of the outboard berms have tidal marsh vegetation on their outboard sides.

In most areas, the outboard edges of outboard berms have been colonized by marsh species such as pickleweed (*Salicornia virginica*) and alkali heath (*Frankenia salina*). Above the intertidal zone, outboard edges of outboard berms tend to be devoid of vegetation or dominated by non-native vegetation, such as fennel (*Foeniculum vulgare*), wild mustard (*Brassica spp.*), wild radish

(*Raphanus sativus*), perennial pepperweed (*Lepidium latifolium*), and various non-native grasses (*Bromus* spp.*, Hordeum marinum, Festuca perennis*). Native coyote brush (*Baccharis pilularis*) is sometimes present along less-disturbed upland sections.

The outboard edges of the outboard berms provide refugia for tidal marsh wildlife species, including SMHM and CRR, from high tides and winter storms. Some of the more densely vegetated berms also provide potential nesting habitat for SMHM, as well as tidal marsh associated birds such as salt marsh common yellowthroat (*Geothlypis trichas sinuosa*), Bryant's savannah sparrow (*Passerculus sandwichensis alaudinus*), and most commonly Canada goose (*Branta canadensis*). Unvegetated portions of outboard berms have limited potential to provide nesting habitat for American avocet, black-necked stilt, WSP, Caspian tern, and Forster's tern as these species prefer nesting on internal berms, islands, and dry pond bottoms.

Tidal marsh communities are often discussed in terms of "zones" based on elevation in relation to the tides. Each provides habitat for different plants and animals resulting from differing frequency and duration of tidal flooding at different elevations. Low marshes are generally regularly flooded by daily tides. Low marsh vegetation is almost always dominated by grass-like plants, such as Pacific cordgrass (*Spartina foliosa*). The invasive smooth cordgrass (*Spartina alterniflora*) or its hybrids can also be present within the low marsh zone; however, the San Francisco Estuary Invasive Spartina Project, a coordinated regional effort among local, state, and federal organizations dedicated to preserving California's extraordinary coastal biological resources through the elimination of introduced species of *Spartina* (cordgrass), has significantly decreased the amount of invasive smooth cordgrass and its hybrids (San Francisco Bay Joint Venture 2020). Within the middle marsh zone at slightly higher elevations flooded only by the higher high tides, pickleweed, saltgrass (*Distichlis spicata*), salt marsh dodder (*Cuscuta salina*), fleshy jaumea (*Jaumea carnosa*), and fat-hen (*Atriplex prostrata*). Shorebirds, such as willets (*Catoptrophorus semipalmatus*) and marbled godwits (*Limosa fedoa*), rest in pickleweed when their feeding grounds are covered by water at high tide.

Salt pannes (lower lying barren areas within marshes) often occur at the upper margins of middle marsh communities. Salt pannes form in lower lying areas within a marsh that are not drained by tidal channels. This results in ponded water which concentrates salts as it evaporates, resulting in higher salinity conditions that exclude marsh vegetation. Salt pannes occur throughout marshes in the Bay and provide foraging habitat for many bird species, in particular shorebirds.

High marsh occurs where tidal waters infrequently flood, mostly during spring tides (tides that occur twice a month) during summer and winter, and dominant plants are pickleweed, saltgrass, alkali heath, and marsh gumplant (*Grindelia stricta* var. *angustifolia*). This vegetation provides high water refugial habitat for two marsh-dependent species currently listed as endangered: CRR and SMHM. High marsh zones throughout the Bay Area are often disturbed, resulting in extirpation or reduction in numbers of several plant species as well as widespread invasion by exotic species (WRA 2007).

Northern Coastal Salt Marsh (Holland 1986) is a highly productive plant community dominated by halophytic hydrophytes such as pickleweed and cordgrass. Northern Coastal Salt Marsh provides habitat for numerous endangered, threatened, and rare animals and plants. Many exotic plant species threaten Northern Coastal Salt Marsh communities and restoration efforts near the BSA. The California Invasive Plant Council (Cal-IPC) rates non-native invasive plants according to their distribution and threat to native ecosystems. Plants with a rating of *High* have severe ecological impacts, those with a *Moderate* rating have apparent but not severe impacts, and those with a rating of *Limited* are invasive but have minor impacts either spatially or ecologically (Cal-IPC 2020).

Smooth cordgrass, its hybrids with the native Pacific cordgrass, perennial pepperweed, and Mediterranean saltwort (*Salsola soda*) rapidly invade coastal marsh habitats and create uniform stands that greatly alter species diversity and ecological processes. Exotic cordgrass and hybrids are of particular concern in the South Bay. However, as mentioned, the San Francisco Estuary Invasive Spartina Project is actively decreasing the amount of invasive smooth cordgrass and its hybrids. Between 2005 and 2015, invasive *Spartina* decreased from 805 to 28 acres Bay-wide in the San Francisco Estuary (Olofson and Rohmer 2016). Smooth cordgrass and perennial pepperweed are rated *High* impact by Cal-IPC. These species are all present within the BSA or in the surrounding coastal marsh. Cargill cooperates with Bay-wide efforts to control smooth cordgrass, including providing access to areas within its areas of operation for surveys and control efforts. Many other invasive species, including dense-flowered cordgrass (*Spartina densiflora*) (*High*), common cordgrass (*Spartina angelica*) (*Moderate*), and saltmeadow cordgrass (*Spartina patens*) (*Limited*), are present in Bay coastal marshes and are potential species of concern (WRA 2007). Infestations by invasive plant species such as perennial pepperweed and others can alter habitat to the extent that it is no longer suitable for native species, including the SMHM, CRR, and California black rail (*Laterallus jamaicensis coturniculus*).

Disturbance is a contributing factor to the establishment and spread of invasive plants in native vegetation communities. The BMPs described in Section 2.13 were developed by Cargill in cooperation with resource and regulatory agencies to minimize potential future spread of invasive plants caused by maintenance activities, and to encourage the rapid reestablishment of native species.

Intertidal Mudflat

There are approximately 15,000 acres of intertidal mudflat in South San Francisco Bay. Mudflats are found bayward of many salt pond berms from approximately 3 feet below mean sea level (MSL) to 1 foot above MSL. The deposition of sediments forming bay mud in South San Francisco Bay has been a continuous process. Where sediments are inundated by high tides and exposed at low tides, they form broad, almost level mud flats. The mud is composed of clay, sand, silt, organic matter, and shell fragments.

The primary producers (organisms that can convert light or chemical energy into organic matter) native to intertidal mudflats are represented by three groups: benthic microalgae, phytoplankton, and benthic macroalgae. Species abundance and composition is dependent upon localized turbidity, water depth, light levels, and salinity levels. Mudflats provide habitat for three major groups of invertebrates: organisms that live primarily in the muds (benthic

infauna); those that live on the surface of the mudflats or attached to other objects, animals, or plants (epifauna); and those living in the water column (pelagic fauna).

Tidal Open Water

Tidal open waters within the South Bay, including tidal sloughs and channels and areas of open water within and between salt ponds and marshes, support a diversity of benthic invertebrates, pelagic invertebrates, and fish species. While not all species reported in the South Bay may occur in the BSA, there is potential for occurrence of many of these species in varying distributions and abundance. Outside of the salt ponds, South San Francisco Bay and the major sloughs include areas where open water is present regardless of tidal level.

CDFW has conducted fishery surveys since 1980 for the San Francisco Bay Study (CDFW 2024a). These surveys include data from multiple stations in the South Bay. Data between 1980 and 2006 reported that 71 native fish species were collected in the South Bay region (Swanson 2007). The most common fish species of the South Bay include Bay pipefish (*Syngnathus leptorhynchus*), three-spined stickleback (*Gasterosteus aculeatus*), northern anchovy (*Engraulis mordax*), topsmelt silverside (*Atherinops affinis*), Pacific staghorn sculpin (*Leptocottus armatus*), starry flounder (*Platichthys stellatus*), and yellowfin goby (*Acanthogobius flavimanus*) (Sfbaywildlife.info 2020). The tidal sloughs and channels also serve as important nurseries and feeding areas for estuarine resident fish.

Tidal open waters in the South Bay also include Habitat Areas of Particular Concern (HAPCs) under Essential Fish Habitat (EFH) as designated by the Pacific Fisheries Management Council (NMFS 2020a). These include the Estuary and Seagrass HAPCs for Pacific Groundfish species, and Marine and Estuarine Submerged Aquatic Vegetation for Pacific Coast Salmon. The tidal open water habitat within the BSA meets the definition of estuary as defined by NMFS. A small patch of eelgrass (*Zostera marina*) was identified during a survey in 2009 immediately south of the mouth of Alameda Creek, and just west of Pond 2A in Plant 1 (Merkel 2009). During a follow up survey in 2014 for the Baywide Eelgrass Survey, no eelgrass was mapped in this area (Merkel 2014). However, recent surveys (fall 2023, spring 2024) near the Eden Landing shoreline and the mouth of Alameda Creek indicate that eelgrass beds have expanded substantially in this general area (Merkel 2024a, 2024b).

Wildlife Movement and Migration Corridors

Stretches of wildlife habitat that join two larger, otherwise separated, habitat areas often serve as important corridors for wildlife movement. Topography and other natural factors, in combination with urbanization, have fragmented or separated large open-space areas. The fragmentation of natural habitat creates isolated “islands” of vegetation that may not provide sufficient area to accommodate sustainable populations of plants or animals, and can adversely affect genetic and species diversity. Areas of suitable habitat create movement corridors that avoid and/or minimize the effects of fragmentation by allowing animals to move between remaining habitats.

The San Francisco Bay adjacent to the BSA serves as a migration corridor for anadromous fish between the Pacific Ocean and spawning habitat, which occurs primarily within the Sacramento and San Joaquin River watersheds, but also in a handful of smaller tributaries to South San Francisco Bay including Alameda Creek. San Francisco Bay is also an important stopover for migratory shorebirds along the Pacific Flyway (Stenzel et al. 2002). Open water within the Bay provides congregation and foraging habitat for shorebirds, while larger stands of wetland vegetation such as those within the adjacent Don Edwards San Francisco Bay National Wildlife Refuge provide habitat for many species. Cargill's operating salt ponds contribute to the integrity of the wildlife movement functions of Bayshore areas in the South Bay.

3.4.2 Special-Status Species

3.4.2.1 Methods

This section summarizes the methods used to identify biological resources and analyze potential impacts, including waters, wetlands, and special-status plants and wildlife.

As used in this document, special-status plants are those species that met one or more of the following criteria:

- Listed, proposed for listing, or candidate for listing as threatened or endangered under the federal Endangered Species Act (FESA) (50 Code of Federal Regulations [CFR] 17.11 for wildlife; 50 CFR 17.12 for plants; 67 Federal Register 40658 for candidates) and various notices in the Federal Register for proposed species)
- Listed under the California Endangered Species Act (CESA) as threatened or endangered, proposed, or candidate for listing
- Designated as rare under the Native Plant Protection Act
- Species that otherwise meet the definition of rare, threatened, or endangered species under CEQA Guidelines § 15380; this includes species listed by the California Native Plant Society (CNPS) in the online version of its *Inventory of Rare and Endangered Plants of California* (CNPS 2020) as List 1A, 1B, 2A, 2B, 3, or 4

Special-status wildlife includes species that meet one or more of the following criteria:

- Listed, proposed for listing, or candidate for listing as threatened or endangered under FESA
- Listed or candidate for listing as threatened or endangered under CESA
- Designated as Species of Special Concern or a Fully Protected Species by CDFW
- Species that otherwise meet the definition of rare, threatened, or endangered species under CEQA Guidelines § 15380
- Species covered under the Marine Mammal Protection Act (MMPA) of 1972

Natural communities were considered to be of special status if they are identified on the CDFW List of Vegetation Alliances and Associations as being critically imperiled, imperiled, or vulnerable, which correspond to CDFW ranks S1, S2, and S3 respectively (California Natural Diversity Database [CNDDB]; CDFW 2020b).

Database and Literature Review

A list of endangered, threatened, proposed for listing, and candidate species with potential to occur within the BSA, along with other resources such as critical habitats, was generated from USFWS's Information for Planning and Consultation website (USFWS 2024a, 2024b). Critical habitat for federally listed species and sensitive plant communities is shown on Figure 3.4-2. Essential Fish Habitat (EFH) is shown on Figure 3.4-3. Additionally, a list of special-status plant and wildlife species that could occur in the BSA was developed through queries of the CNDDB for a 2-mile radius around the Project (CNDDB 2024); the CNPS Electronic Inventory and the NMFS California Species List Tool within the Redwood Point, Newark, Palo Alto, Mountain View, and Milpitas U.S. Geological Survey (USGS) 7.5-minute quadrangles; and the USFWS Comprehensive Conservation Plan (CCP) (CDFW 2020b; CNPS 2020; NMFS 2020b; USFWS 2012a). Appendix E includes brief summaries and assessments for all special-status species identified in the database and literature reviews. Tables 3.4-1 and 3.4-2 in Sections 3.4.2.2 and 3.4.2.3, respectively, summarize the information from Appendix E and focus only on those species that have the potential to occur within the BSA.

Likelihood of Presence for Special-Status Species

The likelihood of special-status species occurrence in the BSA was determined based on natural history parameters, including, but not limited to, the species' range, habitat, foraging needs, migration routes, and reproductive requirements, using the following general categories:

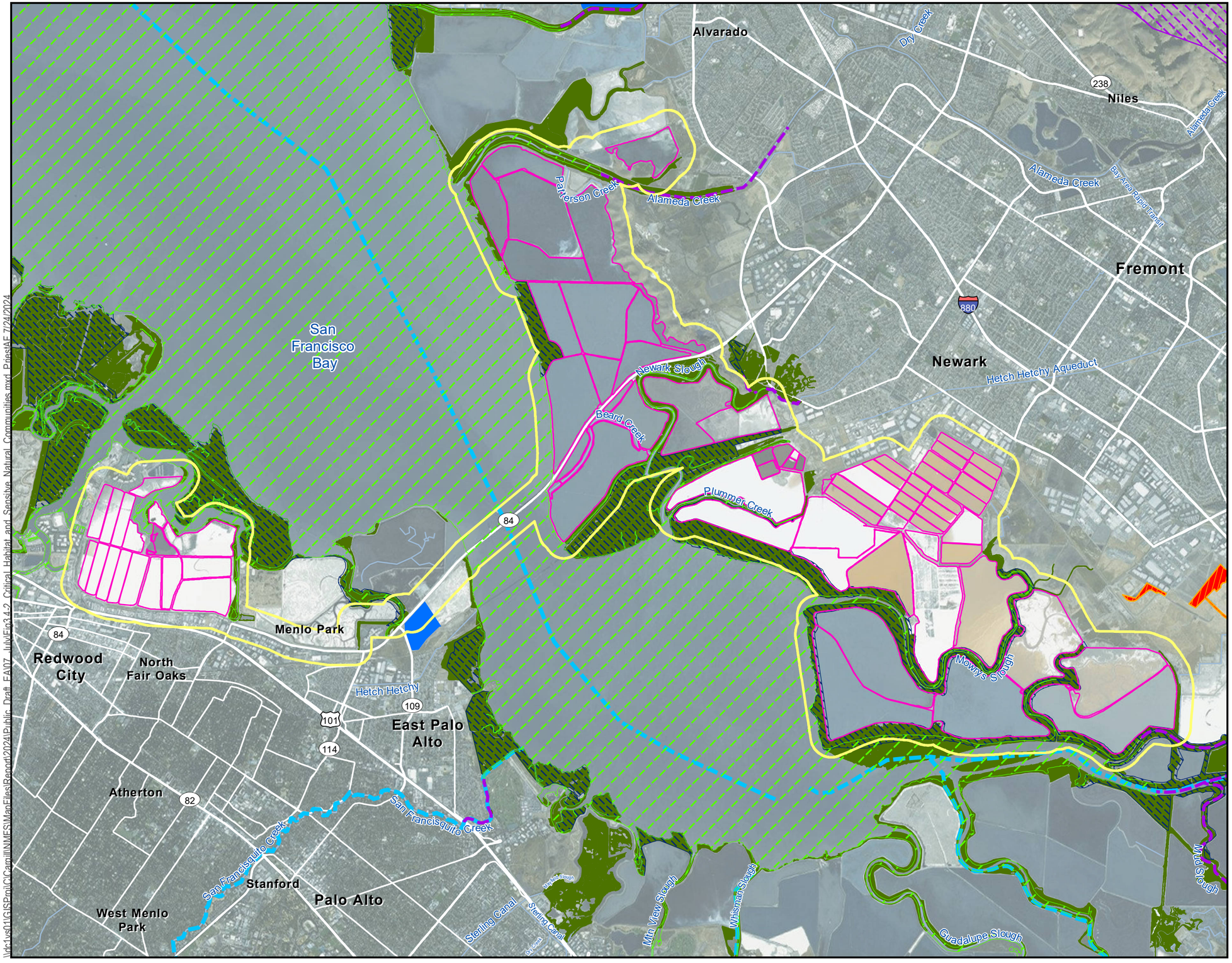
- *Present* – Reconnaissance-level, focused, or protocol-level surveys documented the occurrence or observation of a species in the BSA.
- *Seasonally present* – Individuals were observed in the BSA only during certain times of the year.
- *Likely to occur (onsite, or offsite where the species may be affected by the Project [e.g., from noise, dust, lighting, hydrological modifications, etc.])* – The species has a strong likelihood to be found in the BSA (or offsite and potentially subject to Project impacts) prior to or during maintenance activities, but has not been directly observed to date during Project surveys. The likelihood that a species may occur is based on the following considerations: suitable habitat that meets the life history requirements of the species is present on or near the BSA; migration routes or corridors are near or within the BSA; records of sighting are documented in or near the BSA; and invasive predators (e.g., red fox) are absent. The main criteria for this category are that records of occurrence have been documented within or near the BSA, the BSA falls within the range of the species, and suitable habitat is present but it is undetermined whether the habitat is currently occupied.

- *Potential to occur* – There is a possibility that the species can be found in the BSA or is potentially subject to Project impacts prior to or during maintenance activities, but it has not been directly observed to date. The likelihood that a species may occur is based on the following conditions: suitable habitat that meets the life history requirements of the species is present in or near the BSA; migration routes or corridors are near or within the BSA; and there is an absence of invasive predators (e.g., red fox). The main criteria are that the BSA falls within the range of the species and suitable habitat is present, but no records of sighting are located within or near the BSA and it is undetermined whether the habitat is currently occupied.
- *Unlikely to occur* – The species is not likely to occur in the BSA or be potentially subject to Project impacts based on the following considerations: lack of suitable habitat and features in the BSA that are required to satisfy the life history requirements of the species (e.g., absence of foraging habitat; lack of reproductive areas, and lack of sheltering areas); presence of barriers to migration/dispersal; presence of predators or invasive species that inhibit survival or occupation (e.g., the presence of bullfrogs or invasive fishes); or lack of hibernation areas or estivation areas onsite.
- *Absent* – Suitable habitat does not exist in the BSA where the species would be potentially subject to Project impacts, the species is restricted to or known to be present only within a specific area outside of the BSA, and/or focused or protocol-level surveys did not detect the species.

The likelihood of presence and environmental information is detailed in Appendix E. The following subsections summarize the information from Appendix E and focus only on those species that have the potential to occur in the BSA.

3.4.2.2 Special-Status Plant Species

Fifty-two special-status plant species were identified in the CNDDB, CNPS, and USFWS records searches (Appendix E). Only three species - Point Reyes bird's-beak (*Chloropyron maritimum* ssp. *palustre*), Congdon's tarplant (*Centromadia parryi* ssp. *congdonii*), and small spikerush (*Eleocharis parvula*) - have the potential to occur in and adjacent to the BSA due to the presence of potentially suitable habitat. These species are described in further detail in Table 3.4-1. The remaining species were determined absent or unlikely to occur because the BSA and adjacent potentially indirectly impacted areas lack suitable habitat.



Legend

- Biological Study Area
- System Ponds
- Northern Coastal Salt Marsh

Critical Habitat

- Alameda whipsnake (=striped racer)
- Contra Costa goldfields
- Vernal pool tadpole shrimp
- Western snowy plover
- Green Sturgeon Southern DPS Critical Habitat Estuaries
- Green Sturgeon Southern DPS Critical Habitat Marsh Areas
- Green Sturgeon Southern DPS Critical Habitat Streams
- CCC Steelhead

Service Layer Credits:
ESRI, National Geograhic

Source:
Critical Habitat from USFWS
Approximate distribution of Northern Coastal Salt Marsh is based on tidal marsh layer from Bay Area Aquatic Resource Inventory (BAARI) (SFEI 2015).
Valley Oak Woodland from The Consesrvation Lands Network 2.0

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Figure 3.4-2
Designated Critical Habitat and Sensitive Natural Communities
Cargill
Alameda and San Mateo Counties, CA

Jacobs

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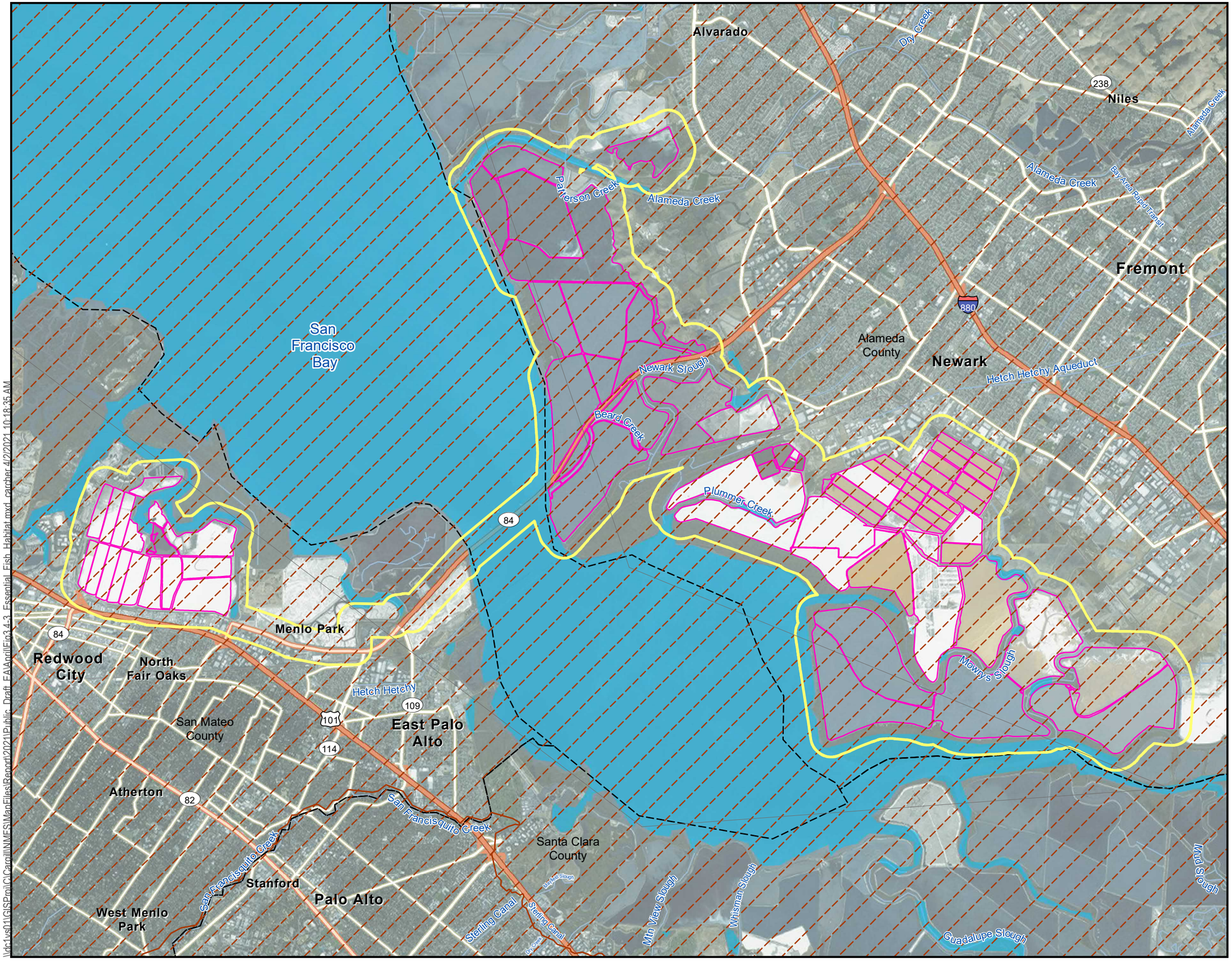

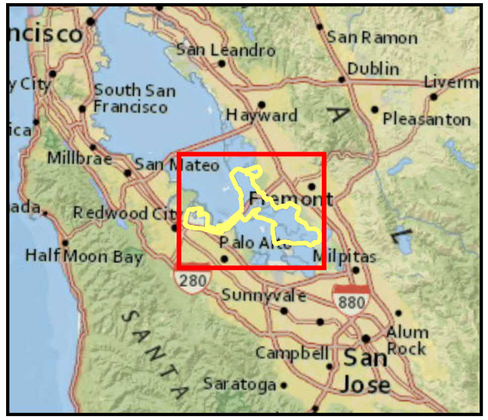

Legend

- Biological Study Area
- System Ponds

Essential Fish Habitat

- Pacific Coast Salmonids
- Coastal Pelagic Species and Pacific Coast Groundfish.

Source:
Essential Fish Habitat from USFWS

Note:
Service Layer Credits: ESRI, National Geograhic

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Figure 3.4-3
Essential Fish Habitat
Cargill
Alameda and San Mateo Counties, CA

Jacobs

\\dc1vs01\GIS\Proj\Cargill\NMFS\MapFiles\Report\2021\Public_Draft_FAV\April\Fig3.4-3_Essential_Fish_Habitat.mxd carcher 4/2/2021 10:18:35 AM

Table 3.4-1. Special-Status Plant Species with Potential to Occur in the Biological Study Area

Scientific Name/ Common Name	Federal Status[a]	State Status[a]	CNPS Status[a]	Habitat	Blooming Period	Potential for Occurrence
Chloropyron maritimum ssp. palustre Point Reyes bird's-beak	None	None	1B.2	In coastal salt marshes.	July to October	**Potential to occur.** There is suitable habitat within the outboard BSA. One CNDDB record within BSA and an additional three CNDDB records outside the BSA but within 2 miles of the BSA.
Centromadia parryi ssp. *congdonii*/ Congdon's tarplant	None	None	1B.1	Valley and foothill grassland. Grows in alkaline soils.	May to October (November)	**Potential to occur.** There is potentially suitable habitat within the outboard areas on the outboard side of outboard berms where maintenance or access work infrequently occur. Two CNDDB records within the BSA and an additional three CNDDB records outside the BSA but within 2 miles of the BSA.
Eleocharis parvula/ small spikerush	None	None	4.3	In coastal salt marshes.	April to September	**Potential to occur.** Suitable habitat is present within the BSA. This species is not tracked in the CNDDB.

[a]Status designations are as follows:
CNPS California Rare Plant Rank (CRPR):
1B = Rare, threatened, or endangered in California and elsewhere
4 = Limited distribution – a watch list
Threat Rank:
0.1 Seriously threatened in California (more than 80% of occurrences threatened/high degree and immediacy of threat)
0.2 Fairly threatened in California (20 to 80% of occurrences threatened/moderate degree and immediacy of threat)
0.3 = Not very threatened in California (less than 20% of occurrences threatened/low degree and immediacy of threat or no current threats known)

Sources:

USFWS 2024a; CDFW 2024b; CNPS 2024

Point Reyes Bird's-Beak
Point Reyes bird's-beak is a CNPS List 1B.2 plant that blooms from July through October and occurs in coastal salt marshes. Potentially suitable conditions occur in tidal marsh habitat (Figure 3.4-1). There is one CNDDB record within BSA, and a further 3 CNDDB records outside the BSA but within 2miles of the BSA.

Congdon's Tarplant
Congdon's tarplant is a CNPS List 1B.1 plant that blooms from May through November and occurs in valley and foothill grasslands in alkaline soils. Potentially suitable conditions exist along upland portions of locks and access cuts, upland areas along the berms, and other upland internal and external areas of the Project (Figure 3.4-1). There are two CNDDB records within the BSA and a further three CNDDB records outside the BSA but within 2miles of the BSA.

Small Spikerush
Small spikerush is a CNPS List 4.3 plant that blooms from April through September and occurs in coastal salt marshes. Potentially suitable conditions occur in tidal marsh habitat (Figure 3.4-1). This species is not tracked in the CNDDB.

Sensitive Plant Communities
Tidal marsh within the BSA is characteristic of Northern Coastal Salt Marsh described by Holland (1986). Figure 3.4-2 shows the approximate distribution of Northern Coastal Salt Marsh in the BSA. Most of the vegetation alliances that comprise Northern Coastal Salt Marsh, such as *Sarcocornia pacifica* (*Salicornia depressa*) alliance and *Spartina foliosa* alliance (Sawyer et al. 2009, CNPS 2024), are considered sensitive natural communities (CDFW 2023a). Northern Coastal Salt Marsh is found on the outboard side of many outboard berms, wherever tidal action and elevation are adequate to support this community type. The plant that is most characteristic of Northern Coastal Salt Marsh in the BSA is pickleweed. This succulent, salt-tolerant perennial forms a dense canopy over large expanses in the Bay. Other commonly encountered native plants include Pacific cordgrass, alkali heath, saltgrass, salt marsh dodder, fleshy jaumea, sea lavender (*Limonium californicum*), and marsh gumplant, among others.

3.4.2.3 Special-Status Wildlife Species
Forty-eight special-status wildlife species were identified in the CNDDB, CNPS, NMFS, and USFWS records searches (Appendix E). Suitable habitat for 27 of the 48 species was identified in the BSA. Species that were identified as being present in or having a potential to occur in the BSA are further detailed in Table 3.4-2.

Table 3.4-2. Special-Status Wildlife Species with Potential to Occur in the Biological Study Area

Category	Scientific Name/ Common Name	Status[a] Federal	Status[a] State	Status[a] CDFW	Habitat	Potential for Occurrence
Fish	*Acipenser medirostris*/ green sturgeon	T	None	SSC	These are the most marine species of sturgeon. Abundance increases northward of Point Conception. Spawns in the Sacramento River. Spawns at temps between 8-14° C. Preferred spawning substrate is large cobble but can range from clean sand to bedrock.	**Potential to occur**. Suitable foraging habitat is present within open water and intertidal mudflats (during high tide) of the BSA. The BSA is within designated critical habitat. Sturgeon have the potential to be present within the BSA year-round. There are no CNDDB records for this species within two miles of the BSA. Cargill's operating salt ponds do not provide habitat for this species.
	Acipenser transmontanus/ white sturgeon	None	C	SSC	Lives in estuaries of large rivers, moving into freshwater to spawn. Most abundant in brackish portions of estuaries. Adults concentrate in deep areas with soft bottoms.	**Likely to Occur**. Suitable foraging habitat is present within open water and intertidal mudflats (during high tide) of the BSA. Sturgeon have the potential to be present within the BSA year-round. This species is not tracked in the CNDDB.
	Entosphenus tridentatus/ Pacific lamprey	None	None	SSC	Found in Pacific Coast streams north of San Luis Obispo County, however regular runs also occur in the Santa Clara River. Swift-current gravel-bottomed areas for spawning with water temps between 12-18 C.	**Present.** Suitable habitat is present, and species is known to be present in portions of the BSA including Alameda Creek (ACWD 2023b).
	Oncorhynchus mykiss irideus/ steelhead -- central California coast Distinct Population Segment	T	None	SSC	From Russian River, south to Soquel Creek and to, but not including, Pajaro River. Also San Francisco and San Pablo Bay basins.	**Seasonally present**. Suitable habitat is present, and species is known to be present in open water of the BSA; however, this species is unlikely to occur between July and October. There are no CNDDB records for this species within two miles of the BSA. Cargill's operating salt ponds do not provide habitat for this species**.**

Category	Scientific Name/ Common Name	Status[a] Federal	Status[a] State	Status[a] CDFW	Habitat	Potential for Occurrence
	Oncorhynchus tsawytscha/ Chinook salmon - Central Valley fall / late fall-run ESU	None	None	SSC	Populations spawning in the Sacramento and San Joaquin rivers and their tributaries.	**Seasonally Present.** Suitable habitat is present. Species strays into portions of the BSA and spawn in Alameda Creek (ACWD 2023b). This species is not tracked in the CNDDB.
	Spirinchus thaleichthys/ longfin smelt	E	T	None	Euryhaline, nektonic, and anadromous. Found in open waters of estuaries, mostly in middle or bottom of water column.	**Likely to occur.** There is potentially suitable habitat within aquatic habitat in the outboard areas of the BSA, where maintenance or access work infrequently occurs. The San Francisco Bay Study has detected this species in small numbers at sampling stations near the BSA (CDFW 2024a), and the species was recently found in restored salt marsh habitat in the Coyote Creek Watershed immediately south of the BSA (Lewis et al. 2020). These observations have been consistently made during the winter and spring months, and these studies have not observed longfin smelt in the South Bay between June and September (CDFW 2024a). This species is not tracked in the CNDDB. Cargill's operating salt ponds do not provide habitat for this species**.**
Invertebrates	*Danaus plexippus plexippu/* Monarch – California overwintering population	C	None	None	Winter roost sites extend along the coast from northern Mendocino to Baja California, Mexico. Roosts located in wind-protected tree groves (eucalyptus, Monterey pine, cypress), with nectar and water sources nearby.	**Potential to Occur.** There are no known or potential overwintering sites within Cargill's operating ponds. However, there are several documented overwintering sites, and three CNDDB records outside the BSA but within two miles of BSA.

Category	Scientific Name/ Common Name	Status[a] Federal	Status[a] State	Status[a] CDFW	Habitat	Potential for Occurrence
Reptiles	*Emys marmorata*/ *Western pond turtle*	PT	None	SSC	A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation, below 6,000 ft elevation. Needs basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 km from water for egg-laying.	**Potential to occur**. Brackish creeks and sloughs in the BSA provide suitable aquatic habitat and adjacent uplands provide potentially suitable nesting habitat. Species is not expected to be present in outboard areas or salt ponds where maintenance would occur. There is one CNDDB record outside BSA but within two miles of the BSA.
Birds	*Agelaius tricolor*/ tricolored blackbird	None	T	SSC	Requires open water, protected nesting substrate which may also occur in uplands, and foraging area with insect prey within a couple miles of the colony.	**Potential to occur**. Marginally suitable foraging habitat is present within the external areas of the BSA. Cargill's operating salt ponds do not provide habitat for this species**.** There are two CNDDB records within the BSA, and an additional two CNDDB records outside the BSA but within two miles of the BSA.
	Asio flammeus/ short-eared owl	None	None	SSC	Found in marsh lands, both fresh and salt; lowland meadows; irrigated alfalfa fields.	**Present.** Suitable foraging habitat is present within the external areas of the BSA. Species documented by USFWS during Ridgway's rail survey at Newark Plant in 2019. There is one CNDDB record outside the BSA but within two miles of the BSA. Cargill's operating salt ponds do not provide habitat for this species**.**
	Athene cunicularia/ burrowing owl	None	None	SSC	Open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation.	**Potential to occur**. Suitable foraging habitat is present within outboard berms and other upland areas within the BSA. There are two CNDDB records within the BSA and an additional eight CNDDB records outside the BSA but within two miles of the BSA.

Category	Scientific Name/ Common Name	Status[a] Federal	Status[a] State	Status[a] CDFW	Habitat	Potential for Occurrence
	Charadrius alexandrinus nivosus/ western snowy plover	T	None	SSC	Sandy beaches, salt pond berms and shores of large alkali lakes. Needs sandy, gravelly or friable soils for nesting.	**Present**. Suitable foraging and nesting habitat is present within the BSA and this species is known to occur at berms and intertidal mudflats within the BSA. There are five CNDDB records within the BSA, and an additional four CNDDB records outside the BSA but within two miles of the BSA.
	Circus cyaneus/ northern harrier	None	None	SSC	Coastal salt and freshwater marshes, nesting and foraging habitats in grasslands, agricultural fields, and high marsh.	**Present**. Suitable foraging habitat is present within outboard areas of the BSA and this species is known to occur in tidal marsh habitat within the BSA. There are three CNDDB records within the BSA, and an additional three CNDDB records outside the BSA but within two miles of the BSA.
	Elanus leucurus/ white-tailed kite	None	None	FP	Rolling foothills and valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland.	**Present**. Suitable foraging habitat is present within the BSA and this species has been observed within the BSA. Presence within the BSA is limited to fly overs or foraging. Cargill's operating ponds lack suitable trees for nesting. There is one CNDDB record within the BSA, and an additional five CNDDB records outside the BSA but within two miles of the BSA.
	Falco peregrinus anatum/ American peregrine falcon	DL	DL	FP	Wetlands, lakes, rivers, or other water; on cliffs, banks, dunes, mounds; also, human-made structures. Nest consists of a scrape or a depression or ledge in an open site.	**Present.** Suitable foraging habitat is present within the BSA. Have been observed annually by USFWS at the Newark Plant. Cargill's operating salt ponds do not provide suitable nesting habitat for this species**.**

Category	Scientific Name/ Common Name	Status[a] Federal	Status[a] State	Status[a] CDFW	Habitat	Potential for Occurrence
	Geothlypis trichas sinuosa/ salt marsh common yellowthroat	None	None	SSC	Resident of the San Francisco Bay region, in freshwater and salt water marshes. Requires thick, continuous cover down to water surface for foraging; tall grasses, tule patches, willows for nesting.	**Present.** Suitable habitat is present within tidal marsh in the external areas of Project and may transit or forage in other parts of the BSA. There are five CNDDB records within the BSA, and an additional four CNDDB records outside the BSA but within two miles of the BSA. Cargill's operating salt ponds do not provide suitable nesting habitat for this species**.**
	Lanius ludovicianus/ loggerhead shrike	None	None	SSC	Broken woodlands, savannah, pinyon-juniper, Joshua tree, and riparian woodlands, desert oases, scrub and washes.	**Potential to occur.** Suitable foraging habitat is present within the BSA. Cargill's operating salt ponds do not provide suitable nesting habitat for this species**.**
	Laterallus jamaicensis coturniculus/ California black rail	None	T	FP	Freshwater marshes, wet meadows, and shallow margins of saltwater marshes. Needs dense vegetation for nesting habitat.	**Present.** Suitable habitat is present within the BSA and this species is known to occur in tidal marsh habitat within the BSA. There are three CNDDB records within the BSA, and an additional nine CNDDB records outside the BSA but within two miles of the BSA. Cargill's operating salt ponds do not provide suitable nesting habitat for this species**.**
	Melospiza melodia pusillula/ Alameda song sparrow	None	None	SSC	Resident of salt marshes bordering south arm of San Francisco Bay. Inhabits *Salicornia* marshes; nests low in *Grindelia* bushes (high enough to escape high tides) and in *Salicornia*.	**Present.** Suitable foraging and nesting habitat is present within the BSA and this species is known to occur in tidal marsh habitat within the BSA. There are six CNDDB records within the BSA, and an additional nine CNDDB records outside the BSA but within two miles of the BSA.
	Pelecanus occidentalis californicus/ California brown pelican	DL	DL	FP	Nests on coastal islands of small to moderate size which afford immunity from attack by ground-dwelling predators. Roosts communally.	**Likely to occur.** Suitable foraging habitat is present in external areas and a limited number of internal portions of the BSA. Nesting habitat is not present within the BSA as the BSA is outside of its nesting range.

Category	Scientific Name/ Common Name	Status[a] Federal	Status[a] State	Status[a] CDFW	Habitat	Potential for Occurrence
	Rallus obsoletus obsoletus/ California Ridgway's rail	E	E	FP	Salt water and brackish marshes with tidal sloughs. Associated with abundant growths of pickleweed (*Salicornia* spp.) but feeds away from cover on invertebrates from mud-bottomed sloughs.	**Present.** Suitable foraging and nesting habitat is present within the BSA and this species is known to occur in tidal marsh habitat within the BSA. There are six CNDDB records within the BSA, and an additional seven CNDDB records outside the BSA but within two miles of the BSA. Cargill's operating salt ponds do not provide suitable nesting habitat for this species**.**
	Rynchops niger/ black skimmer	None	None	SSC	Nests on gravel bars, low islets, and sandy beaches, in unvegetated sites. Nesting colonies usually less than 200 pairs.	**Likely to occur.** Suitable habitat is present in external areas and a limited number of internal portions of the Project.
	Sternula antillarum browni/ California least tern	E	E	FP	Nests along the coast from San Francisco Bay south to northern Baja California, Mexico on bare sparsely vegetated, flat substrates such as sand beaches, alkali flats, landfills, or paved areas.	**Present.** The species is known to forage within the BSA. No nesting occurs in the BSA. There are two CNDDB records within the BSA, and a further three CNDDB records outside the BSA but within two miles of the BSA.
Mammals	*Reithrodontomys raviventris* (southern subspecies; *R. r. raviventris)*/ salt marsh harvest mouse	E	E	FP	Only found in the saline emergent wetlands of San Francisco Bay and its estuaries. Pickleweed is primary habitat. Does not burrow, builds loosely organized nests. Requires higher areas for flood escape.	**Present**. Suitable habitat is present within the BSA and this species is known to occur in tidal marsh habitat within some areas of the BSA, and should be presumed present elsewhere. Species has been documented in Newark Plants 1 and 2 by USFWS and confirmed via genetic testing by UC Davis. There are fifteen CNDDB records within the BSA, and an additional twelve CNDDB records outside the BSA but within two miles of the BSA.

Category	Scientific Name/ Common Name	Status[a] Federal	Status[a] State	Status[a] CDFW	Habitat	Potential for Occurrence
	Sorex vagrans halicoetes/ salt marsh wandering shrew	None	None	SSC	Salt marshes of the south arm of San Francisco Bay.	**Likely to occur**. Suitable habitat is present within the BSA and this species is known to occur in tidal marsh habitat within the BSA. There are three CNDDB records within the BSA, and an additional two CNDDB records outside the BSA but within two miles of the BSA.
Marine Mammals	*Phoca vitulina richardsi*/ Pacific harbor seal	MMPA	None	None	Favor near-shore coastal waters and are often seen on rocky islands, sandy beaches, mudflats, bays, and estuaries. Use various intertidal substrates that are exposed at low to medium tide levels for resting and breeding.	**Present**. Suitable habitat is present within the outboard areas of the BSA and this species is known to occur within the open water and intertidal mudflat habitat of the BSA. Pupping sites are known to be present along Mowry Slough and Newark Slough. This species is not tracked in the CNDDB. Cargill's operating salt ponds do not provide habitat for this species**.**
	Zalophus californianus/ California sea lion	MMPA	None	None	Shallow waters of the eastern North Pacific Ocean. Use various intertidal substrates that are exposed at low to medium tide levels for resting and breeding. Noted for using anthropogenic structures such as floating docks, piers, and buoys to haul out of the water to rest.	**Present.** Suitable habitat is present within the external areas of the BSA and this species is known to occur. There are no known haul-out locations in the BSA. This species is not tracked in the CNDDB. Cargill's operating salt ponds do not provide habitat for this species**.**

[a]Status designations are as follows:
Federal Designations:
(E) Federally Endangered, (T) Federally Threatened, (PT) Federally Proposed Endangered, (PT) Federally Proposed Threatened, (C) Candidate, (DL) Federally Delisted, (MMPA) Marine Mammal Protection Act
State Designations:
(E) State Endangered, (T) State Threatened, (C) State Candidate, (DL) State Delisted
California Department of Fish and Wildlife (CDFW) Designations:
(SSC) Species of Special Concern, (FP) Fully Protected
Sources:
CDFW 2019; CDFW 2024a; CDFW 2024b; NMFS 2020a; USFWS 2020

Fish

Green Sturgeon

The federally threatened southern distinct population segment (DPS) of North American green sturgeon (*Acipenser medirostris*) is designated as populations originating from coastal watersheds south of the Eel River (California), where the only known spawning population is in the Sacramento River (50 CFR part 226). Southern DPS green sturgeon is designated a Species of Special Concern by CDFW (CDFW 2024b).

The life cycle of southern DPS green sturgeon can be broken into four distinct phases based on developmental stage and habitat use: (1) larvae and post-larvae less than 10 months of age; (2) juveniles less than or equal to 3 or 4 years of age; (3) coastal migrant females between 3 or 4 and 13, and males between 3 or 4 and 9 years of age; and (4) adult females greater than or equal to 13 years of age and males greater than or equal to 9 years of age (Nakamoto et al. 1995).

Southern DPS green sturgeon adults typically begin their upstream spawning migrations into the San Francisco Bay by late February to early March, and spawn between March and July (Heublein et al. 2009) in the Sacramento River (Moyle 2002, Erickson et al. 2002, Farr and Kern 2005). Therefore, there is no southern DPS green sturgeon spawning habitat within the BSA. During the late summer and early fall, juveniles, subadults, and non-spawning adult green sturgeon frequently can be found aggregating in estuaries along the Pacific coast (Emmett et al. 1991), like the San Francisco Bay. Green sturgeon migrating between the Pacific Ocean and spawning habitat in the Sacramento River watershed rarely travel south of the San Francisco–Oakland Bay Bridge. Typically, adults take a more direct route from San Pablo Bay, passing through Raccoon Strait adjacent to Angel Island, and out to the Pacific Ocean (Kelly et al. 2007). However, juveniles and adults are presumed present year-round in all parts of the San Francisco Bay, including the South San Francisco Bay (Monaco et al. 1990, Israel and Klimley 2008). The entire San Francisco Bay is designated as critical habitat for green sturgeon (Figure 3.4-2). Green sturgeon are benthic feeders that often forage over intertidal mudflats (Moser et al. 2016); therefore, suitable foraging habitat exists within the BSA.

This species is not regularly encountered during scientific surveys in the San Francisco Bay (Heublein et al. 2017), and few data and studies exist on the species in the South San Francisco Bay. Similarly, there are little to no available data on fish assemblages in the sloughs within the BSA; however, two sampling programs regularly sample areas in the vicinity. The San Francisco Bay Study (Bay Study) has been sampling since 1980 and uses a midwater trawl and an otter trawl to sample 52 stations, 3 of which (Stations 101, 102, and 140) are within 11 miles of Cargill's intakes; no green sturgeon have been captured in this study (CDFW 2020a). Additionally, sampling performed by the Hobbs Biogeochemistry and Fish Ecology Laboratory (Hobbs Lab) within the Alviso Marsh Complex (a series of marshes and sloughs similar to those surrounding and within the BSA) has been conducted continuously each month since 2010 (Lewis and Hobbs 2018). Over the course this sampling, no green sturgeon have been captured.

Note that juvenile, subadult, and adult green sturgeon are rarely caught in the type of trawls used in the Bay Study and the Hobbs Lab studies, and they may be completely absent from all

monitoring throughout the San Francisco Bay in some years (Heublein et al. 2017). Therefore, these data likely do not provide a complete picture on abundance and presence of the species in the South San Francisco Bay. Studies that target juvenile, subadult, and adult sturgeon, such as the CDFW Sturgeon Study, which uses trammel nets, have only been conducted in the San Pablo and Suisun bays; data from studies utilizing these more effective survey methods in the South San Francisco Bay are not available. Green sturgeon are assumed to forage in the South Bay (Heublein pers. comm. 2020). Similarly, commercial fishing does not occur at large levels in the South San Francisco Bay, so bycatch data are not available.

Because of the difficulty in sampling for this species as described, the presence of foraging juvenile, subadult, and adult sturgeon year-round in the vicinity of the BSA cannot be ruled out, though primarily in deeper subtidal waters. However, no spawning is expected in the South San Francisco Bay or its tributaries, and Cargill's operating salt ponds do not provide suitable habitat for this species.

White sturgeon

White sturgeon (*Acipenser transmontanus*) is designated a Species of Special Concern by CDFW (CDFW 2024b) and is a candidate for listing under CESA. In 2023, conservation groups submitted a petition to the California Fish and Game Commission to list this species as threatened under CESA. In March 2024, CDFW completed an evaluation of the petition and recommended for further consideration for listing under CESA (CDFW 2024c). On June 19, 2024, the California Fish and Game Commission approved white sturgeon as a candidate species for listing under CESA.

White sturgeon ranges from Mexico to Alaska, primarily residing in large rivers and their associated estuaries (CDFW 2024d) Though found further south, white sturgeon only spawns in rivers in California's Central Valley and northward (Moyle 2002).

Males reach maturity at 10-12 years of age, while females become mature at 12-16 years of Age (Moyle 2002). Once mature, sturgeon move upstream to spawn in deep holes with swift current and rock bottoms. When spawning is complete, adults migrate back into the estuary. Males can spawn every 1-2 years, while females spawn every 2-4 years (Moyle 2002).

In California's Central Valley, adults migrate from the estuary into the river in winter, spawn from February to June, and return to the Delta after spawning (CDFW 2024d). Spawning has only been documented in the Sacramento and San Joaquin rivers and their tributaries (CDFW 2024), with the majority occurring in the mainstem Sacramento River. Juvenile, subadult, and adult sturgeon are expected to occur year-round in the vicinity of the BSA. However, spawning is not expected in the South San Francisco Bay or its tributaries.

Threats to white sturgeon include ship strike, poaching, predation, pumps and diversion, and harmful algal blooms (CDFW 2023b). A harmful algal bloom August 2022 killed more than 800 sturgeon in the Bay-Delta, with numerous white sturgeon carcasses confirmed along the shoreline of the South Bay (CDFW 2023c).

Pacific Lamprey

Pacific lamprey (*Endosphenus tridentatus*) is designated a Species of Special Concern by CDFW (CDFW 2024b). Lamprey are anadromous and thought to be distributed wherever salmon and steelhead have occurred. Though existing in similar waters as these salmonids, the degree of homing is unknown (USFWS 2024c). Pacific lamprey are widely distributed along the Pacific Rim and their distribution includes major river systems such as the Fraser, Columbia, Klamath, and Sacramento-San Joaquin rivers (USFWS 2024c).

Similar to spawning habitats of salmon, lamprey prefer gravel bottomed streams, at the upstream end of riffle habitat. Spawning occurs between March and July depending on location within their range. Embryos hatch in about 19 days. As larvae, or ammocoetes, lamprey drift downstream to areas of low velocity and finer substates where they burrow and live as filter feeders for several years. As their larval stage ends, lamprey transform and develop eyes and a mouth full of teeth. Juveniles migrate downstream to the ocean and become parasitic to fish and marine mammals. Lamprey at this stage may spend several years in the ocean before returning as adults to spawn (USFWS 2024c). Although lamprey are able to spawn immediately after upstream migration, some populations have been found to overwinter in freshwater for a year before fully maturing and spawning (CDFW 2024b). Like salmon, Pacific lamprey are semelparous, meaning adults have one spawning event before dying (CDFW 2024b).

Suitable habitat is present throughout the aquatic habitat in outboard portions of the BSA. Monitoring conducted in 2022/2023, the first year of operation, documented Pacific lamprey at the Alameda Creek fish passage facilities (ACWD 2023b).

Steelhead

The federally threatened Central California Coast (CCC) steelhead (*Oncorhynchus mykiss*) DPS includes all naturally spawned populations of steelhead (and their progeny) in California streams from the Russian River to Aptos Creek, and the drainages of San Francisco and San Pablo bays eastward to the Napa River (inclusive), excluding the Sacramento-San Joaquin River Basin. The Project area is within critical habitat for steelhead which includes the South San Francisco Bay (Figure 3.4-2). CCC DPS steelhead is designated a Species of Special Concern by CDFW (CDFW 2024b).

Steelhead are anadromous, spending some time in both freshwater and saltwater. The older juvenile and adult life stages occur in the ocean, until the adults ascend freshwater streams to spawn. Unlike Pacific salmon, steelhead are iteroparous, or capable of spawning more than once before death (Busby et al. 1996). Eggs (laid in gravel nests called redds), alevins (gravel dwelling hatchlings), fry (juveniles newly emerged from stream gravels), and young juveniles remain in freshwater until they become large enough to migrate to the ocean to finish rearing and maturing to adults. General reviews for steelhead in California document much variation in life history (Barnhart 1986, Busby et al. 1996, McEwan 2001). Although variation occurs, steelhead usually live in freshwater for 2 years, then spend 1 or 2 years in the ocean before returning to their natal stream to spawn.

Tributaries where steelhead are known to spawn and rear include San Francisquito Creek (which reaches the Bay approximately 3.5 miles southeast of the Redwood City Plant), Stevens

Creek (which reaches the Bay approximately 6.5 miles southeast of the Redwood City Plant), and Guadalupe River and Coyote Creek (which converge and reach the Bay less than a mile southeast of Newark Plant 2). Alameda Creek has not supported a FESA-protected run of CCC steelhead until very recently due to significant barriers blocking access to spawning habitat. In late 2022, Alameda County Water District (ACWD) and the Alameda County Flood Control and Water Conservation District completed construction of the Lower Alameda Creek Fish Passage Improvement Project. The fish passage improvements at the ACWD's Rubber Dams 1 and 3 (RD1 and RD3) and the BART Weir (Drop Structure) provide steelhead unimpeded access to spawning habitat upstream of these previously inaccessible barriers (ACWD 2023b). Monitoring conducted in 2022/2023, the first year of operation, documented use of the fish passage facilities by steelhead (ACWD 2023b). Also, as noted in Section 2.10.5, in April 2023 a tagged juvenile steelhead trout was detected while migrating downstream from the upper watershed through lower Alameda Creek toward the Bay. The juvenile was one of a group that had been tagged in October 2022 in the upper watershed of Alameda Creek (ACWD et al, 2023), where a resident population of steelhead trout exists.

Data on steelhead abundance in San Francisco Bay, and to a greater extent South San Francisco Bay, are limited. However, estimates put the number of adult steelhead within the entire Bay per year at approximately 14,100 (NMFS 2006), with local populations near the BSA presumably representing only a small percentage of this number due to fewer creeks with spawning habitat available to steelhead in the South Bay.

Steelhead from the tributaries of San Francisco Bay typically migrate to freshwater between November and April, peaking in January and February. They migrate downstream and out to the ocean as juveniles from March through June, with peak migration occurring in April and May (Fukushima and Lesh 1998). Steelhead fry generally rear in edgewater habitats within natal streams and move gradually into pools and riffles as they grow larger. Cover is an important habitat component for juvenile steelhead, both as a velocity refuge and as a means of avoiding predation (Shirvell 1990, Meehan and Bjorn 1991). However, steelhead tend to use riffles and other habitats not strongly associated with cover during summer rearing more than other salmonids. Young steelhead feed on a wide variety of aquatic and terrestrial insects, and emerging fry are sometimes preyed upon by older juveniles. Rearing steelhead juveniles prefer water temperatures of 7.2 to 14.4 degrees Celsius (°C) (45.0 to 57.9°F) and have an upper lethal limit of 23.9°C (75.0°F) (Barnhart 1986, Moyle 2002). They can survive in water up to 27°C (80.6°F) with saturated dissolved oxygen conditions and a plentiful food supply. Fluctuating diurnal water temperatures also aid in survivability of salmonids (Busby et al. 1996).

Juvenile steelhead emigrate episodically from natal streams during fall, winter, and spring high flows. Emigrating steelhead use the lower reaches of rivers and estuaries for rearing and as a migration corridor to the ocean. Juvenile steelhead migrate downstream during most months of the year, but the peak period of emigration occurs in the spring, with a much smaller peak in the fall. Outmigrating juvenile steelhead may pass through and occasionally rear in outboard aquatic habitat in the BSA, particularly along Alameda Creek where fish passage has recently been restored. Steelhead may be seasonally present in the BSA between approximately November and June, but individuals are expected to transit through the BSA quickly.

Chinook Salmon

Multiple runs of Chinook Salmon (*Oncorhynchus tshawytscha*) exist in the Bay-Delta. Named for the season in which they enter the freshwater system, fall-run, late fall-run, spring-run, and winter-run salmon migrate in distinct periods of the year and have different life strategies. Of these runs, fall-run and late fall-run are a state and federal Species of Concern, spring-run is listed both state and federally as threatened, and winter-run is listed both state and federally as endangered (CDFW 2024e).

Chinook Salmon are anadromous, spending time in both freshwater and saltwater. The older juvenile and adult life stages occur in the ocean, until the adults ascend freshwater streams to spawn. Chinook Salmon are semelparous, meaning they are only capable of spawning once before dying. Eggs (laid in gravel nests called redds), alevins (gravel dwelling hatchlings), fry (juveniles newly emerged from stream gravels), and young juveniles remain in freshwater until they become large enough to migrate to the ocean to finish rearing and maturing to adults.

Spring-run, and winter-run Chinook salmon are not expected to occur in the BSA. Chinook salmon exhibiting fall-run life history have been observed in Alameda Creek successfully passing the ACDW fish ladder and spawning downstream of the passage facility (ACDW 2023).

Longfin Smelt

The longfin smelt (*Spirinchus thaleichthys*), listed as state threatened and federally endangered, is a small, slender-bodied pelagic fish. This species typically measures approximately 3 inches in length as adults and generally live for 2 years, although some 3-year-old smelt have been observed. Juveniles and pre-spawning adults reside in the more saline habitats within San Pablo Bay and central San Francisco Bay during a majority of their life (Kelly et al. 2007).

Longfin smelt are primarily an open water fish species, except for in the larval stage, and inhabit the middle to lower water column. Movement patterns based on CDFW fishery sampling and other studies suggest that longfin smelt actively avoid water temperatures greater than 22°C (72°F) (Baxter et al. 1999, Hobbs and Moyle 2015). Adult longfin smelt are primarily present throughout the San Francisco Bay during the late summer months, generally concentrated in Suisun and San Pablo Bays, before migrating upstream to spawn in late winter (Merz et al. 2013). Spawning occurs from November through May, peaking from February through April. Longfin smelt were previously considered not to be present in the South Bay. However, longfin smelt were recently detected in the Alviso area of the Coyote Creek watershed (Lewis et al. 2020) with spawning within Coyote Creek confirmed during years of high precipitation. Longfin smelt have been detected at Stations A-21-1 and A-21-4, which are within or immediately adjacent to the BSA.

Longfin smelt adults have been captured during the winter months at the three closest stations for CDFW's Bay Study, all of which are within 11 miles of Cargill's intakes. A review of 10 years of records from these same survey stations reveals no longfin smelt captured during the summer months (June-September), with one fish captured in May and one fish captured in October during ten years of surveys. These results indicate that longfin smelt are likely only present in the South Bay seasonally when temperature and salinity are more stable and within more suitable ranges for this species. Recent studies have captured longfin smelt at high

densities near the mouth of Coyote Creek, south of the BSA (Lewis et al., 2019), where seasonal freshwater outflow creates a low salinity and low temperature zone.

Surveys conducted from 2011 to 2019 in the marshes and sloughs associated with the Coyote Creek watershed between October and April found persistent and occasionally dense aggregations of adult longfin smelt, some of which were in late-stage spawning condition (Lewis et al. 2020). In addition, post-larval recruits (i.e., intermediate life stage between larvae and juveniles) were observed in April through May of 2017 and 2019; these years were characterized by high precipitation and freshwater outflow, and as such, the marshes in the area experienced persistent and stable low-salinity spawning and rearing habitat. Thus, there appears to be potential for spawning in Coyote Creek watershed immediately south of the BSA in all years, but recruitment success is limited by freshwater outflow (Lewis et al. 2020). The highest catches of recruits and adults were often within shallow, recently restored tidal marshes and adjacent sloughs at the mouth of Coyote Creek.

There are suitable tidal marshes within the BSA, and as such, longfin smelt have the potential to occur. Temperature and salinity data analyses provided by WRA (2024) suggest that conditions in the vicinity of Cargill's operating ponds are generally unsuitable for longfin smelt from June through October. This period of poor habitat conditions for longfin smelt is consistent with the period of time when the species has not been detected by fisheries surveys in the South Bay (CDFW 2024). The available data regarding longfin smelt capture, which were collected in the center of the South Bay, and limited water quality data collected at the intakes, suggest that longfin smelt are not likely to be present in the South Bay during the summer months.

Managed U.S. Fisheries Species

Under the Magnuson-Stevens Act, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-297), the NMFS, Fishery Management Councils, and federal agencies are required to cooperatively protect Essential Fish Habitat for commercially important fish species, such as Pacific coast groundfish, three species of salmon, and five species of coastal pelagic fish and squid. As defined by the U.S. Congress, EFH includes "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." The entire central San Francisco Bay is considered generally to provide EFH for the species listed in Table 3.4-3, as these fish species are included in fish management plans prepared by regional Fishery Management Councils under the Magnuson-Stevens Act. Figure 3.4-3 shows EFH in and around the BSA.

Invertebrates

Monarch Butterfly

The overwintering population of Monarch butterfly (*Danaus plexippus*) is listed as a federal candidate species (CDFW 2024f). Monarchs are known for their long distance, multigenerational migration cycle and reliance on milkweed as its obligate larval host plant. In California, Monarchs migrate southward and overwinter in roosts of eucalyptus, Monterey pine, and Monterey cypress trees. In the spring, Monarchs return north, feeding and mating along the way. Successive generations join this migration and make up the returning population for the following year. Monarchs require abundance in milkweed plants for laying eggs and as a food source for larvae (USFWS 2024d). There are several documented overwintering sites, and

three CNDDB records outside the BSA but within two miles of BSA. Milkweed, the obligate larval host plant, is not commonly observed in and around salt ponds.

Overwintering habitat would not be impacted by maintenance activities. Milkweed is not expected to be present. Marginally suitable foraging habitat is present within the BSA.

Reptiles

Western Pond Turtle

The western pond turtle (*Actinemys marmorata*) is a federally proposed threatened species and a California Species of Special Concern. The range of the western pond turtle spans from Washington to Baja California. Within California, two subspecies, northwestern and southwestern, are believed to integrate over a broad range in the Central Valley (Jennings and Hayes 1994). Western pond turtles inhabit streams, ponds, lakes, and permanent and ephemeral wetlands. Though they spend most of their lives in water, they also require terrestrial habitat for nesting (USFWS 2024e). Western pond turtles may winter in an inactive state on land or in the water, although some turtles may be active year-round.

Female pond turtles usually reach sexual maturity around 10-15 years of age, while males mature more quickly at 8-12 years. Mating takes place both in the spring and fall. Nesting occurs from May until July. Females dig a hole for their nest in a suitable site with dry soil, sparse vegetation, and southern exposure. Eggs are deposited and the nest is then covered to maintain a humid environment for the eggs. Incubation underground lasts between 90-130 days (USFWS, 2024c).

Western pond turtles are likely to exist and nest in freshwater and brackish creeks within the proximity of the BSA, although it is unlikely for them to be present within salt marshes and salt ponds. This species has not been observed in salt pond or marshes owned by owned by USFWS that are managed by Cargill or in other salt marsh areas of the Don Edwards San Francisco Bay National Wildlife Refuge (Tertes 2024). There is one CNDDB record outside BSA but within two miles of the BSA.

Birds

Tricolored Blackbird

Tricolored blackbird (*Agelaius tricolor*) is state listed as threatened (CDFW 2020). Individuals of the species nest in wetlands and triticale (a type of grain) fields, near stock ponds, and in irrigated pastures. Foraging habitats include cultivated fields, feedlots associated with dairy farms, and wetlands. They now nest almost exclusively in triticale fields, especially those with invasive mustard or mallow plants. Females select the nesting site within a male's territory, typically close to freshwater, with plenty of concealing vegetation. Females build nests in vegetation from just above ground level up to about 8 feet. Tricolored blackbirds typically have 1 to 2 broods each breeding season. They form dense breeding colonies and defend only their nesting patch (Beedy et al. 2017).

Marginally suitable foraging habitat is present within the external areas of the BSA, in the dredge locks and access cuts and tidal marsh habitat. There are two CNDDB records within the

BSA and a further two CNDDB records outside the BSA but within two miles of the BSA. No suitable nesting habitat is present within Cargill's operating system.

Table 3.4-3. Managed Fish Species in San Francisco Bay under the Magnuson-Stevens Act

Fisheries Management Plan	Common Name	Scientific Name	Life Stage	Abundance in San Francisco Bay
Coastal Pelagic	Northern anchovy	*Engraulis mordax*	J, A	Abundant
	Jack mackerel	*Trachurus symmetricus*	E, L	Present
	Pacific sardine	*Sardinops sagax*	J, A	Present
Pacific Groundfish	English sole	*Parophrys vetulus*	J, A	Abundant
	Sand sole	*Psettichthys melanostictus*	L, J, A	Present
	Curlfin sole	*Pleuronichthys decurrens*	J	Rare
	Pacific sanddab	*Citharichthys sordidus*	E, L, J, A	Present
	Starry flounder	*Platichthys stellatus*	J, A	Present
	Lingcod	*Ophiodon elongatus*	J, A	Present
	Brown rockfish	*Sebastes auriculatus*	J	Present
	Pacific whiting (hake)	*Merluccius productus*	E, L	Present
	Kelp greenling	*Hexagrammos decagrammus*	J, A	Present
	Leopard shark	*Triakis semifasciata*	J, A	Present
	Spiny dogfish	*Squalus acanthias*	J, A	Present
	Skates	*Raja* ssp.	J, A	Present
	Soupfin shark	*Galeorhinus galeus*	J, A	Rare
	Bocaccio	*Sebastes paucispinis*	J	Rare
	Cabezon	*Scorpaenichthys marmoratus*	J	Present
Pacific Coast Salmon	Chinook salmon	*Oncorhynchus tshawytscha*	J, A	Seasonally Present
	Coho salmon	*Oncorhynchus kisutch*	J, A	Historically Present, but now considered extirpated (Williams et al. 2011)

Notes:
A = Adult
J = Juvenile
L = Larvae
E = Egg
Sources: NMFS 2001, and Interagency Ecological Program for the San Francisco Bay Estuary (IEP), *San Francisco Bay Study, 2005-2009,* unpublished raw midwater trawl data, 2005-2009.

Burrowing Owl

Burrowing owl (*Athene cunicularia*) is considered a Species of Special Concern by CDFW (CDFW 2019). This species inhabits open, treeless areas with low, sparse vegetation, usually on gently sloping terrain. Burrowing owls nest in burrows dug by other animals, often in areas that have

loose soil, a bit of elevation to avoid flooding, and nearby lookouts such as dirt mounds, bushes, fence posts, or road signs. Burrowing owls eat invertebrates and small vertebrates, including lizards, birds, and mammals, and hunt at all hours of the day and night. While hunting, they often stay close to the ground seizing prey in their talons. Between forays for food, they sleep on dirt mounds at their burrow entrances or on depressions in the ground.

There is potential for this species to occur within the BSA as suitable foraging, roosting, and nesting habitat is present within the external areas of the BSA, particularly on the upland edge of the salt pond complexes. This species is known to nest in berms along the Delta; it has been documented to be seasonally present in the berms at Cargill's Napa Plant site in the North Bay (S. von Rosenberg 2020, pers. comm., August 31). There are two CNDDB records within the BSA, east of Newark Plants 1 and 2 and a further 8 CNDDB records outside the BSA but within two miles of the BSA.

Western Snowy Plover

The WSP is federally listed as threatened and is considered a Species of Special Concern by CDFW (CDFW 2024). This species inhabits barren to sparsely vegetated sand beaches, dry salt flats in lagoons, dredged material deposited on beach or dune habitat, berms and flats at salt-evaporation ponds, river bars, and along alkaline or saline lakes, reservoirs, and ponds. Western snowy plovers breed primarily above the high tide line on coastal beaches, sand spits, dune-backed beaches, sparsely vegetated dunes, beaches at creek and river mouths, and salt pannes at lagoons and estuaries. WSP have high breeding-site fidelity, but the location of nests within those breeding sites changes from year to year. In addition, site fidelity is associated with wintering areas. WSP also use the shores and earthen berms of salt ponds, alkaline lakes, and salt flats in landlocked portions of their range. Less common nesting habitats include bluff-backed beaches, upland beneficial reuse sites using dredged material, salt pond earthen berms, dry salt ponds, and river bars. Nests typically occur in flat, open areas with sandy or saline substrates where vegetation and driftwood are usually sparse or absent. Nests consist of a shallow scrape or depression, sometimes lined with beach debris (e.g., small pebbles, shell fragments, plant debris, and mud chips) (USFWS 2007). Nesting season extends from early March through late September. WSP winter mainly in coastal areas from southern Washington to Mexico. In winter, WSP are found on many of the beaches used for nesting as well as on beaches where they do not nest, in anthropogenic salt ponds, and on estuarine sand and mud flats.

The BSA contains suitable nesting and foraging habitat and WSP are known to occur. Nesting habitat exists within dry salt ponds, on interior earthen berms, and to a lesser degree, in areas outside the salt ponds. Salt ponds are not suitable nesting habitat for this species when they are filled with brines, as WSP nesting requires dry land. There is also a large amount of protected nesting habitat in areas adjacent to the Project area, such as Eden Landing Ecological Reserve. WSP have been recorded foraging and nesting in the Project area within the last several years, specifically at pond P2-13, where in 2015 Cargill representatives reported two separate sightings of an adult and two chicks, and P2-PP1, where SFBBO biologists reported a group of two adults and two chicks (Pearl et al. 2015). In 2017, Cargill staff and WRA again observed WSP nesting at pond P1-PP1, as well as within ponds P2-2, P2-7 and P2-8 (WRA 2017).

They have also been documented nesting at the Redwood City Plant by USFWS in 2014. In the 2023 breeding season, SFBBO monitored 63 WSP nests on Cargill-managed ponds in the Dumbarton Complex (i.e, Newark Plant 1) and found an additional four nests at the brood stage. Apparent nest success in this complex was 73%. In 2023, nest density and success was very high in Pond PP1, which was not flooded during the breeding season. One WSP brood was also observed at the Newark facility (SFBBO 2024). In addition, designated critical habitat exists within the Project area (Figure 3.4-2). There are five CNDDB records within the BSA, and a further four CNDDB records outside the BSA but within two miles of the BSA.

Northern Harrier

Northern harrier (*Circus cyaneus*) is considered a Species of Special Concern by CDFW. They are known to forage in coastal salt and freshwater marshes and adjacent habitats, and are also known to nest in high marsh on the ground or in low-growing vegetation. Suitable foraging habitat is present in the BSA, including both internal and external areas; nesting may occur in external portions of the Project in high marsh and other external areas that are not tidally inundated. There are three CNDDB records within the BSA, and a further three CNDDB records outside the BSA but within two miles of the BSA.

Salt Marsh Common Yellowthroat

Salt marsh common yellowthroat (*Geothlypis trichas sinuosa*) is considered a Species of Special Concern by CDFW (CDFW 2019). The salt marsh common yellowthroat is a resident of the San Francisco Bay region, in fresh and salt water marshes. This species requires thick, continuous cover down to the water surface for foraging and tall grasses, tule patches, and willows for nesting. This species is known to occur within the external areas of the Project within the dredge locks and access cuts and tidal marsh habitat, where maintenance or access work infrequently occurs and would not impact this species. There are five CNDDB records within the BSA, and a further four CNDDB records outside the BSA but within two miles of the BSA.

California Black Rail

California black rail is state listed as threatened (CDFW 2020) and is a California Fully Protected species (CDFW 2019). This species inhabits freshwater marshes, wet meadows, and shallow margins of saltwater marshes. California black rail are primarily associated with emergent tidal marshes. The species is most abundant within pickleweed at or above the mean tide level. They prefer areas with dense cover of native marsh species and moist substrate, and nest in high marsh vegetation (Evens and Thorne 2015). Suitable habitat is present within the BSA and this species is known to occur in tidal marsh habitat within the BSA. There is no suitable habitat for this species within Cargill's operating salt ponds. There are three CNDDB records within the BSA, and a further nine CNDDB records outside the BSA but within two miles of the BSA.

Alameda Song Sparrow

The Alameda song sparrow (*Melospiza melodia pusillula*) is considered a Species of Special Concern by CDFW (CDFW 2019). This species is a resident of salt marshes bordering the south San Francisco Bay. Alameda song sparrow inhabit pickleweed marshes and nest low (though high enough to escape high tides) in gumplant bushes and pickleweed. Suitable foraging, roosting, and nesting habitat is present within the BSA, and this species is known to occur in

tidal marsh habitat within the BSA. There is no suitable habitat for this species within Cargill's operating salt ponds. There are six CNDDB records within the BSA, and a further nine CNDDB records outside the BSA but within two miles of the BSA.

California Ridgway's Rail

The CRR, formerly called the California clapper rail, is the resident Ridgway's rail subspecies of northern and central California. Although formerly more widespread, it is currently restricted to the San Francisco Bay, with the largest populations occurring in remnant salt marshes of southern San Francisco Bay. No critical habitat has been proposed or designated for this subspecies.

The CRR occurs only within salt and brackish marshes. Important CRR habitat components are: (1) well-developed tidal sloughs and secondary sloughs; (2) beds of cordgrass in the lower marsh zone; (3) dense salt marsh vegetation for cover, nest sites, and brooding areas; (4) intertidal mudflats, gradually sloping banks of tidal channels, and cordgrass beds for foraging; (5) abundant invertebrate food resources; and (6) transitional vegetation at the marsh edge to serve as a refuge during high tides. In South and Central San Francisco Bay and along the perimeter of San Pablo Bay, CRR typically inhabits salt marshes dominated by pickleweed and cordgrass, with other halophytes (e.g., marsh gumplant, saltgrass, fleshy jaumea) typically present.

Breeding begins in mid-March and extends into July, with peak activity in late April to late May. California Ridgway's rail nests, constructed of wetland vegetation and platform-shaped, are placed near the ground in clumps of dense vegetation, usually in the lower marsh zone near small tidal channels. Existing marsh vegetation or drift material is used as a canopy over the nest platform. Although CRR is considered non-migratory, numerous accounts exist of juveniles dispersing widely between habitat areas (USFWS 1984).

Habitat for CRR is present in existing tidal marsh on the bayside margins of the outboard earthen berms at Newark Plants 1 and 2 and in marshes in close proximity to the Redwood City Plant. There is no suitable habitat for this species within Cargill's operating salt ponds. Marshes abutting the perimeter berms directly associated with the Redwood City Plant are not suitable nesting habitat for CRR due to their low elevation and limited width, but they may support CRR foraging. Portions of the BSA support nesting and foraging habitat for CRR where well-developed tidal marsh areas are present outboard of exterior earthen berms, and potentially on the outboard sides of such berms where vegetation is suitable. Nesting habitat for CRR within the BSA consists of large areas of pickleweed and cordgrass monocultures that are concentrated on the bayside marshes abutting exterior earthen berms, and along channels including Alameda Creek, Newark Slough, and Coyote Creek. Abundant foraging habitat exists on the margins of the marshes and along the creek and slough edges.

Although the South San Francisco Bay supports some of the largest populations of CRR, populations declined in some areas due to invasive *Spartina* eradication efforts (USFWS 2012a). However, CRR are frequently observed in the BSA. The Invasive Spartina Project and other agencies perform annual surveys for CRR in various locations within and adjacent to the BSA. Between Plant 1 and Pond B-3C, Alameda Creek, Newark Slough, and Dumbarton/Audubon

Marsh are surveyed. Directly south of Newark Plant 2, the Plummer Creek Mitigation Bank, Mowry Marsh North, Calaveras Point, and Coyote Creek/Mud Slough are surveyed. Adjacent to the Redwood City Plant, West Point Slough and Greco Island are surveyed. Analysis of results from CCR surveys conducted between 2019 and 2021 showed moderate to high densities of CRR in the tidal marshes outboard of Newark Plants 1 and 2 and the Redwood City Plant (Wood et al. 2022).

There are six CNDDB records within the BSA, and a further seven CNDDB records outside the BSA but within two miles of the BSA.

Black Skimmer

Black skimmer (*Rynchops niger*) is considered a Species of Special Concern by CDFW (CDFW 2019). This species forages in flight by opening their bill and dropping their long, narrow lower mandible into the water, skimming along until they feel a fish. Black skimmers inhabit coastal areas, usually around sandy beaches and islands. Nesting birds use open sandy areas, gravel or shell bars with sparse vegetation, or broad mats of wrack in saltmarsh. Foraging birds frequent places that concentrate prey: tidal waters of bays, estuaries, lagoons, creeks, rivers, ditches, and saltmarsh pools. Suitable foraging, roosting, and nesting habitat exists within and around the BSA; therefore, this species is likely to occur.

California Least Tern

The CLT is a federally endangered species that ranges in length from 8.25 to 9 inches. This species feeds primarily on small fish, but also shrimp and occasionally other invertebrates, by plunge-diving in bays, lagoons, estuaries, tidal marshes, river mouths, ponds and lakes, as well as in offshore deep-water habitats (USFWS 2017). Most CLT begin breeding in their third year, starting in April or May and ending in mid-June. Nesting occurs in colonies in relatively open areas, such as beaches or islands with no vegetation. This species rests on sandy beaches, mudflats, and salt pond dikes.

Currently, the breeding colony at Alameda Point, located approximately 20 miles north of Newark Plant 1, is the largest colony in San Francisco Bay and one of the most important breeding colonies in California. This colony had 358 breeding pairs in 2016 (Frost 2017), which has increased in size considerably from prior decades: 128 pairs were observed in 1993, and only 70 pairs in 1982 (Collins 1994). CLT also nest in Hayward Regional Shoreline where 83 breeding pairs were observed in 2016 (Frost 2017). Other breeding sites in the Bay Area include Napa Sonoma Marsh Wildlife Area, Montezuma Wetlands, Pittsburg Power Plant, and Eden Landing Ecological Reserve. Prior to 2017, least terns intermittently attempted to nest in Eden Landing. Since 2017, CLT have regularly attempted to nest at Eden Landing, with nest sites at Ponds E13 and E14. In 2023, a new breeding colony established at Pond E6B (SFBBO 2024). Breeding success at Eden Landing has generally been poor due to predation (SFBBO 2024).

Within the BSA, suitable roosting habitat exists in the form of internal and external berms, and dry salt ponds. Foraging habitat is present in external portions of the BSA. There are two CNDDB records within the BSA, and a further three CNDDB records outside the BSA but within two miles of the BSA.

Foraging Birds

Short-eared owl (*Asio flammeus*), white-tailed kite (*Elanus leucurus*), American peregrine falcon (*Falco peregrinus anatum*), loggerhead shrike (*Lanius ludovicianus*), and California brown pelican (*Pelecanus occidentalis californicus*) all have the potential to occur within the BSA because suitable foraging habitat exists both in the internal and external areas of the Project. However, no suitable nesting habitat occurs for any of these species within the BSA.

Mammals

Salt Marsh Harvest Mouse

The SMHM is federally and state listed as endangered and is a California Fully Protected species (CDFW 2019). This species is highly adapted to its marsh habitat (Fisler 1965), but reliance on the marshes of the San Francisco Bay has made this species vulnerable because more than 90 percent of tidal marshes have been lost since the mid-1800s (Williams and Faber 2001). Amplifying the effect of this spatial constraint is the increasing fragmentation of remaining SMHM habitat (Fisler 1961).

The SMHM is a relatively small rodent found only in and adjacent to suitable salt- and brackish-marsh habitat in the greater San Francisco Bay, San Pablo Bay, and Suisun Bay areas. Habitat associated with SMHM has been described as pickleweed-dominated marsh (Fisler 1965), although more recent studies have shown that SMHM is supported equally in pickleweed dominated and mixed-vegetation marsh (including native and non-native salt- and brackish-marsh species) (Sustaita et al. 2005, Sustaita et al. 2011, Smith et al. 2020). Shellhammer et al. (2010) found that SMHM inhabit brackish marshes with a developed thatch layer of vegetation, including bulrush (*Schoenoplectus* spp.), pepperweed/bulrush, and pepperweed/spearscale marshes. In saline marshes, like those of the south San Francisco Bay, habitat for SMHM tends to be marshes dominated largely by low pickleweed plains with patchy cordgrass.

The SMHM does not burrow; therefore, it depends on year-round vegetative cover. As such, the plant species composition is less important than the quality of cover from predators and the food sources provided by the vegetation. The SMHM prefers deep, dense vegetative cover greater than 11.8 inches high (USFWS 1984), although there are indicators that shorter stands of vegetation (5.9 inches) may also support this species (Fisler 1965, Shellhammer et al. 1982). In tidal areas, the suitability of cover and vegetation depth also depends on the degree to which tidal vegetation is submerged during high tide events.

Another key habitat requirement for this species is upland or tidal refuge habitat, which is used to escape high tides and storm events that flood portions of its habitat. SMHM is a good swimmer when necessary, but it feeds, nests, and seeks cover outside the water and thus requires refuge from incoming tides and floods. Tall stands of pickleweed that remain unsubmerged during high tides or floods, as well as gumplant, bulrush, natural and artificial dikes and berms, floating debris, and grasslands adjacent to the marsh edge, are all potential sources of refuge. Without at least one of these forms of refuge available, the SMHM cannot persist in a wetland.

Habitat for SMHM must also provide suitable food sources, such as seeds, grass, and pickleweed. The SMHM tolerates food and water with high salinities, which may give this

species a competitive advantage over other small mammal species, though high salinity is not a strict habitat requirement. The presence of grassland habitat adjacent to the marsh is not a strict requirement either, though the SMHM's seasonal use of available upland grasslands (sometimes over 300 feet from the marsh edge) suggests that they opportunistically forage and seek cover within grasslands (USFWS 2010). Recent research has shown that SMHM have a very flexible diet and will eat many plant and invertebrate species (Smith and Kelt 2019, Aylward et al. 2022).

There are fifteen CNDDB records within the BSA, and a further twelve CNDDB records outside the BSA but within two miles of the BSA. Within the past several years, genetic testing has also confirmed SMHM populations at Eden Landing approximately 1 mile north of the Newark Plant 1 (Statham et al. 2016), and trapping efforts have confirmed presence of the species in the Dumbarton marshes (CDFW 2020b). During the 2022 Rangewide Survey for SMHM, completed by a cooperative partnership between over a dozen entities and led in-part by WRA, the SMHM was detected at two marshes within Newark Plant 2. An area just outboard of Pond 12 at the mouth of Mowry Slough, and Calaveras Marsh, outboard of ponds 2 and 3, were surveyed for SMHM. Both areas surveyed supported high densities of SMHM (Smith et al., in prep). SMHM were also detected at Ideal Marsh in Plant 1 using passive fecal sampling with genetic confirmation. These surveys were completed during the course of normal operations at the Cargill salt ponds.

The habitat for SMHM within tidal marsh and adjoining berms in and along the margins of Newark Plants 1 and 2 are now confirmed to support SMHM in at least some locations. The habitat at the Redwood City Plant is more limited due to the narrow width and low elevation of the marshes abutting the berms along First Slough and Westpoint Slough. Overall, habitat for SMHM is largely concentrated on the outboard margins of the salt ponds, though well-vegetated berms surrounding the salt ponds may provide refugia (on berm tops and inboard slopes) for SMHM where they are close to core marsh habitat.

Salt Marsh Wandering Shrew

The salt marsh wandering shrew is considered a Species of Special Concern by CDFW (CDFW 2019). Similar to SMHM, salt marsh wandering shrew inhabit salt marshes of South San Francisco Bay that consist of dense pickleweed and require upland or tidal refuge habitat, and are known to occur in tidal marsh habitat within the BSA. There are three CNDDB records within the BSA, and a further two CNDDB records outside the BSA but within two miles of the BSA. There is suitable habitat for salt marsh wandering shrew within tidal marsh and adjoining berms in and along the margins of Newark Plants 1 and 2 and at the Redwood City Plant. Habitat is largely concentrated on the outboard margins of the salt ponds, though berms surrounding the salt ponds provide refugia.

Marine Mammals

In general, the presence of marine mammals in San Francisco Bay is related to distribution and presence of prey species and foraging habitat. Pacific harbor seals (*Phocaituline richardsi*), and California sea lions (*Zalophus californianus*), and harbor porpoises (*Phocoena phocoena*) are found year-round within San Francisco Bay. Pacific harbor seals and California sea lions are the

marine mammal species most likely to occur in the BSA; harbor porpoises are common in the deeper waters of the Central Bay and unlikely to be present in the BSA. Other marine mammal species that have occasionally been seen in San Francisco Bay include the gray whale (*Eschrichtius robustus*), the humpback whale (*Megaptera novaeangliae*), the bottlenose dolphin (*Tursiops truncates*), and the northern elephant seal (*Mirounga angustirostris*). Less frequently, the Guadalupe fur seal (*Arctocephalus townsendi*) and the northern fur seal (*Callorhinus ursinus*) have also been observed (Caltrans 2015).

Pacific harbor seals and California sea lions both use various intertidal substrates that are exposed at low to medium tide levels for resting and breeding (NMFS 2007). California sea lions are noted for using anthropogenic structures such as floating docks, piers, and buoys to haul out of the water to rest; however, there are no known haul-out locations in proximity to the BSA. Due to the lack of known haul-out locations in the BSA, the presence of sea lions in the BSA is likely to be confined to a few individuals temporarily present.

Harbor seals have established haul-out sites and use of these haul-out sites varies over time. South Bay sites including Mowry Slough, Bair Island, Corkscrew Slough, Guadalupe Slough, Coyote Creek, and Greco Island are currently used or have been important haul-outs historically (H.T. Harvey et al. 2005). These haul-out sites range from within the BSA at Mowry Slough and Coyote Creek to 0.25 mile from the BSA at Bair Island, 1 mile from the BSA at Corkscrew Slough, 2 miles from the BSA at Guadalupe Slough, and 0.5 mile from the BSA at Greco Island. Bair Island, Corkscrew Slough, Mowry Slough, Newark Slough, and Greco Island have also been identified as pupping sites (Green 2004 as cited in HT Harvey et al. 2005). Therefore, harbor seals have a moderate to high potential to traverse and/or forage in aquatic habitats adjacent to outboard berms within the BSA.

3.4.3 Regulatory Setting

3.4.3.1 Federal and State

Federal and state laws and regulations pertaining to this issue area and relevant to the Project include the FESA of 1973 (16 United States Code [USC] §§ 1531–1544), as amended, which protects plants, fish, and wildlife that are listed as endangered or threatened by the USFWS or NMFS; the federal Migratory Bird Treaty Act (MBTA) of 1918 (16 USC §§ 703–711), which protects all migratory birds, including active nests and eggs; the federal Clean Water Act (33 USC § 1251 et seq.), which restores and maintains the chemical, physical, and biological integrity of the nation's waters; the federal Marine Mammal Protection Act (MMPA) of 1972 (16 USC 1361–1407), which prohibits the taking and importation of marine mammals as well as products from them; the Porter-Cologne Water Quality Control Act (Cal. Water Code § 13000 et seq.), under which waters of the State are assigned beneficial uses including those that support biological resources; and the CESA (§§ 2050–2098 of the California Fish and Game Code [CFGC]), which provides for the protection of rare, threatened, and endangered plants and animals, as recognized by the CDFW, and prohibits the taking of such species without its authorization. BCDC regulations and policies including the McAteer-Petris Act and the Bay Plan are discussed in Section 3.4.3.2.

The Refuge operates under a Comprehensive Conservation Plan, which established goals, objectives, and strategies for improving Refuge conditions (USFWS 2012a). The CCP recognizes, however, that "Cargill Salt retains perpetual salt making rights on the Mowry and Newark Ponds" and therefore does not contemplate any changes in use "that would interfere with Cargill's rights per the Declaration of Taking dated June 30, 1977." Consistent with requirements of federal and state permits, and recognizing the unique land use agreements in place for Cargill's salt ponds, Cargill and the Refuge regularly communicate regarding ecological stewardship and salt pond maintenance and operations.

No federal, state, or regional Habitat Conservation Plans or Natural Community Conservation Plans have been adopted for the Project area.

Local San Francisco Estuary Invasive Spartina Project

The Invasive Spartina Project implements a coordinated, region-wide eradication program to arrest and reverse the spread of invasive non-native cordgrass species. The Invasive Spartina Project is focused on the nearly 40,000 acres of tidal marsh and 29,000 acres of tidal flats that constitute the shoreline areas of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma and Sacramento counties.

Fremont

The City of Fremont's General Plan recognizes that Cargill retains the right to harvest salt on approximately 9,000 acres of the land sold to the USFWS and CDFW as documented in legal agreements governing the properties. Much of this land is located in the Fremont Baylands between the Dumbarton Bridge and Mowry Slough and is part of the Don Edwards San Francisco Bay National Wildlife Refuge, which is the first urban wildlife refuge in the United States, and extends around the southern perimeter of the Bay. The General Plan also notes that salt harvesting operations in this area are regulated to ensure that they are consistent with habitat protection and restoration goals. The refuge contributes to the open space quality of the area and provides a unique natural resource for the region.

Newark

The City of Newark's General Plan also recognizes that Cargill has the perpetual right to use salt "evaporator" ponds within the Refuge for its solar salt production system. Cargill's activities are consistent with the City's General Plan.

Redwood City

Redwood City's General Plan continues the prior 1990 General Plan's allowable land uses for the Cargill Site, and allows the continued salt harvesting across the salt crystallization pond area. For any future uses proposed for the salt crystallization ponds, Redwood City would coordinate with BCDC to promote further consistency with the Bay Plan.

3.4.3.2 Bay Conservation and Development Commission

The McAteer-Petris Act and the Bay Plan (BCDC 2020) contain Sections and Policies that are relevant to biological resources for the Project, which include (but are not necessarily limited to) the following:

McAteer-Petris Act Section 66602.1. Salt Ponds
The Legislature further finds and declares:

That areas diked off from the bay and used as salt ponds and managed wetlands are important to the Bay Area in that, among other things, such areas provide a wildlife habitat and a large water surface which, together with the surface of the bay, moderate the climate of the Bay Area and alleviate air pollution;

That it is in the public interest to encourage continued maintenance and operation of the salt ponds and managed wetlands;

That, if development is proposed for these areas, dedication or public purchase of some of these lands should be encouraged in order to preserve water areas; and

That, if any such areas are authorized to be developed and used for other purposes, the development should provide the maximum public access to the bay consistent with the proposed project and should retain the maximum amount of water surface area consistent with the proposed project.

McAteer-Petris Act Section 66605. Fill
The Legislature further finds and declares, with regard to fill in the San Francisco Bay (including contiguous wetlands) and in certain waterways:

(a) That further filling of San Francisco Bay and certain waterways specified in subdivision (e) of Section 66610 should be authorized only when public benefits from fill clearly exceed public detriment from the loss of the water areas and should be limited to water-oriented uses (such as ports, water-related industry, airports, bridges, wildlife refuges, water-oriented recreation and public assembly, water intake and discharge lines for desalinization plants and power generating plants requiring large amounts of water for cooling purposes) or minor fill for improving shoreline appearance or public access to the bay;

(b) That fill in the bay and certain waterways specified in subdivision (e) of Section 66610 for any purpose should be authorized only when no alternative upland location is available for such purpose;

(c) That the water area authorized to be filled should be the minimum necessary to achieve the purpose of the fill;

(d) That the nature, location and extent of any fill should be such that it will minimize harmful effects to the bay area, such as, the reduction or impairment of the volume surface area or circulation of water, water quality, fertility of marshes or fish or wildlife resources;

(e) That public health, safety and welfare require that fill be constructed in accordance with sound safety standards which will afford reasonable protection to persons and property against the hazards of unstable geologic or soil conditions or of flood or storm waters;

(f) That fill should be authorized when the filling would, to the maximum extent feasible, establish a permanent shoreline;

(g) That fill should be authorized when the applicant has such valid title to the properties in question that he may fill them in the manner and for the uses to be approved.

Bay Plan Part III. The Bay as a Resource: Policies

Fish, Other Aquatic Organisms and Wildlife:

Policy 1. To assure the benefits of fish, other aquatic organisms and wildlife for future generations, to the greatest extent feasible, the Bay's tidal marshes, tidal flats, and subtidal habitat should be conserved, restored and increased.

Policy 2. Native species, including candidate, threatened, and endangered species; species that the California Department of Fish and Wildlife, the National Marine Fisheries Service, and/or the U.S. Fish and Wildlife Service have listed under the California or Federal Endangered Species Act; and any species that provides substantial public benefits, as well as specific habitats that are needed to conserve, increase, or prevent the extinction of these species, should be protected, whether in the Bay or behind dikes. Protection of fish, other aquatic organisms, and wildlife and their habitats may entail placement of fill to enhance the Bay's ecological function in the near-term and to ensure that they persist into the future with sea level rise.

Policy 4. The Commission should:

(a) Consult with the California Department of Fish and Wildlife, and the U.S. Fish and Wildlife Service or the National Marine Fisheries Service, whenever a proposed project may adversely affect an endangered or threatened plant, fish, other aquatic organism or wildlife species;

(b) Not authorize projects that would result in the "taking" of any plant, fish, other aquatic organism or wildlife species listed as endangered or threatened pursuant to the state or federal Endangered Species Acts, or the federal Marine Mammal Protection Act, or species that are candidates for listing under these acts, unless the project applicant has obtained the appropriate "take" authorization from the U.S. Fish and Wildlife Service, National Marine Fisheries Service or the California Department of Fish and Wildlife; and (c) Give appropriate consideration to the recommendations of the California Department of Fish and Wildlife, the National Marine Fisheries Service or the U.S. Fish and Wildlife Service in order to avoid possible adverse effects of a proposed project on fish, other aquatic organisms and wildlife habitat.

Tidal Marshes and Tidal Flats:

Policy 1. Tidal marshes and tidal flats should be conserved to the fullest possible extent. Filling, diking, and dredging projects that would substantially harm tidal marshes or tidal flats should be allowed only for purposes that provide substantial public benefits and only if there is no feasible alternative.

Policy 2. Any proposed fill, diking, or dredging project should be thoroughly evaluated to determine the effect of the project on tidal marshes and tidal flats, and designed to minimize, and if feasible, avoid any harmful effects.

Policy 3. Projects should be sited and designed to avoid, or if avoidance is infeasible, minimize adverse impacts on any transition zone present between tidal and upland habitats. Where a transition zone does not exist and it is feasible and ecologically appropriate, shoreline projects should be designed to provide a transition zone between tidal and upland habitats.

Subtidal Areas:

Policy 1. Any proposed filling or dredging project in a subtidal area should be thoroughly evaluated to determine the local and Bay-wide effects of the project on: (a) the possible introduction or spread of invasive species; (b) tidal hydrology and sediment movement; (c) fish, other aquatic organisms and wildlife; (d) aquatic plants; and (e) the Bay's bathymetry. Projects in subtidal areas should be designed to minimize and, if feasible, avoid any harmful effects.

Bay Plan Part IV. Development of the Bay and Shoreline: Policies

Mitigation:

Policy 1. Projects should be designed to avoid adverse environmental impacts to Bay natural resources such as to water surface area, volume, or circulation and to plants, fish, other aquatic organisms and wildlife habitat, subtidal areas, or tidal marshes or tidal flats. Whenever adverse impacts cannot be avoided, they should be minimized to the greatest extent practicable. Finally, measures to compensate for unavoidable adverse impacts to the natural resources of the Bay should be required. Mitigation is not a substitute for meeting the other requirements of the McAteer-Petris Act.

Bay Plan Part V. The Plan Maps (Plan Map 7 – South Bay Map): Policies

Policy 2. Coyote Hills Regional Park: Preserve multi-use public access along Alameda Creek Trail to Don Edwards San Francisco Bay National Wildlife Refuge and to the SR 84 toll plaza crossing. Preserve visitor's center, picnic areas, camping, multi-use trails, and naturalist programs. Protect tidal wetlands and provide opportunities for wildlife observation and non-motorized small boat access.

Policy 4. Newark Slough to Coyote Creek: Protect harbor seal haul-out and pupping sites where harbor seals rest, give birth and nurse their young. Projects allowed only if protective of harbor seals and other sensitive wildlife.

Salt Ponds:

Policy 1. The use and maintenance of salt ponds for salt production should be encouraged. Accordingly, property tax policy should assure that rising property taxes do not force conversion of the ponds and other wetlands to urban development. In addition, maintaining the integrity of the salt production system should be encouraged (Le., public agencies should not take for other projects any pond or portion of a pond that is a vital part of the production system).

Policy 2. If the owner of any salt ponds withdraws any of the ponds from their present uses, the public should make every effort to buy these lands and restore, enhance or convert these areas to subtidal or wetland habitat. This type of purchase should have a high priority for any public funds available, because opening ponds to the Bay represents a substantial opportunity to enlarge the Bay and restoring, enhancing or converting ponds can benefit fish, other aquatic organisms and wildlife, and can increase public access to the Bay.

Policy 3. Any project for' the restoration, enhancement or conversion of salt ponds to subtidal or wetland habitat should include clear and specific long-term and short-term biological and physical goals, success criteria, a monitoring program, and provisions for long-term

maintenance and management needs. Design and evaluation of the project should include an analysis of:

- The anticipated habitat type that would result from pond conversion or restoration, and the predicted effects on the diversity, abundance and distribution of fish, other aquatic organisms and wildlife;
- Potential fill activities, including the use of fill material such as sediments dredged from the Bay and rock, to assist restoration objectives;
- Flood management measures;
- Mosquito abatement measures;
- Measures to control non-native species;
- The protection of the services provided by existing public facilities and utilities such as power lines and rail lines;
- Siting, design and management of public access to maximize public access and recreational opportunities while avoiding significant adverse effects on wildlife; and
- Water quality protection measures that include management of highly saline discharges into the Bay; monitoring and management of mercury methylation and sediments with contaminants; managing the release of copper and nickel to the Bay; and the minimization of sustained low dissolved oxygen levels in managed ponds.

Policy 4. If the public does not acquire for habitat restoration, enhancement or creation purposes all the salt ponds proposed for withdrawal from their use in salt production, and if some of the ponds are proposed to be developed or used for purposes other than salt production, consideration of the development should be guided by the following criteria:

- Recognizing the potential for salt ponds to contribute to the moderation of the Bay Area climate, the alleviation of air pollution and the open space character of the Bay, and to maximize potential habitat values, development of any of the salt ponds should provide for retaining the maximum amount of water surface area consistent with the project. Water surface area retained can include a variety of subtidal and wetland habitat types including diked ponds managed for wildlife or restoration of ponds to tidal action;
- Development should provide the maximum public access to the Bay consistent with the project while avoiding significant adverse effects on wildlife; and
- An appropriate means of permanent dedication of some of the retained water surface area should be required as part of any development.

Policy 5. To determine where and how much water surface area should be retained and how much public access should be provided consistent with any development proposal in a salt pond(s), a comprehensive planning process should be undertaken as part of the development project that integrates with regional and local habitat restoration and management objectives and plans, and provides opportunities for collaboration among local, state and federal agencies,

landowners, other private interests, and the public. In addition, the planning process should incorporate:

- A baseline scientific assessment of existing and historical natural conditions and resource values of the pond(s);
- Natural resource conservation objectives that will protect and enhance onsite and adjacent habitat and species diversity;
- Provisions for public access and recreational opportunities appropriate to the land's use, size and existing and future habitat values; and
- Flood and mosquito management measures.

3.4.4 Impact Analysis

Potential impacts to biological resources would be considered significant if implementation of the proposed Project would do any of the following:

- Create a substantial adverse effect on:
    - Candidate, sensitive, or special-status species
    - Riparian habitat or other sensitive natural community
    - State or federally protected wetlands
- Interfere with the movement of wildlife or wildlife corridors, or with the use of native wildlife nursery sites

These significance criteria were used to conduct the impact analysis.

3.4.4.1 Impact BIO-1: Substantial Adverse Effect on Candidate, Sensitive, or Special-status Species

***Less than Significant with Mitigation*.** The proposed Project may have an adverse effect on the special-status species identified in Tables 3.4-1 and 3.4-2. These species could be affected by general disturbances that could interrupt important life history functions including foraging, breeding, and dispersal. Disturbance could also cause sub-lethal increases in stress, which could affect health and fitness.

Many of the special-status bird species with potential to occur in the Project area including short-eared owl, northern harrier, white-tailed kite, American peregrine falcon, loggerhead shrike, and California brown pelican are limited to foraging in the BSA and are not expected to nest in the BSA. Given the limited size of the work areas relative to adjacent areas and the temporary and localized nature of maintenance activities, the temporary disturbance of foraging habitat and individuals of these species resulting from operations and maintenance activities are not expected to adversely affect these or other migratory bird species. These species are not discussed further in this EA.

The use of equipment and vehicles near salt marsh and other aquatic habitats is required for the Project activities identified in Section 2.10, including earthen berm maintenance, lock access/egress events, stockpiling material, sediment removal, and other infrastructure

maintenance, and has the potential to adversely affect special-status species that occur in salt marshes. This includes tricolored blackbird, salt marsh common yellowthroat, California black rail, Alameda song sparrow, CRR, CLT, SMHM, salt marsh wandering shrew, and small spikerush. Burrowing owl, WSP, northern harrier, black skimmer, and Congdon's tarplant also have potential to occur in the BSA, particularly along and within earthen berms, surrounding grasslands, and dry ponds, and Project activities have the potential to adversely affect these species.

The use of equipment or presence of workers near marsh habitat on berms, and in dry salt ponds could injure or crush these species, their broods, or their nests; disturb nesting, foraging, or hauled-out individuals via noise, vibratory, or visual disturbance; and potentially cause nest abandonment and habitat degradation. These potential effects are part of the environmental baseline as part of the existing operations that have occurred for many decades. The changes from the baseline operations would include a slight increase in berm maintenance, berm heightening, lock access/egress events, repairs and/or replacements of infrastructure, the vinyl sheet pile pilot study (VSP study), placement of outboard riprap, and installation of fish screens on existing pumps. New potential impacts would be avoided and/or minimized through the BMPs identified in Section 2.13, most of which Cargill has implemented for years in accordance with its existing permits. These BMPs would be implemented depending on the various Project activities, including the Endangered Species and Sensitive Natural Resources BMPs, which would be implemented across all proposed work that could adversely affect sensitive species and/or sensitive natural resources. For ease of reference, Project activities have been split into several subsections as discussed in the following subsections. If other alternative berm maintenance methods are proposed, they would be subject to the field test requirements as discussed in Section 2.10.1.4, and if deemed suitable for implementation, would be subject to additional CEQA review.

Effects of Earthen Berm Maintenance, Materials Stockpiles, Riprap Placement, Weed Management, and Other Infrastructure Maintenance on Special-Status Species

As part of operations and maintenance activities, there would be weed management activities as well as placement of various materials near marsh habitat including excavated materials, fill, materials for berm repair and/or berm heightening, riprap, and other construction materials, and this could adversely affect salt marsh-dependent species and species occurring internal to the salt pond system.

Impacts from berm maintenance may occur along an average of 37 miles of berm annually over the proposed 10-year permit term, an increase of approximately 5.5 miles per year over baseline conditions. In addition, Cargill would continue to restore subsided sections of berms to bring them to the height of surrounding berms (i.e., maintain existing berm elevations), and, for Ponds P2-12 and P2-13, to increase the height of the entire perimeter berm to an elevation of 11.5 feet NAVD 88 by the end of the 10-year permit period. There would be no net increase in the volume of soil required to maintain the existing elevations of the berms and to slightly increase the heights of the berms at ponds P2-12 and P2-13; approximately 25% of the clean imported material expected to be delivered to the Project area would be used at Ponds P2-12 and P2-13. Two miles of berm cores would be keyed under the proposed Project over a 10-year

period; this is a reduction of 1 to 2 miles per 10 years relative to the baseline conditions, and a reduction of approximately 950 CY of clean materials per year. Cargill may also modify internal pond connection locations (gaps in the internal berms) to modify flow patterns between ponds and increase vehicle access to a greater portion of the salt pond complex (i.e., making berms drivable). Cargill estimates filling up to 4 berm gaps/year for a maximum of 40 over the permit period. Additionally, for the proposed VSP study, approximately 500 to 600 feet of vinyl sheets would be installed along the inboard side of the berms along Pond 2-12 at Newark Plant 2. Cargill would also continue to repair the outboard slopes and interior slopes of the berms through replenishment and repair of existing riprap, and, in more severely eroded areas, placement of additional soil and geotextile fabric prior to riprap placement. Finally, Cargill may place up to an estimated 7,800 square feet of new riprap over the 10-year life of the new permit. New riprap would be required in areas that are newly-eroded; continued wind-wave action is anticipated to continue to erode outboard fringe marsh, primarily along Newark Plant 1. This is a natural process, and Cargill's operations do not cause outboard erosion of existing marsh. All of these activities, except for the VSP study, are already part of the existing operations. These additional activities would not cause a significant change in potential adverse effects to special status species relative to baseline conditions.

Maintenance activities would remain unchanged from the baseline, and would include but not be limited to the maintenance of miscellaneous structures and equipment, including items such as platforms and trestles, siphons, pipelines, brine channels, pumps, fences, gates, culverts, trash racks, and electrical lines.

Potential direct effects to salt marsh habitat and special-status species associated with these activities would be avoided and/or minimized through the use of the BMPs presented in Section 2.13. These measures will continue to ensure that impacts to species are less than significant.

With implementation of the BMPs, biologists would provide training regarding special-status species that may occur within the Project area (**ES and SNR-11: Environmental Training**) and information about the latest observations of special-status species (**ES and SNR-10: Endangered Species Observed**) and bird nesting activities (**ES and SNR-13: Notice about Nesting Activities**), including observations of WSP and their broods. This will inform staff of appropriate practices to reduce effects to these species and avoid and/or minimize the potential for effects to nesting birds and WSP broods during maintenance activities.

Vehicle speed limits (**ES and SNR-1: Speed Limit**) and limiting vehicular travel to berm roads that have been graded or have been maintained for all-weather traffic would occur (**Berm Maintenance-10: Vehicular Traffic**). This would allow for vehicle operators to visually identify wildlife species and avoid them while driving, and also allow for mobile species to safely avoid vehicles. Confining vehicles to established areas would avoid sensitive habitat where special-status species are more likely to occur, and further avoid and/or minimize any potential impacts from vehicle strikes.

Additional BMPs would implement a seasonal work window (**ES and SNR-3: Seasonal Work**) and nesting avoidance buffers for CRR (**Berm Maintenance-7: California Ridgway's Rail Avoidance During Emergency Berm Maintenance**) to avoid and/or minimize potential

disturbances which could cause changes in behavior, increased stress, and/or nest abandonment. A similar buffer around nesting WSP would also be implemented (**ES and SNR-8: Nesting Western Snowy Plover and California Least Tern Nesting Survey, Buffer and Reporting**) to avoid and/or minimize potential disturbances that could adversely affect the species. Notices would be posted identifying approximate nest locations as well as any road closures and/or buffers around the nests to notify staff about nest status to allow for nests to be avoided and not disturbed by maintenance activities (**ES and SNR-12: Notice about Nesting Activities**).

Maintenance activities have the potential to impact adjacent salt marsh and other sensitive habitats. Implementation of the BMPs would avoid and/or minimize potential impacts to these areas and the species that reside within them by minimizing dust, light, and noise levels when working near or on outboard berms near vegetated marsh (**Berm Maintenance-8: Dust, Light, and Noise**). Additional BMPs would reduce the likelihood of material falling into (**Berm Maintenance-1: Choker Berm, Berm Maintenance-2: Berm Slope, and Berm Maintenance-5: Excess Material**) or spills entering into (**Berm Maintenance-3: Spills**) salt marsh habitat during ongoing operations and maintenance activities and therefore would reduce the chances of injury and mortality to salt marsh species. Similarly, work would be avoided and/or minimized during high tides (**Berm Maintenance-6: High Tides**) when species are dispersing from adjacent high marsh to seek refuge in higher elevation areas.

Adherence to BMPs would also ensure that clean materials are used during maintenance activities (**Berm Maintenance-9: Material**), that the minimum amount of riprap is used to stabilize areas (**Riprap Placement-2: Riprap Amount**), and that these materials would be placed in areas that are generally free of marsh vegetation (**Riprap Placement-4: Riprap Placement**). This would avoid and/or minimize potential habitat conversion and loss of salt marsh habitat, including high-tide refugia, as well as direct effects from materials on salt marsh habitats used by special-status species. The use of riprap may provide habitat for non-native predators including Norway rats (*Rattus norvegicus*) and a species that is a known predator of several special-status bird species. To minimize potential habitat for this and other non-native predator species, the amount of riprap used would be the minimum necessary (**Riprap Placement-2: Riprap Amount**), and to the extent feasible, riprap would be placed to minimize voids (**Riprap Placement-3: Minimize Voids**). If concrete is used in proximity to salt marsh habitat or in water, the concrete would be contained within forms, and allowed to cure at least 30 days prior to coming into contact with water (**ES and SNR-16: Concrete**). This would prevent leaching of pollutants into the water from concrete, as well as potential increases in alkalinity which could affect special-status species and fish. During Project activities, there is potential for weeds, nuisance species, and other invasive plant species (collectively “weeds” hereafter) to enter the Project area and become established, which could directly and indirectly affect special-status species. Cargill’s existing Weed Management Plan would continue to be implemented (**Weed Management-1: Weed Management Plan**). This plan and other weed management BMPs include measures to prevent the introduction and spread of weeds, nuisance species, and invasive plant species, and measures to identify and remove weed populations (**Weed Management-2: Weed Identification Materials and Briefings, Weed Management-3: Weed**

Infestation, Weed Management-4: Clean Equipment, Weed Management-5: Invasive Cordgrass, and Weed Management-7: Weed Removal Prior to Work). This would include appropriate management or removal of weeds prior to work activities, to avoid and/or minimize the potential for weeds to become established and outcompete native species, and potentially displace special-status species that rely on native vegetation or natural habitats to persist.

Filling of gaps in the berms, and thereby making the berms drivable has the potential to decrease available nesting habitat due to vehicular traffic on the berms and could also increase land-based predator access to these areas of the berms. However, while the gaps may provide some protection to nesting birds from land-based predators, with few exceptions these berms are already accessible by land-based predators from one side or the other; few are truly isolated from adjacent upland areas. In addition, based on reviews of nesting activity of special-status birds within the Project area, it was found that of the special status bird species only WSP nests within the Project area. Nesting has been documented along ponds P1-PP1, P2-2, P2-7, and P2-8, and none of the berms along these ponds have gaps within them (WRA 2017). California least terns are not known to nest on berms within the proposed Project. Consequently, closing of gaps in the berms would not have a significant adverse effect on these special status bird species. The closing of the gaps in the internal berms would also help to reduce the need to deploy equipment though the locks and would thereby decrease potential effects on outboard habitat including salt marsh. This would reduce impacts to salt marsh habitat and potential nesting habitat for multiple special-status bird species including salt marsh common yellowthroat, Alameda song sparrow, California black rail, and CRR.

To minimize the potential to impact nesting birds during filling of gaps in the berms, the environmental training and nesting bird measures discussed previously (**ES and SNR-11: Environmental Training, ES and SNR-10: Endangered Species Observed, ES and SNR-12: Notice about Nesting Activities, ES and SNR-3: Seasonal Work, Berm Maintenance-7: California Ridgway's Rail Avoidance During Emergency Berm Maintenance, ES and SNR-8: Nesting Western Snowy Plover and California Least Tern Nesting Surveys, Buffer and Reporting**) would be implemented. These measures would educate project personnel about potential special-status species in the area, notify personnel if species or nesting is observed including avoidance areas, implement seasonal work windows, and establish buffers around nesting birds.

Evaluation of the use of vinyl sheet piles (i.e., the VSP study) would include the installation of up to approximately 600 linear feet of vinyl sheet piles along the inboard sides of the Pond P2-12 berm. Pond P2-12 is one of the ponds that currently holds MSS (bittern). As the MSS within this pond would result in unsuitable habitat for wildlife, there is not expected to be movement between outboard areas and the pond, so movement patterns of special-status species would not be impacted and no long-term impacts to special-status species would be expected. All impacts are anticipated to be short-term and associated with the installation of the piles. Impacts could occur either as a result of disturbance due to the activity and/or noise.

Potential disturbance impacts to nesting birds along the berms would be minimized through implementation of BMPs described previously including seasonal work windows (**ES and SNR-3:**

Seasonal Work), nesting avoidance buffers for CRR (**Berm Maintenance-7: California Ridgway's Rail Avoidance During Emergency Berm Maintenance**), WSP (**ES and SNR-8: Nesting Western Snowy Plover and California Least Tern Nesting Surveys, Buffer and Reporting**) and nesting bird surveys and avoidance measures for other special-status and non-listed species **(ES and SNR-12: Nesting Birds)**. Notices would be posted identifying approximate nest locations as well as any road closures and/or buffers around the nests to notify staff about nest status to allow for nests to be avoided and not disturbed during installation or maintenance of the vinyl sheet piles (**ES and SNR-12: Notice about Nesting Activities**). In addition, the limited area where the piles will be installed relative to the 123 miles of berms (649,440 feet) is 0.09 percent of the total berm length, so only a very small portion of berm areas would be disturbed.

Potential effects from leaching of chemicals from the VSP study would only be of concern if the chemicals have the potential to reach near-by surface water in a sufficient concentration to affect sensitive aquatic species. The vinyl sheet piles themselves are not expected to leach any chemicals; however, the sealant used to waterproof the seams between the sheets could potentially release chemicals to the environment. Although the specific sealant that would be used is not known at this time, Cargill has considered using a sealant that contains a very low percentage (approximately 0.1% by weight) of toluene diisocyanate (TDI). As further discussed in Section 3.8.4, the specific characteristics of TDI make it highly unlikely that it would migrate into the aquatic environment from the sheet pile location. While no marine ecotoxicity studies were found, the U.S. Department Health's Agency for Toxic Substances and Disease Registry information on TDI notes that the compound is rapidly hydrolyzed in water and cites a 1981 study that found no accumulation of TDI bodies of carp after 8 weeks of exposure in a model river system with an initial TDI concentration of 0.1 ppm (ATSDR 2018). Specific details regarding the activities to be completed as part of the vinyl sheet pile study, including the proposed sealant, would be provided as part of the annual Work Plan for the year in which the study would be initiated. Given the low concentration of TDI, and its rapid hydrolysis, as well as agency review of the proposed sealant prior to use, potential effects on aquatic life due to use of the sealant are considered less than significant.

Potential catastrophic events (e.g. earthquakes or excessive scour due to an extreme storm tide) could also lead to a potential release of MSS or high salinity brines. The proposed Project would provide for continued maintenance and operation of the salt pond system, including maintaining the berms and managing brine levels within the ponds in part to minimize the potential impacts of a catastrophic event.

MSS exhibit toxicity to aquatic organisms at relatively low concentrations. While MSS are not classified as hazardous materials, nor do they contain any inherently hazardous constituents, the ionic composition of the MSS differs significantly from the ionic composition of the salts contained sea water. This difference in ionic composition is believed to be the cause for MSS toxicity observed in laboratory testing. Laboratory testing of a somewhat more dilute mixture of MSS at the Napa Sonoma Marshes Restoration Area (Cargill's former North Bay salt ponds) showed that at concentrations of 5% MSS mixed with ambient brackish water the test species

exhibited reproductive and mortality effects and a 10% MSS concentration resulted in complete mortality of the test species (GAIA 2002).[18]

SLR has the potential of increasing the risk of waves overtopping the berms containing MSS and consequently the risk of a release of MSS and other concentrated natural brines (refer to Section 3.9, Hydrology and Water Quality). The maintenance activities to be completed as part of the proposed Project would include increasing the height of the entire perimeter berms around Ponds P2-12 and P2-13 to 11.5 ft NAVD88 in response to anticipated SLR, thereby maintaining the same level of resistance to overtopping as during the baseline period. However, the potential for berm failure due to excess scour from overtopping during an extreme storm event at ponds containing MSS has not been comprehensively analyzed. The release of MSS into outboard marshes and other aquatic habitat is considered a potentially significant impact to special-status species and their habitat. Implementation of Mitigation Measure HYD-1, which includes estimating overtopping rates at transects within the MSS ponds, prioritizing bayfront transects within the MSS ponds (Transects 21, 22, 23, and 24) and evaluating whether overtopping could result in scour and impacts to berm stability, would reduce the potential impacts associated with accidental MSS release to a level that is less than significant.

Bare patches in areas of vegetation have been noted in several locations outboard of the MSS ponds, as well as outboard of other ponds, including low salinity ponds (Hyman, pers. com. 2023). These bare patches could be an indicator of seepage through the berm (i.e., hypersaline conditions killing or stunting vegetation), but may also be due to the presence of natural salt pannes, which are found in marshes throughout the Bay. Cargill currently addresses potential seepage through berm keying, which reduces the permeability of the berms to reduce seepage, and would continue to do so as part the proposed Project. Over time, the need for keying has been reduced, as reflected in the proposed reduction in berm keying relative to the baseline (from 4 miles over 10 years to 2 miles over 10 years). Any past impacts to marsh habitat are part of the baseline. Any additional seepage that kills or stunts marsh vegetation is considered a potentially significant impact to special status species including SMHM and CCR. Implementation of mitigation measure BIO-1 would reduce potential impacts to a less than significant level.

Mitigation Measure BIO-1: Minimize Potential for Brine Seepage. Cargill shall implement the following measures:

a. Continue to monitor and inspect the berms to identify indicators of potential seepage, including bare patches, in the vicinity of high salinity ponds to identify the need for berm keying or other maintenance to address potential seepage. Areas potentially requiring keying or other measures to address potential seepage shall be identified in the Annual Work Plan.

[18] It should be noted that once the MSS brine is diluted with sea water, it no longer exhibits toxicity. MSS discharge was permitted at a concentration of 1% by mass at the Napa Sonoma Marshes Restoration Area (RWQCB 2011).

b. Cargill shall continue to implement berm keying or other approved means of controlling seepage in areas where seepage may be occurring. These activities shall be reported in the Completion Report.

Effects of Lock Access/Egress on Special-status Species

Lock access would also be required as part of operations and maintenance activities. This activity could also adversely affect salt marsh habitat and special-status species and include temporary loss of salt marsh habitats via excavation and sidecasting/stockpiling of materials. The baseline lock access/egress is one time per year with an estimated impact of up to 1.2 acres of salt marsh habitat and upland refugia disturbed per year. The proposed Project increases this access to approximately two times per year, with up to an estimated 1.2 acres of salt marsh habitat and upland refugia disturbed at each of up to two lock access points annually over the proposed 10-year permit term. Although there would be an increase in disturbed areas over baseline conditions, potential direct impacts to salt marsh habitat and special-status species associated with these activities would be avoided and/or minimized through the use of the BMPs presented in Section 2.13.

Similar to the discussion in the "Effects of Earthen Berm Maintenance, Materials Stockpiles, Riprap Placement, Weed Management, and Other Infrastructure Maintenance on Special-status Species" section, with implementation of the BMPs, staff would receive appropriate training and information about special-status species, special-status species observations, bird nesting activities, and speed limit restrictions (**ES and SNR-11: Environmental Training, ES and SNR-10: Endangered Species Observed, ES and SNR-12: Notice about Nesting Activities, and ES and SNR-1: Speed Limit**). This would avoid and/or minimize the potential for effects to special-status species and nesting birds during maintenance activities, and minimize the potential for weeds to enter the Project area and become established as a result of lock access/egress.

With implementation of additional BMPs, impacts to CRR, WSP, and SMHM would be avoided and/or minimized. A seasonal work window for CRR (**ES and SNR-3: Seasonal Work**) and protocol-level surveys for CRR (**Lock Access/Egress-2: CRR Surveys**) would allow for avoidance of nesting CRR and the identification and protection of any existing nests with a buffer during lock access/egress activities. High marsh features will be avoided to the maximum extent feasible, providing refugia for CRR during high tide events (**Lock Access/Egress–6: High Marsh Preservation**).

A similar buffer around nesting WSP (**ES and SNR-8: Nesting Western Snowy Plover and California Least Tern Nesting Surveys, Buffer and Reporting**) would be implemented to avoid and/or minimize potential disturbances associated with lock access/egress which could adversely affect the species.

If marsh vegetation would be impacted, it would be removed using hand tools to allow for SMHM to leave the area and avoid and/or minimize the potential for them to be impacted by Project activities (**Lock Access/Egress-3: Marsh Vegetation Removal for Salt Marsh Harvest Mouse Exclusion)**. If a SMHM or an occupied rodent nest is observed, no work will occur within a buffer zone established by a qualified biologist (or as otherwise specified in the final biological opinion) until the mouse moves away of its own volition, or the USFWS is contacted and gives

approval to proceed. The mouse will not be harassed or moved out of the way **(Lock Access/Egress-4: SMHM 100-Foot Buffer**). This would reduce the risk of injury and mortality overall by encouraging SMHM to move away from work areas.

With implementation of the additional lock access/egress BMPs, impacts to adjacent salt marsh and other sensitive habitats would be avoided and/or minimized. Prior to lock access/egress, areas that have high environmental sensitivity would be identified and a work plan would be developed which would include avoiding placement of sidecast material in these areas to the extent feasible (**Lock Access/Egress-1: Environmentally Sensitive Areas Identified in Work Plan**). If placement is necessary in salt marsh habitat, the vegetation in these areas would be removed using hand tools (**Lock Access/Egress–3: Marsh Vegetation Removal for Salt Marsh Harvest Mouse Exclusion**), and the stockpile areas will be staked out to avoid and/or minimize the potential for impacting adjacent areas (**Lock Access/Egress-7: Excavated Material**). In addition, high marsh features would be avoided where possible to allow for salt marsh species to have refuge sites during high tide events (**Lock Access/Egress-6: High Marsh Preservation**). These BMPs would serve to avoid and/or minimize potential effects to salt marsh habitat, and would similarly avoid and/or minimize potential effects to the special-status species that rely on these habitats.

Following maintenance in an outboard marsh, vegetation would be allowed to recruit naturally, and the impacted area would be monitored for non-native invasive plant species establishment. If target non-natives become established, they would be removed according to the Weed Management Plan (**Lock Access/Egress-11: Vegetation Recruitment and Monitoring**). Steps would be taken specifically to prevent the establishment of perennial pepperweed (**Lock Access/Egress-12: Pepperweed Prevention**). This plant species is known to invade salt marsh and outcompete native species; preventing establishment of this and other non-native invasive plant species would encourage a native dominant habitat and avoid the potential for displacement of special-status species that rely on native vegetation. In addition to this, pre- and post-disturbance photographs would be taken for lock access/egress and these would be included in the monitoring reports prepared by the biologist monitoring the access/egress event (**Lock Access/Egress-15: Pre- and Post-Disturbance Photographs**). This would include photographs of areas where amphibious excavators are “walked” over the lock berms to enter the salt ponds. An analysis of aerial imagery between 2010 and 2015 showed that lock access cuts revegetate substantially within several years of lock access. These findings corroborate the analysis of ground surveys of seven locks accessed between 1995 and 1999, which indicated that vegetation on the lock berms, stockpiles and cut areas substantially recovered approximately three years after access (WRA 2016). This demonstrates the effectiveness of the BMPs in restoring disturbed areas.

Sediment Removal from Intake Structures, Water Intake, and Pile Driving

Sediment removal from intake structures, water intake, and pile driving would also be required as part of operations and maintenance activities. The proposed Project includes removal of approximately 360 CY of sediment per year from the Project area. Sediment removal from intakes would not deepen the natural slough or channel bottom; it would be limited to the sediment that silts in around the intake structures. This sediment removal is anticipated to be

conducted by either mechanical or hydraulic suction equipment. The aforementioned activities could adversely affect aquatic habitat and special-status fish and marine mammals including green sturgeon, white sturgeon, Pacific lamprey, steelhead, longfin smelt, Pacific harbor seal, and California sea lion, which all have potential to occur within the BSA in open water. Work activities such as pile driving, which may be required for piers and platforms, and pumping, which would be required for moving brine and pumping donuts and internal coffer dams, have the potential to adversely affect these aquatic species. The previously mentioned fish species have the potential to be disturbed or injured by pile driving, and entrainment during pumping (water intake) or hydraulic suction has the potential to injure or kill fish. Marine mammals have the potential to be disturbed by these activities. Potential direct impacts to open water habitat and special-status species associated with these activities would be avoided and/or minimized through the use of the BMPs in Section 2.13.

When hydraulic suction is used for sediment removal around water intakes, divers would use 4-inch to 6-inch hoses and low velocity pumps to carefully remove sediment. This would minimize any potential turbidity increases associated with the operation, and because a diver is directing the head of the hose this method provides precision in movement and enables the divers to avoid any visible fish/biota. The diver would submerge the end of the hose into the sediment before engaging the pump and would keep it submerged whenever the suction pump is in operation (disengaging the pump when the hose has to be repositioned), which would further reduce the exposure of fish to entrainment. Implementation of **ES and SNR–19: Turbidity Control During Sediment Removal at Intakes,** installation of a turbidity barrier when an excavator is used to remove sediment at times when water may exit the work area, and **20**: **Work Window for Sediment Removal at Intakes,** which requires all sediment removal in outboard areas to occur between June 1 and October 31 for most intakes and between June 15 and October 31 for the Coyote intake.

In addition, a buffer would be implemented around active seal pupping locations (**ES and SNR-9: Seal Pupping Buffer**), only designated sizes and pile types would be used for pile driving (**ES and SNR-14: Pile Driving**), and a biological monitor would be present during impact pile driving activities. If a seal or sea lion is observed within 1,000 feet of pile driving activities then pile driving would cease until the individual(s) has left the buffer area (**ES and SNR-15: Biological Monitoring of Impact Pile Driving**).

Pumping of water would be confined to occur between June 1 to October 31 to the maximum extent feasible (**EN and SNR-17: Pumping**), and June 15 to October 31 at the Coyote intake to minimize the risk of entraining steelhead and longfin smelt. This would also avoid migratory spawning movements for both steelhead and longfin smelt, downstream migration of steelhead smolts, and larval and post-larval longfin smelt, which are the most likely life stage to be entrained during pumping activities. Presence of these species would also be avoided and/or minimized by pumping during conditions of higher salinity and temperatures, as out-migrating steelhead smolts would be expected to avoid these areas, and longfin smelt cannot successfully spawn in higher-salinity areas and preferentially avoid high temperature waters However, even with the implementation of the avoidance and minimization measures relevant to water intake (**ES and SNR-17: Pumping**), entrainment of outmigrating steelhead smolts may occur if

pumping occurs in April and May before fish screens can be installed at the Coyote intake. Potential entrainment of longfin smelt would be substantially minimized by pumping preferentially during the between June 1 and October 31, but not completely avoided. Additionally, Cargill has a need to take in smaller quantities of Bay water during most of the year to support on-going maintenance activities such as flushing accumulated salts from pumps or siphons. The monitoring program described in Section 2.10.8 would evaluate the potential for sensitive fish species to be present at Cargill's intakes, and would provide a prioritized process for implementing other fish protection measures, if needed.

Entrainment of individual steelhead, longfin smelt, and green sturgeon in pump intakes are potentially significant impacts due to the rarity of these species and the effects that loss of individuals could have to the population as a whole. Implementation of Mitigation Measure BIO-2 would reduce potential impacts to a less than significant level. Mitigation Measure BIO-2 would provide surrogate protection for other special-status fish (such as white sturgeon and Pacific lamprey) which are more abundant and the operation of pump intakes is not likely to cause a substantial adverse impact.

Mitigation Measure BIO-2: Avoid, Minimize, and Mitigate Impacts Associated with Water Intake. Cargill shall implement the following measures:

a. To avoid entrainment of juvenile and adult steelhead, green sturgeon, and longfin smelt, Cargill shall install fish screens or other suitable physical barriers on Bay water intakes where these fish may be present during the water intake period. Fish screens shall be designed, constructed and operated consistent with *NOAA Fisheries West Coast Region Anadromous Salmonid Passage Design Manual* (NMFS 2022a) and have an approach velocity of 0.2 feet per second where longfin smelt may be present. If Cargill can demonstrate, either through physical and/or biological analyses accepted by NMFS, USFWS and CDFW (i.e., implementation of the monitoring program described in Section 2.10.8), that there is no potential for steelhead, green sturgeon, and longfin smelt to be entrained at an intake, then installation of fish screens or other fish protection measures is not required for that intake.

b. Cargill shall prioritize the implementation of fish screens or other fish protection measures determined to be necessary by the monitoring program described in Section 2.10.8 to address intakes with greater potential impact first.

c. If pumping occurs at unscreened intakes when conditions are suitable for steelhead, green sturgeon, or longfin smelt, Cargill shall conduct monitoring and provide compensatory mitigation for species that were subject to entrainment during pump operations. Proposed compensatory mitigation shall be defined in a compensatory mitigation plan acceptable to NMFS, USFWS and CDFW. The compensatory mitigation plan may include advanced mitigation for anticipated operations of unscreened intakes. Compensatory mitigation may include, but is not limited to, restoration or preservation of impacted species habitat, or purchase of credits at an agency-approved mitigation bank. Cargill shall provide compensatory mitigation as required in the compensatory mitigation plan.

Figure 3.4-4 provides an overview of the proposed implementation process for this mitigation measure.

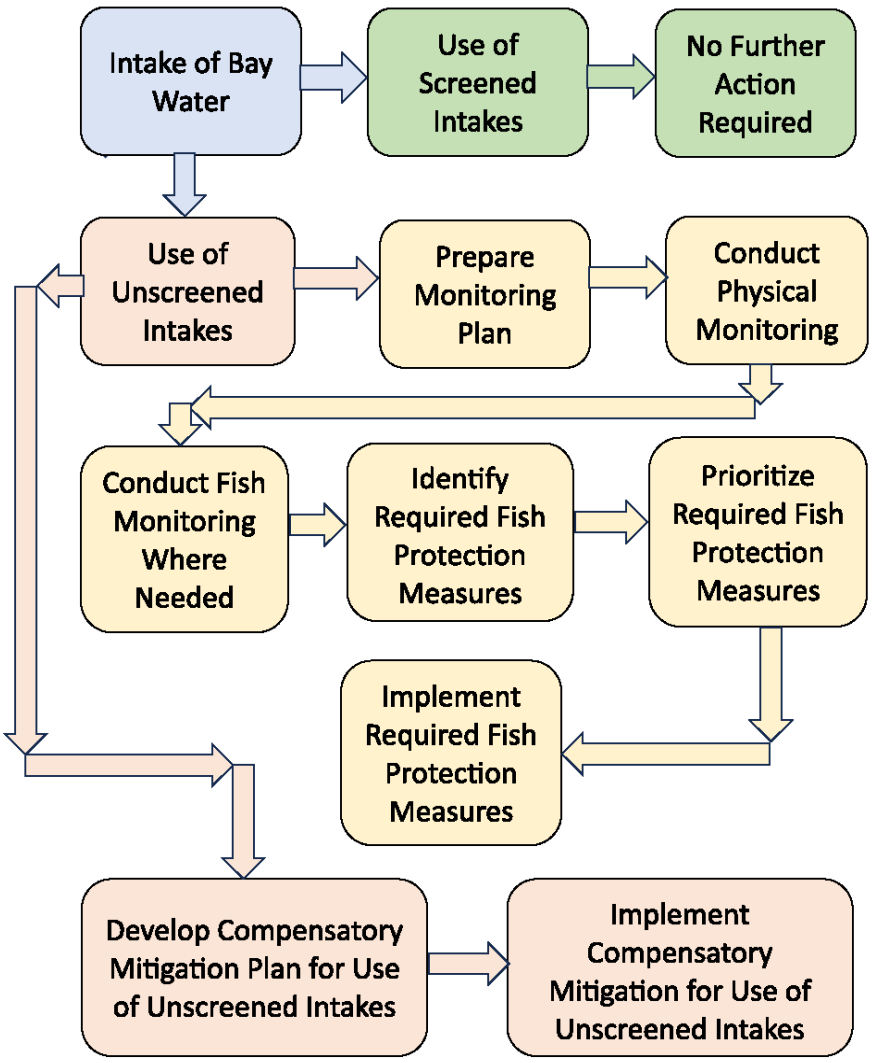

Figure 3.4-4. Mitigation Measure BIO-2 Implementation Process Flowchart

Installation and Maintenance of Fish Screens

As discussed in Section 2.10.5, Cargill is proposing to install fish screens at the Coyote Intake to further avoid and/or minimize the potential for entrainment of fish, including special-status fish species. The design plans for the screens are conceptual at this time, thus actual impacts to special-status species habitats as a result of installation, use and maintenance of the fish screens are not known with certainty at this time. It is likely that construction of the fish screens would permanently impact up to 0.5 acres of salt marsh habitat and open water in Alameda Creek.

Potential direct effects to salt marsh habitat and associated special-status species from fish screen construction and maintenance would be avoided and/or minimized through the use of

the BMPs in Section 2.13, including the ES and SNR BMPs (Section 2.13.5) along with the following BMPs developed for Lock Access/Egress: **Lock Access/Egress–2: CRR Surveys**, **Lock Access/Egress–3: Marsh Vegetation Removal for Salt Marsh Harvest Mouse Exclusion, Lock Access/Egress–4: SMHM 100-Foot Buffer, Lock Access/Egress–12: Pepperweed Prevention, Lock Access/Egress–14: Pre- and Post-Disturbance Photograph** (for a detailed description of each BMP please refer to Section 2.13). The conditions in the vicinity of the proposed fish screen location are similar to those around locks. These measures will ensure that impacts to salt marsh habitat and associated special-status species are less than significant.

Potential permanent direct effects from filling and shading salt marsh and other habitats on special-status species are different for the two design options, which have different amounts of permanent fill, as discussed in Section 2. The fill for Option 1 consists primarily of cover fill (i.e., piers shading the underlying water). Option 1 would have less permanent fill than Option 2. Both options are expected to require compensatory mitigation for fill such as habitat restoration or removal of fill from the Bay in other locations.

Installation of the fish screens and supporting structures is likely to require impact pile driving. While the design plans for the screens are conceptual, Access Option 1 would install a large number of concrete piles to support the fish screens and an access road. Hydroacoustic (i.e., underwaters noise) impacts associated with impact pile driving could impact special-status fish and marine mammals. Hydroacoustic noise impacts would be minimized by implementing BMPs **ES and SNR-14: Pile Driving and ES and SNR–15: Biological Monitoring of Impact Pile Driving**, but the adverse effects to special-status fishes due to impact pile driving would remain potentially significant. Implementation of Mitigation Measure BIO-3 would reduce potential impacts to a less than significant level.

Mitigation Measure BIO-3: Minimize Hydroacoustic Impacts due to Impact Pile Driving. Prior to conducting impact pile driving, Cargill shall conduct an underwater noise impact assessment in accordance with the *Technical Guidance for the Assessment of Hydroacoustic Effects of Pile Driving on Fish* (Molnar et al. 2020). If the assessment determines that the proposed pile driving may result in underwater noise levels that exceed the adopted peak sound pressure levels (SPL) or cumulative sound exposure levels (SELs) for fish (Fisheries Hydroacoustic Working Group 2008, Molnar et al. 2020), then Cargill shall develop a Hydroacoustic Impact Mitigation and Monitoring Plan. The Hydroacoustic Impact Mitigation and Monitoring Plan shall include methods to (1) monitor underwater noise during impact pile driving, (2) provide feasible sound attenuation measures, and/or (3) modify design or construction methods such that impact pile driving would not exceed the peak SPL/cumulative SELs that may injure or kill fish.

Summary

Routine operations and maintenance have occurred within the Project area for many decades. In terms of assessing the significance of potential impacts to special-status species resulting from Project activities, existing potential impacts resulting from activities permitted under the existing permit constitute baseline conditions. There is no evidence or documentation that indicates that routine operations and maintenance which have actually occurred to date have caused a substantial impact to special-status species or have contributed substantially to the decline of any individual special-status species or its habitat. Recent range-wide surveys in

areas proximate to Cargill's operations have detected some of the highest number of SMHM and CRR anywhere in the South Bay (Smith et al., in prep; Olofson 2023). Further, operations and maintenance activities maintain berms and salt ponds, which ensure the availability of high tide refuge, roosting, nesting, and foraging habitat for the identified special-status species. Berm maintenance also protects habitat in the Bay by preventing degradation and/or failure of the berm system.

However, the environmental and regulatory settings have changed since the Project was last subject to environmental review. Most notably, completion of fish passage improvements projects in lower Alameda Creek have restored steelhead passage in the Alameda Creek watershed, enabling the species to complete its lifecycle. Additionally, longfin smelt was listed under the CESA in 2009 and is proposed for listing as endangered under the FESA. The use and importance of estuarine habitat in South San Francisco Bay for longfin smelt is also better understood (Lewis et al. 2020). These changes have necessitated the addition of a mitigation measure to further minimize the potential for entrainment of special-status fishes. In addition, Cargill may need to conduct impact pile driving to construct fish screens and associated improvements. The effects of impact pile driving were not fully considered in prior environmental review. This activity has necessitated the addition of a mitigation measure to minimize the potential impacts to special-status fishes during impact pile driving.

3.4.4.2 Impact BIO-2: Substantial Adverse Effect on Riparian Habitat or Other Sensitive Natural Community

Less than Significant with Mitigation. No riparian habitat would be adversely affected during Project activities. Impacts to other sensitive natural communities are discussed in the following sections.

Effects on Northern Coastal Salt Marsh

The Northern Coastal Salt Marsh is a sensitive natural community within the BSA (Figure 3.4-2). Northern Coastal Salt Marsh is found on the outboard side of most outboard berms, wherever tidal action and elevation are adequate to support this community type.

It is estimated that up to approximately 1.2 acres of salt marsh habitat could be temporarily disturbed up to approximately two times annually at lock access points over the 10-year permit period as a result of activities associated with lock access and egress, an increase of up to slightly more than one lock access event per year compared to the baseline. The number of lock access events would decrease over time as more berms are made drivable or with an increase in use of amphibious equipment.

Additionally, temporary degradation or loss of Northern Coastal Salt Marsh habitat could inadvertently occur as a result of some of the other maintenance activities. The use of equipment on berms and near marsh habitat could cause damage to salt marsh if it is inadvertently crushed. Spills of fluids such as oils and fuels from equipment could harm vegetation, soil, and water in marsh habitats. During berm maintenance, marsh vegetation could be temporarily removed or buried. Habitat could also be damaged by foot traffic of crew members. During placement of silt or excavated material removed from intake structures, gates, pipes, etc., material could flow or fall into marsh habitat, damaging, crushing or burying

marsh vegetation. If excavators are used for removal if sediment at intakes, mats would be used to protect the tidal marsh in the vicinity of the access point, but some damage to tidal marsh vegetation could still occur. These are temporary impacts, and marsh habitat would recover or become re-established relatively quickly following these potential impacts (WRA 2023).

The Project includes placement of up to 7,800 square feet of new riprap (i.e., riprap in areas that were not previously covered by riprap) on the outboard side of berms where erosion has occurred. The riprap would only be placed in highly eroded and degraded areas. These locations have not been surveyed in this analysis, but these areas are not expected to support a substantial amount of Northern Coastal Salt Marsh habitat because they are highly eroded. It is anticipated that a narrow fringe of Northern Coastal Salt Marsh habitat that may be present immediately adjacent to these areas could be permanently impacted with placement of new riprap.

Armoring of shorelines using riprap has, in recent years, been shown to have potential adverse consequences on habitat and biota, including impairing migration, refugia, and conditions for rearing and spawning (NMFS 2022b). In particular, armoring of shorelines can reduce shallow-water and intertidal habitat, lead to coarsening of substrates, and reduce organic debris. This in turn can alter macroinvertebrate assemblages and reduce prey sources for fish (Sobocinski et al. 2010, as cited in NMFS 2022b). For example, in Puget Sound, Washington, epibenthic invertebrate densities were over ten times greater on unarmored shorelines, and species richness was twice that of armored locations (Morley et al. 2012, as cited in NMFS 2022b). Changes in habitat characteristics of shorelines can also reduce habitat suitability for a variety of organisms, including small pelagic fish (Toft et al. 2007, as cited in NMFS 2022b) and may affect microclimate (such as temperature and light). When repurposed concrete is used as riprap, the repurposed concrete often has newly-exposed surfaces that have not fully weathered. Exposure of newly-exposed concrete surfaces to water may result in the release of high pH leachate and, depending on the concrete source materials, certain heavy metals (WDEP 2022). Once the concrete surfaces have been exposed to air and fully carbonated, leachate pH is reduced to near-neutral pH (WDEP 2022). Cargill's practice of using large pieces of recycled concrete (most studies have been conducted on crushed concrete aggregate, which typically consists of pieces less than 2 inches in size), substantially reduces the risk of high pH leachate and associated releases of heavy metals.

As described in Impact BIO-1, brine seepage through berms has the potential to degrade Northern Coastal Salt Marsh by killing or stunting plant growth; however, patches noted during BCDC's June 7, 2023 site visit were small (less than 1 yard in area [Hyman pers. comm. 2023]). Implementation of Mitigation Measure BIO-1 would reduce potential impacts to Northern Coastal Salt Marsh due to brine seepage to a level that is less than significant level.

With implementation of the BMPs and Mitigation Measure BIO-1, impacts to Northern Coastal Salt Marsh would be avoided, minimized, and/or mitigated. As described in Impact BIO-1, these BMPs would reduce the likelihood of material falling or spills entering into salt marsh habitat during ongoing operations and maintenance activities and therefore prevent marsh features and vegetation from being buried or altered (**Berm Maintenance-1: Choker Berm, Berm Maintenance-2: Berm Slope**, and **Berm Maintenance-3: Spills**). Land-based equipment would

also be used on the top of berms, when possible, to avoid and/or minimize the use of locks and avoid digging an access channel through salt marsh vegetation, thereby preserving salt marsh vegetation and topography (**Berm Maintenance-4: Berm Work**). These BMPs would also ensure that the minimum amount of riprap is used to stabilize areas, and that riprap would be placed in areas that are generally free of marsh vegetation (**Riprap Placement-2: Riprap Amount** and **Riprap Placement-4: Riprap Placement**). Cargill would continue to implements its weed management plan, and this plan and other weed management BMPs include measures to prevent the introduction and spread of invasive plant species; and measures to identify and remove invasive weed populations prior to and after work, as appropriate (**Weed Management-1: Weed Management Plan**, **Weed Management-2: Weed Identification Materials and Briefings, Weed Management-3: Weed Infestation, Weed Management-4: Clean Equipment, Weed Management-5: Invasive Cordgrass,** and **Weed Management-7: Weed Removal Prior to Work**). This would avoid and/or minimize the potential for weeds to become established, outcompete native species, and cause degradation of Northern Coastal Salt Marsh. With implementation of these BMPs, the potential for habitat conversion and loss of Northern Coastal Salt Marsh habitat would be avoided and/or minimized.

Prior to lock access/egress, areas that have high environmental sensitivity, including Northern Coastal Salt Marsh, would be identified and a work plan would be developed which would include avoiding placement of sidecast material in these areas to the extent feasible (**Lock Access/Egress-1: Environmentally Sensitive Areas Identified in Work Plan**). In addition, high marsh features would be avoided where possible to allow for salt marsh vegetation and topography to be preserved (**Lock Access/Egress-6: High Marsh Preservation**). Following lock egress, vegetation would be allowed to recruit naturally, and steps will be taken to prevent the establishment of non-native plant species including perennial pepperweed (**Lock Access/Egress-11: Vegetation Recruitment and Monitoring**, and **Lock Access/Egress-12: Perennial Pepperweed Prevention**). By preventing establishment of this and other invasive plant species, native marsh vegetation would be allowed to recruit naturally and not be outcompeted by invasive species. Pre-(immediately before action) and post-(immediately after completion) disturbance photographs would be taken for lock access/egress and included in the monitoring reports prepared by the biologists observing the lock access/egress events (**Lock Access/Egress-14: Pre- and Post-Disturbance Photographs**). This would include photographs of areas where amphibious excavators are “walked” over the lock berms to enter the salt ponds. Staff would also receive appropriate training and information about the importance of appropriate practices to preserve Northern Coastal Salt Marsh habitat, which would further avoid and/or minimize the potential for impacts to this habitat (**ES and SNR-11: Environmental Training**).

Potentially significant impacts include temporary disturbance of salt marsh habitat during lock access/egress, and placement of excavated sediment/soil and silt during berm maintenance and other excavating and stockpiling activities. With respect particularly to USACE permitting requirements for the proposed Project, mitigation for these potential adverse effects to salt marsh habitats and federally listed species associated with these Project activities was satisfied under the Mitigation in Perpetuity agreement with USACE (File Number 19009S98) as discussed

in further detail in Impact BIO-1. As described in greater detail in Impact BIO-1, it was found that salt marsh disturbed during prior maintenance and operations activities substantially recovered within three years of disturbance with implementation of the BMPs (WRA 2016). As discussed previously, Cargill is proposing to install fish screens at the Coyote Intake. It is likely that construction of the fish screens would permanently impact tidal wetlands that support Northern Coastal Salt Marsh habitat. Analysis of permanent impacts to wetlands, including Northern Coastal Salt Marsh habitat, is addressed in Impact BIO-3.

Habitat Areas of Particular Concern (HAPCs)

HAPCs are components of EFH and are considered sensitive natural communities for the purpose of this analysis. HAPCs have been identified under the Pacific Coast Groundfish Fishery Management Plan (FMP) and the Pacific Coast Salmon FMP (PFMC 2022, 2023). The HAPCs for Pacific coast groundfish present in the BSA include Estuaries (i.e., all tidal waters of the Bay) and possibly Seagrass (seagrass includes eelgrass beds). The HAPCs for Pacific coast salmon present in the BSA include Estuaries and possibly Marine and Estuarine Submerged Aquatic Vegetation (this also includes eelgrass beds) (Figure 3.4-1).

Adverse effects on Estuaries would be associated with lock access/egress activities, pile driving, construction of fish screens, intake maintenance, and placement of new riprap.

Adverse effects to Estuaries HAPC during lock access/egress would be minimized by stockpiling excavated materials during lock access/egress into existing stockpile areas, or used for berm fortification and not placed in locations where it could be washed into estuarine habitat and contribute to increases in turbidity (**Lock Access/Egress-7: Excavated Material** and **Lock Access/Egress-8: Excess Sediment**). To avoid and or/minimize the release of silt within locks to adjacent areas, the hydraulic pressure within the lock and adjacent areas will be equalized so that silt does not flush out into adjacent areas (**Lock Access/Egress-8: Sediment within Access Cut**).

Noise and turbidity impacts associated with pile driving, new fish screen construction and maintenance, and new riprap placement on outboard berms could impact the suitability of foraging habitat for Pacific Groundfish and Pacific Coast Salmon, thus impacting the Estuary HAPC. These effects would be temporary in nature and would be minimized through BMP **ES and SNR-14: Pile Driving**, **Riprap Placement–4: Riprap Placement,** and **Mitigation Measure BIO-2**. The noise and turbidity levels associated with these activities would not appreciably diminish the quality of foraging habitat, and immediately following completion of these activities the foraging habitat would return to normal.

Construction of new fish screens and new riprap placement on outboard berms would result in permanent impacts to Estuaries HAPC. Adverse effects would include alteration of substrate and temporary disturbance of the benthic community. These adverse effects would result in a slight reduction (approximately up to approximately 0.5 acre) in the overall area of Estuaries HAPC available for Pacific coast groundfish and Pacific coast salmon. Although adverse effects and permanent loss of Estuaries HAPC may occur, the impacts to Pacific coast groundfish and Pacific coast salmon would be minimal given the amount of this habitat type available to these organisms.

Another potential impact to Estuaries HAPC is the inadvertent release of MSS and other brines. As described in Impact BIO-1, the berms containing MSS may be at risk of wave overtopping and SLR and consequently the risk of a release of MSS and other brines (Refer to Section 3.9, Hydrology and Water Quality). Release of MSS into an aquatic habitat is considered a potentially significant impact to Estuaries HAPC. Continued berm maintenance would help to minimize the potential release of brines and MSS into the Bay. In addition, implementation of Mitigation Measure HYD-1, which would require an analysis of the potential risk of excessive scour of berms as a result of overtopping during an extreme storm event and development of a workplan to address potential risks would reduce the potential impacts associated with accidental MSS release to a level that is less than significant.

Eelgrass has historically been mapped in the BSA (Figure 3.4.1). Recent surveys near Eden Landing shoreline and the mouth of Alameda Creek indicate that eelgrass beds have expanded substantially in this area (Merkel 2024a,b). While the distribution of eelgrass beds is dynamic over time, Project activities are not expected to directly impact eelgrass beds because they would not occur in locations that may support eelgrass. Pile driving and placement of new riprap placement on outboard berms may result in increased turbidity which can negatively affect eelgrass beds. Armoring shorelines with riprap may also negatively affect eelgrass beds by increasing wave energy near the beds, thereby altering sediment transport and erosion processes (WDEP 2022). Areas of eroding shoreline adjacent to Cargill's operating ponds are located approximately 2,000 from the closest eelgrass bed (Merkel pers. comm. 2024b). Potential turbidity and hydrodynamic effects are likely to fully amalgamated with existing conditions in the turbid waters of the South Bay within a short distance of the work area and operations and maintenance activities are not likely to substantially alter the quality or quantity Seagrass or Marine and Estuarine Submerged Aquatic Vegetation HAPCs.

With incorporation of the BMPs identified previously, Mitigation Measure HYD-1, and with mitigation previously provided under the USACE Mitigation in Perpetuity agreement, potential adverse effects sensitive natural communities including HAPCs are considered to be less than significant.

3.4.4.3 Impact BIO-3: Substantial Adverse Effect on State- or Federally Protected Wetlands

Less than Significant with Mitigation. As discussed in Section 3.4.1, Environmental Setting, and Impacts BIO-1 and BIO-2, portions of the facilities are located in or adjacent to wetlands that are protected by federal and state legislation. Maintenance work within the Project area has the potential to affect wetlands through excavation, filling, or hydrological interruption. Some temporary excavation and filling of wetlands could occur during lock access/egress and riprap placement, and there is the potential for inadvertent fill during berm maintenance activities.

Placement of new riprap on outboard berms may result in permanent impacts to wetlands. As mentioned previously, the Project includes placement of up to 7,800 square feet of new riprap (i.e., riprap in areas that were not previously covered by riprap) on the outboard side of berms during the 10-year permit period. The riprap would be placed in highly eroded areas. These locations have not been surveyed for this analysis, but are not expected to support a substantial amount of wetlands/Northern Coastal Salt Marsh habitat because they are highly

eroded. It is anticipated that a narrow fringe of wetlands/Northern Coastal Salt Marsh habitat that may be present immediately adjacent to these eroded areas could be permanently impacted with placement of new riprap because of the need to tie into new riprap areas. New riprap placement would be completed using the minimum amount of riprap necessary. Locations where new riprap should be placed are identified through regular monitoring completed by Cargill staff, following storms and wind-driven weather events that could cause loss of shoreline, and are included in the Annual Work Plan.

Installation of new fish screens at the Coyote intake will likely result in permanent impacts to federally and state protected wetlands. The design plans for the screens are conceptual, thus the total area of permanent impacts are not known at this time, but are estimated to comprise less than 0.5 acre combined of mudflat and tidal marsh habitat.

Temporary and permanent impacts to protected wetlands are considered to be potentially significant. The proposed BMPs have been shown to be effective in restoring salt marsh habitat for lock access/egress and berm maintenance (WRA 2016), and would ensure that the net area of wetland available remains constant even with the increase in disturbance area over the baseline. With the implementation of the same BMPs identified in Impact BIO-2, substantial adverse effects to state or federally protected wetlands due to maintenance activities would be avoided and/or minimized. Mitigation for potential adverse effects to federally protected wetlands due to these activities was satisfied, for the purposes of USACE requirements, under the Mitigation in Perpetuity agreement with USACE (File Number 19009S98) as discussed in Impact BIO-1. However, the Mitigation in Perpetuity agreement did not consider potential wetland impacts associated with installation of new fish screens. These reasonably foreseeable additional impacts would remain potentially significant. Implementation of Mitigation BIO-4 would reduce these impacts to a level that is less than significant.

Mitigation Measure BIO-4: Provide Compensatory Mitigation for Unavoidable Permanent Impacts to State- or Federally Protected Wetlands

For permanent loss of State- or Federally protected wetlands that were not considered in the USACE Mitigation in Perpetuity agreement, Cargill shall provide compensatory mitigation consistent with the terms of the *Final Rule on Compensatory Mitigation for Losses of Aquatic Resources* (USEPA and USACE 2008), the *Regional Compensatory Mitigation and Monitoring Guidelines for the South Pacific Division* (USACE 2015), and the *State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State* (SWRCB 2021). At a minimum, mitigation shall be provided at a ratio determined by the USACE's *South Pacific Division Regulatory Program Standard Operating Procedure For Determination Of Mitigation Ratios* (USACE 2021). Compensatory mitigation may include restoration of habitat and/or purchasing credits from a mitigation bank, among others. Mitigation shall be acceptable to the resource agencies, including USFWS, NMFS, CDFW and the RWQCB.

3.4.4.4 Impact BIO-4: Interference with Wildlife Movement or Wildlife Corridors, or Use of Native Wildlife Nursery Sites

Less than Significant with Mitigation. Wildlife movement corridors are described as pathways or habitat linkages that connect discrete areas of natural open space otherwise fragmented by

topography, changes in vegetation, and other natural or human inducted factors such as urbanization. Operations and maintenance activities including berm maintenance, placement of materials stockpiles, and lock access/egress have the potential to temporarily fragment habitats and disrupt wildlife movements, particularly for SMHM and salt marsh wandering shrew. These activities would have limited spatial scope over the duration of the proposed 10-year permit term, surrounding adjacent habitat would remain open for wildlife movements, and the Project would result in no change to existing baseline conditions with regard to wildlife movement corridors and native wildlife nursery sites. Therefore, temporary disturbance within the BSA from Project activities is a less than significant impact.

San Francisco Bay is also an important stopover for migratory shorebirds along the Pacific Flyway (Stenzel et al. 2002). Open water within the Bay and the salt ponds provides congregation and foraging habitat for shorebirds, while larger stands of wetland vegetation such as that within the BSA and adjacent Refuge provide habitat for many species. Project activities are similar in scope and duration to existing baseline activities which birds are expected to be habituated to, so continuation of these activities is not expected to interfere with migratory shorebirds' use of the BSA.

The San Francisco Bay serves as a migration corridor for anadromous fish between the Pacific Ocean and spawning habitat, which occurs primarily within the Sacramento and San Joaquin River watersheds, but also in a handful of smaller tributaries to South San Francisco Bay including Alameda Creek. Fish species have potential to use the open water habitat in and around the BSA for migration, foraging, or rearing. The BMPs discussed in Impact BIO-1 will avoid and/or minimize impacts to fish species, but there is also potential for impacts during pile driving, concrete pouring, and pumping of water. These will largely be avoided and/or minimized by appropriately timed activities, proper equipment, and biological monitoring. As discussed in more detail in Impact BIO-2, pumping of water would be confined to occur between June 1 to October 31 to the maximum extent feasible (**EN and SNR-17: Pumping**), and June 15 to October 31 at the Coyote intake to the maximum extent feasible which would avoid and/or minimize pumping during migratory movements of steelhead and longfin smelt and avoid and/or minimize the potential for entrainment of these and other fish species. Any residual impacts of pumping during fish migration periods would be mitigated through implementation of Mitigation Measure BIO-2.

Harbor seals are known to haul out at Mowry Slough and loud activities such as pile driving have the potential to impact hauled-out seals. However, marine mammals are known to become habituated to and tolerant of anthropogenic influences. A study of harbor seals in the San Francisco Estuary (that included the Mowry Slough haul-out) failed to find a negative correlation between habitat use and anthropogenic disturbance (Grigg et al. 2012), indicating a high level of habituation to ongoing baseline disturbance. Still, pupping individuals could have increased sensitivity to disturbance. During active pupping at any haul-out locations, a 500-foot activity-free buffer will be implemented around it (**ES and SNR-9: Seal Pupping Buffer**), and this will avoid and/or minimize potential impacts from Project activities. Pile driving will be conducted via pushing piles into sediments or by using a vibratory hammer to the extent feasible (**ES and SNR-14: Pile Driving**) which will avoid and/or minimize noise impacts

regardless of time of year that work occurs. If impact pile driving is necessary, a biological monitor will be present, and if a seal or sea lion is observed within 500 feet of the activity, work will temporarily cease until the individual(s) have left the buffer area (**ES and SNR-15: Biological Monitoring of Impact Pile Driving**), further minimizing the potential to impact movement through the vicinity of the Project.

Evaluation of the use of vinyl sheet piles would include the installation of approximately 600 linear feet of vinyl sheet piles along the inboard side of the berm of Pond P2-12, which currently holds MSS (bittern). As the MSS within this pond is expected to not provide suitable habitat to wildlife, there is not expected to be movement between outboard areas and the pond, so movement patterns of special-status species would not be impacted. In addition, the limited area where the piles will be installed relative to the 123 miles of berms (649,440 feet) is 0.09 percent of the total berm length, so only a very small proportion of berm areas would be disturbed.

Potential temporary impacts to wildlife movement, wildlife corridors, or wildlife nursery sites resulting from operations and maintenance would be less than significant with implementation of mitigation.

3.4.5 Mitigation Summary

Mitigation measures are required to compensate for potential entrainment of steelhead and longfin smelt during pump operations; reduce the potential for adverse effects to fish during impact pile driving; and compensate for permanent impacts to wetlands that were not considered in the USACE Mitigation in Perpetuity agreement, including for the installation of fish screens. The Project, with implementation of the BMPs and Mitigation Measures BIO-1 through BIO-4, would result in less than significant impacts to biological resources.

3.5 CULTURAL RESOURCES

This section analyzes the impacts associated with the implementation of the proposed Project on the historic and cultural resources of the site and identifies the mitigation measures that would reduce those impacts. Cultural resources are defined as pre-contact (Native American) and historical archaeological sites, structures, and districts, or any other physical evidence associated with human activity considered important to a culture, a subculture, or a community for scientific, traditional, religious, or any other reason. For analysis purposes in this section, cultural resources are categorized into two groups: archaeological resources (prehistoric and historical), and historical properties, buildings and districts. *Historical resource*, as defined under CEQA, includes buildings, sites, structures, objects, or districts that may have historical, prehistoric, architectural, archaeological, cultural, or scientific importance and are eligible for listing or are listed in the California Register of Historical Resources (CRHR).

3.5.1 Environmental Setting

3.5.1.1 Pre-Contact Setting

San Francisco Bay and surrounding marshlands and uplands were used extensively by humans and the region has been inhabited for more than 10,000 years. Before circa A.D. 1770, at the time of the first major European contact, the San Francisco Bay region was occupied by Coast Miwok, Patwin, Bay Miwok, and Costanoan/Ohlone Native American people. The Costanoan/Ohlone population in 1770 has been estimated at 7,000. Archaeological remains related to the pre-contact occupation of the area are evidenced by hundreds of shellmounds and occupation sites that lined the shores of the San Francisco, San Pablo, and Suisun Bays. The locations of these shellmounds approximately follow the current shoreline, but also line major tributaries feeding into the Bay. Native people were known to produce and use the naturally-occurring salt that exists along the Bay (Moratto 1984, City of Newark 2013).

Shellmounds are mounds or deposits containing shells, animal bones, and potentially human remains and other evidence of pre-contact settlement of an area. Many of the shellmounds known to be located around the Bay have been found in close relationship with marshy areas. A number of known shellmounds stand partially below current sea level, indicating that their accumulations began during lower water level occurrences in the past. Given the long duration both of the Bay water rise and human occupation of the shore zone, it is likely that earlier use and occupation sites, such as shellmounds, are present below current sea levels (Moratto 1984).

3.5.1.2 Historic Setting

Spanish explorers are said to have first visited the entrance to the Bay in 1769. Travel from the sea into the Bay first occurred in 1775. Spanish and Mexican exploration in the late 1700s and in the 1800s led to the establishment of permanent settlements along the coast of California, mostly in the form of missions and later, Ranchos. Spanish explorers came into increasing contact with Native Americans in the first half of the 1770s as expeditions were led through the region. Mexico gained independence from Spain in 1821 and California changed from Spanish to Mexican control. The decline of the missions allowed for the rise of extensive ranching along the California coast as well as the Sacramento Valley area. What was Native American land

became more than 500 land grants (Ranchos) distributed to prominent California families. Then followed a time period of skirmishes and battles between the Mexican army and Native Americans. This and parceling of the land into Ranchos, along with epidemics of smallpox and malaria that spread through Native populations resulted in the further decimation of the Native population and culture (USACE 2015, USFWS and CDFW 2007).

California became a part of the United States as a result of the Mexican-American war that ended in 1848. During the Gold Rush (lasting from 1849 to approximately 1855), there was a large population increase of emigrants, immigrants, and gold seekers to California. The importance of maritime shipping in the Project vicinity continued throughout the Gold Rush and all succeeding historical periods. Cities grew around the Bay along with associated infrastructure. The solar salt industry in San Francisco Bay began in the mid-1850s. By 1900, significant portions of marshland on the western edge of Newark had been diked, bermed, and converted to salt evaporation ponds. The Leslie Salt Company, precursor to Cargill, traces its history back to operations started in Newark in 1936 (City of Newark 2013). Ownership of salt plants was consolidated during the first part of the 20th century and Cargill is now the only solar salt producer in the San Francisco Bay.

3.5.2 Regulatory Setting

Federal and state regulations pertinent to this resource area are described in Table D-1. State regulations that govern cultural and historical resource aspects of the Project include CEQA and the Health and Safety Code, as well as BCDC's laws and policies. Federal regulations that would be applicable to this area include the Archaeological Resources Protection Act, National Historic Preservation Act, and Federal Antiquities Act of 1906. BCDC regulations and local goals, policies, and/or regulations applicable to this issue area are summarized in the following subsections.

3.5.2.1 San Francisco Bay Plan

The Bay Plan (BCDC 2020) provides the following findings and policies pertaining to cultural resources:

- **Findings and policies pertaining to Environmental Justice and Social Equity Finding c.** – The Commission recognizes that California Native American communities have also faced many environmental injustices and social inequities. However, the Commission has not dedicated institutional resources to tribal issues and cultivating relationships with California Native American communities. As a result, these issues have not been addressed in the Bay Plan. The Commission acknowledges the need to build these relationships and address tribal issues going forward.
- **Environmental Justice and Social Equity Finding j.** – Drawing on the expertise of environmental justice and community-based organizations, the Commission has committed to the following guiding principles to integrate environmental justice and social equity into its mission. The Commission will:

  Recognize and acknowledge the California Native American communities who first inhabited the Bay Area and their cultural connection to the natural resources of the region.

- **Climate Change Policy 6.i.** – The entities that formulate the regional strategy are encouraged to consider the following strategy and goal – advance regional sustainability, encourage infill development and job creation, provide diverse housing served by transit, and protect historical and cultural resources.
- **Water-Related Industry Policy 5.c.** – Important Bay overlook points, and historic areas and structures that may be located in water-related industrial and port areas, should be preserved and incorporated into the site design, if at all feasible.

3.5.2.2 County General Plans

No Alameda County General Plan goals or policies in the area of cultural and historical resources are applicable to the Project site. The San Mateo County General Plan (County of San Mateo 1986) contains the following relevant goals and objectives:

- Goal and Objective 5.3 – Protection of Archaeological/Paleontological Sites
- Goal and Objective 5.20 – Site Survey Protection of Archaeological/Paleontological Sites
- Goal and Objective 5.21 – Site Treatment Protection of Archaeological/Paleontological Sites

3.5.2.3 City of Fremont General Plan

The City of Fremont's General Plan (City of Fremont 2011) contains one relevant goal: Goal 4-6 – Historic Preservation and Cultural Resources Conservation and enhancement of Fremont's historic sites, buildings, structures, objects, and landscapes into the 21st Century and beyond. Goal 4-6 is supported by the following relevant policies: Policy 4-6.1 – Protection of Historic Resources, Policy 4-6.3 – Resource Documentation, and Funding and Policy 4-6.10 – Protection of Native American Remains.

3.5.2.4 City of Hayward General Plan

The City of Hayward's General Plan (City of Hayward 2014) contains Goal LU-8 – Preserve Hayward's historic districts and resources to maintain a unique sense of place and to promote an understanding of the regional and community history. Also relevant are policies LU-8.13 – Planning Study Considerations and NR-1.4 – Shoreline Protection and Enhancement.

3.5.2.5 City of Menlo Park General Plan

The City of Menlo Park General Plan (City of Menlo Park 2016) has numerous policies and one goal pertaining to cultural resources. These include Policy LU-7.8 – Cultural Resource Preservation, Policy OSC3.1 – Prehistoric or Historic Cultural Resources Investigation and Preservation, Policy OSC3.2 – Prehistoric or Historic Cultural Resources Protection, Policy OSC3.3 – Archaeological or Paleontological Resources Protection, Policy OSC3.5 – Consultation with Native American Tribes, and Goal OSC3 – Protect and Enhance Historic Resources. In addition Policy OSC3.4 – Prehistoric or Historic Cultural Resources Found During Construction requires that if cultural resources, including archaeological or paleontological resources, are uncovered during grading or other on-site excavation activities, construction shall stop until appropriate mitigation is implemented.

3.5.2.6 City of Newark General Plan

The City of Newark's policy pertaining to historic resources is Goal LU-5 – Identify, preserve, and maintain historic structures and sites to enhance Newark's sense of place and create living reminders of the City's heritage (City of Newark 2013). Goal LU-5 is supported by policies Policy LU-5.1- Preserving Important Buildings, Policy LU-5.2 – Context-Sensitive Design, and Policy LU-5.5 – Native American Resources. Policy LU-5 requires coordination with local tribal representatives and the Native American Heritage Commission to ensure the protection of Newark's Native American resources and to follow appropriate mitigation, preservation, and recovery procedures in the event that important resources are identified during development.

3.5.2.7 City of Redwood City General Plan

The City of Redwood City General Plan (City of Redwood City 2010d) contains the following goals and policy pertaining to cultural resources:

- Goal BE-36 – Identify, study, and document historic resources.
- Goal BE-37 – Protect, preserve, restore, rehabilitate, and/or enhance historic resources.
- Policy BE-37.1 – Enhance, restore, preserve, and protect, as appropriate, historic resources throughout the city.

3.5.3 Impact Analysis

Potential impacts to cultural resources would be considered significant if implementation of the proposed Project would do any of the following:

- Cause a substantial adverse change in the significance of a historical resource
- Cause a substantial adverse change in the significance of an archaeological resource, or
- Result in the disturbance of Native American human remains

These significance criteria were used to conduct the impact analysis in the following subsections.

3.5.3.1 Impact CUL-1: Substantial Adverse Change in the Significance of a Historical Resource

No Impact. Records searches of all pertinent survey and document data were conducted of the California Historical Resource Information System (CHRIS) at the Northwest Information Center, Sonoma State University on November 21, 2019 and on January 28, 2020. The record search location and results were reviewed in February of 2024 and it was determined that the potential areas of new excavation associated with the possible construction of the fish screens were included in that research. The records searches indicated that three recorded buildings and one structure were found in or adjacent to the proposed Project area along the east side of San Francisco Bay – a boat house, hunter's cabin, pump house/environmental education classroom, and Brine Pumps. Further, the search indicated that a recorded historic District[19]

[19] A "recorded district" is a grouping of buildings that have been described, typically evaluated, and found to be historic as a District instead of as individual buildings.

and a building are found near to the proposed Project along the west side of the Bay. Project activities would not affect those buildings or structures.

A historic resource evaluation of the Ravenswood Salt Ponds/Menlo Park Equalization Basin Levees was completed in 2018, adjacent to the Project area on the west side of the Bay. The analysis was conducted as part of a historic resource evaluation for the West Bay Sanitary District Levee Project (MIG 2018). The evaluation concluded that the integrity of the levees had been lost due to the infill of soil in 1951 and the levees were not determined to qualify as historic (Templar 2018). A historic resource evaluation was also completed.

No evaluation for historical significance of the Project site/salt pond system itself has been performed. However, the Project would not result in substantial changes to the berms or overall site.

Six potential historical resources have been identified at or near the Project area. Two structures, the boat house (P-01-010611) and hunter's cabin (P-01-010612), are located along the north side of Newark Slough and were evaluated for eligibility for the National Register of Historic Places (NRHP) in 2003 (Speulda 2003). The analysis concluded that the buildings did not meet eligibility criteria for the NRHP. Neither was analyzed for historical significance at the state or local level. It would appear unlikely that they would qualify for the CRHR, due to the findings in the analysis that the buildings lack integrity of materials and setting, particularly the boat house, and do not meet the criteria for eligibility for the NRHP. In addition, they are not locally listed as historic buildings.

The pump house/environmental education classroom (P-01-010572) is located along the north side of Newark Slough, south of Dumbarton Road. It was also evaluated for eligibility for the NRHP in 2003 (Speulda 2003). The report concluded that the building does not appear to meet eligibility for the NRHP. It was not analyzed for historical significance at the state or local level. It would appear unlikely that it would qualify for the CRHR because the analysis found that it does not appear to meet the NRHP eligibility criteria as it has lost its connection to the salt industry and has been altered. In addition, the building is not locally listed as historic.

The Archimedes screw brine pumps (P-01-010962) were described in a cultural resources survey completed in 2009 (PAR Environmental Services 2009). The remains of the two wind-powered brine pumps are located in what was termed an "abandoned salt evaporation pond" in the Don Edwards San Francisco Bay National Wildlife Refuge approximately 500 meters south of the Dumbarton Bridge and north of the Hetch Hetchy Aqueduct. The brine pumps were not evaluated for historical significance. This 2009 survey also identified other known or potential cultural resources at or near the Project, including a portion of the Project area itself (the salt evaporation ponds), as well as the Hetch Hetchy Aqueduct, the South Pacific Coast Railroad route, a spur off of the rail line, and the Southern Pacific Railroad Dumbarton Cutoff. The Hetch Hetchy Aqueduct has been previously evaluated as NRHP-eligible, and is therefore assumed to be eligible for the CRHR, but was not evaluated for local historical significance. The other potential resources were not evaluated for historical significance.

In addition, an area to the east and north of components of the Redwood City Plant, termed the "Ravenswood Salt Works District" (P-41-2351), was evaluated for eligibility for the NRHP in

2007. The area was found to be ineligible for the NRHP (Speulda-Drews 2007). A brine pump house (P-41-00204) was reviewed for eligibility for the NRHP and was also found ineligible for the NRHP (Speulda-Drews 2014).

The proposed Project would not affect any of the potential historical resources identified by previous surveys because its proposed maintenance activities would not entail altering those resources and would not cause a substantial adverse change in the significance of a historical resource.

3.5.3.2 Impact CUL-2: Substantial Adverse Change in the Significance of an Archaeological Resource

Less than Significant with Mitigation. Records searches of all pertinent survey and document data were conducted of the CHRIS at the Northwest Information Center, Sonoma State University on November 21, 2019 and on January 28, 2020. The record search location and results were reviewed in February of 2024 and it was determined that the potential areas of new excavation associated with the potential installation of fish screens were included in that research. The records searches indicated that the majority of the Project site has not been surveyed for archaeological resources. However, various cultural resource surveys and investigations have been completed in nearby areas over many years. No previously recorded archaeological resources have been identified on the Project site; however, recorded Native American sites have been recorded near the Project areas located along both sides of San Francisco Bay. One site (CA-ALA-59) near Mowry Slough was described in the PAR Environment Services 2009 survey; however, it was not re-located during the survey. Eight other recorded archaeological sites are found approximately one to two miles east of Newark Plants 1 and 2 and south and southwest of Plant 2 located along the eastern side of San Francisco Bay (CA-ALA-12, -13, -331, -333, -332, -328, -329, and -392). At least nine recorded archaeological sites are found within one to two miles south and southeast of the Redwood City Plant, brine pipeline alignment and the Redwood City Maintenance Pond located on the western side of San Francisco Bay (CA-SMA-83, -160, -242, -235, -275, -248, -305, -386/H, and P-41-438).

The majority of the Project area is located in Holocene (beginning 12,000 – 11,500 years ago) San Francisco Bay mud. Due to the location of the Project site along the Bay, where Native American shellmound sites are typically located, and the existence of known cultural resources in close proximity to the site, there is a high potential for unrecorded Native American archaeological resources to exist in and near the Project area. Other historical archaeological resources could also potentially be located on the site. Project activities, such as berm keying and excavation (berm cuts) for lock access/egress, would take place within berms and other areas that have already been highly disturbed. If archaeological resources are located in berms, any such materials would likely have been separated from the original archaeological site(s). While any potential individual artifacts may be found to be historically significant, the location or archaeological site where the artifact may have been located previously in the Bay Mud would have been disturbed.

Berm keying would take place over the 10 years of the proposed Project and would result in the removal of about 90 cubic yards/100 linear feet of coring, with an estimated average of around

1,000 to 1,100 linear feet of berm keying per year. While the total amount of berm keying would be less than that conducted over the past 10 years, berm keying would occur in new areas. Some berm materials are composed of Bay Mud which could include archaeological resources. Material removed from the berm cores is placed on the inside berm slopes of salt ponds. Some activities could take place in undisturbed soil/sediment that could be as shallow as 2 feet and as deep as 7 feet below the top of the berm. Soil removed during coring could potentially contact archaeological resources.

Additionally, excavation could take place to support the installation of fish screens along a small side slough off of Alameda Creek. In addition, minor excavation could take place at the entrance and exit points or through trenching for new pipes. Some level of disturbance occurred at the fish screen site when the pumps were originally installed in the slough. Alameda Creek and its history are described in CEQA/NEPA environmental review documents prepared for the Lower Alameda Creek Fish Passage Restoration project in 2020 (CITE) and the Alameda County Water District-Alameda County Flood Control District Joint Fish Passage Project in 2016 (CITE). The documents refer to the creek as "man-made" and state that the areas between Flood Control Channel levees are highly disturbed and the levees were constructed "using borrowed sand and gravel from the channel excavation." It is possible that unidentified archaeological remains are present on the Project site. If excavation activities took place in undisturbed areas or even partially disturbed areas, historically significant archaeological resources could be discovered. Damage to such cultural resources would be considered a significant impact. With implementation of Mitigation Measure CUL-1 this impact would be less than significant.

- **Mitigation Measure (MM) CUL-1: Inadvertent Encounter of Undiscovered Archaeological Resources.**

  These mitigation measures shall be printed on contract specifications for field workers for maintenance projects. Cargill, Incorporated shall inform all contractors and Cargill personnel in writing through the contract specifications and/or training, and verbally at any Project initiation meetings connected with soil and ground-disturbing maintenance activities, of the possibility of finding archaeological resources.

  All site workers shall be trained to recognize potential buried artifacts and shall be informed about the appropriate procedures should buried artifacts or human remains be encountered. Documentation of the contract specification and training shall be provided to BCDC if requested by BCDC. Since material removed from the berm cores would be placed on the inside berm slopes of salt ponds, this moved material and other material from the Project site (soils or Bay Mud) that may be moved from one location to another on the Project site shall be reviewed on its surface for the existence of archaeological materials.

  If buried cultural resources, such as chipped or ground stone, obsidian, animal bones, shells or shell pieces consistent with those found in Native American shellmounds, historic debris, building foundations, or other items are discovered inadvertently during soil or ground-disturbing activities, such as coring berms or excavating sediment for lock access, work shall stop in that area and within 100 feet of the find until a qualified archaeologist can assess

the significance of the find and, if necessary, develop appropriate treatment measures in consultation with BCDC, other agencies, and Native American representatives, as appropriate. Material removed through berm keying or other material shall be viewed by construction staff, as feasible based on placement, to determine if cultural resources were encountered during such activities. If recommended by a qualified archaeologist or cultural resource specialist, further excavation activities shall be monitored by an archaeologist and shall also, if advised by the archaeologist, include a Native American monitor.

Project personnel shall not collect cultural resources found. Prehistoric cultural material includes, but is not limited to, chert or obsidian flakes; projectile points; mortars and pestles; dark friable soil containing shell and bone dietary debris; heat-affected rock; human burials; shell midden deposits; hearth remains; and bone, stone and/or shell artifacts. Historical material including but not limited to stone or adobe foundations or walls; structures and remains with square nails; whole or fragmentary ceramic, glass or metal objects; or wood, nails, brick, or other materials may occur within the Project area in deposits such as old privies, dumps, or even as part of the imported soil. Any identified cultural resources shall be recorded on DPR 523 historic resource recordation forms. The disposition of any such items discovered shall be determined by BCDC through recommendations provided by an archaeologist or cultural resource specialist, and in consultation with a Native American representative, if recommended by the archaeologist or cultural resource specialist.

3.5.3.3 Impact CUL-3: Disturbance of Human Remains

Less than Significant with Mitigation. Given the location of the Project area, there is a high potential for unrecorded Native American archaeological resources to exist within the Project area. Therefore, there is a potential for inadvertently uncovering human remains. With implementation of mitigation measure MM CUL-2, this impact would be less than significant.

- **MM CUL-2: Inadvertent Encounter of Human Remains.**

  If human remains are encountered, the County coroner shall be contacted immediately. If the County coroner determines that the remains are Native American, the coroner shall contact the Native American Heritage Commission within 24 hours (pursuant to Section 7050.5 of the California Health and Safety Code.) There shall be no further excavation or disturbance of the site or any nearby areas reasonably suspected to overlie adjacent human remains until the County Coroner is contacted and the Coroner has determined that the remains are not subject to provisions of the law regarding the investigation of the circumstances, manner and cause of death. The NAHC shall provide BCDC and Cargill, Incorporated with the contact information for the most likely descendant who will have the opportunity to make a recommendation within 24 hours after being notified by the NAHC as to how the remains shall be treated and their disposition. If any human remains are encountered, the remains shall be left in place and protected from further disturbance until a plan for their disposition can be developed. Pursuant to Section 7050.5(b), if the remains are not Native American and not subject to investigation as described previously, the

Coroner shall recommend treatment and disposition of the remains to the person responsible for the excavation.

3.5.4 Mitigation Summary

Implementation of the following mitigation measures would reduce potential Project-related impacts to less than significant.

- MM CUL-1: Inadvertent Encounter of Undiscovered Archaeological Resources
- MM CUL-2: Inadvertent Encounter of Human Remains

3.6 GEOLOGY AND SOILS

3.6.1 Environmental Setting

3.6.1.1 Regional Setting

The proposed Project site lies within the Coast Ranges geomorphic region. Much of the Coast Ranges are composed of marine sedimentary deposits and volcanic rocks that form northwest-trending mountain ridges and valleys running subparallel to the San Andreas Fault Zone. Terraces and alluvial fans border the ridges of the Coast Ranges before they intersect the San Francisco, San Pablo, and Suisun Bays and merge into tidal flats along the bay margins. The geomorphology of the region includes parts of three prominent, northwest-trending geologic/geomorphic features, which include, from west to east, the Santa Cruz Mountains, the Santa Clara Valley, and the Diablo Range. The Santa Clara Valley forms part of an elongated structural block (the San Francisco Bay block) within the central Coast Ranges that contains San Francisco Bay and its surrounding alluvial margins. This structural block is bounded by the San Andreas Fault to the southwest and the Hayward-Calaveras Fault zone to the northeast.

3.6.1.2 Project Setting

Soils

South San Francisco Bay is a north-northwest-trending subsiding basin that is filled primarily with Quaternary alluvium (stream) deposits eroded from the surrounding margins and estuarine sources (Bay mud). The Sangamon and Holocene Bay muds are separated by Quaternary alluvium and aeolian (wind-blown) sand deposits. Alluvium deposits consist of sediments eroded from the surrounding Santa Cruz Mountains and Diablo Range uplands. These alluvial sediments were transported and deposited by streams and include a mixture of sands, gravels, silts, and clays with highly variable permeability. In contrast, the fine-grained Bay muds have very low permeability. The youngest Holocene Bay muds underlie almost the entire original Bay (Atwater et al. 1977; Helley et al. 1979). Estuarine (Bay) muds were deposited in San Francisco Bay during high sea level periods of the Sangamon (70,000 to 130,000 years ago) and the Holocene (less than 11,000 years ago) eras (Atwater et al. 1977).

The soils in the Project area on the east side of San Francisco Bay (Newark Plants and Pond B-3C) are classified as primarily Novato Clay series with smaller pockets of Reyes clay and Pescadero clay (NRCS 2018). Soils within the Redwood City Plant area as well as the Cargill West Bay areas are also classified as Novato clay series. The Novato Clay series consists of deep, very poorly drained soils that formed in alluvium deposited along the margin of bays. Novato soils are located in tidal marshes and have nearly level slopes (0–2 percent). These soil types are generally saturated with water all times of the year (NRCS 2018). Both Reyes clay and Pescadero clay are very deep, poorly or very poorly drained soils that formed on basin rims in alluvium that derived from sedimentary rock. Pescadero clay was evaluated by the U.S. Department of Agriculture (USDA) for a number of potential uses ranging from building development to wildlife habitat. The only use options that received good or favorable ratings were “pond reservoir areas” and “wildlife habitat.” Most potential use options received poor or

unfavorable ratings, including the construction of "embankments, dikes and levees." The USDA analysis for potential uses of Reyes clay is very similar to Pescadero clay (WRA 1994).

The geology in the vicinity of the MSS ponds P2-12 and P2-13 indicates the ponds and berms are underlain by Young Bay Mud, a low permeability, low strength silt/clay type material; which is underlain by Old Bay Mud, a similar clay material as Young Bay Mud but denser and stronger with depth (Anchor QEA 2023). Sand deposits would be susceptible to liquification. Geotechnical data collected to date (Anchor QEA 2023) did not exhibit any appreciable sand deposits.

Most of the areas surrounding Cargill's facilities have subsided since Cargill's berms were originally constructed. Land subsidence in southern San Francisco Bay and the Santa Clara Valley can be attributed to the overdrafting of aquifers during the first half of the twentieth century. Some areas have subsided as much as 8 feet between 1934 and 1967, and subsidence in the Project area generally ranged from 0 to 4 feet. While U.S. Geological Survey monitoring determined that no additional subsidence has occurred since 1973 (Poland and Ireland 1988; USGS 2020), a detailed NASA study suggests that most of the shoreline surrounding the South Bay including the Project area is subsiding at the rate of 1 – 2 mm/year (NASA 2018). Cargill continues to maintain the heights of berms by adding clean imported material or material from the salt ponds as needed.

Faults and Seismicity

The proposed Project is located in the seismically active San Francisco Bay region. The San Francisco Bay region is situated on a plate boundary marked by the San Andreas Fault System, which consists of several northwest-trending active and potentially active faults. Scientists have developed a new earthquake forecast model for California, referred to as the third Uniform California Earthquake Rupture Forecast, or "UCERF3". The new model provides authoritative estimates of the magnitude, location, and likelihood of earthquake fault rupture throughout the state. UCERF3 is the latest model from the Working Group on California Earthquake Probabilities (WGCEP) (WGCEP 2014). According to the UCERF3, the probability of one or more earthquakes of magnitude 6.7 or higher occurring in the San Francisco Bay Area within the next by 2036 (starting in 2007) is 63 percent (UCB 2024). The likelihood of a magnitude 6.7 or greater earthquake occurring along individual faults during this time period is 31.7 percent for the Hayward-Rodgers Creek Fault, 21 percent for the Northern San Andreas Fault, and 7 percent for the Calaveras Fault.

Some of the major regional active faults found by the California Geological Survey (CGS) under the Alquist-Priolo Earthquake Fault Zoning Act to be "active" (i.e., to have evidence of fault rupture in the past 11,000 years) include the San Andreas, Hayward-Rodgers Creek, Concord, and Calaveras faults. These faults, which are within the San Andreas Fault Zone (SAFZ), have caused severe ground shaking in the past and have the potential to do so in the future. The Project site could be subjected to damage from movement on any one of the regional active faults which are shown in Figure 3.6-1. The Hayward and Calaveras faults run parallel to the Newark Plants' eastern border; however, no major active faults are known to cross the salt ponds or production facilities. The closest active fault to the Project area is the Hayward fault. The Newark Plants are approximately 3.5 miles west of the Hayward fault and 12 miles east of

the San Andreas Fault. The Redwood City plant is approximately 13 miles west of the Hayward fault and 6 miles east of the San Andreas fault.

Other faults in the vicinity of the Project site include the Silver Creek fault, Palo Alto fault, and Stanford fault. All of these faults are concealed, potentially active Quaternary faults that have evidence of displacement sometime during the past 1.8 million years. These faults have less potential for surface rupture. The Redwood City Plant and Newark Plants are located approximately 2 miles and 8 miles east, respectively, of the Stanford fault. The Silver Creek fault traverses the southeastern edge of Newark Plant 2 in a north/south trending direction while the Palo Alto fault traverses the northern edge of Redwood City Plant site.

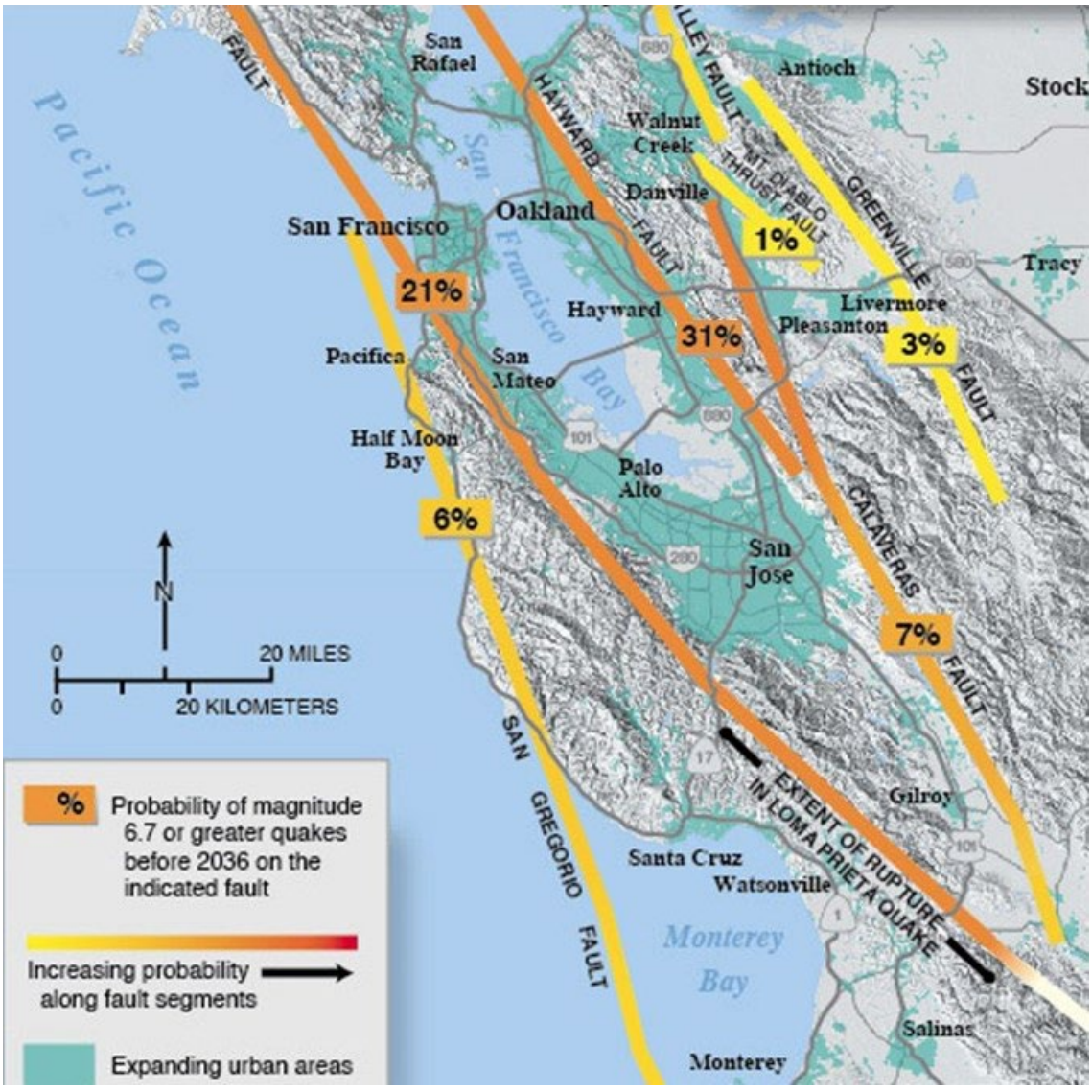

Figure 3.6-1. Faults in the Vicinity of the Project Area
Source: UC-Berkeley 2024 https://seismo.berkeley.edu/hayward/hayward_hazards.html

Landslides
A landslide is a mass of rock, soil, and debris displaced down-slope by sliding, flowing, or falling. The susceptibility of land to slope failure depends on the slope and geology as well as the amount of rainfall, excavation or seismic activities. Steep slopes and down-slope creep of surface materials characterize areas most susceptible to landslides. Landslides can cause severe damage to structures. Inertial forces from earthquake ground shaking can also reduce the stability of a slope and cause sliding or falling of soil or rock.

The Project area has a nearly flat topography. There are no significant hills or steep slopes surrounding the Project. In addition, the CGS's Seismic Hazard Mapping Program reports no landslide hazard areas within the Project area. This means that the potential for a landslide in the Project area is extremely low.

Soil Erosion and Expansive Soils
Soil erosion is the loss of soil due to running water or wind; the greatest risk typically occurs in areas with steep slopes and exposed soils. Rates of erosion can vary depending on the soil material and structure, placement and human activity. Erosion is most likely on sloped areas with exposed soil, especially where unnatural slopes are created by with exposed soil, especially where unnatural or temporarily exposed slopes are created by cut and fill activities. Soil erosion rates could therefore be temporarily higher during maintenance activities.

Expansive soils contain clays with certain mineralogical content (such as bentonite) that give them a "shrink-swell" characteristic. Shrink-swell is the cyclic expansion and contraction that occurs in such clays from the process of wetting and drying. Shrink-swell is the cyclic expansion and contraction that occurs in fine-grained clays from the process of wetting and drying. Damage to structures may occur over time if structures placed directly on expansive soils are not designed properly. The coarse- and medium-grained Holocene alluvial deposits found in the Project area contain less detrital expansive clay and are not intensely weathered; therefore, they have moderate or low shrink-swell potential.

Lateral Spreading and Differential Settlement
Lateral spreading refers to landslides that occur on gentle slopes or nearly flat terrain through rapid fluid-like horizontal movement, typically in response to liquefaction. There are no documented liquefaction-prone areas within the Project site.

Differential settlement occurs when soil settles unevenly, particularly after liquefaction. Differential settlement occurs when the soil layers that liquefy are not of a uniform thickness, or because there are considerable differences in soil composition. Differential settlement can also occur when geological materials are improperly compacted during construction. Differential settlement is not considered a concern at the site due to the relatively consistent soil types and the absence of liquefiable soil deposits.

3.6.1.3 Seismic Hazards
Seismic hazards include surface fault rupture, ground shaking, and ground failure including liquefaction and landslides.

Surface Fault Rupture

Seismically induced ground rupture is defined as the movement of the ground along one side of a fault relative to the other side as the result of an earthquake. The magnitude and nature of fault rupture can vary for different faults or even along different strands of the same fault. Ground rupture is considered more likely along active faults. Potential surface fault rupture hazards exist along the known active faults in the greater San Francisco Bay Region. The faults that have been identified by the CGS as potential surface rupture hazards in close proximity to the South San Francisco Bay include the San Andreas and Hayward faults. These faults show historical (last 200 years) displacement associated with mapped surface rupture or surface creep. None of the Project area is within an earthquake fault zone as defined by the Alquist-Priolo Act, and therefore the Project area is not expected to experience surface rupture. As noted in Section 3.6.1.2 (Faults and Seismicity), no major active faults are known to cross the salt ponds or production facilities, and the facilities are located several miles from any active faults that are likely to experience surface ruptures.

Ground Shaking

Ground movement intensity during an earthquake varies depending on the overall magnitude, distance to the fault, focus of earthquake energy, and type of geologic material. Areas that are underlain by bedrock tend to experience less ground shaking than those underlain by unconsolidated sediments that amplify shaking such as artificial fill and soft materials such as Young Bay Mud. Sites close to the zone of fault rupture typically experience stronger motion. Sites close to the zone of fault rupture typically experience stronger motion than similar sites located farther away. Site soils can amplify ground motion in certain frequency ranges and can dampen ground motion within other frequency ranges. Soft soils sites, such as the Holocene Bay Mud and Quaternary alluvium, aeolian deposits, and older Pleistocene Bay mud located in the Project area, could amplify ground motions in the long period range compared to stiff or firm soils sites. Although the Project area is not located in an Alquist-Priolo Earthquake hazard zone, the area could still experience strong ground shaking from nearby faults.

Liquefaction

Liquefaction is the sudden temporary loss of shear strength in saturated, loose to medium-density granular sediments subjected to ground shaking. When liquefaction occurs, it can cause foundation failure of buildings and other facilities. The potential for liquefaction depends on a number of factors including the duration and intensity of earthquake shaking, particle size distribution of the soil, density of the soil, and elevation of the groundwater. Generally, looser sand deposits have the potential to densify more as a result of ground shaking and are subject to larger volumetric changes. Additionally, thicker deposits of loose sand would accumulate more volumetric change than thinner deposits. The Project area has a moderate susceptibility for liquefaction (Witter et al. 2006). The entire Project area is within a liquefaction zone as defined by the California Department of Conservation (2019). However, as noted in Section 3.6.1.2 Soils, geological data collected to date (Anchor QEA 2023) did not indicate the presence of any appreciable deposits of loose, liquefiable sand, which suggests that the Project area is not vulnerable to any significant liquefaction in an earthquake.

Seismically-Induced Landslides
The susceptibility of sloped lands to failure during an earthquake is dependent on the level of ground shaking, underlying geology, thickness of alluvial material, and degree of saturation. Inertial forces from earthquake ground shaking can reduce the stability of a slope and cause sliding or falling of soil or rock. The Project area is relatively flat with low potential for seismically-induced landslides.

3.6.2 Regulatory Setting

Federal and state laws and regulations pertaining to this resource area and relevant to the Project are described in Table D-1. State regulations that govern geotechnical and geological aspects of the Project include the Alquist-Priolo Earthquake Fault Zoning Act and Seismic Hazards Mapping Act. The California Building Code (CBC) would apply if a significant, permanent structure were to be constructed; however, none are proposed. The McAteer-Petris Act Section 66605(e) requires that "public health, safety, and welfare require that fill be constructed in accordance with sound safety standards which will afford reasonable protection to persons and property against the hazards of unstable geologic or soil conditions or of flood or storm waters." In addition, the Bay Plan contains policies that may be applicable to this resource area.

3.6.2.1 San Francisco Bay Plan

Bay Plan (BCDC 2020) policies that may be applicable to this resource include, but are not limited to, the following:

Safety of Fills Findings a. To reduce risk of life and damage to property, special consideration must be given to construction on filled lands in San Francisco Bay. (Similar hazards exist on the poor soils throughout the Bay Area, including soft natural soils, steep slopes, earthquake fault zones, and extensively graded areas.)

Safety of Fills Findings b. Virtually all fills in San Francisco Bay are placed on top of Bay mud. Under most of the Bay there is a deep, packed layer of old Bay mud. More recent deposits, called younger Bay mud, lie on top of the older muds. The top layer of young mud presents many engineering problems. The construction of a sound fill depends in part on the stability of the base upon which it is placed.

Safety of Fills Findings c. Safety of a fill also depends on the manner in which the filling is done, and the materials used for the fill. Similarly, safety of a structure on fill depends on the manner in which it is built and the materials used in its construction. Construction of a fill or building that will be safe enough for the intended use requires: (1) recognition and investigation of all potential hazards-including (a) settling of a fill or building over a long period of time, (b) ground failure caused by the manner of constructing the fill or by shaking during a major earthquake, and (c) height above high water level-and (2) construction of the filling or building in a manner specifically designed to minimize these hazards. While the construction of buildings on fills overlying Bay deposits involves a greater number of potential hazards than construction on rock or on dense hard soil deposits, adequate design measures can be taken to reduce the hazards to acceptable levels. Similarly, while the construction of a building on fill over the Bay or on the

shoreline can involve tidal flooding risk because of extreme high water levels, storms, and rise in sea level, adequate project design measures can be taken to minimize the hazards to an acceptable risk.

Safety of Fills Findings d. There are no minimum construction codes regulating construction of fills on Bay mud because of the absence of sufficient data upon which to base such a code. Hazards vary with different geologic and foundation conditions, use of the fill, and the type of structures to be constructed on new fill areas. Therefore, the highest order of skilled judgment, utilizing the available knowledge of all affected disciplines, is required to: (1) recognize and investigate all potential hazards of constructing a fill; and (2) design the fill and any construction thereon to minimize these hazards.

Safety of Fills Policy 4. Adequate measures should be provided to prevent damage from sea level rise and storm activity that may occur on fill or near the shoreline over the expected life of a project. The BCDC may approve fill that is needed to provide flood protection for existing projects and uses.

Major Conclusion and Policy 9 (Fill Safety). Virtually all fills in San Francisco Bay are placed on top of Bay mud. The construction of buildings on such fills creates a greater number of potential hazards to life and property, during normal settling and during earthquakes, than does construction on rock or on dense, hard soil deposits. Adequate design measures can be taken, however, to reduce these potential hazards to acceptable levels.

Shoreline Protection Policy 1. New shoreline protection projects and the maintenance or reconstruction of existing projects and uses should be authorized if: (a) the project is necessary to provide flood or erosion protection for (i) existing development, use or infrastructure, or (ii) proposed development, use or infrastructure that is consistent with other Bay Plan policies; (b) the type of the protective structure is appropriate for the project site, the uses to be protected, and the causes and conditions of erosion and flooding at the site; (c) the project is properly engineered to provide erosion control and flood protection for the expected life of the project based on a 100-year flood event that takes future sea level rise into account; (d) the project is properly designed and constructed to prevent significant impediments to physical and visual public access; (e) the protection is integrated with current or planned adjacent shoreline protection measures; and (f) adverse impacts to adjacent or nearby areas, such as increased flooding or accelerated erosion, are avoided or minimized. If such impacts cannot be avoided or minimized, measures to compensate should be required. Professionals knowledgeable of the Commission's concerns, such as civil engineers experienced in coastal processes, should participate in the design.

Other local goals, policies, and/or regulations applicable to this issue area include the following.

In the City of Fremont General Plan (City of Fremont 2013), the following policy may be applicable:

- Policy 10-1.3: Limits on Grading - Prohibit excessive and unnecessary grading activity, especially in areas of potential landslide risk as identified on State and local geologic hazard area maps or as identified during site reconnaissance.

The City of Hayward's General Plan contains Goal HAZ–2 - Protect life and minimize property damage from potential seismic and geologic hazards (City of Hayward 2014).

The Menlo Park General Plan (City of Menlo Park 2016) has the following geologic and seismic safety policy that may be applicable to the Project:

- S1.14 Potential Land Instability. Prohibit development in areas of potential land instability identified on State and/or local geologic hazard maps, or identified through other means, unless a geologic investigation demonstrates hazards can be mitigated to an acceptable level as defined by the State of California.

The City of Newark General Plan (City of Newark 2013) contains the following policy applicable to the Project:

- Policy EH-3.2 Maintaining Drainage Patterns. Prohibit development, grading, and land modification activities that would adversely affect Newark's drainage system or create unacceptable erosion impacts.

The City of Redwood City General Plan (City of Redwood City 2011) contains Policy PS-6.1 which identifies structural types, land uses, and sites that are highly sensitive to earthquake activity and other geological hazards, and seeks to abate or modify them to achieve acceptable risk.

3.6.3 Impact Analysis

Potential impacts to geology and soils would be considered significant if implementation of the proposed Project would do any of the following:

- Expose people or structures to potential substantial adverse effects involving earthquake fault rupture, seismic ground shaking, or seismic-related ground failure, including liquefaction
- Create substantial soil erosion or loss of topsoil, or
- Result in proposed Project facilities being located on unstable or expansive soils

These significance criteria are used in the impact analysis that follows.

3.6.3.1 Impact GEO-1: Exposure of People or Structures to Potential Substantial Adverse Effects Involving Earthquake Fault Rupture, Seismic Groundshaking, or Seismic-related Ground Failure, including Liquefaction

Less than Significant with Mitigation. The Project site is not zoned as an Earthquake Fault Zone under the Alquist-Priolo Act. Although concealed potentially active Quaternary faults (Silver Creek and Stanford) are located in the vicinity of the Project area, these faults have low potential to generate surface fault ruptures. The impact from a potential rupture of a known earthquake fault would be less than significant.

The Project site is located in an area that has the potential to be subject to violent ground shaking from an earthquake along any of the active faults located in the region, including the Hayward Fault, the closest major fault to the Project area. The Project area is underlain by varying thicknesses of Young Bay Mud overlying Old Bay Mud with some interbedded coarser-

grained materials. The Young Bay Mud would be likely to amplify ground-shaking. There has been no known historic record of shoreline berm failure in the study area due to earthquakes; however, the two major earthquakes (1906 San Francisco and 1989 Loma Prieta earthquakes) were sufficiently far from the Project area that peak ground acceleration at the Newark Plants would have been less than half of what would be experienced from an earthquake on the Hayward fault (ECRB 2023). The seismic activity associated with the Loma Prieta Earthquake of 1989 resulted in only minor cracking and settling of the salt pond berms (USFWS and CDFW 2007).

The proposed Project does not include construction of any habitable structures that could potentially be damaged or cause injury or death. Workers may be subject to ground shaking in the event that a significant earthquake occurred during the Project activities. The primary hazards typically associated with ground shaking and liquefaction are falling objects, collapsing structures, or obstacles created as a result of ground shaking. The maintenance areas generally lack features that could fall or collapse, thereby limiting exposure to these types of hazards. Some smaller structures, such as walkways, fences, and power poles could collapse during a major seismic event, however, the risk of collapse of these types of structures would remain the same as under current conditions.

The berms are constructed predominantly of local sediments that have been allowed to drain, densify and consolidate over time. Slightly increasing the height of the MSS ponds berms (up to approximately 12 inches) to address SLR and continuing to maintain the remaining berms (which could include placement of up to approximately 12 inches of material on low spots) would not change the likelihood of effects from violent ground shaking. Because the Project proposes continued maintenance of the salt ponds and facilities in the same manner as has been done to date, it would maintain the existing level of structural stability. The impacts associated with a potential rupture of the berms around the MSS ponds would be less than significant.

BCDC convened two meetings of its Engineering Criteria Review Board to receive expert input on the structural stability of the MSS pond berms, the potential effects of increasing the height of the berms to address SLR, and potential effects of sea level rise on these berms. If the berms are breached as a result of any of the Project activities or seismic events, there is the potential to release MSS brine into the adjacent tidal wetlands. Potential effects to water quality from a release of MSS are addressed in Section 3.9, Hydrology and Water Quality, and potential effects to biological resources are addressed in Section 3.4, Biological Resources.

Additional analysis was conducted by Cargill and its consultants to address some of the considerations identified by the ECRB during the November 16, 2022 meeting. Cargill prepared a geotechnical white paper to assess the effects of Cargill's maintenance activities on geotechnical stability of the berms (Anchor QEA 2022) and also conducted a static and seismic stability analysis of the berms, which documents available information regarding subsurface conditions at the two MSS ponds as well as salt pond berms in general (Anchor QEA 2023). While the stability analysis concluded that there was an adequate factor of safety (seismic resistance) with even a very major earthquake (1-in-475 years probability of occurrence), at the August 30, 2023 meeting the ECRB requested further analysis of certain berm failure scenarios

that more thoroughly evaluate the depth of Bay mud below the ponds and the effects of berm keying. Cargill is currently evaluating these scenarios, and is conducting additional field investigations to collect supplemental site data. These data, and the geotechnical stability of the berms specifically, will be further considered at an upcoming ECRB meeting, and would also be addressed in the permit. Although there may be an existing level of seismic risk that has not be fully evaluated, for the purposes of this EA, the focus is on the potential impacts of the proposed Project compared to existing conditions. Because the berms have been maintained in the same fashion for more than 100 years, continuation of these maintenance activities (i.e., periodically increasing the height of the berm crests by up to 12 inches) would be a less than significant impact. However, increasing the extent of berm keying could decrease the stability of the berms if berm keying creates an additional failure plane for seismic events. With implementation of mitigation measure Geo-1, this impact would be less than significant.

- **Mitigation Measure Geo-1: Evaluate and Mitigate Potential Effects of Berm Keying**

  To address the potential risk of berm core compaction creating an additional failure plane for seismic events, Cargill shall conduct modeling to determine the magnitude of any such effects and shall present the results of that analysis to BCDC's ECRB for consideration. The ECRB shall determine whether berm core compaction, as it is currently conducted, represents an unacceptable seismic risk. Should the results of the study indicate that berm core compaction as currently conducted represents an unacceptable seismic risk, the ECRB shall recommend alternate construction methods or alternatives to berm core compaction that would effectively address seepage without increasing seismic risk. Cargill shall implement these alternative method(s) as needed to continue to address seepage through the berms. Implementation of new alternative method(s) may require Cargill to seek new permits or permit amendments from relevant and appropriate government agencies.

If a breach occurs, whether the brines are released to the environment, or Bay water enters the breached pond(s), or both, would depend on the tide stage, the type of natural event and the salinity of the brine(s) in the affected pond(s) (refer to Section 3.9). While the immediate release of the brines (or a major intrusion of Bay water) could sweep away an individual caught in the breach, the release of brines into the environment would not have any other adverse effects on humans. Release of high salinity brines and/or MSS could temporarily affect aquatic organisms and local water quality (refer to Sections 3.4 and 3.9).

Sea level rise (refer also to the discussion for Impact Geo-2) could lead to an increase in the portion of the berms that are saturated. SLR could also raise groundwater levels. Saturated materials have lower seismic stability than unsaturated materials, increasing their vulnerability to damage or collapse during an earthquake over time. However, most of the berms are already saturated due to brine and Bay water located adjacent to the berms, and thus a slight increase in water levels due to SLR or increases in groundwater levels are unlikely to affect the seismic stability of the berms due to increased berm saturation.

For the proposed vinyl sheet pile pilot study, approximately 600 feet of vinyl sheet piles would be installed along the inboard side of the berms along Pond P2-12. The vinyl sheets would be installed for structural reinforcement and are meant to protect the berm against excessive

scour from overtopping due to waves and storm surges and could also eliminate seepage of MSS out of the ponds into the environment. The vinyl sheet piles are considered an imported material and would be studied as a potential reinforcement of berms constructed from native Bay mud. If the vinyl sheet pile pilot test indicates more adverse impacts than benefits, that outcome would not pose a risk to people or structures. In addition, should the vinyl sheet piles prove ineffective, they would be removed. Impacts associated with seismic ground shaking would be less than significant.

After an earthquake, areas of settlement and other damage to berms would be repaired as part of Cargill's ongoing maintenance requirements. Therefore, the impact to people or structures from ground shaking would be expected to be less than significant with mitigation.

New fish screens and access facilities would be designed to meet appropriate current seismic standards, based on site-specific geotechnical parameters and therefore would not be expected to be substantially impacted by a large seismic event. The fish screens and intake facility would be repaired following an earthquake and placed back into service.

If other alternative berm maintenance measures (including potential nature-based solutions) are considered, these maintenance measures would be subject to the field test requirements described in Section 2.10.1.4, and would require additional CEQA review.

The Project site is located in an area mapped as having a moderate potential for liquefaction (Witter 2006). Liquefaction could cause portions of berms to settle below minimum elevations, allowing them to be overtopped. The proposed Project would not significantly alter the existing site conditions such that liquefaction would be more likely to occur. Furthermore, as noted in Section 3.6.1.2 Soils, site data collected to date (Anchor QEA 2023) revealed no appreciable deposits of loose, liquefiable sand, implying that the area is not vulnerable to any significant liquefaction in an earthquake. If the Project is approved, Cargill would be able to perform ongoing maintenance of ponds and facilities which would prevent an increase in the potential for berm failure or damage to other salt production facilities as a result of seismic ground failure. Berms would be repaired after seismic events, including any occurrence of liquefaction or lateral spreading. Therefore, the potential impact to people or structures from seismic-related ground failure, including liquefaction, is less than significant.

3.6.3.2 Impact GEO-2: Substantial Soil Erosion or Loss of Topsoil

The proposed Project has the potential for minor erosion of the tops of berms due to rainfall and due to wind during the dry season. This minor erosion is repaired as part of Cargill's routine maintenance activities. The Project area also has potential for soil erosion and loss of topsoil due to high wind/wave energy and overtopping of berms. Loss of topsoil would only occur as a result of rainfall-related erosion. The proposed Project activities would not increase the risk of loss of topsoil relative to existing conditions, and there would be no impact with regard to loss of topsoil. As discussed in Section 3.9, consistent with current practices, the Project proposes ongoing maintenance and repair of areas where erosion is occurring, whether on outboard slopes of outboard berms or on interior berm slopes due to waves, or on the tops of berms from rainfall.

To avoid future erosion, most areas subject to wave-driven erosion only require replacement of riprap lost to erosion (referred to as riprap repair). In areas with more extensive erosion, clean, imported material would first be placed within the zone of erosion, then geotextile fabric would be placed over the material and riprap would be placed as the final erosion prevention layer. Cargill anticipates that some short (typically 20 feet or less in length) sections of berms fronting the Bay will require new riprap as waves erode remnant tidal marsh. This marsh erosion is a natural phenomenon driven by wind-waves.

Cargill has recently completed an engineering analysis regarding appropriate riprap sizing (Anchor QEA 2024). Wind-wave analysis was used to estimate wave heights and periods for various berm locations, which was then used to determine the required riprap sizing to withstand the calculated wave action based on exposure. Larger riprap is required in areas more affected by wind waves, primarily Newark Plant 1. The proposed Project incorporates use of riprap sized in accordance with the Anchor QEA analysis; therefore, potential erosional impacts associated with wind-driven waves are less than significant.

Erosion of the tops of berms, which is driven primarily by heavy rainfall, is addressed as part of Cargill's routine berm maintenance activities. Cargill performs an aerial survey each winter to identify low spots along the berms, and maintains these areas by leveling them to the elevation of the surrounding berms by adding soil to the tops of the berms. Climate change models predict that while changes in annual mean precipitation are expected to be relatively small compared to the range of natural variability experienced in the region, the largest individual storms are becoming more intense with climate change (CEC 2019). The Clausius-Clapeyron relation provides a general estimate of the potential increase in precipitation relative to temperature. It states that the maximum water vapor content in the atmosphere increases by 6–7% per degree Centrigrade of warming (Lenderink et al. 2021).

The precise magnitude of potential increases in storm intensity and frequency cannot be determined at this point (CEC 2019). However, recent modeling specific to the San Francisco Bay Area suggests that changes in storm-related rainfall depend strongly on the storm type. Major storms in California and the Bay Area are typically either atmospheric rivers (ARs) accompanied by extratropical cyclones (ETCs) or atmospheric rivers only. Projected increases in precipitable water and vapor transport are similar for both types of ARs, but only ARs occurring with ETCs showed a projected increase in rainfall. The majority of ARs observed are associated with ETCs. These types of ARs are projected to show an increase in the amount of associated precipitation exceeding (by up to 1.5 times) the theoretical Clausius Clapeyron scaling of 6–7% per ◦C warming. The modeling concludes that storm-total precipitation associated with the most common type of storm event may increase by up to 11-17% by 2050, and by 26–37% in 2100 relative to historical levels (Patricola et al. 2022). Cargill's maintenance activities have successfully addressed erosion damage associated with major storms and heavy rainfall years including 2005/2006, 2014, and 2023. The proposed Project provides for emergency repairs, if necessary; no emergency repairs have been required as a result of or related to Cargill's

activities.[20] Consequently, potential impacts from erosion due to rainfall are less than significant. Abiding by the BMPs shown in Section 2 would further minimize potential for soil erosion.

Erosion (scour) may also occur as a result of wave overtopping of berms. Scour due to wave overtopping is of concern because excess scour from an extreme storm event could result in an unplanned breach of the affected berm if the scour is severe. Erosion is addressed as part of routine maintenance, and except in extreme cases erosion repairs would prevent excess scour of the berms. Section 3.9.3.4 (Impact HYD-4: Release of Pollutants Due to Project Inundation) discusses the potential for overtopping of berms due to storm surge and astronomical tides in combination with SLR, and the resultant potential for release of MSS due to inundation and resultant erosion.

Section 3.9.3.4 also addresses the potential for erosion due to waves and coastal flooding. FEMA flood maps for the salt ponds, updated last in 2009 and 2019, show all the Newark and Redwood City salt ponds within in the current 100-year (1% probably recurrence) flood plains. The base flood elevations range from 10 to 11 feet NAVD88, depending on the pond. Sea level rise (SLR) will exacerbate flooding and increase the risks of wave overtopping. SLR in the Bay Area was negative overall between 1993 and 2006 (between -1 to -3 mm/year), but then sharply accelerated between 2007 and 2020, with average rates between 6 and 8 mm/year. Averaged over the period from 1993 to 2020, the Bay Area experienced around 2 mm of SLR per year (NOAA 2022). The most likely projection for SLR in California is a total of 0.24 m, or approximately 0.8 feet between the Years 2000 and 2050 (NOAA 2022, COPC 2024). [21] This projection is the recommended guidance from both the National Oceanographic and Atmospheric Administration (NOAA) and the California Ocean Protection Council (COPC). This projection utilizes an intermediate-high scenario that also tracks most closely with extrapolation based on current rates of SLR (NOAA 2022). As discussed in the Sea Level Rise Assessment conducted by Cargill in 2021 (AECOM 2021), many of the berms are vulnerable to overtopping in the future by a combination of storm surge, wind-waves, and sea level rise, assuming that the berms remain at their current elevation. Under this assumption, 19 of the 48 berm segments evaluated had a crest overtopping return period of 10 years or less (AECOM 2024b).

A portion of the projected SLR has already occurred; the most recent estimate is 0.2 feet between 2000 and 2020 (COPC 2024). The projected SLR between 2000 and 2030 is 0.4 feet and 0.6 between 2000 and 2040. Thus, it is reasonable to assume that the Project area may experience a sea level rise of 0.3 feet (3.6 inches) between 2020 and 2035, and a total SLR of 6 inches by 2035 (AECOM 2024a) from the 2000 baseline.

Cargill and its predecessors have been maintaining berms for more than 150 years, including the period from 1900 to 2020, when a total of approximately 10 inches of sea level rise occurred. Given the projected increase in sea level during the term of the permit between

[20] In the past 20 years there has been one incident resulting in a minor collapse of a berm (no brine was released). The incident was caused by an outside contractor working on the Hetch Hetchy pipeline that crosses the Project area.

[21] Projections range from 0.15 m for the low case, to 0.38 m for the high case (NOAA 2022).

(2025 and 2034), Cargill's berm maintenance program, which includes increasing the height the MSS berms to an elevation of 11.5 feet NAVD88, regular inspections to address erosion, plus emergency response preparedness for berm repairs, would provide sufficient protection against increased berm failure due to wave overtopping due to sea level rise during the term of the proposed permit.

As stated previously, Cargill is preparing a SLR Long-term Adaptation Management Plan that will evaluate methods to address vulnerable areas identified in the SLR Assessment. That Plan is not part of this proposed Project. Activities proposed as part of the proposed Project would not conflict with other adaptation measures Cargill may implement in the future. Cargill would continue to maintain the berms as it has previously, restoring low spots to prevent overtopping. If overtopping occurs (this has happened only very infrequently in the past), Cargill conducts and would continue to conduct any necessary maintenance of the affected berm section. If necessary, Cargill would conduct emergency repairs with notification to BCDC and other agencies per the to-be-established permit conditions. As an added measure of protection given the potential ecological concerns associated with a breach of the MSS ponds, Cargill would increase the height of the berms around the MSS ponds to 11.5 feet NAVD88.

The potential impact associated with substantial soil erosion or loss of topsoil would be less than significant.

3.6.3.3 Impact GEO-3: Location on Unstable or Expansive Soils

Given that the salt production facilities are built on Bay mud soils, liquefaction, collapse, and ongoing settlement are a potential concern. As discussed for Impact Geo-1, the risk of liquefaction or collapse of berms and other structures due to a major seismic event is not likely to increase as result of the proposed Project activities, as maintenance activities would remain consistent with current activities. The height of the MSS berms would be increased slightly (approximately 6 to 12 inches to 11.5 feet NAVD88) as part of the proposed SLR adaptation efforts. Increasing the height of the berms this amount is consistent with past berm maintenance efforts and, based on the ages of the berms and past experience with maintaining berms, would not be expected to cause substantial settlement. Any structures that might be installed within the Project area (e.g., trestles to access pumps or tide gates) would be designed for an appropriate level of seismic resistance.

The Project would allow for continued maintenance on a regular basis of the berms and other salt production facilities in the Project area. In addition, the installation of the vinyl sheets piles for the vinyl sheet pile pilot study is anticipated to increase the resilience of the berms where the sheet pile is located and minimize the risk of a release of brine into the Bay. By providing a rigid barrier near the top of the elevation of the berm, storm waves would be prevented from flowing over the unprotected inboard side of the berm that is vulnerable to scouring. BMPs would be employed during the installation of the study materials and well as all other ongoing maintenance. Maintenance activities proposed as part of this Project would assure that ongoing settlement is not affecting operational safety and that typical berm elevations and profiles are being maintained. The proposed Project would not construct any new buildings. New culverts and bridges within the salt production areas would be designed and constructed in accordance

with applicable engineering standards considering the site soil characteristics. Therefore, the impact from the proposed Project would be less than significant.

3.6.4 Mitigation Summary

Implementation of the following mitigation measure would reduce potential Project-related impacts to geology, soils, and seismicity to less than significant.

- **Mitigation Measure Geo-1: Evaluate and Mitigate Potential Effects of Berm Keying**

3.7 GREENHOUSE GAS EMISSIONS

3.7.1 Environmental Setting

Greenhouse gases (GHGs) are atmospheric gases that capture and retain a portion of the heat radiated from the earth after it has been heated by the sun. The primary GHGs are carbon dioxide (CO_2), methane, nitrous oxide (N_2O), ozone, and water vapor. While GHGs are natural components of the atmosphere, CO_2, methane, and N_2O are also emitted in considerable quantities from human activities, and their accumulation in the atmosphere over the past 200 years has substantially increased their concentrations. This accumulation of GHGs has been identified as the driving force behind global climate change. Human emissions of CO_2 and N_2O are largely by-products of fossil fuel combustion, whereas methane results from off-gassing associated with organic decay processes in agriculture, landfills, etc. as well as hydrocarbon processing (e.g., refineries). Other GHGs, including hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride, are generated by certain industrial processes.

CO_2 is the most common reference gas for climate change. To account for the warming potential of GHGs, GHG emissions are often quantified and reported as carbon dioxide equivalents (CO_2e). With the warming potential of CO_2 set at a reference value of 1, methane has a warming potential of 28-36 (i.e., one ton of methane has the same warming potential as 28-36 tons of CO_2, while N_2O has a warming potential of 265-298 (USEPA 2021)). There is widespread international scientific consensus that human-caused increases in GHGs have and will continue to contribute to climate change, although there is uncertainty concerning the magnitude and rate of the warming.

Climate change is having widespread impacts on California's economy and environment, and will continue to affect communities across the state in the future. Documented effects of climate change in California include increased average, maximum, and minimum temperatures; decreased spring run-off to the Sacramento River; more severe droughts; extensive wildfires; shrinking glaciers in the Sierra Nevada; warmer temperatures in major lakes such Lake Tahoe, Clear Lake, and Mono Lake; and changes in elevations for plant and animal species (OEHHA 2018).

The San Francisco Bay Area as a whole emitted an estimated 95.8 million metric tons of CO_2e in 2007 (BAAQMD 2010) and 86.6 million metric tons of CO_2e in 2011 (BAAQMD 2015). Of the 2011 emissions, 83.9 million metric tons of CO_2e ($MMTCO_2e$) were emitted within the Bay Area Air District and 2.7 $MMTCO_2e$ were indirect emissions from imported electricity (BAAQMD 2015). GHG emissions estimates by local jurisdictions are provided in the following subsections.

3.7.1.1 Alameda County GHG Emissions Inventory

Alameda County conducted a calendar year 2003 baseline GHG emissions inventory for County government operations and unincorporated communities. The total emissions were estimated to be 797,125 metric tons of carbon dioxide equivalents (MT CO_2e), comprised of 736,579 MT from unincorporated communities and 60,546 MT from government operations (Alameda County 2008). The 2010 Update revised the emissions from government operations slightly, to 62,997 MT CO_2e (Alameda County 2010).

3.7.1.2 San Mateo County GHG Emissions Inventory

San Mateo County prepared an updated 2005 baseline emissions estimate reflecting updated BAAQMD requirements. Emissions from county sources totaled 905,090 MT CO_2e in the baseline year 2005. Transportation is the largest contributor at 53 percent, producing approximately 479,400 MT CO_2e in 2005 (San Mateo County 2012a).

3.7.1.3 City of Fremont GHG Emissions Inventory

In 2007-2008, the City of Fremont conducted an evaluation of GHG emissions from City facilities and the Fremont community using a 2005 baseline. The inventory showed a total GHG emissions baseline of 1,698,000 MT CO_2e. In January 2014, Fremont completed an update of GHG emissions, demonstrating a decrease of 11 percent in community-wide emissions between the years of 2005 and 2010, to 1,516,500 MT CO_2e. Commercial and industrial energy use comprised 23 percent of the GHG emissions, while transportation was the largest contributor, at 58 percent (City of Fremont 2014).

3.7.1.4 City of Hayward GHG Emissions Inventory

The City of Hayward has conducted four emissions inventories, for calendar years 2005, 2010, 2015, and 2017. The most recent inventory, for calendar 2017, showed a net reduction of 14.6 percent from the 2005 baseline, from 1,082,982 MT CO_2e to 924,581 MT CO_2e (City of Hayward 2020).

3.7.1.5 City of Menlo Park GHG Emissions Inventory

The City of Menlo Park completed its baseline GHG emissions inventory in 2005, which showed that it generated 349,284 tons of GHG emissions. The 2020 GHG emissions target is 254,977 tons, or a 94,307-ton reduction. Menlo Park currently conducts annual net emissions inventories (City of Menlo Park 2020). The most recent data shows that between 2005 and 2017, GHGs decreased to 284,378 MT CO_2e, an 18.6 percent reduction (Menlo Park 2019).

3.7.1.6 City of Newark GHG Emissions Inventory

The City of Newark has also conducted a 2005 baseline emissions inventory. The inventory showed that in 2005 the Newark community emitted approximately 433,860 MT CO_2e. Approximately 44 percent were attributable to transportation, with State highways in and adjacent to Newark accounting for 24 percent of the total emissions (56.4 percent of the transportation sector emissions). Industrial and commercial activity accounted for a total of 40.4 percent of Newark emissions (City of Newark 2010).

3.7.1.7 City of Redwood City GHG Emissions Inventory

Redwood City has completed two baseline emission inventories, using different methodologies. Both methodologies excluded some emissions, such as emissions associated with the Port of Redwood City. One estimate was prepared using the Clean Air and Climate Protection software developed by Local Governments for Sustainability (ICLEI), and the other used GIS-based INDEX software. The ICLEI-based-inventory concluded that transportation, housing, commercial and industrial activities, and waste processing emitted 669,737 MT CO_2e in 2005. The INDEX estimate estimated that Redwood City emitted 747,000 MT CO_2e in 2008 (City of Redwood City 2010a).

3.7.2 Regulatory Setting

Federal and state laws and regulations pertaining to this issue area and relevant to the Project are described in Table D-1. California has passed multiple laws pertaining to climate change and GHGs, most notably the California Global Warming Solutions Act of 2006 (AB 32), which requires that State GHG emissions be reduced to 1990 levels by 2020. Statewide strategies to reduce GHG emissions to attain the 2020 goal include: the Low Carbon Fuel Standard, California Appliance Energy Efficiency regulations, the California Renewable Energy Portfolio standard, and changes to the motor vehicle corporate average fuel economy (CAFE) standards. In addition, the Bay Plan contains policies that focus on the effects of climate change.

The BAAQMD's *Clean Air Plan: Spare the Air, Cool the Climate* (2017 Plan; BAAQMD 2017a), focuses on two closely- related goals: protecting public health from air pollutant exposures and protecting the climate. Consistent with the GHG reduction targets adopted by the State of California, the 2017 Plan lays the groundwork for a long-term effort to reduce Bay Area GHG emissions 40 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2050.

The 2017 Plan defines an integrated, multipollutant control strategy to reduce emissions of ozone precursors, particulate matter, TACs, and GHGs.

The 2017 Plan GHG control strategy is based on the following key priorities:

- Reduce emissions of "super-GHGs" such as methane, black carbon, and fluorinated gases.
- Decrease demand for fossil fuels (i.e., gasoline, diesel and natural gas).
    - Increase efficiency of the energy and transportation systems.
    - Reduce demand for vehicle travel, and high-carbon goods and services.
- Decarbonize the energy system.
    - Make the electricity supply carbon-free.
    - Electrify the transportation and building sectors.

In addition to the BAAQMD's 2017 Plan, local Climate Action Plans are prepared by local governments.

The BAAQMD's *CEQA Air Quality Guidelines* (BAAQMD 2022) specify methodologies for CEQA GHG analysis/mitigation. Its *Project Level Climate Impacts* (Chapter 6) sets no quantitative CEQA significance thresholds for project operational GHG emissions, but recommends that such emissions be quantified. The BAAQMD's *Guidelines* methodology have been used in this analysis of the Project's potential GHG impacts.

3.7.2.1 San Francisco Bay Plan

BCDC's Bay Plan also addresses climate change, but focuses on regional-scope approaches to addressing the effects rather than the cause.

Bay Plan policies and findings that may be applicable to this resource include, but are not limited to, the following:

- **Climate Change Finding g.** In the context of climate change, mitigation refers to actions taken to reduce greenhouse gas emissions, and adaptation refers to actions taken to address potential or experienced impacts of climate change that reduce risks … Implementing many adaptation strategies will require action and funding by federal, state, regional and local agencies with planning, funding and land use decision-making authority beyond the Commission's jurisdiction.
- **Climate Change Finding u.** Government jurisdictional boundaries and authorities in the Bay Area are incongruent with the regional scale and nature of climate-related challenges. The Joint Policy Committee, which is comprised of regional agencies, provides a framework for regional decision-making to address climate change through consistent and effective regionwide policy and to provide local governments with assistance and incentives for addressing climate change. The Commission can collaborate with the Joint Policy Committee to assure that the Bay Plan Climate Change policies are integrated with the emerging Sustainable Communities Strategy and other regional agencies' policies that deal with climate change issues.
- **Climate Change Policy 6.f.** The Commission, in collaboration with the Joint Policy Committee, other regional, state and federal agencies, local governments, and the general public, should formulate a regional sea level rise adaptation strategy for protecting critical developed shoreline areas and natural ecosystems, enhancing the resilience of Bay and shoreline systems and increasing their adaptive capacity.

  The entities that formulate the regional strategy are encouraged to consider the following strategies and goals: … integrate regional mitigation measures to reduce greenhouse gas emissions with regional adaptation measures designed to address the unavoidable impacts of climate change.
- **Climate Change Policy 7.** Until a regional sea level rise adaptation strategy can be completed, the Commission should evaluate each project proposed in vulnerable areas on a case-by-case basis to determine the project's public benefits, resilience to flooding, and capacity to adapt to climate change impacts.

Given the multi-factor and regional-scale significance of GHG emissions, Climate Change Findings g and u, as well as Policy 6.f, recognize that various jurisdictional regulatory entities should develop a regional strategy that integrates regional mitigation measures to reduce GHG emissions.

3.7.2.2 Alameda County Climate Action Plans

The Alameda County (Unincorporated Areas) Community Climate Action Plan, approved in 2014, addresses reduction of GHG emissions through 37 local programs and policy measures related to transportation, land use, building energy, water, waste, and green infrastructure. The goal of the plan is to reduce County-wide GHG emissions by 15 percent below the 2005 levels by 2020, and to set the County on a pathway to achieve an 80 percent reduction by 2050. A parallel plan was developed to address government operations (the *Alameda County Climate*

Action Plan for Government Services and Operations). The Community Climate Action Plan was incorporated into the General Plan when it was approved in 2014 (Alameda County 2014).

3.7.2.3 San Mateo County Climate Change Initiatives

San Mateo County addresses climate change both in its general plan and in its climate action plan.

General Plan

San Mateo County's General Plan includes a voluntary Energy and Climate Change Element (San Mateo County 2013a). The strategies and goals in the Energy and Climate Change Element are targeted at unincorporated San Mateo County, and therefore do not apply to the Project area.

Climate Action Plans

The County has two Climate Action Plans in place – a Government Operations Climate Action Plan and a Community Climate Action Plan. The Government Operations Climate Action Plan (San Mateo County 2012b) focuses on the County's facilities and operations and has a goal of achieving a 15 percent reduction in GHG emissions by the year 2020. The Community Climate Action Plan, also known as the Energy Efficiency Climate Action Plan (San Mateo County 2013b), has a target of reducing GHG emissions 17 percent below 2005 baseline levels by 2020. The Office of Sustainability is currently working with the Planning and Building Department to update the existing Community Climate Action Plan (San Mateo County 2020).

3.7.2.4 City of Fremont Climate Change Initiatives

The City of Fremont addresses climate change both in its general plan and in its climate action plan.

General Plan

The General Plan 2030 (City of Fremont 2011) incorporates sustainability as the central theme throughout the document. Both the Sustainability Element and the Conservation Element of the Update address climate-related policies.

Climate Action Plan

The Fremont City Council adopted its Climate Action Plan in November 2012. The plan sets a GHG emissions reduction goal of 25 percent from 2005 levels by the year 2020 (City of Fremont 2012).

3.7.2.5 City of Hayward Climate Action Plan

The City of Hayward General Plan also functions as a climate action plan. Climate Action Plan actions are contained in the Natural Resources element of the General Plan (City of Hayward 2014). The City of Hayward's GHG reduction goals are 20 percent below 2005 baseline levels by 2020, 61.7 percent below 2005 baseline levels by 2040, and 82.5 percent below 2005 baseline levels by 2050 (City of Hayward 2014).

3.7.2.6 City of Menlo Park Climate Action Plan

The City of Menlo Park General Plan (City of Menlo Park 2016) includes actions to promote sustainability; the Climate Action Plan and Climate Action Plan Assessment Reports provide strategies and actions to reduce GHG emissions. Menlo Park's Climate Action Plan was adopted in 2009 and set a GHG emissions reduction target of 27 percent below 2005 levels by 2020. The city continues to update the Climate Action Plan to reflect technological advancements and legislative changes. The most recent update was in 2018 (City of Menlo Park 2020).

3.7.2.7 City of Newark Climate Action Plan

The City of Newark Climate Action Plan Initial Framework was adopted in January 2010. The Climate Action Plan sets targets for GHG emissions reductions from City of Newark activities and community emissions. The Plan sets a target of a 15 percent reduction in emissions from the 2005 baseline by 2020 (a total of 65,038 MT CO_2e) to be consistent with the State's target of reducing emissions to 1990 levels by 2020 (City of Newark 2010). The document states that the Plan is intended to be a dynamic document that will evolve and be reevaluated on a regular basis; however, no updates have been issued.

3.7.2.8 City of Redwood City Climate Action Plan

Redwood City's Community Climate Action Plan (City of Redwood City 2010b) sets a target of reducing GHG emissions by 15 percent from the 2005 baseline level by the year 2020, i.e., a reduction of 100,466 MT CO_2e.

3.7.3 Impact Analysis

Potential impacts associated with GHGs would be considered significant if implementation of the proposed Project would do either of the following:

- Generate significant quantities of GHGs as defined in BAAQMD CEQA guidance, or
- Conflict with an adopted applicable plan, policy or regulation for reducing GHG emissions

The *CEQA Air Quality Guidelines* recommend quantification of project operational GHG emissions along with providing assurance of the following:

Climate Impact Thresholds of Significance (Project Level):

- The project will not include natural gas appliances or natural gas plumbing.
- The project will not result in any wasteful, inefficient, or unnecessary energy use.
- The project will achieve a reduction in project-generated vehicle miles traveled (VMT) below the regional average consistent with the current version of the California Climate Change Scoping Plan.
- The project will achieve compliance with California's off-street electric vehicle requirements.

The following impact analysis considers potential Project impacts relative to the two CEQA checklist items.

3.7.3.1 Impact GHG-1: Generation of Significant Quantities of Greenhouse Gases

Less than Significant Impact. The *CEQA Air Quality Guidelines* recommend quantification of operational GHG emissions using the California Emissions Estimator Model (CalEEMod). This was done for sixteen identified maintenance activities essential to the salt works' existing and proposed future operation. Off-road equipment and vehicular pollutant emission rates were taken from CalEEMod (Version 2022.1, Appendix G). Marine emission factors were taken from *Emissions Estimation Methodology for Commercial Harbor Craft Operating in California* (CARB 2012).

Baseline GHG emissions were estimated for the thirteen identified maintenance activities associated with the existing salt works during a typical year, as shown in Table 3.7-1 (in metric tons/year).

Table 3.7-1. Cargill Solar Sea Salt System Maintenance - Baseline Greenhouse Gas Emissions (in metric tons/year)

Maintenance Activity	Emission Source	CO_2	CH_4	N_2O	CO_2e
Berm Grading	Off-Road	21.76	0.001	0.0002	21.83
	On-Road	0.00	0.000	0.0000	0.00
	Marine	0.00	0.000	0.0000	0.00
	Total	21.76	0.001	0.0002	21.83
Maintain Berm Height/Width	Off-Road	45.04	0.002	0.0004	45.18
	On-Road	0.00	0.000	0.0000	0.00
	Marine	0.00	0.000	0.0000	0.00
	Total	45.04	0.002	0.0004	45.18
Berm Keying	Off-Road	61.54	0.002	0.0005	61.74
	On-Road	0.00	0.000	0.0000	0.00
	Marine	0.00	0.000	0.0000	0.00
	Total	61.54	0.002	0.0005	61.74
Making Berms Drivable	Off-Road	28.89	0.001	0.0002	28.98
	On-Road	0.00	0.000	0.0000	0.00
	Marine	0.00	0.000	0.0000	0.00
	Total	28.89	0.001	0.0002	28.98
Outboard Erosion Repair	Off-Road	23.05	0.001	0.0002	23.12
	On-Road	0.00	0.000	0.0000	0.00
	Marine	0.00	0.000	0.0000	0.00
	Total	23.05	0.001	0.0002	23.12
Interior Erosion Repair	Off-Road	23.05	0.001	0.0002	23.12
	On-Road	0.00	0.000	0.0000	0.00
	Marine	65.54	0.003	0.0005	65.75
	Total	88.59	0.004	0.0007	88.88

Maintenance Activity	Emission Source	CO_2	CH_4	N_2O	CO_2e
Lock Access	Off-Road	3.71	0.000	0.0000	3.72
	On-Road	0.00	0.000	0.0000	0.00
	Marine	9.05	0.000	0.0001	9.07
	Total	12.75	0.001	0.0001	12.80
Minor Earthmoving Activities	Off-Road	8.94	0.000	0.0001	8.97
	On-Road	0.00	0.000	0.0000	0.00
	Marine	0.00	0.000	0.0000	0.00
	Total	8.94	0.000	0.0001	8.97
Repair of Water Control Structures	Off-Road	17.44	0.001	0.0001	17.49
	On-Road	0.00	0.000	0.0000	0.00
	Marine	0.07	0.000	0.0000	0.07
	Total	17.51	0.001	0.0001	17.57
Repair of Access Structures	Off-Road	4.38	0.000	0.0000	4.39
	On-Road	0.00	0.000	0.0000	0.00
	Marine	0.00	0.000	0.0000	0.00
	Total	4.38	0.000	0.0000	4.39
Minor Maintenance and Repair	Off-Road	2.45	0.000	0.0000	2.45
	On-Road	0.00	0.000	0.0000	0.00
	Marine	0.00	0.000	0.0000	0.00
	Total	2.45	0.000	0.0000	2.45
Algae Removal from Ponds	Off-Road	0.76	0.000	0.0000	0.76
	On-Road	0.00	0.000	0.0000	0.00
	Marine	1.93	0.000	0.0000	1.94
	Total	2.69	0.000	0.0000	2.69
Sediment Removal from Intakes	Off-Road	3.27	0.000	0.0000	3.28
	On-Road	0.00	0.000	0.0000	0.00
	Marine	2.49	0.000	0.0000	2.50
	Total	5.77	0.000	0.0000	5.78
Silt Curtain Placement and Maintenance	Off-Road	0.00	0.000	0.0000	0.00
	On-Road	0.00	0.000	0.0000	0.00
	Marine	0.14	0.000	0.0000	0.14
	Total	0.14	0.000	0.0000	0.14
All Maintenance Activities	**Off-Road**	**244.27**	**0.01**	**0.00**	**245.06**
	On-Road	**0.00**	**0.00**	**0.00**	**0.00**

Maintenance Activity	Emission Source	CO_2	CH_4	N_2O	CO_2e
	Marine	**79.23**	**0.00**	**0.00**	**79.48**
	Grand Total	**323.49**	**0.01**	**0.00**	**324.54**

Notes:
CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; CO_2e = carbon dioxide equivalents

Net new Project incremental GHG emissions were estimated for the expansion of one maintenance activity category and the addition of six new identified maintenance activities associated with the salt works continued operation under the BCDC permit, as shown in Table 3.7-2 (in metric tons/year) in comparison with baseline GHG emission levels (for reference).

Table 3.7-2a. Cargill Solar Sea Salt System Maintenance - Project Incremental GHG Emissions (in metric tons/year)

Existing Activities	Emission Source	CO_2	CH_4	N_2O	CO_2e
Berm Grading	Off-Road	22.75	0.001	0.0002	22.82
	On-Road	0.00	0.000	0.0000	0.00
	Marine	0.00	0.000	0.0000	0.00
	Total	22.75	0.001	0.0002	22.82
Maintain Berm Height/Width	Off-Road	47.09	0.002	0.0004	47.24
	On-Road	0.00	0.000	0.0000	0.00
	Marine	0.00	0.000	0.0000	0.00
	Total	47.09	0.002	0.0004	47.24
Berm Keying	Off-Road	30.77	0.001	0.0002	30.87
	On-Road	0.00	0.000	0.0000	0.00
	Marine	0.00	0.000	0.0000	0.00
	Total	30.77	0.001	0.0002	30.87
Making Berms Drivable	Off-Road	28.89	0.001	0.0002	28.98
	On-Road	0.00	0.000	0.0000	0.00
	Marine	0.00	0.000	0.0000	0.00
	Total	28.89	0.001	0.0002	28.98
Outboard Erosion Repair	Off-Road	302.52	0.012	0.0024	303.50
	On-Road	0.00	0.000	0.0000	0.00
	Marine	0.00	0.000	0.0000	0.00
	Total	302.52	0.012	0.0024	303.50
Interior Erosion Repair	Off-Road	8.40	0.000	0.0001	8.43
	On-Road	0.00	0.000	0.0000	0.00
	Marine	23.90	0.001	0.0002	23.97

Existing Activities	Emission Source	CO_2	CH_4	N_2O	CO_2e
	Total	32.30	0.001	0.0003	32.40
Lock Access	Off-Road	8.35	0.000	0.0001	8.37
	On-Road	0.00	0.000	0.0000	0.00
	Marine	20.35	0.001	0.0002	20.42
	Total	28.70	0.001	0.0002	28.79
Minor Earthmoving Activities	Off-Road	8.94	0.000	0.0001	8.97
	On-Road	0.00	0.000	0.0000	0.00
	Marine	0.00	0.000	0.0000	0.00
	Total	8.94	0.000	0.0001	8.97
Repair of Water Control Structures	Off-Road	69.75	0.003	0.0006	69.97
	On-Road	0.00	0.000	0.0000	0.00
	Marine	0.30	0.000	0.0000	0.30
	Total	70.04	0.003	0.0006	70.27
Repair of Access Structures	Off-Road	17.52	0.001	0.0001	17.57
	On-Road	0.00	0.000	0.0000	0.00
	Marine	0.00	0.000	0.0000	0.00
	Total	17.52	0.001	0.0001	17.57
Minor Maintenance and Repair	Off-Road	2.45	0.000	0.0000	2.45
	On-Road	0.00	0.000	0.0000	0.00
	Marine	0.00	0.000	0.0000	0.00
	Total	2.45	0.000	0.0000	2.45
Algae Removal from Ponds	Off-Road	0.76	0.000	0.0000	0.76
	On-Road	0.00	0.000	0.0000	0.00
	Marine	1.93	0.000	0.0000	1.94
	Total	2.69	0.000	0.0000	2.69
Sediment Removal from Intakes	Off-Road	3.93	0.000	0.0000	3.94
	On-Road	0.00	0.000	0.0000	0.00
	Marine	2.99	0.000	0.0000	3.00

Table 3.7-2b. Cargill Solar Sea Salt System Maintenance - Project Incremental GHG Emissions (in metric tons/year)

New Activities	Emission Source	CO_2	CH_4	N_2O	CO_2e
Filling Gaps in Internal Berms	Off-Road	17.28	0.001	0.0001	17.34
	On-Road	0.00	0.000	0.0000	0.00
	Marine	0.00	0.000	0.0000	0.00
	Total	17.28	0.001	0.0001	17.34
	Total	13.45	0.001	0.0001	13.49
Re-establishing Vehicle Access on Internal Berms	Off-Road	0.00	0.000	0.0000	0.00
	On-Road	0.00	0.000	0.0000	0.00
	Marine	13.45	0.001	0.0001	13.49
	Total	25.56	0.001	0.0002	25.64
Vinyl Sheet Pile Pilot Study	Off-Road	0.00	0.000	0.0000	0.00
	On-Road	0.00	0.000	0.0000	0.00
	Marine	25.56	0.001	0.0002	25.64
	Total	3.20	0.000	0.0000	3.21
Stockpile Replenishment	Off-Road	0.00	0.000	0.0000	0.00
	On-Road	0.00	0.000	0.0000	0.00
	Marine	3.20	0.000	0.0000	3.21
	Total	237.17	0.009	0.0019	237.94
Fish Screen Installation	Off-Road	0.00	0.000	0.0000	0.00
	On-Road	21.31	0.001	0.0002	21.38
	Marine	258.48	0.010	0.0021	259.32
	Total	17.28	0.001	0.0001	17.34
Net New Emissions from New/Additional Project Maintenance Activities	**Off-Road**	**643.49**	**0.03**	**0.01**	**645.58**
	On-Road	**0.00**	**0.00**	**0.00**	**0.00**
	Marine	**-8.31**	**0.00**	**0.00**	**-8.34**
Total		**635.19**	**0.03**	**0.01**	**637.24**
Increase from Baseline Maintenance Activities Emissions		**196%**	**196%**	**196%**	**196%**

Notes:
CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; CO_2e = carbon dioxide equivalents

The existing solar sea salt system relies largely on the energy provided by the sun, wind and tides to produce its products. The purpose of the Project is to continue existing maintenance activities of the existing solar sea salt system in Newark and Redwood City. The standard maintenance methods will continue to maintain the integrity of the berms while also adapting to SLR, including for the MSS ponds. The Project would allow the solar sea salt system to continue in operation at about the same salt production levels as at present. Thus, the Project will not introduce new natural gas appliances/plumbing to the sites; it will not result in wasteful, inefficient, or unnecessary energy use from on-site sources; and because salt production and product transport would remain at present levels, there would be no VMT increase from present levels. Project GHG emissions are estimated to increase by 279 CO2e metric tons/year, an increase of approximately 20% over baseline. Project GHG emission impacts would be less than significant.

3.7.3.2 Impact GHG-2: Conflict with an Adopted Applicable Plan, Policy or Regulation for Reducing Greenhouse Gas Emissions

Less-Than- Significant Impact. The purpose of the Project is to continue existing maintenance activities of the existing salt system in Newark and Redwood City install one or more fish screens, and conduct limited SLR adaptation activities. The standard maintenance methods will continue to maintain the integrity of the berms while also adapting to SLR, including for the MSS ponds. The Project would allow Cargill to continue in operation at about the same salt production level as at present. It would not have the potential to substantially increase regional population, employment or transportation levels in Alameda or San Mateo Counties, or the Bay Area, all of which are the bases of the 2017 Plan's regional GHG emission inventories and the GHG emission reduction policies they support.

The Project would not conflict with the GHG reduction strategies of local communities, the 2017 Plan (BAAQMD 2017a), or the State of California's Climate Change policies. Project impacts would be less than significant.

3.7.4 Mitigation Summary

There would be no significant impacts, and no mitigation is required.

3.8 HAZARDS AND HAZARDOUS MATERIALS

3.8.1 Environmental Setting

This section addresses potential hazards associated with soil and/or groundwater contamination, and other potential human health hazards posed by maintenance and operations of the Solar Sea Salt System. High-salinity brine and mixed sea salts are not classified as a hazardous waste, and therefore potential releases of brine are discussed in Section 3.12 under water quality impacts.

The use of hazardous materials during maintenance operations is limited to small amounts of fuel (diesel and gasoline), oils (penetrating, lubricating, and hydraulic) and vehicle batteries. Equipment used to conduct maintenance operations throughout the Project area is serviced in maintenance operations facilities and not on the berm or lock areas, and thus not adjacent to or on the water. However, there could be incidental releases of hazardous materials from maintenance equipment into the environment. Cargill and its contractors are required to prepare and implement a Spill Prevention Plan, a SWPPP, and BMPs (Section 2.12) for all maintenance activities. Implementing these plans and measures reduces the potential for spills or other incidents and provides for effective response in the unlikely event of a spill.

A search was conducted for potential hazardous waste sites near or on the Project area using the California State GeoTracker website (SWRCB 2020). This website identifies cleanup sites, hazardous material sites, sites with leaking underground storage tanks, and permitted sites, including Resource Conservation and Recovery Act (RCRA) Hazardous Waste Sites, throughout California. The Project site is not listed as a hazardous substance site. A 500-foot search radius of the Newark Plant Sites, the Redwood City Plant, and Cargill West Bay areas was conducted in February 2020 to identify any hazardous materials sites. A search of the Newark Plant sites showed one permitted Hazardous Waste/Storage site located approximately 500 feet north of Pond CX-21 (Newark Plant Site 2) at 6880 Smith Avenue in Newark. No releases of hazardous wastes are documented at this facility. Morton Salt, located at 7380 Central Avenue (currently registered as Overton Moore Properties), is part of a Cleanup Program Site[22] and its cleanup status is listed as “Open Site Assessment” which means site characterization, investigation, risk evaluation, and/or site conceptual model development are occurring at the site. The site is approximately 1,100 feet from Pond CX-19. Low to moderate levels of total petroleum hydrocarbons in the diesel range were detected in shallow soil and grab groundwater samples collected from the site in 2017; remedial excavation was conducted in 2018. Ongoing groundwater monitoring is currently being conducted at the site (SWRCB 2020).

The closest site to the Redwood City Plant is an open cleanup program site, 3723 Haven Avenue Development, located approximately 350 feet south of the edge of Pond RC-7C. It is listed as

[22] Cleanup Program Sites: includes all "non-federally owned" sites that are regulated under the State Water Resources Control Board's Site Cleanup Program and/or similar programs conducted by each of the nine Regional Water Quality Control Boards. Cleanup Program Sites are also commonly referred to as "Site Cleanup Program sites." Cleanup Program Sites are varied and include but are not limited to pesticide and fertilizer facilities, rail yards, ports, equipment supply facilities, metals facilities, industrial manufacturing and maintenance sites, dry cleaners, bulk transfer facilities, refineries, mine sites, landfills, RCRA/CERCLA cleanups, and some brownfields.

Open Site Assessment. Site investigation is currently occurring to delineate the extent of a trichloroethylene plume at the site and evaluate additional remedial actions necessary to address constituents of concern for future site redevelopment. A permitted hazardous waste transfer/storage facility (Clean Harbors Environmental Services Port of Redwood City) is located at 695 Seaport Blvd., approximately 600 feet west of Pond RC-1. One cleanup program site is located within 500 feet of the Cargill West Bay areas. This site, the Sun Microsystems Site, is listed as Open Inactive, meaning no regulatory oversight activities are being conducted. It is located approximately 600 feet east of the brine pipeline on the Facebook campus.

Potential hazards associated with access for emergency response are addressed in Section 3.11. Preparation of a Traffic Management Plan when needed would ensure that there is no interference with an adopted emergency response or evacuation plan. Should emergency response be required on a recreational trail, any maintenance equipment that could impact emergency vehicle access would be relocated. If maintenance equipment would block recreational trails, the affected trail would be closed for the short period of time while the maintenance activities are occurring in that location (refer to Section 3.11.3, Transportation/Impacts Analysis).

Several potential hazards commonly evaluated in CEQA documents are not pertinent to this Project. Schools are considered potential sensitive receptors with regard to hazardous materials releases. The closest schools to the Project area are Delaine Easton Elementary School (east of Pond B-3C) and Newark Memorial High School (northeast of Pond CX-22); both are located approximately ¾ mile from the site. The Project would therefore not result in use, handling or emissions of any hazardous materials within ¼ mile of a school. Similarly, the Project area is not located within 2 miles of a public airport, nor is it in the vicinity of a private airstrip. Finally, the Project area is not located in an area prone to wildfires.

3.8.2 Regulatory Setting

Federal and state laws and regulations pertaining to this issue area and relevant to the Project are described in Table D-1. Local goals, policies, and/or regulations applicable to this issue area are summarized in this section.

A material is considered hazardous if it appears on a list of hazardous materials prepared by a federal, state, or local agency or if it has characteristics defined as hazardous by such an agency. At the state level, a hazardous material is defined in Title 22 of the California Code of Regulations. The USEPA is the agency primarily responsible for enforcement and implementation of federal laws and regulations pertaining to hazardous materials. Applicable federal regulations pertaining to hazardous materials are contained mainly in CFR Titles 29, 40, and 49. Management of hazardous materials is governed by the following laws:

- Resource Conservation and Recovery Act of 1976 (RCRA) (42 U.S. Code [USC] 6901 et seq.)
- Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA, also called the Superfund Act) (42 USC 9601 et seq.)
- Superfund Amendments and Reauthorization Act (SARA) of 1986 (Public Law 99-499)

These laws and associated regulations include specific requirements for facilities that generate, use, store, treat, and/or dispose of hazardous materials.

The transportation of hazardous materials is regulated by the Hazardous Materials Transportation Act (HMTA), which is administered by the Research and Special Programs Administration of the U.S. Department of Transportation (DOT). HMTA provides DOT with a broad mandate to regulate the transport of hazardous materials.

The California Department of Toxic Substances Control (DTSC), a division of the California Environmental Protection Agency (CalEPA), has primary regulatory responsibility over hazardous materials in California, working in conjunction with the USEPA to enforce and implement hazardous materials laws and regulations. The hazardous waste management program enforced by DTSC was created by the Hazardous Waste Control Act (California Health and Safety Code § 25100 et seq.), which is implemented by regulations described in CCR Title 26. The state program thus created is similar to but more stringent than the federal program under RCRA.

The provisions of Government Code Section 65962.5 are commonly referred to as the "Cortese List." The Cortese List is a planning document used by state and local agencies to comply with CEQA requirements in providing information about the location of hazardous materials release sites. Government Code Section 65962.5 requires CalEPA to develop and update the Cortese List annually, at minimum. DTSC is responsible for a portion of the information contained in the Cortese List. Other California state and local government agencies are required to provide additional hazardous material release information for the Cortese List.

3.8.2.1 San Francisco Bay Plan

Major Conclusion and Policy 8 (Water Quality) of the Bay Plan (BCDC 2020) states that "Because of the regulatory authority of the State Water Resources Control Board [SWRCB], the San Francisco Bay Regional Water Quality Control Board, the U.S. Environmental Protection Agency, and the U.S. Army Corps of Engineers, the Bay Plan does not deal extensively with the problems and means of pollution control." Similarly, the Water Quality Finding "o" of the Bay Plan states, in relevant part: "The Department of Toxic Substances Control, [San Francisco Bay] Regional [Water Quality Control] Board, and U.S. Environmental Protection Agency have the primary responsibility for the remediation and cleanup of hazardous substances." The Bay Plan findings and policies that may be relevant to hazards and hazardous materials are as follows.

Water Quality Finding a. Pollutants are harmful substances that when discharged into the environment adversely affect the environment's physical, chemical, or biological properties. The San Francisco Bay Regional Water Quality Control Board's Water Quality Control Plan, San Francisco Bay Basin designates the beneficial uses of the waters of the Bay, such as recreational boating, swimming, fishing, navigation, or aquatic habitat. Pollution occurs when pollutants unreasonably interfere with or adversely affect one or more of these beneficial uses. Pollutants can be divided into two types: point sources and nonpoint sources. Pollutants discharged from a distinct source, such as a pipe, are referred to as point source pollution. Other pollutant discharges are referred to as nonpoint source pollution because the pollution comes from diffuse sources such as oil and grease left on streets, and loose soil from construction sites.

Stormwater or irrigation flows across land can transport and deposit pollutants into San Francisco Bay or into tributaries that flow to the Bay.

***Water Quality Finding* i.** The protection of the Bay ecosystem and human health from water pollution requires a comprehensive strategy that encompasses: (1) preventing pollution at its source; (2) controlling and reducing pollution; (3) substituting less toxic chemicals and products in the project development process; and (4) remediating and cleaning up existing contaminants.

***Water Quality Finding* j.** Existing programs for controlling pollution, including stormwater management plans, Total Maximum Daily Load implementation plans, and construction site stormwater runoff and erosion and sediment controls, are effective in preventing and reducing Bay pollution.

***Water Quality Finding* k.** Management measures for controlling, reducing or eliminating nonpoint source pollution include establishing best management practices, such as site planning or structural controls, new technologies, project siting criteria, and operating methods.

Water Quality Policy 1. Bay water pollution should be prevented to the greatest extent feasible. The Bay's tidal marshes, tidal flats, and water surface area and volume should be conserved and, whenever possible, restored and increased to protect and improve water quality. Fresh water inflow into the Bay should be maintained at a level adequate to protect Bay resources and beneficial uses.

Water Quality Policy 2. Water quality in all parts of the Bay should be maintained at a level that will support and promote the beneficial uses of the Bay as identified in the San Francisco Bay Regional Water Quality Control Board's Water Quality Control Plan, San Francisco Bay Basin and should be protected from all harmful or potentially harmful pollutants. The policies, recommendations, decisions, advice and authority of the State Water Resources Control Board and the Regional Board, should be the basis for carrying out the Commissions water quality responsibilities.

Water Quality Policy 4. When approving a project in an area polluted with toxic or hazardous substances, the Commission should coordinate with appropriate local, state and federal agencies to ensure that the project will not cause harm to the public, to Bay resources, or to the beneficial uses of the Bay.

Water Quality Policy 7. Whenever practicable, native vegetation buffer areas should be provided as part of a project to control pollutants from entering the Bay, and vegetation should be substituted for rock riprap, concrete, or other hard surface shoreline and bank erosion control methods where appropriate and practicable.

Climate Change Policy 5. Wherever feasible and appropriate, effective, innovative sea level rise adaptation approaches should be encouraged.

Safety of Fills Policy 4. Adequate measures should be provided to prevent damage from SLR and storm activity that may occur on fill or near the shoreline over the expected life of a

project. The BCDC may approve fill that is needed to provide flood protection for existing projects and uses.

3.8.2.2 Alameda County

The following policy in the Alameda County General Plan Safety Element (amended 2014) may be applicable to the Project:

- *P1.* Uses involving the manufacture, use or storage of highly flammable (or toxic) materials and highly water reactive materials should be located at an adequate distance from other uses and should be regulated to minimize the risk of on-site and off-site personal injury and property damage. The transport of highly flammable materials by rail, truck, or pipeline should be regulated and monitored to minimize risk to adjoining uses.

3.8.2.3 San Mateo County

In the San Mateo County General Plan Hazardous Materials section, the following goals/objectives apply:

- 16.47: Strive to Protect Life, Property, and the Environment From Hazardous Material Exposure.
- 16.48: Strive to Ensure Responsible Hazardous Waste Management.
- 16.49: Strive to Reduce Public Exposure to Hazardous Material.

3.8.2.4 City of Fremont

Every city and county is required by State law to adopt a Hazardous Waste Management Plan. If the county plan is applicable and contains sufficient detail for the city's use, a city may adopt the county plan. The Fremont City Council adopted the Alameda County plan by resolution on July 25, 1989 (City of Fremont 2011). The City, as a Certified Unified Program Agency, regulates the management, handling and storage of hazardous materials and waste. In addition, the following goal and policies from the City of Fremont's general plan (City of Fremont 2011) are applicable to the Project:

- GOAL 10-6: Hazardous Materials and Waste - Minimize feasible risks to life, property and the environment resulting from the use, storage, transportation and disposal of hazardous materials
- Policy 10-6.1: Hazardous Material Regulation
- Policy 10-6.5: Hazardous Material Oversight -
- Policy 10-6.6: Hazardous Material Disclosure

3.8.2.5 City of Hayward

In the City of Hayward General Plan Hazards Element (City of Hayward 2014), the following goal and policies are applicable:

- *Goal HAZ-6:* Protect people and environmental resources from contaminated hazardous material sites and minimize risks associated with the use, storage, transport, and disposal of hazardous materials.
- Policy HAZ-6.1 Hazardous Materials Program.
- Policy HAZ-6.7 Agency Coordination.

3.8.2.6 City of Newark

The following goal and policy in the City of Newark's General Plan area applicable to the Project:

- *GOAL EH-4:* Protect Newark residents and workers from the potential adverse effects of hazardous materials.
- *Policy EH-4-1:* Hazardous Materials Risk Reduction.

3.8.2.7 City of Menlo Park

The City of Menlo Park General Plan contains the following policy applicable to the Project:

- *S1.16 Hazardous Materials Regulations.* Review and strengthen, if necessary, regulations for the structural design and/or uses involving hazardous materials to minimize risk to local populations. Enforce compliance with current state and local requirements for the manufacturing, use, storage, transportation and disposal of hazardous materials, and the designation of appropriate truck routes in Menlo Park.

3.8.2.8 City of Redwood City

In the Redwood City General Plan Public Safety Element (2011), the following policy would apply:

- *Policy PS-8.1*: Establish policies to regulate and reduce hazardous waste within Redwood City that are consistent with the County's Hazardous Waste Management Plan and other County regulatory programs

3.8.3 Impact Analysis

3.8.4 Impact Analysis

Potential impacts associated with hazards and hazardous materials would be considered significant if implementation of the proposed Project would:

- Transport, use, or dispose of hazardous materials, or
- Create the potential for upset and accident conditions involving the release of hazardous materials

The following impact analysis considers potential Project impacts relative to these significance criteria.

3.8.4.1 Impact HAZ-1: Transport, Use, or Disposal of Hazardous Materials

Less than Significant Impact. The primary hazardous materials concern arises from accidental spills and small amounts of leakage of petroleum products from maintenance vehicles during continued facility maintenance and berm repair. The proposed Project would require the use of the following hazardous materials:

- Fuel (diesel and gasoline)
- Penetrating oils, lubricating oils and hydraulic oils for equipment
- Paint
- Batteries

The proposed Project would not result in any changes from current maintenance and operations activities regarding hazardous materials. Because equipment maintenance activities are performed in the maintenance operations facility and not on the berm or lock areas, there is limited opportunity for even small spills of fluids on the berms/soil or in the water. All hazardous materials in the Project area are handled in accordance with applicable regulations.

It is expected that Cargill will continue to comply with federal and state laws and take all necessary precautions to prevent release of hazardous pollutants and will continue to comply with all applicable regulations during maintenance operations and waste disposal, in order to prevent significant hazardous materials impacts. Employees attend annual mandatory environmental training which provides instruction on implementation of safe operating practices as well as required documentation, communications, and reporting. In addition, a Storm Water Pollution Prevention Plan and annual Work Plans are in place to ensure compliance.

The proposed vinyl sheet pile study would install vinyl sheets to strengthen the berms. The vinyl sheets would be installed with a sealant (De Neef Swellseal) between the sheets to seal the sheet pile knuckles per the manufacturer's instructions. The sealant, which cures and swells in the presence of moisture and water, is solvent-free and is applied with a caulking gun. During installation, a 3/8-inch bead of sealant would be applied to the vinyl sheets driven into the berm, allowing for any excess material to be pushed out the top of the sheet pile and easily wiped off and disposed of if need be (Cargill 2019). Following the manufacture's installation and cleanup instructions would minimize possible product exposure to the environment. The Safety Data Sheet (SDS) for Swellseal for Sheetpile indicates that it has low to very low hazard ratings for humans. The bulk of the product consists of calcium carbonate and limestone powder; however, the primary active ingredient in the sealant is a volatile compound called toluene diisocyanate (TDI) (it has several other chemical and trade names). Based on an SDS for Swellseal, TDI is only present at the very low concentration of < 0.1 percent wt/wt and as a volatile product it would be expected to dissipate upon exposure to air (EOA 2019). TDI therefore represents less than 0.1 percent (one part per thousand) by weight of the total weight of the marketed product. In addition, TDI reacts with water to form stable, insoluble polyureas, which are inert solids. The reactivity of TDI with water greatly limits its mobility, and

even an accidental spill would be localized and have only transient impacts (EOA 2019). The SDS for a Dow Chemical Company TDI product (Voranate T-80 Type 1 TDI) provided some ecological toxicity information. According to the aquatic toxicity testing results indicated that there would need to be 10 – 100 milligrams per liter (mg/L) of the pure TDI present to result in the toxicity reported. This is likely several orders of magnitude greater than the amount of TDI that could be released from a vinyl sheet pile seam sealed with Swellseal (EOA 2019). Because the amount of TDI present in the Swellseal sealant is very low and any TDI that might be released would rapidly turn into predominantly insoluble stable polyureas with limited mobility in soil (particularly in the very low permeability Bay mud contained in the Cargill salt pond berms), risk to the environment from use of the sealant in the vinyl sheet pile study is low. This impact would be less than significant.

3.8.4.2 Impact HAZ-2: Potential for Upset and Accident Conditions Involving the Release of Hazardous Materials

Less than Significant Impact. Cargill and its contractors would be required to manage all hazardous materials in accordance with applicable regulations. This includes maintaining a spill response plan and SWPPP, and training employees in spill prevention and response. Contractors would be required to maintain appropriate spill response equipment and materials at their work location if warranted, and to conduct operations involving storage or transfer of hazardous materials, such as fuels, only at the maintenance facility. Adhering to these control measures would minimize potential contamination from accidental spills and protect water quality at the site.

Accidental release of MSS due to a breach in a pond berm has not been reported in the Project area. MSS are not classified as hazardous under state or federal regulations; if MSS are released to the environment as a result of an upset condition (e.g., seismic event or other breaching of a perimeter berm), impacts could occur to biological resources and water quality. For a discussion on potential impacts from an accidental MSS release related to marine life, refer to Section 3.4.4. A 100-year storm tide could raise the water level in the Bay near the Project area by 42 inches. Such an extreme event, with or without an increase in MHHW due to SLR, could result in overtopping of Bay water into the ponds, including MSS ponds. Sea level rise would increase the likelihood of overtopping because overtopping could occur during a less extreme event, and for the same increase in water level due to 100-year storm tide, could increase the extent (linear feet of berm) of overtopping.

The primary hazard associated with overtopping of berms is that the berms may erode (scour) in the area of overtopping. If the berms are substantially eroded during an extreme event, the scour could affect their structural stability and/or the lowering of the berm due to scour may allow brine to flow out of the affected pond into the Bay (minor erosion is addressed as part of routine maintenance). Water quality effects due to accidental releases of brine or MSS are discussed in Section 3.9.3.4. As discussed in Section 3.9.1, salt ponds can act as temporary storage during coastal flooding conditions. As ponds fill, waves overtop internal berms sequentially (internal berms are typically lower than outboard berms). However, as the risk of extreme events increases due to SLR, the risk of inundation of the ponds and the associated risk of a release of brine to the Bay, increases.

As discussed in Section 2.10.1.4, the SLR Assessment performed by AECOM (AECOM 2021, 2024) identified berms that are vulnerable to overtopping as a result of a combination of SLR and a 100-year storm tide. Three segments of berms enclosing MSS ponds (two longer segments on Pond P2-12 and a short segment on Pond P2-13) were identified as high priority segments. During the life of the proposed permit, Cargill would raise the berms of the MSS ponds by approximately up to 12 inches to 11.5 feet NAVD88 to minimize the risk of overtopping of the MSS berms, and therefore the potential for scour leading to berm failure. More than 90% of the berms around P2-12 and 100% of the berms around P2-13 are already at or above 11 ft NAVD88. Cargill's standard maintenance methods of placing up to 12-inch lifts would be sufficient to increase the height of the MSS pond berms to the target elevation.

In addition, Cargill would continue to monitor berms and restore areas that are lower in elevation than adjacent areas. Cargill would focus its efforts on those portions of the berm segments identified as being high priority in the SLR Assessment.

Potential impacts associated with reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment would be less than significant. furthermore, the MSS Project, if approved, would address a potential long-term threat from SLR by reducing the volume and salinity of brines stored in ponds closest to the Bay, and would reduce potential impacts associated with reasonably foreseeable upsets.

3.8.5 Mitigation Summary

The Project would not result in significant impacts; therefore, no mitigation is required.

3.9 HYDROLOGY AND WATER QUALITY

3.9.1 Environmental Setting

3.9.1.1 Regional Hydrologic Setting

South San Francisco Bay

The Project area lies within the San Francisco Bay Area Hydrologic Basin, specifically in the South Bay. The South Bay is defined as the portion of San Francisco Bay south of Coyote Point on the western shore and the San Leandro Marina on the eastern shore; these two locations are just north of the San Mateo Bridge. The Bay waters between the San Mateo Bridge and the Dumbarton Bridge can be considered the upper South Bay, and the area below the Dumbarton Bridge, the lower South Bay. The hydrodynamic and water quality descriptions in this section encompass both upper and lower regions of the South Bay given that the Project area includes salt ponds located both above and below the Dumbarton Bridge.

The San Francisco Bay is an estuary receiving its major source of freshwater from the Sacramento-San Joaquin drainage basin which discharges into San Pablo Bay. Minor contributions of freshwater come from local streams and creeks all around the Bay. Freshwater strongly influences environmental conditions in the San Francisco Bay Estuary as it mixes with saltwater from the ocean. Wind and tidal flows also greatly affect the Bay water conditions. Because of these very dynamic and complex environmental conditions, San Francisco Bay supports a very diverse and productive ecosystem.

The South Bay covers an area of approximately 22 square miles at mean higher high water (MHHW). Major features are a central channel, adjacent tidal mudflats and adjoining sloughs fed by local streams and drainages. The average depth in the South Bay is approximately 15 feet and ranges from 40 feet in the entrance channel to a few inches in peripheral mudflats. Strong vertical mixing due to tidal and wind action results in resuspension of particulate matter, and thus generally high turbidity and low transparency (WRA 2007).

The South Bay is the southernmost extreme of the Bay Estuary and furthest removed from Sacramento-San Joaquin Delta (Delta) outflows. Due to this lack of large-scale natural stream flows, circulation and flushing in the South Bay is limited, and this in turn influences many water quality parameters including salinity, turbidity, temperature, dissolved oxygen, and pollutant concentrations.

Hydrodynamics

The South Bay can be characterized as a large shallow basin, with a relatively deep main channel surrounded by broad shoals and mudflats. Tidal currents, wind, and freshwater tributary inflows interact with bathymetry to define the residual circulation patterns and residence time, and determine the level of vertical mixing and stratification. One of the most important factors influencing circulation patterns in the South Bay is bathymetry. Bathymetric variations create different flow patterns between the San Mateo Bridge and Dumbarton Bridge and in areas south of the Dumbarton Bridge (CDFW et al. 2019).

As with all large bodies of water, the most significant daily hydrodynamic action is the daily rise and fall of the tides. The tides in San Francisco Bay are mixed semidiurnal tides (i.e., two high and two low tides of unequal heights each day). There is also an annual cycle, with the strongest spring tides and thus highest and lowest water levels occurring in early summer and early winter, and the weakest neap tides occurring in the spring and fall.

Tidal datums provided by NOAA demonstrate an increase in both the range in daily tides and the extremes in water level as one moves further south in the bay from San Francisco. At the San Francisco gauge (NOAA ID 9414290), the mean higher high water (MHHW) elevation (average of highest daily tide levels) is 5.90 feet NAVD88, and the mean tidal range (average between all high and low tides) is 4.09 feet. Tidal fluctuations are amplified by the shape of the South Bay, for example at the Redwood City gauge (NOAA gauge 9414523), the MHHW water is 7.02 feet NAVD88 and the mean range is 6.37 feet.

Sea level records are available from the NOAA San Francisco gauge for over 150 years. The linear trend in sea level rise published by NOAA on their Relative Sea Level Trend webpage for gauge 9414290 is 1.99 +/- 0.17 mm/year, which is equivalent to 0.65 feet in 100 years. Although there is significant near-term variability in monthly sea level conditions influenced in part by El Niño Southern Oscillation events (ENSO), monthly data for the past 20 years indicate an increase in the long-term linear sea level rise trend.

Estimates of future sea level rise are provided by the State of California Ocean Protection Council for a range of future emission assumptions. State guidance from 2018 stated the likely range of sea level rise (66% probability) is 0.3 to 0.5 feet for 2030 and 0.6 to 1.1 feet for 2050 relative to year 2000 conditions. The State has issued a draft 2024 update with lower near-term estimates of SLR (0.4 feet in 2030 and 0.8 to 1.0 feet in 2050) for intermediate and intermediate-high estimates. The 2024 guidance document moves away from providing percent likelihood estimates of each of 5 scenarios, but the intermediate and intermediate-high (scenarios 3 and 4 of 5, with 5 being the catastrophic emissions and ice-sheet melt scenario) are likely comparable with the 2018 scenarios mentioned previously. The estimated sea level rise through the end of the projected permit period (2034) is approximately 6 inches. This aligns with the projections in the draft OPC (2024) guidance, where there is close alignment in the range of projections for the Intermediate and Intermediate-High scenarios (with both projecting approximately 6 inches of sea level rise by 2035).

Currents in the South Bay are driven predominantly by tidally- and wind-forced flows and their interaction with the bathymetry. Typically, winds drive a surface flow, which then induces a return flow in the deeper channels. Although density-driven currents are generally uncommon in the South Bay, in years of heavy rainfall, freshwater can flow from the Delta through the Central Bay and into the South Bay. In such events, the freshwater flows southward along the surface, while the more saline South Bay water flows northward along the bottom (CDFW et al. 2019).

The volume of water in the South Bay between mean low water and mean high water is the "tidal prism" of the South Bay. At mean lower low water (MLLW), the volume of water in the far South Bay (south of the Dumbarton Bridge) is less than half the volume present at MHHW. In

addition, surface water area coverage at MLLW is less than half that at MHHW, indicating that over half of the far South Bay consists of shallow mudflats exposed at low tides (CDFW et al. 2019).

Berms

Salt pond berms in the South Bay were typically constructed with Bay mud (weak clays and silts) dredged from adjacent borrow ditches or pond areas. Soils were not compacted during original construction, and the berms have continued to settle and consolidate. Berm maintenance with Bay muds or imported material is required throughout the salt pond system due to erosion, subsidence, and consolidation. In general, salt pond berms are low to moderate in height with variable side slopes ranging from 2:1 to 3:1 (for outboard berms, i.e., Bayfront berms adjacent to tidal waters, the side slope is typically 2:1).

Outboard berms enclose the evaporation ponds and were built for the exclusive purpose of producing salt in shallow ponds and were created between 60 to more than 100 years ago.

Flood Hazards

Flood hazards in the South Bay result primarily from coastal flooding (tides, storm surge and wind-wave action) and fluvial flows (rainfall-runoff) from the adjacent watersheds. Coastal flooding normally results from exceptionally high astronomical tides, increased by storm surge, climatic events (such as El Niño), and wind-wave action. Coastal flooding can occur when high Bay water levels, in concert with wind waves, lead to erosion and/or overtopping of coastal barriers. The highest astronomical tides occur for a few days each summer and winter due to the relative positions of the earth, moon, and sun. The highest Bay water levels typically occur in the winter when storm surges coincide with the higher astronomical tides. Salt ponds and berms in the South Bay dissipate incident wind-wave action. The ponds have sufficient capacity for incidental overtopping if it occurs and managing rainwater, depending on the brine levels in the ponds prior to the overtopping event. The difference between the brine level in the pond and the top of the berm is called freeboard. Freeboard varies depending on the time of year and rainfall patterns. The ponds have several feet of freeboard at the start of the rainy season. During past storm events, the salt pond system has effectively managed water levels due to available freeboard and rainwater management performed by Cargill staff. Cargill manages rainwater within the salt pond system using a Rain Plan, as discussed in Section 2. Floods resulting solely from coastal processes have been rare due to the presence of pond berms (USFWS and California State Coastal Conservancy 2016). As discussed in Section 2, the salt pond berms were never engineered or constructed to provide flood protection.

Fluvial flooding occurs when rivers, creeks, and other natural or constructed channels are overtopped from freshwater outflows. Fluvial flooding has been the primary source of historical flood damage in developed areas adjacent to the South Bay. An extensive network of flood control levees has been constructed by the U.S. Army Corps of Engineers and others along various channel reaches to protect adjacent developed areas from channel overtopping. These leveed reaches are designed to convey large fluvial discharges during high Bay tides; however, the levees can be overtopped when high runoff conditions and high Bay tides exceed the design capacity of the leveed channel. Out-of-bank flooding can also occur in areas adjacent to non-leveed channels when the runoff exceeds the carrying capacity of the channel. Flooding also

results from local drainage that collects behind bayfront berms or USACE-engineered levees when discharges to the Bay (either by pumps or gravity flow) are inadequate (USFWS and California State Coastal Conservancy 2016).

Although most of the shoreline in the South Bay consists of berms that do not meet the Federal Emergency Management Agency (FEMA) or the USACE flood-protection standards, the absence of a history of significant tidal flooding indicates that these berms do provide some level of flood buffer to developed areas (USACE 1988, as cited in PWA 2005).

FEMA and USACE have developed flood maps for the South Bay that include delineation of the 100-year floodplain. FEMA delineation of the coastal floodplain in the South Bay is based on the assessment that salt pond berms provide for a reduction of wave action but do not prevent inundation from high Bay water levels. In addition, in the Bay Plan, BCDCs Salt Pond Policy Finding e states: "The water surface area of the salt ponds supplements the water surface area of the Bay and thus helps to moderate the Bay Area climate and to prevent smog. Further, the salt ponds contribute to the open space character of the Bay and the berms surrounding the ponds, although not designed or maintained for flood control, help to protect adjacent low-lying areas from tidal flooding" (BCDC 2020).

In general, salt pond berms would not meet FEMA criteria and are not certified as flood-protection facilities as defined in FEMA's certification requirements. The Newark and Redwood City Plants are entirely within the FEMA 1%-probability (100-year) flood plain according to current FEMA maps. If berm maintenance is not performed and the berms fail and breach, flooding of inland areas is likely to occur. As stated previously, the berms were not constructed for flood management, and there is no information to show that the berms were designed for the 100-year event. In addition, FEMA would require a maintenance program for certification, including a commitment by a public entity, and such a program does not exist (CDFW et al. 2019).

Tsunami and Seiche

Tsunamis are long-period, low-amplitude ocean waves that pose an inundation hazard to many coastal areas around the world. In studies done by geophysicist Eric Geist at the USGS and Professor Steven Ward at UC Santa Cruz, hypothetical worst-case tsunami-induced wave heights in San Francisco Bay were evaluated. The models used a tsunami caused by a very large earthquake (greater than 9.0 on the Richter scale) in the Alaska-Aleutian Islands. Modeling results predicted a 16.4-foot wave entering San Francisco Bay at the Golden Gate, but the wave height was quickly reduced to less than 3.2 feet by the time it reached Treasure Island. Model predictions indicate that the tsunami probably would not reach the South Bay and if it did, it would be approximately 6 inches in height. The largest tsunami recorded to reach the San Francisco Bay was in 1964, after a 9.2 earthquake in Alaska. That tsunami entered the Bay at the Golden Gate at a height of approximately 4 feet.

A seiche is a wave that oscillates in lakes, bays, or gulfs from a few minutes to a few hours as a result of seismic or atmospheric disturbances. Tsunami waves can also create seiches when they enter embayments. A 1975 USGS study of seismic risks in San Francisco Bay indicated that a magnitude 6.5 earthquake would be unlikely to generate a seiche in San Francisco Bay (USGS

and HUD 1975). Geologically-induced seiche events have not been documented in the Bay and meteorological effects can be quickly dissipated due to the connection with the Pacific Ocean (CDFW et al. 2019).

In the unlikely event that seiche waves in the Bay are large enough to overtop the outboard berms of the salt ponds, the Bay water would flow into the ponds, but pond water would likely not flow out into the Bay. This dynamic would occur for two primary reasons: (1) the ponds are against the eastern shore of the bay, and prevailing winds in San Francisco Bay are almost always from the west or northwest. Thus, winds would blow the waves to the eastern shoreline hitting the salt ponds first, and (2) the brine levels in the salt ponds are kept below the top of the berms, so any water overtopping the berms would flow to the lower depth and fill the ponds with more Bay water.

Sediment Characteristics

San Francisco Bay, like most bay habitats that contain subtidal shoals, intertidal mudflats, and wetlands, experiences both deposition and erosion of sediment. This can occur consistently or vary over time. The factors that affect deposition versus erosion are sediment availability, and fate and transport. Analysis of several decades of bathymetric data showed that the South Bay north of the Dumbarton Bridge is net erosive, while the Lower South Bay, south of the Dumbarton Bridge is accreting (SFEI 2023). The main losses of sediment from the South Bay are exports to the Central Bay and sediment capture within marsh areas and restored ponds. The far South Bay below the Dumbarton Bridge has remained largely depositional since bathymetric data collection began in 1857 (SFEI 2023, CDFW et al. 2019), although any unarmored marsh perimeter subject to wave action is reasonably considered to be erosive. Tidal marsh footprints across the Bay are able to keep pace with sea level rise through current sediment accretion rates, but are not projected to be able to continue to do so in the later decades of this century (SFEI 2023).

Suspended sediment concentrations (SSCs) in the South Bay exhibit short-term variability, primarily in response to variations in tidally driven resuspension, wind-driven resuspension, and riverine input from local tributaries and sloughs (CDFW et al. 2019). In the winter and early spring, the main sources of suspended sediments are local tributaries and the Central Bay. The Bay Area receives most of its annual rainfall from strong winter storms. During extremely wet years, rainfall and spring snow melt can create turbid plumes of sediment from the Delta into the South Bay. This influx of sediment entering the system is continually reworked and transported as it is deposited and resuspended by tidal and wind-driven currents. However, even in the dryer summer months when there is very little direct input of suspended sediment from the Delta, the SSCs are still often high in the South Bay, due to strong afternoon winds across the Bay and mudflats that increase wind-wave resuspension and reworking of previously deposited sediments (CDFW et al. 2019).

Climate and Precipitation

The South Bay experiences a Mediterranean climate characterized by mild, wet winters and dry, warm summers. Air temperatures are mild due to proximity to the ocean. Winter weather is dominated by storms from the northern Pacific Ocean that produce nearly all the annual rainfall, while summer weather is dominated by sea breezes caused by differential heating

between the hot interior valleys and the cooler coast. The climate is generally characterized by relatively cool summers and mild winters. In summer, a steady marine wind blows through the Golden Gate and disperses north, east, and south over the Bay. This moderating influence is reflected in a mean July temperature of 68°F and a mean January temperature of 51°F in the South Bay (based on City of Newark recorded temperatures).

The South Bay, like the rest of the Bay, typically receives about 90 percent of its precipitation in the fall and winter months (October through April), with most of the rainfall occurring in late December through February. The average annual rainfall in the counties surrounding the South Bay is approximately 18 to 20 inches. The actual rainfall in cities around the South Bay varies significantly due to the influence of local topography, most notably the coastal mountains on the western side of the Bay, and the warmer air on the eastern shores coming from the inland East Bay valleys.

While long-term average annual precipitation is not expected to change substantially, climate change is predicted to lead to more extreme weather patterns, with extended periods of droughts and extreme wet years, as well as "whiplash" events where extremely dry periods are followed by extremely wet periods. Precipitation from storms is expected to intensify because warmer air can hold more moisture, and the frequency of 1-in-20 years events may triple by 2100. The amount of precipitation on the average wettest day of the year may increase by around one-third by the end of the century (USEPA 2024; CEC 2024).

Water Quality

In the Basin Plan, as further discussed in Section 3.9.2.1, the San Francisco Bay Regional Water Quality Control Board identifies a number of beneficial uses of the Bay that must be protected (RWQCB 2017). The beneficial uses include cold freshwater habitat, warm freshwater habitat, fish migration, contact and non-contact recreation, wildlife habitat, preservation of rare and endangered species, fish spawning, and fish migration (RWQCB 2017).

The Basin Plan contains narrative criteria that provide general guidance to avoid adverse water quality impacts for constituents including salinity, sediment (i.e., total suspended solids), tastes and odors, sulfides, toxicity, and bioaccumulation. Numeric criteria included in the Basin Plan include such parameters as trace metals, dissolved oxygen, turbidity, temperature, pH, bacteriological pathogens, and un-ionized ammonia. These criteria apply to the receiving waters of the Bay.

The Basin Plan also sets beneficial uses for groundwater. Beneficial uses of San Francisco Bay area groundwater include municipal and domestic supply, agricultural supply, and industrial service supply. The Basin Plan establishes numeric and narrative surface and groundwater water quality objectives designed to protect designated beneficial uses of surface water and groundwater resources.

Turbidity. As discussed earlier, turbidity can be naturally high in the South Bay during periods of high stream inflow when large quantities of suspended sediments are carried into the Bay, and due to the typical afternoon winds. Measured total suspended solids concentrations in the South Bay range from relatively low values (less than 50 mg/L) to very turbid conditions exceeding 1,000 mg/L (CDFW et al. 2019).

Sediment standards for San Francisco Bay as set in the Basin Plan establish that "the suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses." Furthermore, the turbidity standards establish that "water shall be free of changes in turbidity that could cause nuisance or adversely affect beneficial uses. Increases in turbidity as a result of discharge shall not be greater than 10 percent in areas where natural turbidity is greater than 50 NTU [nephelometric turbidity units]."

Salinity. Salinity in the South Bay varies seasonally, largely driven by variability in freshwater inflows from the Central Bay (i.e., the Delta), freshwater tributary inflows from the South Bay watersheds, winter precipitation, and summer evaporation. High freshwater inflows typically occur in winter and early spring in wet years when freshwater flows from the Delta make their way into the South Bay. Normal South Bay water salinity ranges from 7 to approximately 35 parts per thousand (ppt) (USGS 2023). During dry years when Delta outflows are small, surface salinity in the South Bay remains high (greater than 20 ppt). When Delta and tributary inflows decrease during late spring, summer and early fall, salinity increases to near oceanic salinities approximately 30 ppt on average. Exceptions include areas within the far South Bay below the Dumbarton Bridge, which can remain brackish year-round due to wastewater treatment plant discharges (CDFW et al. 2019).

The Basin Plan provides definitions for freshwater, saltwater, and estuarine waters, as follows: freshwater has a salinity of less than 5 ppt more than 75 percent of the time; saltwater has a salinity of more than 5 ppt more than 75 percent of the time; and estuarine water has a salinity that is between that of freshwater and saltwater. South Bay waters are classified as saltwater.

3.9.1.2 Project Setting

The salt ponds are entirely enclosed systems which take in water from the Bay and process the brine through a series of sequential evaporators that eventually reach a concentration near the point where sodium chloride precipitates. Details on salt production are provided in Section 2. Brines at the point of precipitation reach approximately 350 ppt.

The salt ponds are isolated from groundwater by Bay Mud clays that underlie the ponds and crystallizers, and also form the salt pond berms. Some of the pond bottoms also have layers of salt and gypsum (calcium sulfate). The Cargill Solar Salt System operations do not use groundwater, and do not affect groundwater recharge.

Operation of the solar salt system does not discharge brines or other liquids to the Bay, except during extreme storm events when excess rainwater may be discharged into the Alameda Flood Control Channel in Alameda Creek and into Mowry Slough. Cargill can discharge water to the Bay under the terms of its SWPPP and in coordination with RWQCB authorization No substantial changes to the solar salt system operation are anticipated during the term of the proposed Project, and consequently there would be no major changes in discharges from the ponds. Because the salt ponds and crystallizers themselves are not considered to be receiving waters, water quality standards for the Bay do not apply to these industrial facilities. However, maintenance activities such as outboard berm

maintenance and excavation for lock access may have a temporary effect on Bay water quality, particularly turbidity.

The salt pond berms will remain in their current configuration and size. Unlike publicly maintained flood control levees, berms associated with Cargill's facilities were built to facilitate salt production through solar evaporation. They were not constructed for flood protection of the surrounding communities and therefore do not meet modern flood control engineering requirements.

3.9.2 Regulatory Setting

Federal and state laws and regulations pertaining to this issue area and relevant to the Project are described in Table D-1. Local goals, policies, and/or regulations applicable to this issue area are summarized in the following subsections.

3.9.2.1 RWQCB Basin Plan

The Project area is within the jurisdiction of the RWQCB. The RWQCB is responsible for developing the water quality standards that are adopted in the Basin Plan. The Basin Plan is the master policy document that describes the legal, technical, and programmatic bases of water-quality regulation in the San Francisco Bay region. The plan includes a statement of beneficial water uses that the RWQCB will protect, water-quality objectives to protect designated beneficial water uses, and implementation plans for achieving water-quality objectives through its regulatory programs (RWQCB 2017). The Basin Plan makes reference to salt marsh ecosystems, specifically within the context of wetland restoration using dredged material. However, there is no direct reference to the South Bay's former salt ponds, particularly with regard to land-use plans or decisions. The Basin Plan provides both narrative and numeric water quality objectives to avoid adverse water-quality impacts.

The Alameda County Water District is responsible for groundwater resources in the eastern portion of the Project area. The agency carries out its missions by operating groundwater recharge facilities, conducting monitoring at guard wells, ensuring that unused wells are properly abandoned, and encouraging water conservation by municipalities in their respective service areas. Although there are public and private water agencies in San Mateo County, there is no groundwater management agency for the San Mateo Plain Subbasin (including the Redwood City Plant area). [23]

3.9.2.2 San Francisco Bay Plan

The Bay Plan Major Conclusion and Policy 8 (BCDC 2020) states that "Because of the regulatory authority of the State Water Resources Control Board, the San Francisco Bay Regional Water Quality Control Board, the U.S. Environmental Protection Agency, and the U.S. Army Corps of Engineers, the Bay Plan does not deal extensively with the problems and means of pollution control. Nevertheless, the entire Bay Plan is founded on the belief that water quality in San

[23] The San Mateo Plain Subbasin is considered a very low priority subbasin, and only medium priority and higher subbasins are required to have a Groundwater Sustainability Agency

Francisco Bay can and will be maintained at levels sufficiently high to protect the beneficial uses of the Bay." Bay Plan policies pertaining to water quality include, but are not limited to:

Water Quality Policy 1: Bay water pollution should be prevented to the greatest extent feasible. The Bay's tidal marshes, tidal flats, and water surface area and volume should be conserved and, whenever possible, restored and increased to protect and improve water quality. Fresh water inflow into the Bay should be maintained at a level adequate to protect Bay resources and beneficial uses.

Water Quality Policy 2: Water quality in all parts of the Bay should be maintained at a level that will support and promote the beneficial uses of the Bay as identified in the Regional Water Quality Control Board's Water Quality Control Plan, San Francisco Bay Basin and should be protected from all harmful or potentially harmful pollutants. The policies, recommendations, decisions, advice and authority of the State Water Resources Control Board and the Regional Water Quality Control Board should be the basis for carrying out the Commission's water quality responsibilities.

Water Quality Policy 3: New projects should be sited, designed, constructed and maintained to prevent or, if prevention is infeasible, to minimize the discharge of pollutants into the Bay by: (a) controlling pollutant sources at the project site; (b) using construction materials that contain nonpolluting materials; and (c) applying appropriate best management practices, accepted and effective especially where water dispersion is poor and near shellfish beds and other significant biotic resources.

The Bay Plan includes additional water quality policies for new development, which are not relevant to the continuing operations and maintenance of the proposed Project.

Applicable Bay Plan policies for the surface area and volume of the Bay are:

Water Surface Area and Volume Policy 1: The surface area of the Bay and the total volume of water should be kept as large as possible in order to maximize active oxygen interchange, vigorous circulation, and effective tidal action. Filling and diking that reduce surface area and water volume should therefore be allowed only for purposes providing substantial public benefits and only if there is no reasonable alternative.

Water Surface Area and Volume Policy 2: Water circulation in the Bay should be maintained, and improved as much as possible. Any proposed fills, dikes, or piers should be thoroughly evaluated to determine their effects upon water circulation and then modified as necessary to improve circulation or at least to minimize any harmful effects.

Shoreline Protection Policy 1**:** New shoreline protection projects and the maintenance or reconstruction of existing projects and uses should be authorized if: (a) the project is necessary to provide flood or erosion protection for (i) existing development, use or infrastructure, or (ii) proposed development, use or infrastructure that is consistent with other Bay Plan policies; (b) the type of the protective structure is appropriate for the project site, the uses to be protected, and the causes and conditions of erosion and flooding at the site; (c) the project is properly engineered to provide erosion control and flood protection for the expected life of the project based on a 100-year flood event that takes future sea level rise into account; (d) the

project is properly designed and constructed to prevent significant impediments to physical and visual public access; (e) the protection is integrated with current or planned adjacent shoreline protection measures; and (f) adverse impacts to adjacent or nearby areas, such as increased flooding or accelerated erosion, are avoided or minimized. If such impacts cannot be avoided or minimized, measures to compensate should be required. Professionals knowledgeable of the Commission's concerns, such as civil engineers experienced in coastal processes, should participate in the design.

***Shoreline Protection Policy 3*:** Riprap revetments, the most common shoreline protective structure, should be constructed of properly sized and placed material that meet sound engineering criteria for durability, density, and porosity. Armor materials used in the revetment should be placed according to accepted engineering practice, and be free of extraneous material, such as debris and reinforcing steel. Generally, only engineered quarry stone or concrete pieces that have either been specially cast, or are free of extraneous materials from demolition debris, and are carefully selected for size, density, and durability will meet these requirements.

***Shoreline Protection Policy 4*:** Authorized protective projects should be regularly maintained according to a long-term maintenance program to assure that the shoreline will be protected from tidal erosion and flooding and that the effects of the shoreline protection project on natural resources during the life of the project will be the minimum necessary.

***Shoreline Protection Policy 5*:** All shoreline protection projects should evaluate the use of natural and nature-based features such as marsh vegetation, levees with transitional ecotone habitat, mudflats, beaches, and oyster reefs, and should incorporate these features to the greatest extent practicable. Ecosystem benefits, including habitat and water quality improvement, should be considered in determining the amount of fill necessary for the project purpose. Suitability and sustainability of proposed shoreline protection and restoration strategies at the project site should be determined using the best available science on shoreline adaptation and restoration. Airports may be exempt from incorporating natural and nature-based features that could endanger public safety by attracting potentially hazardous wildlife.

***Shoreline Protection Policy 6*:** Adverse impacts to natural resources and public access from new shoreline protection should be avoided. When feasible, shoreline protection projects should include components to retain safe and convenient water access, for activities such as fishing, swimming, and boating, especially in communities lacking such access. Where significant impacts cannot be avoided, mitigation or alternative public access should be provided. Shoreline protection projects that include natural and nature-based features may be self-mitigating or require less mitigation than projects that do not include any natural or nature-based features.

***Shoreline Protection Policy 7*:** The Commission should encourage pilot and demonstration projects to research and demonstrate the benefits of incorporating natural and nature-based techniques in San Francisco Bay.

Salt Ponds Finding e: The water surface area of the salt ponds supplements the water surface area of the Bay and thus helps to moderate the Bay Area climate and to prevent smog. Further,

the salt ponds contribute to the open space character of the Bay and the levees surrounding the ponds, although not designed or maintained for flood control, help to protect adjacent low lying areas from tidal flooding.

3.9.2.3 County-Level Flood Control and Stormwater Management

The responsibility for protection of stormwater quality is assigned to the countywide stormwater programs. The Alameda Countywide Clean Water Program represents 15 municipal government co-permittees, the Alameda County Flood Control and Water Conservation District (ACFC), and the Zone 7 Water Agency. This stormwater program implements stormwater quality management plans with regulatory oversight from the RWQCB.

The ACFC and the City of Fremont share the responsibility for storm drainage. The ACFC was formed in 1949 to respond to the rapid development taking place in potentially flood-prone areas. The ACFC's primary focus is to plan, design and inspect construction of flood control projects. Additionally, the ACFC maintains flood control infrastructure and preserves the natural environment through pollution control regulations.

The ACFC has delineated watersheds into management zones. In the Fremont area, two management zones exist: Zone 5 generally located in the northern part of the City, and Zone 6 in the south. Each zone contains several watersheds. The boundary between the two zones generally runs northeast to southwest along Stevenson Avenue and Grimmer Boulevard. The Project area is located within Zone 5. Zone 5, one of ACFC's largest zones, incorporates over 36 miles of natural waterways including Alameda Creek, Crandall Creek, Dry Creek, and Plummer Slough. It also includes 50 miles of engineered flood control channels (City of Fremont 2011).

The San Mateo County Flood Control District Act of 1959 establishes the San Mateo County Flood Control District (SMCFCD) in order to:

- Control and conserve stormwater and flood waters;
- Prevent waste or exportation of water;
- Retain drainage, storm, flood and other waters for beneficial use in the district; and
- Prevent pollution or diminution of water supply.

The SMCFCD is a special district created by the state legislature and has jurisdiction throughout all of San Mateo County.

3.9.2.4 City of Fremont

In the City of Fremont's General Plan Conservation Element and Public Facilities Element, the following policies are applicable:

- Policy 7-2.1: Preservation of Water Resources Water.
- Policy 7-3.1: Protect and Improve Water Quality.

3.9.2.5 City of Hayward

The City of Hayward's General Plan has the following goal applicable to the Project:

- Goal NR-6: Improve overall water quality by protecting surface and groundwater sources, restoring creeks and rivers to their natural state, and conserving water resources.

3.9.2.6 City of Menlo Park

Menlo Park's General Plan Open Space, Conservation, Noise and Safety Elements contain the following goal and policies applicable to the proposed Project:

- Goal OSC5 — ENSURE HEALTHY AIR QUALITY AND WATER QUALITY. Enhance and preserve air quality in accord with State and regional standards, and encourage the coordination of total water quality management including both supply and wastewater treatment

3.9.2.7 City of Newark

The City of Newark's General Plan contains the following policies that may be applicable to the proposed Project:

- Policy CS-3.4 Reducing Water Pollution.
- Policy EH-3.2 Maintaining Drainage Patterns.

3.9.2.8 City of Redwood City

In the Redwood City General Plan Natural Resource Element and Public Safety Element, the following policies may apply:

- Policy NR5.1: Restore, maintain, and enhance Redwood City's creeks, streams, and sloughs to preserve and protect riparian and wetland plants, wildlife and associated habitats, and where feasible, incorporate public access.
- Policy NR-5.2: Limit construction activities to protect water quality in creeks and streams.
- Policy PS-7.8: Address flooding potential as a result of sea level rise.

3.9.3 Impact Analysis

Potential impacts associated with hydrology and water quality would be considered significant if implementation of the proposed Project would do any of the following:

- Cause adverse effects on surface water quality
- Create changes in drainage patterns leading to substantial erosion or siltation
- Adversely affect the implementation of a Water Quality Control Plan
- Release of pollutants as a result of Project inundation or overtopping, or
- Release high salinity brines as a result of Project inundation or overtopping

The impact analysis in this section considers potential Project impacts relative to these five criteria.

3.9.3.1 Impact HYD-1: Effects on Surface Water Quality

Less than Significant Impact. Because the salt pond system is self-contained, the applicable standards would only apply to discharges from the ponds or the facilities. Cargill does not have any discharges to the Bay from the salt ponds or crystallizers, other than controlled discharge of stormwater during extreme storm events, in accordance with the current BMPs and approved NPDES permits and in coordination with RWQCB authorization. Implementation of the proposed Project will not result in changes to these controlled discharges.

The proposed Project could result in short-term impacts on water quality by increasing suspension of fine sediments during excavation for access to the locks for berm maintenance, and during sediment removal and infrastructure replacement or maintenance on the outboard side of the ponds, which can cause temporary localized increases in turbidity. All of these activities are part of the existing operation and maintenance procedures. However, as noted in Section 2.10.9, Cargill anticipates an increase in the frequency of lock access from approximately one event per year to up to approximately two events per year for the projected permit period and to increase placement of riprap at newly eroded locations on outboard berm slopes. In addition, Cargill intends to install fish screens for one or more of the pumps on its Coyote Intake. This would involve construction of piers to access the fish screens, as well as some excavation to provide adequate water circulation to the fish screens. These are all changes in the level of activities relative to the baseline.

Cargill would continue to implement BMPs as described in Section 2.13 including berm maintenance and riprap replacement to control sediment discharge to the Bay. WRA (2016) determined that implementation of BMPs included in Section 2 had resulted in a measurable decrease in sediments placed within the Bay. Cargill would also prepare a workplan for construction of the fish screens prior to installation, and that workplan would identify appropriate avoidance and minimization measures to minimize resuspension of sediment related to the area into Alameda Creek, and ensure that impacts due to potential sediment resuspension would be less than significant. Therefore, the potential impact to surface water quality from the proposed Project are considered to be less than significant.

3.9.3.2 Impact HYD-2: Changes in Drainage Patterns Leading to Substantial Erosion or Siltation

Less than significant Impact. The Project does not involve altering the drainage patterns of any existing streams or rivers, nor does it add any impervious surfaces. Therefore, there would be no permanent increase in erosion or siltation on- or off-site. Cargill may periodically remove silt from in front of some intake structures (i.e., on the outboard side); this activity would merely restore the historical capacity of the specific channel or slough in question in the vicinity of the intake. This activity would not result in substantial erosion or siltation. Depth to sediment in the vicinity of the intakes is shallow and the removal of additional sediments would alter the depth of water in the immediate vicinity. However, this is an existing activity and is not expected to alter drainage patterns or the courses of the sloughs and creeks in the vicinity of the intakes given their off-channel nature and the limited volume and localized footprint of the sediment removal. It is similarly not expected to result in substantial erosion of siltation within the vicinity of the intake structures. A detailed description of the procedure for sediment removal is provided in the Project Description (Section 2). In addition, the proposed fish screens would be located off of the main channel of Alameda Creek, and their placement would not create substantial new erosion or siltation within the main channel. Siltation is likely to occur around the fish screens and would be addressed in the same manner as sediment removal at the intakes. This impact would be less than significant.

3.9.3.3 Impact HYD-3: Effect on Implementation of Water Quality Control Plan

Less than significant Impact. Activities on the outboard side of exterior berms or intake structures, including the removal of an average of approximately 360 CY of sediment per year, may result in temporary, localized increases in turbidity through the disturbance and thus release of some sediment. Similar to the discussion in Impact HYD-1 and HYD-2, the volume of sediment proposed for removal and the anticipated activity footprint are minimal and located in off-channel locations, the activity would be of short duration, and the South Bay in the vicinity of the proposed Project is naturally turbid. Construction of fish screens will employ BMPs to reduce sediment disturbance, resuspension, and release to local tidal channels. The BMPs described in Section 2.13 would reduce the potential impacts of sediment disturbances to less than significant levels.

3.9.3.4 Impact HYD-4: Release of Pollutants Due to Project Inundation or Overtopping

Less than Significant Impact. The potential for inundation due to a tsunami along the South Bay shoreline is very low. The salt ponds are isolated from the Bay and from local streams and flood control channels. Cargill operations and ongoing maintenance of berms and infrastructure mitigates the risk of inundation due to berm failure. However, there is a longer-term inundation risk from SLR. As part of the proposed Project, Cargill would implement preliminary SLR adaptation efforts, including increasing the height of the berms around Ponds P2-12 and P2-13 (refer to Section 2.10.1.5), which is intended to reduce or eliminate the likelihood of inundation of these two ponds during the term of the proposed Project. The berms around Ponds P2-12 and P2-13 would be raised by up to approximately six inches. Increasing the berm height by up to 12 inches would reduce the occurrence of overtopping by wave runup from levels seen between a 10-year and 25-year storm to those seen at greater than a 50-year storm (at current sea level conditions).

However, there would be a longer-term inundation risk from SLR, assuming that berm heights remain the same as under existing conditions. Cargill anticipates conducting a separate project to develop strategies and methods for Long-term SLR Adaptation and Management of the entire system. This impact is less than significant for the proposed Project (i.e., during the term of the proposed permit).

3.9.3.5 Impact HYD-5: Release of High-Salinity Brines Due to Potential Inundation or Overtopping

Less than Significant Impact with Mitigation. AECOM (2021) provided a SLR Assessment which evaluated various aspects of the Project area's vulnerability to existing flooding, potential future flooding, and other potential future SLR hazards, and prepared an update to the SLR Assessment to analyze of wave runup and overtopping of bayfront berms (AECOM 2024b). The wave runup analysis assumed that berms would remain at their current elevations (i.e., that Cargill would not increase the height of the berms.). Cargill plans to increase the height of the berms around Ponds P2-12 and P2-13 to 11.5 feet NAVD88 by 2034, but this is a nominal increase from current Bay-fronting berm heights at Ponds P2-12 and P2-13 (refer to Table 3.9.1) based on the latest available survey data contained in the AECOM Assessment. The AECOM analysis draws on hindcasts of total water levels (TWLs) along the shoreline, and includes

contributions from tides, storm surge, wave setup, and wave runup. The analysis included prediction of total water levels on an hourly basis from 1956 to 2009, with peak annual water levels extracted and input into a standard frequency analysis to quantify return-period events between 5 years and 100 years along each of 48 transects fronting Cargill's bayfront berms. Summary tables were developed showing the maximum TWL for 5, 10, 25, 50, and 100-year return interval events at each transect.

Under current sea level conditions, predicted runup from the 10-year storm exceeds the local berm crest elevation at 5 of the 48 transects used in the study, with a maximum overtopping height of 0.6 feet. However, no overtopping is projected at transects 21-24 fronting Pond P2-12. As larger storms occur, the number of transects subject to overtopping by waves increases as does the magnitude of the runup over the crest of the berm. For the 25-year event, 20 of the 48 transects are predicted to overtop by up to 1.6 feet, with three of the four transects fronting P2-12 projected to overtop by up to 0.4 feet. For the 50-year event, the maximum overtopping height is 3 feet above the berm crest for all transects and 1.0 feet at P2-12, and for the 100-year event, runup is expected to exceed some local berm crests by 4.8 feet with maximum overtopping depths of 1.6 feet at Transect 23 adjacent to P2-12. These numbers do not account for sea level rise.

Focusing on the transects fronting Pond P2-12, Table 3.9.1 summarizes the Total Water Level (TWL) from the AECOM study at transects 21 through 24 for storm events between the 10-year event and the 100-year event. The average berm crest elevation is provided for reference. Table 3.9.2 summarizes the difference between the TWL and the berm crest elevation for the same set of storms. Storm events where the TWL exceeds the berm crest are bolded in red. For the 25-year event, the maximum exceedance of the berm crest is 0.4 feet. This increases to 1.6 feet for the 100-year event. These numbers do not account for sea level rise, which will increase the frequency at which storm events overtop the berms.

The percentile chance of a given storm event in a given duration is easily calculated as the percentage change of the event not occurring in a given year raised to the power of the number of years (referred to as the "encounter probability"). For example, the chance of a 25-year storm event (4 percent annual occurrence probability) occurring in a 10 year period is (1-0.04)^10, or 34 percent. Thus, there is a 34 percent chance that wave runup at Transect 23 exceeds the berm crest by 0.4 feet during the permit period. Likewise, there is a 10 percent chance that the runup exceeds the berm crest by 1.6 feet at Transect 23 during the 10-year permit period. The chance of a 10-year event in a 10-year period is 65 percent, and the chance of a 50-year event in a 10-year period is 18 percent.

Cargill's berm maintenance program, which includes increasing the height of the MSS berms to an elevation of 11.5 feet NAVD88, regular inspections to address erosion, plus emergency response preparedness for berm repairs due to extreme storm events, would provide additional protection against wave overtopping from sea level rise during the term of the proposed permit.

Table 3.9-1. Predicted TWL (feet NAVD88) for Range of Storms

Transect	Existing Berm Crest (ft)	10-year	25-year	50-year	100-year
21	11.5	11.1	11.7	12.1	12.7
22	11.3	9.7	10.0	10.4	10.8
23	11.3	11.1	11.7	12.3	12.9
24	11.4	11.0	11.5	11.8	12.1

Table 3.9-2. Exceedance of Berm Crest for Range of Storms (in feet) Assuming Existing Berm Heights

Transect	10-year	25-year	50-year	100-year
21	-0.4	0.2	0.6	1.2
22	-1.6	-1.3	-0.9	-0.5
23	-0.2	0.4	1	1.6
24	-0.4	0.1	0.4	0.7

Note: Cargill's berm maintenance program would increase the height of the MSS berms to an elevation of 11.5 feet NAVD88.

While the likelihood of berm overtopping occurring can be assessed based on the work completed by Cargill to date, the duration and rate of overtopping are also necessary to evaluate whether overtopping could result in scour and impacts to berm stability. Standard approaches, such as the EurOtop manual and/or USACE guidance, for managed overtopping should be used to estimate the overtopping flow rates for predicted storm events and evaluate the impact of overtopping on berms. With implementation of Mitigation Measure HYD-1, the potential impact associated with release of high salinity brines due to overtopping would be less than significant.

- **Mitigation Measure HYD-1:** Evaluate outboard berms' vulnerability due to wave runup and overtopping during storm events.

Cargill shall estimate overtopping rates at transects at the MSS ponds, prioritizing bayfront transects within the MSS ponds (Transects 21, 22, 23, and 24) and evaluate whether overtopping could result in overtopping/scour impacts to berm stability. Evaluation shall be performed for 10-, 25-, 50- and 100-year storm events at current and future sea levels. Cargill shall provide documentation of the risk analysis to BCDC and the RWQCB, highlighting when berms may be at risk of scour-related failure due to overtopping based on future sea level rise. BCDC and the RWQCB shall work with Cargill to address the risks identified, if needed; if necessary supplemental CEQA review shall be conducted.

3.9.4 Mitigation Summary

Implementation of the following mitigation measure would reduce potential Project-related impacts to hydrology and water quality to less than significant.

- **Mitigation Measure HYD-1**: Evaluate outboard berms vulnerability due to wave runup and overtopping during storm events.

3.10 NOISE AND VIBRATION

3.10.1 Environmental Setting

The Project Area is located between the San Francisco Bay and commercial, industrial, and residential developments of Newark, Fremont, Redwood City, Union City, and Menlo Park. The nearest residences are located in the City of Newark, approximately 450 feet from Newark Plant 1 Pond P1-PP1, 60 feet from Newark Plant 2's Pond P2-FMC-2, and 900 feet from Pond B-3C. Several mobile home communities are located nearly adjacent to the Redwood City Plant, between the southern edge of the Redwood City Plant and U.S. 101. The closest sensitive receptors to the Cargill West Bay areas are approximately 900 feet away on the west side of U.S. 101.

With one exception, all public schools in the vicinity are located more than half a mile from any Project area berms or ponds. Summit Preparatory Charter High School is located approximately 0.25 mile south of the Redwood City Plant, south of U.S. 101. The next closest school is Newark Memorial High School located about 0.43 miles northeast of Pond CX-22. Delaine Eastin Elementary School in Union City is located approximately 0.55 mile east of Pond B-3C.

Significant sources of noise in the vicinity of the Project area include the Dumbarton Bridge/SR 84, which passes through Newark Plant 1; the Union Pacific Railroad, which passes between Newark Plants 1 and 2, and U.S. 101, which passes between 600 and 1,500 feet south of the Redwood City Plant. Interstate 880, which passes more than 1.5 miles to the east of the Project area, is unlikely to be a significant source of noise to the Project area. The Oakland, San Jose, and San Francisco Airports are all more than 5 miles from the Project area. The closest municipal airports are in Hayward, Palo Alto, and San Carlos, 2 or more miles away.

Potentially affected communities are protected from dangerous or nuisance levels of noise by each city's Municipal Codes. Each city has noise ordinances that regulate decibel levels produced from industrial areas that may affect neighboring communities. Noise in industrial zones is regulated in Chapter 8-21904 of the Fremont Municipal Code, Section 4-1.03.1 of the Hayward Municipal Code, Section 8.06.030 of the Menlo Park Municipal Code, Chapter 17.24.100 of the Newark Municipal Code, and by Chapter 24 of the Redwood City Municipal Code. Current BMPs by Cargill also serve to protect wildlife from noise impacts as required on USFWS property by Section 7 of the FESA.

Current and proposed Project activities involve equipment that typically produces noise at no more than 88 A-weighted decibels (dBA) at a 50-foot distance (trucks, bulldozers, excavators, etc.) (FHWA 2019). Noise levels from maintenance equipment would remain similar to previous equipment, with modern equipment typically being less noisy than older equipment (FHWA 2019). Cargill occasionally uses a vibratory driver to drive replacement piles for water control structures and pumps. In addition, Cargill periodically uses vinyl sheet pile on the outboard sides of locks to contain sediment and accelerate its settlement. As part of the proposed Project Cargill plans to conduct a pilot study to evaluate the effectiveness of vinyl sheet piles as a means of reducing seepage and minimizing potential erosion due to overtopping of berms. Vinyl sheet piles are also driven using a vibratory driver. Because soils in the Project area are

typically soft, low-impact energy drivers should be adequate for most pile installation. If other alternative berm maintenance methods are considered, including potential nature-based solutions, they would be subject to the field test requirements outlined in Section 2.10.1.4, and would be subject to additional CEQA review.

The analysis of potential noise and vibration effects in this section focuses on humans and the built environment. Effects of vibration on wildlife are addressed in Section 3.4, Biological Resources.

3.10.1.1 Ambient Noise and Vibration Environment

The ambient noise environment is defined primarily by vehicle traffic on the Dumbarton Bridge/SR 84, which passes through Plant 1; the Union Pacific Railroad, which passes between Newark Plants 1 and 2; and U.S. 101, which passes south of the Redwood City Plant. U.S. 101 freeway noise is so loud that mobile homes and RVs 650 feet to the north of the freeway adjacent the Redwood City Plant berms are exposed to ambient day-night sound level (L_{dn}) noise levels greater than 70 dBA (City of Redwood City, 2010c).

Local vehicle traffic and typical neighborhood noise sources contribute to the ambient noise environment to a lesser extent. The only potentially significant noise-producing commercial or industrial activity in the vicinity of the Project area is the Port of Redwood City, located immediately east of the Redwood City Plant. Other industrial and commercial activities are in proximity to the Dumbarton Bridge/SR 84, I-880, and U.S. 101, which would tend to mask noise generated by these sources.

Heavy equipment would be in use during the maintenance activities. The equipment that could be used, and noise levels that could be generated by the equipment, are shown in Table 3.10-1. Because several pieces of equipment may be running simultaneously, total noise levels were calculated assuming the three noisiest pieces of equipment are operating simultaneously near each other. Noise is measured on a logarithmic scale; total noise levels are therefore heavily influenced by the loudest noise source, and the addition of other (quieter) sources has only a small effect on the total noise level.

Noise levels drop approximately 6 dB with every doubling of distance (shielding from topography, wind and other factors may affect this estimate).

Existing ground-borne vibration in the vicinity of the Project area is caused by the passing trains, trucks on local roads and highways, construction activities, and to a much lesser degree, trucks on berms.

3.10.1.2 Sensitive Receptors

In general, residences, schools, hotels, hospitals, and nursing homes are considered to be the most sensitive to noise. Places such as churches, libraries, and cemeteries, where people tend to pray, study, and/or contemplate, are also sensitive to noise. Commercial and industrial uses are considered the least noise-sensitive. Sensitive receptors in the vicinity of the Project area include the mobile home parks south of the Redwood City Plant and the residential areas near Pond B-3C and Newark Plant 1 and Newark Plant 2. While Summit Preparatory Charter High School is located within approximately 0.25 mile of the Redwood City Plant, noise from

activities at the Redwood City Plant would be masked by U.S. 101, located between the plant and the school. Sensitive receptors that could potentially be affected by the Project are summarized in Table 3.10-2.

Noise and vibration impacts to wildlife are evaluated in Section 3.4, Biological Resources.

Table 3.10-1. Maximum Estimated Noise Levels of Proposed Project Equipment

Project Equipment	Noise Levels at 50 feet (dBA Lmax)
Amphibious Excavators (Land-based excavator used as surrogate)	85
Backhoe	80
Back-up Alarms	85
Barge (Tugboat used as surrogate)	87
Bulldozer	85
Crane	85
Drill Rig	84
Dump truck	84
Excavator, barge mounted (Land-based excavator used as surrogate)	85
Forklift	79
Front-end loader	80
Grader	85
Haul truck (20-30 ton capacity)	84
Pickup Truck	55
Pile Driver, vibratory driver	95
Pile Driver, impact driver	101
Pump (w/ diver assisted suction hose)	76
Scraper	85
Sweeper	80
Tractor (without attachments)	84
Water truck for dust control	80

Note:
L_{max} = Maximum sound level; the highest sound level measured during a single noise event.
Sources: FHWA 2019, EAI 2006 (Tugboat), FTA 2006, USEPA 1971

Table 3.10-2. Sensitive Receptors

Location	Sensitive Receptor to Closest Project Location	Distance from Project Site (feet)	Direction from Project Site
Residential Receptors	(Newark Plant 2) – Homes on Cape Breeze Dr to Material Stockpile near Pond CX-16.	1,000	NE
	(Newark Plant 2) -- Homes in FMC Parcel C to Green Hornet #2 Pump	450	East
	(Newark Plant 2) -- Bayside Way homes to Pond CX-7	250	Northwest
	(Newark Plant 2) -- Homes at Bridgeway development near Ponds FMC-1 to -4	60	Northeast
	(Newark Plant 2) -- Homes at Bridgeway development to vinyl pile driving test site	5,000	North
	(Redwood City Plant) -- Harbor Village Mobile Home Park near Pond RC-8W	140	South
	(Redwood City Plant) -- Trailer Villa RV Park near Pond RC-7C	75	South
	(Redwood City Plant) -- Anton Menlo Apartments to Pond RC-8W	140	South
	(Baumberg Pond B-3C) -- Homes on Monterey Drive to Pond B-3D	950	Northeast
	(Cargill West Bay) -- Pipeline maintenance to Hamilton Motel	900	South
Parks	(Newark Plant 1) - Coyote Hills Regional Park's Bayview Trail to Pond P1-7	240	North
	(Newark Plant 1) -- Alameda Creek Regional Trail to Pond P1-2A	25	South
	(Newark Plant 1) -- Newark Slough Trail to Pond P1-PP1 near Tidelands Trailhead	20	Northeast
	(Newark Plant 2) --Bayshores Park to Pond FMC-3	1,400	Northeast
	(Newark Plant 2) -- Softball field in Silliman Recreation Complex to Pond CX-22	300	Northeast
	Redwood City Plant) -- Bedwell Bayside Park to Pond RC-7C	200	East
	(Cargill West Bay) – San Francisco Bay Trail to Brine Pipeline	85	South
Schools	(Redwood City Plant) -- Summit Preparatory Charter High School	0.25 miles	Northeast
	(Newark Plant 2) -- Newark Memorial High School	0.43 miles	Northeast
	(Newark Plant 1) -- Delaine Eastin Elementary School, Union City	0.55 miles	East
Religious Centers	(Newark Plant 2) -- Pentecostal Missionary Church to Pond CX-1	1,400	North

3.10.2 Regulatory Setting

Federal and state laws and regulations pertaining to this issue area and relevant to the Project are described in Table D-1. The U.S. Noise Control Act implemented by USEPA and the U.S. Department of Housing and Urban Development guidance regarding acceptable noise levels set the primary federal requirements. The Bay Plan (BCDC 2020) does not provide any applicable findings or policies with regard to noise. Local goals, policies, and/or regulations applicable to this issue area are summarized in the following subsections.

3.10.2.1 Noise

Local regulation of noise involves implementation of general plan policies and noise ordinance standards. Local general plans identify general principles intended to guide and influence noise generating activities.

County of Alameda

The Alameda General Plan Countywide Noise Element indicates that acceptable noise levels range from 55 to 65 dBA L_{dn}[24] for residential and educational uses to 70 dBA L_{dn} for commercial and to 75 dBA L_{dn} for industrial and open-space recreation and parks uses.

Relevant countywide noise policies include the following goal:

- Goal #1: The peace, health, safety, and welfare of the residents of Alameda County require protection from excessive, unnecessary, and unreasonable noises from any and all sources in the cities and unincorporated territory.

Chapter 6.60, Noise, of the Alameda County Code of Ordinances prohibits unnecessary, excessive, and annoying noise to ensure public health, welfare, and safety (Alameda County 1966). This chapter provides maximum exterior noise limits for specific land uses during specified time periods. Permissible noise levels range from 45 to 65 dBA for residential and public area uses and from 60 to 80 dBA for commercial properties during the night (10 p.m. to 7 a.m.). Permissible noise levels range from 50 to 70 dBA for residential and public area uses and from 65 to 85 dBA for commercial properties anytime during the day (7 a.m. to 10 p.m.).

County of San Mateo

The San Mateo General Plan states that satisfactory noise levels range from 50 to 65 dBA L_{dn} for residential and transient-lodging uses to 70 dBA L_{dn} for semipublic facilities (churches, hospitals, nursing homes, schools, libraries, civic buildings, halls, and theaters) and office buildings to 75 dBA L_{dn} for industrial, open-space and recreation, and outdoor sports uses. Chapter 4.88, Noise, of the San Mateo County Code of Ordinances prohibits unnecessary, excessive, and annoying noise to ensure public health, welfare, and safety (San Mateo County 1982).

City of Fremont

The following policy within the City of Fremont's General Plan Safety Element (City of Fremont 2011) is relevant to the Project:

[24] The L_{dn} is the day-night 24-hour average sound level. A penalty of 10 decibels is added to nighttime noise levels between 10:00 p.m. and 7:00 a.m. before averaging to reflect the greater noise sensitivity during nighttime hours.

- Policy 10-8.2: Acceptable Noise Environment: Guidelines articulated by Table 10-4 in the City of Fremont General Plan (City of Fremont, 2011) are not intended to be applied reciprocally. In other words, if an area currently is below the desired noise standards, an increase in noise up to the maximum should not necessarily be allowed. The impact of a proposed project on an existing land use should be evaluated in terms of potential for adverse community response based on a substantial increase in existing noise levels, regardless of the compatibility guidelines.
- Policy 10-8.3 requires existing residential neighborhoods be protected from noise when:
    1. The project would cause the L_{dn} to increase by 5 dBA or more but would remain below 60 dBA, or
    2. The project would cause the L_{dn} to increase by 3 dBA or more and exceed 60 dBA, or if it has the potential to generate significant adverse community response due to the unusual character of the noise.

Noise is regulated in Fremont through enforcement of Municipal Code performance standards and implementation of General Plan policies. Article 19, Section 8-21904 of the Fremont Municipal Code contains noise performance standards for the land uses within the City, at the property line nearest the source of a suspected violation. The maximum noise generated by such use cannot exceed 60 dBA when adjacent uses are residential, park or institutional uses. Less stringent standards apply to adjacent commercial or industrial uses (65 or 70 dBA, respectively). Excluded from these standards are occasional sounds generated by the movement of railroad equipment, temporary construction activities, or warning devices (City of Fremont 2016).

City of Hayward

The Hayward General Plan 2040 defines the "Normally Acceptable" noise level based on the Project's land use type (Industrial Manufacturing, Utilities, Agriculture) as 75 dBA (L_{dn} or Community Noise Equivalent Level [CNEL]). The Hayward Municipal Code, Sections 4-1.03.1(a & b), sets a maximum noise level of 70 dBA at residential properties between 7:00 a.m. and 9:00 p.m. However, Section 4-1.03.4 allows construction noise levels up to 86 dBA during certain daytime hours. These other standards may also apply:

- Residential uses (low-density single family, duplex, mobile homes): 60 dBA (L_{dn} or CNEL)
- Residential uses (townhomes and multi-family apartments and condominiums), Lodging (Motels and Hotels): 65 dBA (L_{dn} or CNEL)
- Playgrounds, Neighborhood Parks, Office Buildings (Business, Commercial, and Professional): 70 dBA (L_{dn} or CNEL);
- Haz 8.22 - The City shall require a vibration impact assessment for proposed projects in which heavy-duty construction equipment would be used (e.g., pile driving, bulldozing) within 200 feet of an existing structure or sensitive receptor. If applicable, the City shall require all feasible mitigation measures to be implemented to ensure that no damage or disturbance to structures or sensitive receptors would occur.

- Section 4.1.03 of the Municipal Code prohibits construction noise levels more than 6 dB above the local ambient level at any point outside the property plane before 7 a.m. and after 7 p.m. daily except on Sundays and holidays. On Sundays and holidays the restrictions apply to before 10 a.m. and after 6 p.m. (City of Hayward 2011).

City of Menlo Park

According to the City of Menlo Park General Plan (City of Menlo Park 2016) normally acceptable external noise levels for public parks, recreation, and passive open space range from 50 to 75 L_{dn} or CNEL. Levels above 70 L_{dn} are either normally unacceptable or clearly unacceptable. Acceptable noise levels for commercial, intensive open space, and industrial uses are 70 to 75 dBA L_{dn}. Section 8.06.030 of the Menlo Park Municipal Code defines the noise limitations within city boundaries. For all sources of sound measured from any residential property, the night- and day-time noise limitations are 50 dBA and 60 dBA, respectively (City of Menlo Park 2004).

City of Newark

The City of Newark's General Plan describes exterior residential noise levels of less than 60 dBA Ldn to be normally acceptable, and between 60 to 70 dBA Ldn to be conditionally acceptable. POLICY EH-7.4 limits noise levels in outdoor residential living areas to 60 dBA Ldn or requires noise-reduction measures.

The City of Newark's Noise Ordinance, section 17.24.100(A)(3)(b) allows construction noise levels of a maximum of 86 dBA on weekdays between 7:00 a.m. and 7:00 p.m.

City of Redwood City

The City of Redwood City's Noise Ordinance sections 24.30 to 24.32 allow noise levels from construction equipment that do not exceed 110 dB within a residential district of the City between 7:00 a.m. and 8:00 p.m. on weekdays.

The following goals and policies of the General Plan (City of Redwood City 2011) are relevant to the Project:

- Goal PS-13: Minimize the impact of point source noise and ambient noise levels throughout the community.
- Policy PS-13.4: In accordance with the Municipal Code and noise standards contained in the General Plan, strive to provide a noise environment that is at an acceptable noise level near schools, hospitals, and other noise sensitive areas.
- Policy PS-13.5: Limit the hours of operation at all noise generation sources that are adjacent to noise sensitive areas, wherever practical.
- Program PS-63: Enforcing Construction and Maintenance Noise Regulations: Limit construction to the hours of 8:00 a.m. to 5:00 p.m. on weekdays, and 9:00 a.m. to 5:00 p.m. on Saturdays, with no noise-generating construction on Sundays or holidays. Limit construction workers' radio noise so they are not audible at residences bordering the project site. Equip engines with good mufflers. Locate stationary noise-generating equipment as far as possible from nearby sensitive receptors. Prohibit unnecessary idling of

internal combustion engines. Notify residents adjacent to the project site of the construction schedule in writing.

City of Union City

The City of Union City's General Plan provides a maximum allowable noise exposure for single-family residences of 60 dBA L_{dn} or CNEL. A project's maximum noise level increase cannot exceed 10 dBA above the local ambient noise level at residential properties. Construction equipment noise is exempt from those standards between 9:00 a.m. and 8:00 p.m. on weekdays but it must not produce noise levels then of more than 83 dBA at a distance of 25 feet, or 86 dBA anywhere on neighboring property.

3.10.2.2 Vibration

Typical levels of ground-borne vibration at a 50-foot setback for blasting, pile driving, and vibratory compaction equipment are 100 vibration decibels (VdB), and 95 VdB for heavy tracked vehicles (such as bulldozers, cranes, and drill rigs). There are no local standards for vibration impacts. However, the DOT's Federal Transit Administration (FTA) has developed assessment criteria for evaluating vibration impacts associated with transit projects. The criteria are appropriate for assessing human annoyance or interference with vibration-sensitive equipment for common projects. The FTA has proposed criteria based on maximum overall levels for a single event. There are criteria for frequent events (more than 70 events of the same source per day), occasional events (30 to 70 vibration events of the same source per day), and infrequent events (less than 30 vibration events of the same source per day). The criteria for homes and buildings where people normally sleep (e.g., nearby residences) are 72 VdB for frequent events, 75 VdB for occasional events, and 80 VdB for infrequent events (FTA 2018; Table 3.10-3). Impact will occur if these levels are exceeded. Caltrans' recommended standard with respect to the prevention of structural building damage is 0.2 inch/second peak particle velocity (PPV) for normal structures.

The following local policies, goals and actions address vibration impacts. The Cities of Menlo Park, Newark, and Redwood City do not have any applicable policies pertaining to vibration.

City of Fremont

The City of Fremont utilizes the FTA criteria to evaluate vibration impacts throughout the City.

City of Hayward

GOAL HAZ-8 - Minimize human exposure to excessive noise and ground vibration.

HAZ-8.22 Vibration Impact Assessment - The City shall require a vibration impact assessment for proposed projects in which heavy duty construction equipment would be used (e.g., pile driving, bulldozing) within 200 feet of an existing structure or sensitive receptor. If applicable, the City shall require all feasible mitigation measures to be implemented to ensure that no damage or disturbance to structures or sensitive receptors would occur.

Table 3.10-3. Ground-Borne Vibration Impact Criteria

Land Use Category	Groundborne Vibration Impact Levels (VdB re 1 µinch/sec, RMS) Frequent Events	Groundborne Vibration Impact Levels (VdB re 1 µinch/sec, RMS) Occasional Events	Groundborne Vibration Impact Levels (VdB re 1 µinch/sec, RMS) Infrequent Events
Category 1: Buildings where vibration would interfere with interior operations.	65 VdB	65 VdB	65 VdB
Category 2: Residences and buildings where people normally sleep.	72 VdB	75 VdB	80 VdB
Category 3: Institutional land uses with primarily daytime use.	75 VdB	78 VdB	83 VdB

Note: µinch/sec = microinches per second; RMS = root mean square; VdB = vibration decibels
Source: *FTA 2018*

3.10.3 Impact Analysis

Potential impacts associated with noise and vibration would be considered significant if implementation of the proposed Project would do any of the following:

- Result in a substantial temporary or permanent increase in ambient noise levels at sensitive receptors compared to their existing ambient noise levels under current conditions, by exceeding the following criteria and leading to resulting noise level exceeding the applicable exterior standard at a noise sensitive use:
    - An increase of the existing ambient noise levels by 5 dB or more, where the ambient level is less than 60 dBA L_{dn}
    - An increase of the existing ambient noise level by 3 dB or more, where the ambient level is 60 to 65 dBA L_{dn}, or
    - An increase of the existing ambient noise level by 1.5 dB or more, where the ambient level is greater than 65 dBA L_{dn}.
- Exceed the FTA's or Caltrans' vibration standards of:
    - 80 VdB with respect to human annoyance for residential uses, or
    - 0.2 in/sec PPV for prevention of building damage to normal structures.

If the ambient noise environment is quiet and the new noise source substantially increases the noise exposure, an impact may occur even though a noise criterion level might not be exceeded.

The City of Fremont is the only applicable local agency with incremental noise level standards to protect against a project's increases in noise levels compared with ambient noise levels. Fremont's standards are triggered when a project would cause the L_{dn} to increase by 5 dBA or more but would remain below 60 dBA, or would cause the L_{dn} to increase by 3 dBA or more and exceed 60 dBA.

Fremont's standards are similar to those used by the Federal Interagency Committee on Noise (FICON). The FICON provides guidance on evaluations of changes in ambient noise levels. It defines that a significant noise impact will occur with an increase of 5 dB when ambient noise levels without the project are less than 60 dB; or with an increase of 3 dB when ambient noise levels without the project are between 60 to 65 dB, or an increase of 1.5 dB when ambient noise levels without the project are greater than 65 dB. The reason for these criteria is that as ambient noise levels increase, a smaller increase in noise levels resulting from a project is sufficient to cause annoyance. In lower noise level circumstances below 60 dBA L_{dn}, a greater increase in noise levels was reported to be tolerated before people become annoyed. The recommendations are based upon studies that relate aircraft noise levels to the percentage of persons highly annoyed by the noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, they have been widely accepted in many California cities and counties. They are used in the preparation of the noise sections of Environmental Impact Reports that have been certified and are applicable to all sources of noise described in terms of cumulative noise exposure metrics such as the L_{dn}.

3.10.3.1 Impact NV-1: Substantial Temporary or Permanent Increase in Ambient Noise Levels Less than Significant Impact. Cargill would continue to conduct maintenance and operations activities permitted under the existing permit. There are no anticipated changes to most of these existing activities that would result in an increase in equipment use (i.e., a higher level of noise), or activities closer to residential areas than under current maintenance and operations practices. New residences have been constructed in closer proximity to the Project area than existed at the time the current permit was granted; however, because Cargill's maintenance and operations activities existed at the time the new residences were constructed, they are also part of the background noise condition for these residences. The analysis that follows focuses on changes to maintenance and operations activities that could potentially result in an increase in daily noise levels due to increases or changes in equipment use, and/or that represent new sources of noise (i.e., new activities). This analysis estimates the potential increase in noise from the changes at the closest sensitive receptor locations, taking into consideration background noise levels at the receptor locations.

Some maintenance and operations activities would increase in duration, but the equipment use would remain the same. Noise levels for noise impact analysis are typically measured and averaged during an hour or a day, but not for periods of multiple days or weeks. The standards used by all relevant local agencies are based on averaged, short-term periods of minutes, hourly or daily noise levels. An increase in duration would typically not be considered a significant impact if the daily equipment use remains the same because the maintenance activities would not be louder than current levels on any given day.

For reference, noise levels from maintenance activities at or near the Project site would fluctuate depending upon the particular type, number, and duration of use of various pieces of construction equipment. Table 3.10-1 shows typical exterior noise levels generated by various types of construction equipment proposed for use in these maintenance activities. Table F-1 in Appendix F shows predicted maintenance noise levels at the nearest sensitive receptors from Project activities at Cargill's various ponds, based on consideration of the operation of three of

the loudest equipment types during their simultaneous operations at full power with a 50 percent "acoustical usage factor." The assumption of operation at full power is likely to overstate the actual noise generation, as most equipment rarely functions at full power, and it is unlikely that three pieces of equipment would do so simultaneously. The "acoustical usage factor" is used to estimate the fraction of time each piece of construction equipment is operating at full power (i.e., its loudest condition) during a maintenance operation on the Project sites (FHWA 2018). An acoustical usage factor of 50 percent is selected for calculations in Table 3.10-1 to be conservative. The Federal Highway Administration standards for such usage factors are based upon tests and assume that this Project's types of heavy equipment will mostly have a usage factor of 40 percent or less, representing a typically quieter use.

Material Stockpile Replenishment

A maintenance activity that is currently performed regularly and is expected to be performed pursuant to a new permit includes creation and use of material stockpiles. The four existing stockpile locations are shown in Figure 2-1. Imported material would be stored in a designated stockpile area and moved to the maintenance location by trucks. Sometimes temporary stockpiles, on upland areas or where lock access is needed, would be utilized to hold clean material immediately before use on a specific task. The total volume of soil to be imported for this Project is expected to increase up to 10% over the current baseline, thereby increasing the stockpiling activity required by the same amount. However, the frequency and duration of stockpiling activities is expected to change compared to existing operations. Cargill anticipates importing an estimated 180,000 CY of materials over the life of the 10-year permit. This material would be imported during a combination of larger and smaller events. The volume of trucks will vary from year to year and month to month. Larger events may include importing up to 45,000 CY. Such a large import event would be expected to require approximately 8 weeks, assuming deliveries occur 5 days per week, and up to 100 loads are delivered each day.

The implementation of Cargill's Soil Import Acceptance Criteria and Quality Assurance Project Plan (SACQAPP) and the slight increase in total volume of imported material required would not result in additional truck trips during peak delivery days compared to the baseline. Off-site noise levels due to minor increases in trucking for these stockpiles would therefore remain the same as under existing conditions. Cargill currently receives up to 120 truckloads per day, and would not exceed this existing level of activity. Therefore, the noise impacts of potential changes to the import material delivery process would be less-than-significant.

Noise is also generated from management and use of the stockpiles, which is an existing activity. The distance from the closest of the four existing stockpiles by Pond CX-16 to homes on Cape Breeze Drive is about 1,000 feet. At that distance, the typical noise level of equipment used at a material stockpile (bulldozer, dump truck, tractor/loader) of about 86.1 dBA L_{eq} at 50 feet (refer to Table F-1 in Appendix F) would reduce to about 60.1 dBA L_{eq}. When converted to the day-night weighted average for comparison with local noise standards, that noise level is at most 55.8 dBA L_{dn} (for stockpile work occurring from 8:00 a.m. to 5:00 p.m.). With atmospheric attenuation, it could be another 1 dB less. That noise level is within Newark's conditionally-acceptable General Plan noise standards for single-family homes that range from 55 to 70 dBA L_{dn}. It is also much less than Newark's 86 dBA L_{max} maximum construction noise

limitation. Because stockpile storage work already occurs there, the noise level increase due to new stockpile expansion work of 10 percent would result in at most a 0.5 dBA L_{dn} increase which is likely inaudible at the nearest homes and is a less-than-significant noise impact.

Maintenance of Earthen Berms

The existing permit allows Cargill to operate and maintain its facilities, and this Project proposes to add some new or alternative maintenance methods. Because Cargill operates on a greatly reduced footprint now compared to when the existing permit was approved, its maintenance efforts and the noise they create have been reduced compared to earlier periods. In the last decade, Cargill has maintained and graded on average approximately 31.5 miles of its earthen berms annually. It now proposes to increase that work to about 37 miles per year on average over the life of the proposed permit.

Even with this small increase in berm maintenance work within the Project area, there would be no significant increase in noise from using heavy equipment to conduct maintenance activities as compared to baseline conditions. That is because with the proposed Project a similar amount of equipment would be in use each day. Since most of the same types of equipment would be used as for current maintenance activities, Project noise levels for most maintenance activities would be similar to current levels. However, the number of days during which maintenance activities may occur may increase slightly due to an increase in the extent of berms made drivable. These increases would be partially offset by an expected decrease in the mileage of keying.

Potential increases in the duration of maintenance activities would most likely occur farther away from residences, as most berms along the land-side perimeter of the Project area are already drivable, and no other new maintenance activities are anticipated within 1,000 feet of sensitive receptors.

Berm maintenance would result in temporarily higher levels of noise than described previously at the closest residential receptors. For example, berm maintenance is currently permitted as close as 75 feet from the Redwood City mobile homes or RVs near Pond RC-8W. That work can result in a noise level of about 81.0 dBA L_{eq} at these mobile dwellings during the infrequent times that berm maintenance would occur in that immediate area (refer to Table F-1 in Appendix F). That noise level is compliant with applicable standards because Redwood City allows such maintenance work if it does not exceed 110 dBA at such residences. Berm grading work is also compliant because it creates noise levels that are slightly lower at these mobile homes (refer to Table F-1 in Appendix F).

The Bridgeway condominiums along Seawind Way near Newark Plant 2 are as close as 60 feet to existing berms at Pond FMC-4, and those berms would also continue to be maintained. At that distance, the maintenance noise levels would be about 84.9 dBA L_{eq}. That maintenance work complies with applicable noise standards in part because Newark's standards allow construction noise levels of a maximum of 86 dBA.

This berm maintenance work for both locations is currently permitted and there will not be an increase in the magnitude of this berm maintenance noise level compared to current

conditions. At a similar daily equipment use as in the past decade, the noise impact of the Project's berm maintenance work would be less-than-significant.

Existing Outboard and Inboard Riprap Repairs and New Outboard Riprap Placement
This Project proposes to import soil and new riprap for berm stabilization. Noise effects from import of these materials are addressed in the preceding Material Stockpile Replenishment section.

Riprap placement on outboard berm slopes at Newark Plant 1 would occur on an as-needed basis, and is estimated to require an average of two weeks per year; however, there would be variability in duration from year to year. Cargill already places some new soil and riprap every year because there is continued (natural) erosion of the shoreline, mostly along Newark Plant 1. The volume for riprap repairs on outboard slopes would increase from around 80 cubic yards per year under the current permit to an estimated 1,050 cubic yards per year. In addition, riprap would be placed in some small, newly-eroded areas. Cargill estimates that around 100 CY/year of riprap would be required for these areas. Riprap (an estimated 175 CY/year) would also be required to repair existing riprap on interior berm slopes. This represents a reduction of approximately 300 CY/year compared to current levels for a net increase in riprap placement of approximately 780 CY/year.

Cargill utilizes an excavator to place pieces of riprap on these berms. Riprap is hauled to the berms with dump trucks and smaller equipment. Such equipment use generates a noise level of up to about 86.1 dBA L_{eq} at a distance of 50 feet (refer to Table F-1 in Appendix F). Riprap and soil placement work does not occur at one location for very long because the extent of riprap placement in any one location is generally small.

There are two groups of homes that are closest to proposed riprap installation. One is a group of condominiums along Seawind Way in Newark at a distance of 1,150 feet to the northeast side of Pond P2-13 at Newark Plant 2 where inboard berms would be stabilized with riprap. The construction noise level during placement of the riprap at that distance when measured outdoors nearest these homes would be about 58.9 dBA L_{eq}. (refer to Table F-1 in Appendix F). When converted to the day-night weighted average for comparison with local noise standards, that noise level is at most 55.0 dBA L_{dn} (assuming berm maintenance occurred at this closest berm location from 8:00 a.m. to 5:00 p.m.). The riprap placement construction noise levels of 55.0 dBA L_{dn} at these nearest homes would remain below the City of Newark's normally acceptable day-night average threshold of significance for these multi-family residences of 65 dBA L_{dn}.[25] Activity occurring further away from these residences would result in lower noise increases.

The other nearest sensitive receptors to potential riprap and/or soil placement are a group of single-family residences being built along Hidden Harbor Way in Newark to the south about

[25] The Newark Municipal Code, Sections 17.24.100(A)(2)(a)(i), sets a maximum noise level of 70 dBA L_{max} at the exterior of residential properties between 7:00 a.m. and 9:00 p.m. For residential multifamily areas, the Newark General Plan's Table EH-2 (Noise Compatibility Guidelines for Newark) establishes a normally acceptable noise limit of 65 dBA L_{dn}. However, Newark's Noise Ordinance, section 17.24.100(A)(3)(b) allows construction noise levels of a maximum of 86 dBA L_{max} on weekdays between 7:00 a.m. and 7:00 p.m.

500 feet away from the berm at Pond P1-PP1. At these closest homes' distances, the construction noise level during daytime placement of the riprap would be less than 66.1 dBA L_{eq} (refer to Table F-1 in Appendix F), which when converted to a day-night average noise level is less than 61.8 dBA $L_{dn.}$ The noise level at these homes would be even lower because such repair work moves frequently and will not remain at that closest location for long. That noise level is within Newark's conditionally-acceptable General Plan noise standards for single-family homes that range from 55 to 70 dBA L_{dn}. That noise level is also much less than Newark's 86 dBA L_{max} maximum construction noise level standard.

As noted previously, placement of riprap and soil for berm maintenance is already allowed under Cargill's existing maintenance permit so most residential neighbors should already be used to this type of occasional maintenance noise. It would not be louder than what currently occurs during berm maintenance work because the same equipment usage would occur as is now already permitted. When added to the ambient noise levels at these homes of about 57 to 60 dBA L_{eq}, this noise from riprap work could at times be slightly audible at homes along Hidden Harbor Way. But with no increase above the existing riprap and soil placement noise levels, this work would not create a temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without any Project-related maintenance, and there would be no noise impact from riprap placement.

Increased Lock Access and Egress Activities

This Project may increase the number of times per year that lock access activities occur from approximately one event per year to two events per year. These maintenance activities would occur on more days per year, but not more times per day. Therefore, the potential increase in lock access work would not generate significant noise level increases in comparison to existing ambient noise levels at sensitive receptors during any one day. The increase in the number of days per year that locks would be accessed would result in less than significant noise impacts on any one day. The amount of lock access and egress activities would decrease by nearly 50% from the amount discussed in the Public Draft EA.

At the great distance from sensitive receptors, even the simultaneous operation of three of the noisiest equipment types during these lock activities would not be readily audible. A maximum noise level from such operations is about 92.7 dBA L_{eq} on average at 50 feet, which reduces to about 46.4 dBA L_{eq} at a 5,200-foot distance to the nearest dwellings close to the Redwood City plant. The closest homes near the Newark Plant 2 are about 7,200 feet from other lock activity, so they would be exposed to noise levels of about 43.8 dBA L_{eq}. The closest homes near the Newark Plant 1 are about 8,400 feet from its lock activity, so they would be exposed to noise levels of about 42.3 dBA L_{eq}. These noise levels at all three locations are well below the ambient noise levels at these sensitive receptors of about 60 dBA L_{eq} in Newark and more than 70 dBA L_{eq} in Redwood City. The noise impact of such expanded lock access and egress activity would therefore be less-than-significant.

Berm Gap Filling

This Project would re-establish vehicle access on some internal berms by restoring the berm in the area of the gap and/or inserting a siphon, pipe, or culvert (referred to as filling berm gaps) to provide access while maintaining the brine flow between ponds. Cargill currently fills berm

gaps and modifies berm gap locations under its existing maintenance permit. This Project proposes to slightly expand such filling berm gaps in new locations. Cargill anticipates filling up to four berm gaps per year in interior berms, requiring 1,100 cubic yards of material per year and affecting approximately 3,000 square feet of area per year. This activity would require about 5 8-hour days of use for a crawler tractor, grader, and water truck. A dozer would be used for about 10 days, and a skid steer loader and pickup truck for about 20 days.

Gaps within the internal berms are predominantly found in Newark Plant 1. Filling berm gaps involves use of heavy equipment that could cumulatively create noise levels of about 86.5 dBA L_{eq} at 50 feet. There are no berm gaps needing filling near homes located to close to Newark Plant 1 so noise impacts during berm gap filling will not be significant. The closest homes to Plant 1's berms would be about 450 feet away, but the Pond P1-PP1 berms northwest of those new homes being built near Hidden Harbor Way do not have gaps needing filling. The Newark Slough Trail already provides a drivable access atop the nearest Pond P1-PP1's berm. Instead, the nearest visible berm gap at Newark Plant 1 is located to the northwest about 3,750 feet from these closest single-family homes being built at Hidden Harbor Way. At that distance from berm filling work, these homes would be exposed to insignificant and likely inaudible noise levels of less than 49.0 dBA L_{eq} which would be masked by other, ambient noise sources of about 60 dBA L_{eq}. The noise level at sensitive receptor locations generated by berm gap filling would be compliant because it is much less than Newark's maximum standard for construction noise of 86 dBA L_{max}, and any increase in noise levels at these homes during berm gap filling would be less than the 3 dB threshold of significance.

There are no berm gaps at Plant 2's Ponds P2-12 and P2-13 or Ponds FMC-1, -2, -3 or -4 that require filling. These ponds, which are the ponds in closest proximity to sensitive receptors near Newark Plant 2, already have drivable berms. Therefore, Cargill's vehicle access and berm gap filling construction work at its ponds would create a less-than-significant noise impact.

Cargill will need imported materials to fill these berm gaps. Noise effects from import of these materials are addressed in the preceding Material Stockpile Replenishment section.

Increase Height of Berms Around Ponds P2-12 and P2-13

Cargill proposes to increase the height of its berms around the two MSS ponds to 11.5 feet NAVD 88 by 2034 to protect these berms from overtopping from a 100-year storm/flood tide plus six inches of sea level rise. Approximately 93 percent of the berms around P2-12 and 100 percent of the berms around P2-13 are already at 11 ft NAVD88. This work would be accomplished as part of Cargill's routine berm maintenance activities. The Project's noise levels during this work would not exceed local noise standards at sensitive receptors. This work would mostly occur far away from homes so the associated noise levels would be decreased substantially by such distances. The nearest residences that would be exposed to construction noise from increasing the height of the berms at Ponds 2-12 and P2-13 are condominiums along Seawind Way in Newark. These condominiums are located about 1,070 feet to the northeast from the closest berm at Pond P2-13.

Equipment used to increase the height of these berms would consist of a heavy truck, bulldozer, excavator, front-end loader, and grader. This is the same equipment currently used

under Cargill's existing permit for berm grading, berm height maintenance, repairing berms, berm keying, and making berms drivable.

Heavy equipment used to increase the berm height could cumulatively generate a noise level about 86.5 dBA L_{eq} at 50 feet from the work area, which diminishes to a noise level of about 59.8 dBA L_{eq} at 1,070 feet (the closest residences). Because this construction work would only occur during the daytime, the day-night weighted average noise level of such work if measured at these nearest homes would be at most about 55.5 dBA L_{dn}. With atmospheric attenuation in 1,070 feet, that noise level could be another 1 dB lower. This noise level's impact would be less-than-significant because it is below the City of Newark's conditionally acceptable threshold of significance of 70 dBA L_{dn} for residential property, and less than the City's 86 dBA L_{max} standard for noise resulting from daytime construction work.

While the duration of activities at Ponds P2-12 and P2-13 would increase relative to typical berm maintenance at these locations, on any day the equipment use would not be significantly expanded. Rather the increased work to increase berm heights would instead occur for more days per year. Even if this berm raising work occurred at the same time as other berm maintenance work, it would increase the noise level at these nearest homes by only about 2.4 dBA (Appendix F). Therefore, the daily average noise level from increasing the height of berms would not increase more than the 3 dBA threshold of significance above existing permitted maintenance activity noise levels at the nearest residences.

The noise resulting work proposed to increase the height of the MSS pond berms for sea level rise adaptation would be less than significant.

Major and Minor Repairs

Repair and replacement of certain structures such as motors, pipes, pumps, gates, culverts and platforms are already authorized under the existing permit. Such repair and replacement work would also include other existing infrastructure, such as existing or temporary fences, vehicle gates, siphons, wooden trash racks, electrical distribution lines for service operations, platforms, walkways, bridge structures, crystallizer access ramps, and pumping donuts and cofferdams, which were not specifically identified in the existing permit. The repair of structures is expected to increase from approximately one major repair per year to a total of up to 12 major and minor repairs per year. More than 90% of repairs or replacements of older structures would be done at Newark Plant 1 and 2. This expanded repair work would occur at generally the same distances to sensitive receptors as baseline conditions. Construction noise levels during such repair work would not exceed the local noise standards at affected residences (Table F-1 in Appendix F).

Because the new work proposed for repair and replacement of existing older structures would involve the same equipment that is already used at the Project site, only the increases in noise levels relative to noise levels during current operations needs to be analyzed. The number of days that repair or replacement work for such structures occurs per year would increase, but the number of hours per day for such work would not increase. Therefore, the noise level that sensitive receptors would be exposed to on any day during repair or replacement of existing structures would not increase compared to baseline conditions. The magnitude of noise level

increases due to major and minor repairs and their noise impacts would be less-than-significant.

Sediment Removal at Intake Structures

The Project would continue removing sediment from intake structures as needed. Removal of sediment at intakes would comply with the applicable local noise standards. The closest intake to new homes in the FMC Parcel C residential subdivision in the City of Newark is about 450 feet south of the Green Hornet #2 pump intake structure in the Newark Plant 1 at Pond P1-PP1. At that distance to nearby homes, this maintenance work would generate a noise level of approximately 66.0 dBA L_{eq} (Table F-1). If that work continued from 8 a.m. to 5 p.m, its day-night weighted average noise level would be about 61.7 dBA L_{dn} or 66.7 dBA L_{dn} (day-night weighted average) for 15 hours of maximum daylight during early summer and would be consistent with the City of Newark's General Plan standard for conditionally-acceptable noise levels at residences of 60 to 70 dBA L_{dn}. The City of Newark also allows construction noise levels up to 86 dBA during weekday daytime construction hours. None of this Project's calculated sediment removal maintenance activity's noise levels at nearby sensitive receptors would exceed 86 dBA L_{eq} (Table F-1). Therefore, the noise impact of such sediment removal activities at this intake structure would be less than significant. Other intake structures potentially requiring sediment removal are further away from residences, and the increase in noise levels would be less.

At the Redwood City Plant the nearest sensitive receptors from the Redwood City Brine Pump intake structure at Pond RC-7A are the residents in mobile homes and RVs in a residential district located as close as 140 feet from this pump. When sediment removal work occurs at that intake structure, the noise level at these closest sensitive receptors would be about 76.2 dBA L_{eq}. If that maintenance work occurs full time between 8:00 a.m. and 5:00 p.m., its noise level can be converted to a day-night average of 72.4 dBA L_{dn}, which is appropriate for comparison to the local noise standards for such temporary and infrequent work. During the maximum daylight work hours in early summer, the resulting noise level would be 76.9 dBA L_{dn}.

Sediment removal at a specific structure would occur on average every 3 to 5 years. That noise level is compliant because Redwood City's standards allow noise levels from construction and maintenance equipment that do not exceed 110 dBA within a residential district between 8:00 a.m. and 5:00 p.m. on weekdays. (RCMC §24.30 and Program PS-63). This work would use similar equipment to existing permitted maintenance and therefore would not increase existing sediment removal noise levels by more than 1.5 dB at sensitive receptors. Therefore, the proposed Project's noise level impacts during sediment removal would be less-than-significant.

Removing sediment from the intake structures may result in a very slight increase in truck trips in the vicinity of Newark Plants 1 and 2 and the Redwood City Plant. Based on this approximate volume, Cargill estimates that dump trucks operating to remove this sediment would operate on five days a year. The rate of hauling could increase from approximately 25 to 30 truck trips per year, or on average about 1 additional trip per day during sediment removal activities. This would have a negligible effect on local noise, the noise impacts of these truck traffic increases related to sediment removal at intakes would be less than significant.

Install Fish Screens and Access Platforms

Cargill proposes to construct new fish screens that, depending upon which option is chosen, would involve activities that produce noise. These activities include sediment removal at the Coyote intake, installation of sheet piling around the perimeter of the pump station's pier, installing up to six conical 6.5-foot diameter fish screens and pipes near the Coyote pump station, and constructing access to the fish screens for routine and annual maintenance and any needed repairs. The fish screen installation would occur in the City of Newark. These six fish screens would each be supported by four piles that are driven deep into the earth using a crane-suspended vibratory hammer.

Cargill has identified two potential options for providing access to these fish screens from the existing embankment access road less than 350 feet away: either building an elevated, permanent platform supported by piles (pier), or building an earthen, raised embankment access road. The number of piles needed to support the fish screens is the same for both options at four 12-inch by 12-inch micropiles per screen for a total of up to 24 micropiles.

In Access Option 1, a true pier (pile-supported platform) for access to the fish screens would be constructed by driving up to 80 concrete piles, each measuring 18" by 18" square and 45 feet long. The pier support and fish screen support piles would each be driven 40 feet into the ground with a vibratory driver, where possible. It is likely that the last 5 to 10 feet of the piles would be driven into stiff material, which may require use of an impact hammer. Each pile would take up to 15 minutes to install; with most of the time being vibratory driving. The last 5 minutes of pile driving time for each pile may involve impact pile driving. Driving all up 104 piles would therefore take up to approximately 26 hours, with up to8.7 hours consisting of impact pile driving.

In Access Option 2, a short earthen embankment access road would be built but it does not require any supporting piles. (The fish screens themselves would still require the same 24 micropiles as they would for Access Option 1.) Cargill estimates that construction of Access Option 2 would require 5 to 8 months. The noise impact associated with Option 2 would be lower than with Option 1 because up to 80 fewer piles would be driven compared to Option 1.

Cargill also proposes to install sheet piles to create a reservoir into which water from the fish screens would be discharged for intake by the pumps. These sheet piles would be driven with a vibratory hammer, or pushed into the ground with heavy equipment. In addition, construction of the fish screens would also involve hauling materials to and removing excavated materials from the area, which may result in a slight increase in truck trips in the vicinity during the construction period.

The loudest construction noise would occur during impact pile driving, but that noise level when calculated at the nearest homes would create a less-than-significant impact compared to appropriate noise standards for maximum levels, standards for noise with an impulsive character, acceptable increases, and vibration. Currently noise levels at the nearest homes are about 57 – 60 dBA L_{eq}. Although other construction equipment may be operated in the vicinity of the Coyote Intake during the fish screen construction work, that other equipment's use and its noise contribution is already allowed under Cargill's current maintenance permit. Only the

new noise levels of impact pile driving or the somewhat quieter vibratory pile driving need consideration. As described in greater detail in Appendix F (Noise Calculations), the maximum noise levels from impact pile driving would be about 56.9 dB A L_{max} when measured at the nearest residences. This maximum noise level from impact pile driving by itself would be much lower than the maximum-allowed daytime construction noise limits of 86 dBA L_{max} for homes in Union City or Newark. The impulsive character of pile driving noise is potentially more intrusive, but that would also not result in a significant noise impact, due to the large distances involved. With a noise level at those nearest homes that reduces by distance to 56.9 dBA L_{max} (Table F-1), or as little as about 49 dBA L_{max} at the nearest homes when atmospheric attenuation is considered, impact pile driving noise is substantially lower than the maximum construction standard for impulsive noise.

The magnitude of the increase in noise levels would also be less than significant. The impact pile driving noise level when heard at the nearest homes 8,000 feet (1.5 miles) away would result in a noise level increase above ambient conditions of only about 0.3 dBA. That increase would not be significant because it is much less than the applicable threshold of significance of 3 dBA for such increases. When added to the ambient noise levels at these homes of about 57 to 60 dBA L_{eq}, this fish screen construction noise would mostly be inaudible. This construction noise would not constitute a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project. Temporary construction noise associated with fish screen construction would be minimal and occur only during daylight hours. After construction is complete, noise levels at these homes from the distant operation of these fish screens including their self-cleaning machinery will be inaudible and drop to existing levels.

Berm Keying

Under its existing permit, Cargill addresses indications of potential seepage through the berms through a process referred to as keying. Keying involves excavating an approximately 30-inch-wide section of the center of the berm to a depth of up to 9 feet. The excavated core section is backfilled with clean imported material with low organic content that is compacted in place. This process uses heavy equipment like an excavator, grader and scraper, as well as trucks to deliver imported materials to the berms. Under the proposed permit, Cargill would reduce the amount of such keying. Two miles of berm cores would be keyed under the proposed Project over a 10-year period. This is a reduction of approximately 50% relative to the baseline conditions, which reduces the need for imported soil by approximately 950 CY per year. The noise level of this keying work, when measured at the nearest homes, is between 61 to 85 dBA L_{eq} (Table F-1 in Appendix F) which is lower than the maximum allowable 86 dBA noise standard for construction work, and is part of the baseline. The keying work would not result in an increase in noise levels at any sensitive receptors. There would be no noise impact due to such reduced activity compared to baseline conditions.

Vinyl Sheet Pile Pilot Study

Cargill may conduct a vinyl sheet pile pilot study that would install approximately 500 to 600 linear feet of vinyl sheet pile along the inboard side of the berms along Pond P2-12 at Newark Plant 2. This study would evaluate the viability of using the sheet piles to reduce the risk of

erosion due to overtopping and increase resistance to permeation. Vinyl sheet piles would be driven using a vibratory driver or an excavator-mounted sheet pile driver. Because soils in the Project area are typically soft, low-impact energy drivers should be adequate for most vinyl sheet pile installation.

The nearest sensitive receptors to the study location for this vinyl sheet pile installation are condominiums along Seawind Way about 5,000 feet to the northeast in the westernmost portion of the FMC Parcel C residential subdivision, near Pond FMC-1. Those homes at 5,000 feet away would be exposed to vinyl sheet pile installation noise levels up to about 52.7 dBA L_{eq} (Table F-1). These projected noise levels could be less depending upon wind direction. Atmospheric attenuation over that long distance would reduce this construction noise by another approximately 5 dB to about 47.7 dBA L_{eq}. The total noise level from these homes' existing noise levels of between about 57 to 60 dBA L_{eq}, with the added noise from vinyl sheet pile installations of 47.7 dBA L_{eq}, would increase to at most about 57.5 to 60.3 dBA L_{eq}. That would be an increase of only about 0.3 dBA to 0.5 dBA above existing ambient noise levels. An increase of less than 1 dBA is not generally audible to people in such residential settings and is less than the 3 dB threshold of significance for increases in noise. Installation of vinyl sheet piles would not cause a significant noise impact at the nearest sensitive receptors.

Recreational Users of Nearby Trails

Recreational users on nearby trails could get close to heavy equipment while it is operating, and could therefore experience high noise levels on a short-term basis. Assuming local trail users choose to walk past operating heavy equipment rather than avoid areas with active maintenance, they could be exposed to noise levels in excess of 65 dBA (up to about 91 dBA) for a distance of up to 3,200 feet (1,600 feet in either direction from the operating equipment). At an average walking speed of 3 mph, trail users would be exposed to high levels of noise for up to 12 minutes. Given the short duration of the potential exposure and the opportunity to use other berms for recreation, the potential impact to recreational users of the berms or nearby trails is less than significant.

Project maintenance activity noise would not significantly impact the other nearby recreational facilities. Noise impacts on people using Bedwell Bayfront Park, the San Francisco Bay Trail, the Bayview Trail in Coyote Hills Regional Park, the Don Edwards San Francisco Bay National Wildlife Refuge, the Alameda Creek Regional Trail, the Newark Slough Trail, or Bayshores Park would be less than significant because recreational users would be transiting through or near the Project areas only briefly to access other portions of the recreational areas that would be further away from Project maintenance operations. Therefore, because the proposed Project would be in compliance with applicable thresholds, this noise impact to recreational users would be less than significant.

3.10.3.2 Impact NV-2: Ground-borne Vibration and Noise

Less than Significant Impact. Construction or maintenance activities can generate ground-borne vibration that causes annoyance to humans and in extreme cases cause physical damage to nearby buildings. Vibration levels depend upon the specific equipment used and which maintenance activities are involved. Ground-borne vibration is typically associated with the use

of pile drivers or heavy construction equipment. Vibration generated by construction equipment spreads through the ground and diminishes in amplitude with increasing distances. Table 3.10-4 shows the nearest sensitive receptors to Project activities that would generate vibration impacts. Table 3.10-5 shows the vibration levels generated by typical construction equipment.

Ground vibration consists of rapid waves that spread from the source location. Different methods are typically used to quantify the amplitude of vibration. One method uses the Peak Particle Velocity (PPV). The PPV is defined as a maximum instantaneous positive or negative peak of the vibration wave. In this report, the PPV descriptor with units of inch/second is used to evaluate construction-generated vibration for either building damage or human complaints. Also, FTA (2018) has developed vibration criteria based on building use. These criteria, also shown in Table 3.10-5, are based on overall root mean square vibration levels expressed in VdB.

Table 3.10-4. Distances from Nearest Sensitive Receptors to Vibration Producing Activities

Pond Complex	Approximate Distance From the Nearest Construction (Earthmoving) Activities (feet)[1]	Approximate Distance From the Nearest Pile-Driving Activities feet) [2]
Baumberg Pond B-3C - to Monterey Drive Homes	950	N/A
Newark Plant 1: Homes in FMC Parcel C at Hidden Harbor Way to Green Hornet Pump #2	450	N/A
Newark Plant 1: Newark Memorial High School to Pond CX-22	2,300	N/A
Newark Plant 1: Homes on Monterey Drive to Pond P1-1A by Coyote Intake Fish Screens	8,000	8,000
Newark Plant 2: Bridgeway homes on Seawind Way by Pond FMC-2	60	5,000
Redwood City: Trailer Villa RV Park to Pond RC-8W	75	3,500
Redwood City: Harbor Village Mobile Home Park	140	3,500
Redwood City: Anton Menlo Apartments to Pond RC-7C	140	3,500
Redwood City: Summit Preparatory Charter High School	1,400	N/A
Cargill West Bay – pipeline to Hamilton Hotel	900	N/A

Notes:
[1] The distances are measured from the edge of the pond closest to the sensitive receptors (residential uses). Earthmoving activities may occur anywhere within the pond complexes.
[2] The distances are measured from the location where pile driving would occur (typically at vinyl sheet pile study or fish screens site or water control facilities) to the nearest sensitive receptors.

Table 3.10-5. Vibration Source Levels for Construction Equipment

Equipment	Peak Particle Velocity at 25 ft. (in/sec)	Approximate Lv at 25 ft. (VdB) [1]
Pile Driver (Impact) upper range	1.518	112
Pile Driver (Impact) typical	0.644	104
Pile Driver (Vibratory) upper range	0.734	105
Pile Driver (Vibratory) typical	0.170	93
Vibratory Roller	0.210	94
Large bulldozer	0.089	87
Loaded trucks	0.076	86
Jackhammer	0.035	79
Small bulldozer	0.003	58

Source: FTA 2006, WSDOT 2010 (pile driver)
Notes:
[1] Lv is the velocity level in decibels (VdB) referenced to 1 µ inch/second and based on the root mean square (RMS) velocity amplitude.

Human sensitivity to ground-borne vibration is summarized in Table 3.10-6. Studies have shown that the threshold of perception for average persons is in the range of 0.008 to 0.012 in/sec PPV. The background vibration velocity level in residential areas is usually around 50 VdB. The FTA reports that the threshold of perception for humans is around 65 VdB. Although the perceptibility threshold is about 65 VdB, human response to vibration is not usually significant unless the vibration exceeds 70 VdB. Human perception of vibration varies with the individual and is a function of physical setting and the type of vibration. Persons exposed to elevated ambient vibration levels, such as people in an urban environment, may tolerate a higher vibration level.

Thresholds of Significance

A significant vibration impact would be identified if the construction or maintenance of the project's new activities would expose persons or homes to vibration levels exceeding 0.20 in/sec PPV. This is the level above which temporary vibration activities become distinctly perceptible, and is consistent with the threshold of significance identified by Caltrans (Caltrans 2020) for the potential to result in cosmetic damage to buildings of normal conventional construction. Consistent with FTA guidance, [26] the threshold at which vibration levels would be considered to result in a significant impact would be 80 VdB for daytime residential uses (FTA 2006).

[26] The Federal Transit Administration ("FTA") policies and guidelines are often utilized to assess impacts due to ground-borne vibration. The FTA recommends an 80 VdB threshold of significance at residences and buildings where people typically sleep (e.g., nearby residences).

Table 3.10-6. Reaction of People and Damage to Buildings from Continuous or Frequent Intermittent Vibration Levels

Velocity Level, PPV (in/sec)	Human Reaction	Effect on Buildings
0.012	Barely perceptible	No effect
0.035	Distinctly perceptible	Vibration unlikely to cause damage of any type to any structure
0.10	Strongly perceptible	Threshold at which there is a risk of damage to fragile buildings with no risk of damage to most buildings
0.25	Strongly perceptible to severe	Threshold at which there is a risk of damage to historic and some old buildings.
0.50	Severe - Vibrations considered unpleasant	Threshold at which there is a risk of damage to new residential and modern commercial/industrial structures

The Project would require limited maintenance activities that can generate vibration perceivable at a distance. These maintenance activities are not near enough to sensitive receptors to exceed the FTA's or Caltrans' vibration standards. Moreover, because these maintenance activities would occur during daytime, non-vibration-sensitive hours only, and because such activities would occur intermittently during the proposed 10-year term of the permit, vibration effects during this Project's operations would be less than significant. These vibration levels would not be great enough to cause structural damage in nearby buildings or to cause significant human annoyance impacts at the nearest sensitive receptors.

Table 3.10-4 provides the distances from this Project's pond complexes where vibration-generating maintenance activities would occur to the nearest sensitive receptors.

Fish Screen and Access Pier Installation

As shown in Table 3.10-7, the highest vibration associated with this Project's construction equipment would be generated by an impact pile driver at the Coyote Intake while installing fish screens. Vibration from such an impact pile driver could exceed both the FTA and Caltrans standards at a distance of 25 feet but there are no sensitive receptors within that distance. The use of trucks and bulldozers could also exceed FTA standards at 25 feet with respect to human annoyance for residential uses, and there are also no sensitive receptors within 25 feet of locations where this equipment would be used.

Table 3.10-7. Predicted Vibration Levels at Closest Sensitive Receptors from Maintenance Activities

Project Maintenance Sites (Closest Pond) [1]	Equipment Used [2] (Vibration Level at 25 feet)	Distance (feet)	PPV [3] (in./sec.)	Approximate L_V (VdB) [4]
Baumberg Pond (Pond B-3C)	Bulldozer (0.089 inches per second PPV)	950	0.0004	39.6
	Vibratory Pile Driver (0.170 inches per second PPV)	6,500	0.00004	20.6

Project Maintenance Sites (Closest Pond) [1]	Equipment Used [2] (Vibration Level at 25 feet)	Distance (feet)	PPV [3] (in./sec.)	Approximate L_V (VdB) [4]
Newark Plant 1 (Pond P1-4B)	Bulldozer (0.089 inches per second PPV)	450	0.001	49.3
	Vibratory Pile Driver (0.170 inches per second PPV)	450	0.002	55.3
Newark Plant 1 (Pond P1-1A) Coyote Intake Fish Screens and Access Pier	Impact Pile Driver (0.644 inches per second PPV)	8,000	0.0001	28.8
	Vibratory Pile Driver (0.170 inches per second PPV)	8,000	0.0003	17.8
	Vibratory Roller (0.210 inches per second PPV)	8,000	0.0004	18.8
	Vibratory Roller (*150 feet to recreational trail)*	150	0.143	79.7
Newark Plant 2 (Ponds FMC-1. -2, -3, -4)	Bulldozer (0.089 inches per second PPV)	60	0.0239	75.6
	Excavator (0.089 inches per second PPV)	1,000	0.0035	38.9
	Vibratory Pile Driver (0.170 inches per second PPV)	5,000	0.00006	24.0
Redwood City (Pond RC-8W)	Bulldozer (0.089 inches per second PPV)	75	0.017	72.7
	Excavator (0.089 inches per second PPV)	140	0.007	64.6
	Vibratory Pile Driver (0.170 inches per second PPV)	3,500	0.0001	28.6
Cargill West Bay (Pipeline)	Bulldozer or excavator (0.089 inches per second PPV)	1000	0.0004	38.9

Notes:
[1] Pond that is closest to a sensitive receptor which is typically a residence.
[2] Assumed peak particle velocity (PPV) (bulldozer) = 0.089 in./sec. at 25 feet; PPV (vibratory pile driver) = 0.170 in./sec. at 25' for typical vibratory pile drivers; PPV (impact pile driver) = 0.0644 in./sec. at 25' for typical impact pile drivers. Equipment with the maximum vibration levels is shown for those locations.
[3] PPV at 25 feet is based on FTA 2006. To calculate PPV at other distances, the following equation (FTA 2006) was used: PPV at distance D = $PPV_{(at\ 25\ ft)}$ * [(25/D)^1.5]
[4] Vibration levels generated by pile driver and/or other construction equipment as designated in the second column– $L_v(D) = L_{v(25\ feet)}$ - 30 x Log(D/25) where D = Distance from source to sensitive receptor

Impact or vibratory pile driving would typically occur far from residences and the soft site soils would be expected to dampen vibrations. Ground-borne vibration impacts to Category 2 (i.e., residential) locations are generally considered to be less than significant if the vibration source is more than 200 feet from the sensitive location. The mobile homes and RVs south of the Redwood City Plant are the only residences within 200 feet of any portion of the Project area. No pile driving is being proposed for the berms immediately north of these residences. Other

new residences are being built as close as about 60 feet to berms at Newark Plant 2 Ponds FMC-1, -2, and -3 but no pile driving is proposed within about 5,000 feet of those new homes.

The primary source of ground-borne vibrations during fish screen installation and access pier construction at the Newark Plant 1 Coyote Intake would be the temporary use of an impact pile driver. At a distance of 1.5 miles from fish screen installation work to the nearest homes on Monterey Drive, that work would result in a vibration level of only about 0.0001 PPV in/sec at these homes (Table 3.10-7). That vibration level would not be perceptible or cause annoyance impacts to these residents or any physical damage to their homes. As the nearest recreational trail is located at least 150 feet to the fish screen-related pile driving work, vibratory impacts to recreational users would be negligible with vibration levels less than applicable standards. Human exposure to such equipment noise would be brief. Heavy equipment use near this trail is already permitted under Cargill's existing maintenance permit. People walking nearby during such recreational activities are not considered to be sensitive receptors (i.e., would not experience sleep-disturbance or annoying interference with their work or household activities). Therefore, any vibration-related impacts during the fish screen installations would be less than significant.

Other Maintenance Activities

As discussed in the noise analysis, most activities to be conducted pursuant to the proposed Project would use heavy construction equipment. Use of this equipment could result in ground-borne vibration; however, the exposure of sensitive receptors (nearby residents) to annoying or damaging ground-borne vibration is unlikely to occur, and the duration or frequency of perceptible vibration is unlikely to increase (refer to Appendix F).

The closest activity proposed near residential receptors is berm maintenance. Berm maintenance activities could occur as close as 60 feet from the closest residences. At that distance, berm maintenance could generate a vibration level up to about 0.0239 PPV in./sec. and 75.6 VdB at the closest homes. That vibration level could be perceptible but it is less than the 80 VdB standard for human annoyance impacts and much less than the 0.20 PPV in./sec. standard for structural damage to those homes. Berm maintenance currently occurs at these locations; increased berm maintenance required to maintain berms newly made drivable would occur at substantially greater distances from residences. Other activities, including major and minor repairs, lock access, sediment removal at intakes, riprap placement, stockpile management, berm gap filling, berm keying, increasing the berm heights at Ponds P2-12 and P2-13, and the vinyl sheet pile pilot study would use similar equipment but occur at a greater distance from residents, and would result in lower levels of ground-borne vibration. In many cases ground-borne vibration would be the same as for existing activities, or would be imperceptible.

All of the predicted vibration levels from this Project's heavy equipment or pile driver use would be less than the FTA's maximum-acceptable threshold of significance for ground-borne vibration of 80 VdB with respect to human annoyance for residential uses. Where vibration levels would exceed 70 VdB as shown in Table 3.10-7 along berms within 60 to 75 feet of residences, that exceedance is already allowed by Cargill's existing permit. Nearly all of the

predicted vibration levels from this Project's activities would also be less than the Caltrans' recommended standard with respect to the prevention of structural building damage of 0.20 in/sec PPV for normal wood-framed residential structures. Only homes along Seawind Way which are located about 60 feet from the nearest berm at Newark Plant 2 Ponds FMC-1, -3, and -4 could be exposed to vibration levels slightly greater than the 0.20 in/sec PPV standard, but Cargill's existing permit already allows that same existing maintenance activity as part of this Project's baseline conditions and Cargill is not proposing noisier or more intensive construction work there. Therefore, the vibration effects from the proposed Project's operations would be less than significant.

Mitigation Summary

The Project would not result in any potentially significant impacts from noise or vibration; therefore, no mitigation is required.

3.11 TRANSPORTATION

3.11.1 Environmental Setting

As described in the Project Description (Section 2), the Project area is located on both sides of the Bay, on the east side near Newark and on the west side near Redwood City. Both Project areas are in industrial zones, with commercial and residential areas nearby. The eastern Project area (Newark Plants 1 and 2) is approximately one mile from downtown Newark, and the western Project area, the Redwood City Plant, is approximately one mile from downtown Redwood City. Interstate 880 is a feeder highway to the Newark area but does not pass through or adjacent to the Project area. State Route 84 and the Dumbarton Bridge are the only major highways passing through the Newark Plants 1 and 2; other public roads only pass along the boundary. Central Avenue is the main surface street to the Cargill main salt refining facility and Newark Plants 1 and 2. The Redwood City Plant is served by U.S. 101 and surface street Seaport Boulevard. The Cargill West Bay areas are accessible via frontage roads and portions of the drivable berms.

The proposed Project would continue to use existing transportation systems. No new roadways would be created to implement the proposed Project activities. Newark Plants 1 and 2 would be accessed by Central Avenue, and the Redwood City Plant would be accessed via Seaport Boulevard. In general, current traffic patterns under existing Cargill maintenance operations would remain.

Traffic on the local connecting roadways and freeway system would result from moving Project equipment and materials into and out of the Project area. Activities that may involve the movement of soil or other materials include maintaining berms, making berms drivable, riprap repairs, keying, and intake structure maintenance (sediment removal). These and other activities, such as maintenance of structures, may also require heavy equipment to travel to the Project area.

Cargill will continue its current practice of using existing stockpile materials and accepting clean material (soil and riprap) from local sources for berm maintenance, limiting the distance and number of truck trips. Clean materials imported for berm and salt pond maintenance activities may be imported at any time of year, because the schedule is driven by the projects supplying the materials. In addition, sediment removal for each intake structure would typically be required every three to five years at a given structure, but some work could occur at various structures in any given year.

The Project area does not include any mass transit. The Project area does include USFWS trails and a section of the Bay Trail.

In September 2020 Cargill completed the Plummer Slough Bridge project. As a result of that project, most of the heavy vehicular and equipment movement associated with salt production has been rerouted from an existing dirt roadway adjacent to a new residential development and proposed public trail, to an existing internal roadway.

3.11.2 Regulatory Setting

Federal and state laws and regulations pertaining to this issue area and relevant to the Project are described in Table D-1. Caltrans has authority over the state highway system, including mainline facilities and interchanges. Caltrans is responsible for the planning, design, and construction of highway improvements, as well as for operations and maintenance. Regional and local agencies have jurisdiction over the transportation network and circulation in and around the Project area. The Metropolitan Transportation Commission is the regional transportation planning, financing and coordinating agency for the nine-county San Francisco Bay Area. In addition, the Bay Plan contains policies that may be applicable to this resource area.

Pursuant to Senate Bill 743 (Steinberg 2013), the focus in evaluating transportation impacts under CEQA has shifted from traffic delays (Level of Service [LOS]) to total vehicle miles traveled (VMT) (OPR 2018). The intent of SB 743 is to bring analysis of transportation impacts under CEQA more into alignment with the State's overall goals to increase long-term sustainability by encouraging infill development, increasing reliance on mass transit, and reducing GHG emissions. SB 743 does not preclude local jurisdictions from setting LOS targets; however, a project's conformance with LOS standards is addressed as part of its conformance with plans and policies. The VMT analysis is intended to focus on automobile and light-duty truck trips; heavy duty truck trips can be included in the analysis for convenience (OPR 2018). Impacts associated with heavy duty vehicles are addressed in the noise, air quality, and greenhouse gas analyses of this EA.

The requirements from SB 743 are implemented in CEQA Guidelines §15064.3 Subdivision (b). To connect the analysis part of those guidelines, the Technical Advisory on Evaluating Transportation Impacts in CEQA (OPR 2018) describes a series of "screening thresholds" to identify when a project should be expected to cause less-than-significant impact without conducting a detailed study. As discussed in the document, the screening threshold for small projects is "Absent substantial evidence indicating that a project would generate a potentially significant level of VMT, or inconsistency with a Sustainable Communities Strategy (SCS) or general plan, projects that generate or attract fewer than 110 trips per day generally may be assumed to cause a less-than-significant transportation impact."

The Alameda County Transportation Commission (ACTC) is responsible for the county-wide transportation planning in that county. This includes highway and roadway improvements and the operation of public transit systems, shuttles, and carpool, bicycling and pedestrian programs. In addition, this agency is responsible for long range regional transportation planning in coordination with the MTC. The ACTC prepares and updates the Countywide Transportation Plan, the long-range planning and policy document that guides future transportation decisions for all modes and users in Alameda County.

The City/County Association of Governments (C/CAG) is the Congestion Management Agency for San Mateo County authorized to set state and federal funding priorities for improvements affecting the San Mateo County Congestion Management Program (CMP) roadway system. The C/CAG is required to prepare and adopt a CMP on a biennial basis. The purpose of the CMP is to

identify strategies to respond to future transportation needs, develop procedures to alleviate and control congestion, and promote countywide solutions. The CMP is required to be consistent with the MTC planning process that includes regional goals, policies, and projects for the Regional Transportation Improvement Program (C/CAG 2019). C/CAG-designated CMP roadway system components in Redwood City and Menlo Park include SR 82 (El Camino Real), SR 84 (Woodside Road), U.S. 101, and I-280. C/CAG-designated CMP intersections in or near Redwood City include El Camino Real/Whipple Avenue, Bayfront Expressway/Marsh Road (borders Redwood City), and Woodside Road/Middlefield Road.

C/CAG has adopted guidelines as a part of its CMP, which are intended to reduce the regional traffic impacts of substantive new developments. The guidelines apply to all projects in San Mateo County that will generate 100 or more net new peak-hour trips on the CMP network and are subject to CEQA review.

3.11.2.1 San Francisco Bay Plan

The Bay Plan (BCDC 2020) Transportation Finding i may be relevant to the transportation analysis in this EA:

- A continuous network of paths and trails linking shoreline communities and crossing the Bay's bridges is a vital component in a regional transportation system and provides travel alternatives to the automobile.

In addition, the following Bay Plan policies pertain to the transportation analysis:

Recreation Policy 3a. Recreational facilities, such as waterfront parks, trails, marinas, live-aboard boats, non-motorized small boat access, fishing piers, launching lanes, and beaches, should be encouraged and allowed by the Commission, provided they are located, improved and managed consistent with the following standards:

General Recreational facilities should:

1. Be well distributed around the shores of the Bay to the extent consistent with the more specific criteria that follow. Any concentrations of facilities should be as close to major population centers as is feasible;
2. Not pre-empt land or water area needed for other priority uses, but efforts should be made to integrate recreation into such facilities to the extent that they are compatible;
3. Be feasible from an engineering viewpoint; and
4. Be consistent with the public access policies that address wildlife compatibility and disturbance.

In addition:

5. Different types of compatible public and commercial recreation facilities should be clustered to the extent feasible to permit joint use of ancillary facilities and provide a greater range of choices for users.

6. Sites, features or facilities within designated waterfront parks that provide optimal conditions for specific water-oriented recreational uses should be preserved and, where appropriate, enhanced for those uses, consistent with natural and cultural resource preservation.
7. Access to marinas, launch ramps, beaches, fishing piers, and other recreational facilities should be clearly posted with signs and easily available from parking reserved for the public or from public streets or trails.
8. To reduce the human health risk posed by consumption of contaminated fish, projects that create or improve fishing access to the Bay at water-oriented recreational facilities, such as fishing piers, beaches, and marinas, should include signage that informs the public of consumption advisories for the species of Bay fish that have been identified as having potentially unsafe levels of contaminants.
9. Complete segments of the Bay and Ridge Trails where appropriate, consistent with policy 4-a-6.

Public Access Policy 10. Access to and along the waterfront should be provided by walkways, trails, or other appropriate means and connect to the nearest public thoroughfare where convenient parking or public transportation may be available. Diverse and interesting public access experiences should be provided which would encourage users to remain in the designated access areas to avoid or minimize potential adverse effects on wildlife and their habitat.

3.11.2.2 City Goals and Policies

The cities of Hayward, Fremont, Newark, Redwood City, and Menlo Park have jurisdiction over their respective city streets, bike paths, public trails, and parking facilities in the Project area. These cities have adopted general plans that include strategies and policies regarding operation and maintenance of their respective transportation networks.

The following provides a general summary of applicable goals and policies from each of the cities' adopted general plan:

- Protect residential neighborhoods from intrusion of truck traffic by maintaining and enforcing an efficient system of designated truck routes (City of Fremont, City of Hayward, and City of Newark).
- Support measures that encourage through truck traffic to use interstate highways rather than local truck routes (City of Fremont and City of Hayward).
- Balance the safe and efficient movement of goods with local access and circulation needs (City of Hayward and City of Redwood City).
- Reduce vehicle miles traveled and dependency on motor vehicles through land use and transportation strategies (City of Hayward and City of Newark).
- Promote and coordinate the planning of pedestrian and bicycle trail systems with affected jurisdictions and organizations (City of Fremont, City of Newark and City of Redwood City).

- Maintain the minimum level of service (LOS) at signalized intersections during the peak commute periods (City of Fremont, City of Hayward, City of Menlo Park and City of Newark).

3.11.3 Impact Analysis

Potential impacts associated with transportation would be considered significant if implementation of the proposed Project would do any of the following:

- Conflict with a program, plan, ordinance or policy addressing the circulation system
- Be inconsistent with CEQA Guidelines Section 15064.3 Subdivision (b), or
- Adversely affect emergency access

Potential transportation-related impacts are evaluated relative to these significance criteria.

3.11.3.1 Impact TT-1: Conflict with a Program, Plan, Ordinance or Policy Addressing the Circulation System

Less than Significant Impact. Overall, the volume of trucks will vary from year to year and month to month. The Project may result in an increase in vehicle trips in the vicinity of Newark Plants 1 and 2, and the Redwood City Plant. The slight increase in vehicle trips would be associated with materials imported into and out of the site due to increased berm maintenance, berm gap filling, increased lock access and egress, and removal of sediments from intake structures, among others. A decrease in keying is proposed, resulting in decrease of vehicle trips for this activity. Passenger car trips for all activities, if any, would be minimal, and would be limited to contractor employees, should Cargill increase the amount of maintenance work contracted out.

Current operations require approximately 16,200 CY of imported material per year. Some material for stockpiles is delivered to Newark Plant 2 and a smaller portion is delivered to the Redwood City Plant. This material is delivered directly to a designated stockpile located within the Project area by the contractor providing the material. With the proposed operations, it is anticipated that up to approximately 18,000 CY of imported material would be required during a typical year, and as much as 22,700 CY could be required during a year with higher levels of activity. Cargill would continue reuse excavated soils on-site to the degree feasible to minimize the need for imported material.

The volume of trucks will vary from year to year and month to month. The incremental volume associated with the proposed Project is approximately 1,800 CY/year. The delivery schedule and truck sizes for imported material will be set by the project providing the material, so it is possible that Cargill may receive a greater volume of material on occasion, but there will not be more than the current level of up to 120 truck trips per day.

Based on these projections, the relatively small change in traffic would not conflict with a program, plan, ordinance or policy. These new and modified maintenance activities for the proposed Project would not be expected to have a significant impact based on the TT-1 criterion.

The Project may temporarily increase lock access and egress events for salt pond maintenance. The locks provide access to the salt ponds when berms in the vicinity of the salt pond are not drivable. The increase in events is anticipated to occur in the beginning of the Project and is expected to decline over time as more of the berms are made drivable and more work on the berms can be accomplished from the tops of the berm. An average of approximately two locks per year could be accessed over the 10-year permit period. If an increase in heavy equipment would be required due to the increase of lock access and egress events, it would be temporary and minimal.

Temporary short-term closures of the USFWS trails and the Bay Trail may occur due to the proposed Project. During berm maintenance, access to the berms may be needed through these trails and may require brief closures. A Traffic Management Plan (TMP) would also be prepared if access to a work location involves routine heavy equipment access or numerous truck trips via a berm that receives frequent public use.

During construction, there would not be any conflicts with a Congestion Management Plan, Countywide Transportation Plan, Bay Plan, and the various Cities' General Plans within the Project limits, because the increase in traffic is nominal and temporary. Truck trips are generally not expected to use public streets and highways during the peak hours. The types of trucks delivering materials typically travel during off-peak hours. Changes in traffic volumes are minimal relative to background traffic, and there are no conflicts with relevant programs, plans, ordinances, or policies from affected jurisdictions.

In addition, Cargill has recently completed the Plummer Slough Bridge project which has rerouted heavy vehicular and equipment movement associated with salt production from an existing dirt roadway adjacent to a new residential development and proposed public trail to an existing internal roadway. This minimizes potential effects to the new housing development located immediately north of Central Avenue between Willow Street and Hickory Street. Preparation of a TMP (Section 2.12.5), if required, would further reduce any potential impact. The TMP would provide strategies for managing heavy vehicle traffic, especially during peak hours, and identify established truck routes. The TMP would also coordinate and address the closures on the public trails, if needed. Cargill will also implement BMPs to provide notification regarding planned work on berms. Based on the evaluation of transportation effects of the proposed Project, Impact TT-1 is a less than significant impact.

3.11.3.2 Impact TT-2: Consistency with CEQA Guidelines Section 15064.3 Subdivision (b) Less than Significant Impact. The proposed Project would continue to require imported material deliveries for maintenance. Cargill estimates that there would be an average annual increase of approximately 10% compared to the current imported material volume. Imported material could be delivered in smaller, on-going deliveries, or in a series of larger import events. Material delivery events would result in no more than 120 truckloads per day, as is the current practice. Deliveries would occur over a slightly longer period of time to provide the additional

approximately 1,800 CY of imported material each year. Imported material could be delivered to either Newark Plant 2 or the Redwood City Plant.

Cargill's maintenance practices would continue to minimize the increase in VMT by reusing soils on-site when possible. This practice would minimize the need for materials that would be imported from further away and reduce the amount of sediments removed from the site, which would minimize overall truck trips and truck travel. Therefore, the VMT increase would be minimized due to Cargill's proposed operating strategies.

Based on the Technical Advisory on Evaluating Transportation Impacts in CEQA, if the Project does not generate more than additional 110 permanent trips per day, the Project is assumed to result in a less than significant transportation impact. Consequently, given that existing traffic volumes would not be exceeded, the proposed Project would not conflict with or be inconsistent with CEQA Guidelines section 15064.3.

3.11.3.3 Impact TT-3: Emergency Access

Less than Significant Impact. The Project's effect on Central Avenue and Seaport Boulevard and other local roads is a nominal increase in truck traffic. No adverse effects on emergency access are anticipated. The TMP would ensure that adequate emergency access is provided during any maintenance activities along roads. Therefore, the impact for TT-3 is less than significant.

3.11.4 Mitigation Summary

The Project would not result in significant impacts; therefore, no mitigation is required.

3.12 TRIBAL CULTURAL RESOURCES

This section analyzes the potential for the Project to have an adverse impact on tribal cultural resources.

3.12.1 Environmental Setting

Section 3.5.1 describes the environmental setting for tribal cultural resources.

3.12.2 Regulatory Setting

Federal and state regulations pertaining to Tribal Cultural Resources are described in Table D-1. As discussed in Section 3.5.2.1, the Bay Plan (BCDC 2020) Environmental Justice and Social Equity Finding c acknowledges that tribal issues have not been expressly accounted for in the Bay Plan, so for purposes of this EA BCDC's analysis of tribal issues is informed by CEQA requirements. Section 3.5.2 provides a discussion of local polices and regulations pertaining to cultural resources.

AB 52, approved in 2014, established a new category of resources under CEQA called "tribal cultural resources." According to section 21074 of the Public Resource Code:

> "(a) "Tribal cultural resources" are either of the following: (1) Sites, features, places cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following: (A) Included or determined to be eligible for inclusion in the California Register of Historic Resources, or (B) Included in a local register of historic resources as defined in subjection (k) of Section 5020.1; or (2) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.
>
> (b) A cultural landscape that meets the criteria of subdivision (a) is a tribal cultural resource to the extent that the landscape is geographically defined in terms of the size and scope of the landscape.
>
> (c) A historical resource described in Section 21084.1, a unique archaeological resource as defined in subdivision (g) of Section 21083.2, or a "nonunique archaeological resource" as defined in subdivision (h) of Section 21083.2 may also be a tribal cultural resource if it conforms with the criteria of subdivision (a)."

PRC Section 21084.2 states that a "project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant impact on the environment." To assist in determining whether a project may have an impact on a tribal cultural resource, a CEQA lead agency is required to consult with any California Native American tribe that requests consultation and is traditionally and culturally affiliated with the geographic area of a proposed project. No Native American tribes have requested consultation from BCDC regarding projects in its jurisdiction.

3.12.3 Consultation Results

Native American tribes traditionally and culturally affiliated with the Project area have not requested consultation pursuant to PRC Section 21080.3.1. BCDC initiated tribal consultation in June 2020 by requesting a list of tribal representatives from the Native American Heritage Commission, as well as a search of NAHC's Sacred Lands file. On July 20, 2020, BCDC sent letters to the tribal representatives provided by NAHC. The letters notified the tribal representatives of the proposed Project and invited them to provide comments regarding the Project, share any information regarding possible Native American cultural resources which could potentially exist on the Project site, and identify any other potential concerns related to the proposed Project.

BCDC followed up with phone calls to the tribal representatives in August 2020. At that time, the Amah Mutsun Tribal Band of Mission San Juan Bautista indicated that the Project site is outside of their area, and therefore they would have no comment on the Project. Phone calls were made again in December 2020 and representatives of three tribes were reached for comment. The Amah Mutsun Tribal Band[27] representative indicated at that time that the Project is outside of their area, and therefore they would have no comment on the Project. The representative of the Indian Canyon Mutsun Band of Costanoan commented verbally that she recommends that there be an archaeological monitor and a Native American monitor present during any earth moving activity. The representative of the Ohlone Indian Tribe commented verbally that he affirms and supports the mitigation measures listed in this document.

3.12.4 Impact Analysis

Potential impacts associated with tribal cultural resource would be considered significant if implementation of the proposed Project would:

- Cause a substantial adverse change in the significance of a tribal cultural resource as defined in PRC Section 21074 that is:
    1) listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in PRC Section 5020.1(k), or
    2) a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to the standard set forth in subdivision (c) of PRC Section 5024.1. In applying the criteria set forth in PRC, Section 5021.1(c), the lead agency shall consider the significance of the resource to a California Native American tribe.

Potential impacts related to tribal cultural resources are evaluated relative to these significance criteria.

[27] While their names are similar, The Amah Mutsun Tribal Band of Mission San Juan Bautista and the Amah Mutsun Tribal Band are separate tribes.

3.12.4.1 Impact TCR-1: Substantial Adverse Change in the Significance of a Tribal Cultural Resource that is listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources a resource determined to be by the lead agency to be significant

Less than Significant with Mitigation. As stated in Section 3.5, a records search of all pertinent survey and document data was conducted of the CHRIS, located at the Northwest Information Center, Sonoma State University, on November 21, 2019 and January 28, 2020. The record search location and results were reviewed in February of 2024 and it was determined that the proposed areas of potential new excavation if fish screens are installed were included in that research. The records search indicated that no previously recorded archeological resources have been identified on the Project site; however, recorded Native American sites have been recorded near the study area. The proposed Project would not result in a substantial adverse change in the significance of any known tribal cultural resources. BCDC requested a record search of the NAHC's Sacred Lands File, which resulted in a notification that the result of the check of the file was positive, but no further information on this subject was received from the NAHC or the tribal representatives. Consultation with Native American tribes has been offered and initiated by BCDC to all tribal representatives identified by the NAHC. Section 3.12.3 provides additional information.

While no impacts to tribal cultural resources have been identified to date, a mitigation measure has been added in the event that previously unknown tribal cultural resources are encountered during excavation activities. In addition, mitigation measures have been included in Section 3.5, Cultural Resources, that would serve to protect cultural resources in the event any are inadvertently encountered during the various maintenance activities of the Project. With implementation of mitigation measure MM TCR-1, MM CUL-1 and MM CUL-2, (the latter two are described in Section 3.5), this impact would be less than significant.

- Mitigation Measure (MM) TCR-1: Inadvertent Encounter of Undiscovered Tribal Cultural Resources.

If Native American cultural resources are encountered during ground-disturbing activities, an archaeological consultant shall review, identify, and evaluate the find to determine if the discovery could qualify as a tribal cultural resource, as defined in Public Resources Code Section 21074. Tribal representatives culturally affiliated with the site shall be consulted regarding this determination. If the discovery is determined to qualify as a tribal cultural resource, it shall be subject to treatment/mitigation that prevents an adverse effect on the resource, in accordance with Public Resources Code Section 15064.5. Mitigation shall be determined through consultation between BCDC and the tribe(s).

3.12.5 Mitigation Summary

Implementation of the following mitigation measures would reduce potential Project-related impacts to tribal cultural resources to less than significant.

- MM TCR-1: Inadvertent Encounter of Undiscovered Tribal Cultural Resources
- MM CUL-1: Inadvertent Encounter of Undiscovered Archaeological Resources
- MM CUL-2: Inadvertent Encounter of Human Remains

3.13 UTILITIES AND SERVICE SYSTEMS

3.13.1 Environmental Setting

There is no potable water or wastewater service within the Project area, and maintenance activities in the Project area would not affect any water or wastewater pipelines. Stormwater is contained within the Project area; during extreme storm events, some rainwater may be discharged via low salinity ponds, as described in Section 2.12.4. Electrical power in the Project area is supplied by PG&E. Cargill is typically a net importer of clean soil and concrete material.

3.13.2 Regulatory Setting

There are no federal or state regulations that are applicable to this resource area, nor are there any applicable Bay Plan policies. The following subsections summarize the local goals, policies, and/or regulations applicable to this issue area.

3.13.2.1 City of Fremont

The City of Fremont General Plan includes the following applicable goal and policy:

- Goal 9-6: Solid Waste Diversion - Waste diversion maximized with the long-term objective of eliminating landfill waste.
- Policy 9-6.1: Increase Waste Diversion - Divert more of the City's solid waste stream to beneficial reuse, with a long term objective of eliminating landfill waste.

3.13.2.2 City of Hayward

The City of Hayward General Plan contains the following goal and policy that may be applicable to the proposed Project:

- GOAL PFS-7 Minimize the generation of solid waste, increase recycling, and provide for the collection and disposal of solid waste.
- Policy PFS-7.12 Construction and Demolition Waste Recycling. The City shall require demolition, remodeling and major new development projects to salvage or recycle asphalt and concrete and all other nonhazardous construction and demolition materials to the maximum extent practicable.

3.13.2.3 City of Menlo Park

The City of Menlo Park General Plan's Open Space/Conservation, Noise and Safety Element contains the following policy that may be applicable:

- Policy OSC4.8 Waste Diversion. Develop and implement a zero waste policy, or implement standards, incentives, or other programs that would lead the community towards a zero waste goal.

3.13.2.4 City of Newark

The City of Newark General Plan does not contain any relevant policies.

3.13.2.5 City of Redwood City

The Redwood City General Plan's Built Environment element contains the following goals and policies that may apply to this resource area:

- GOAL BE-45: Minimize the volume of solid waste that enters regional landfills.
- Policy BE-45.1: Meet or exceed State mandates regarding the diversion of waste from landfills.
- Policy BE-45.2: Encourage recycling, composting, and source reduction by residential and non-residential sources in Redwood City.

3.13.3 Impact Analysis

Potential impacts associated with utilities and service systems would be considered significant if implementation of the proposed Project would generate excess solid waste such that the capacity of local landfills would be adversely affected, thereby accelerating the need for new or expanded landfills.

3.13.3.1 Impact UTIL-1: Excess Generation of Solid Waste

Less than Significant Impact. Cargill accepts clean soil and riprap (repurposed concrete) material for use in berm maintenance, thus diverting solid waste from landfills. Some excavated soil or sediment may also be disposed of at area landfills because the material does not meet the geotechnical criteria for soil reuse. Other solid waste disposal would include small amounts of maintenance-related trash and recyclable material. There would be sufficient capacity at existing facilities, and the proposed Project would not accelerate the need for new or expanded landfills.

3.13.4 Mitigation Summary

The Project would not result in significant impacts to utilities and service systems; therefore, no mitigation is required.

3.14 ALTERNATIVES TO THE PROJECT

When undertaking an EA as the lead agency for CEQA purposes, BCDC regulations require that BCDC describe any feasible alternatives, including design alternatives, to the proposed project that would reduce any substantial adverse environmental impacts identified for the proposed project (14 CCR § 11521(e)). As stated in Section 1, the Project purpose is to continue maintenance and operational activities at Cargill's solar salt systems in Newark and Redwood City in a safe and environmentally protective manner over the next 10 years. The Project objectives include:

- Continue conducting various activities necessary to maintain the integrity and stability of earthen berms, water control structures, and other infrastructure associated with salt-making to ensure continued viability of salt production activities;
- Allow for implementation of preliminary sea level rise adaptation efforts, including studies; and
- Permit Cargill to develop and implement alternative maintenance methods, as discussed in this EA, that may further reduce the effects of maintenance activities on the environment, improve efficiency, and/or adapt to changing climate conditions, where appropriate.

There are no feasible design alternatives to the proposed Project that would reduce the potential impacts associated with the proposed Project. CEQA typically requires analysis of the No Project alternative. In this case, ceasing to conduct maintenance would mean that it would become harder and harder for Cargill to conduct salt-making operations because pumps and other essential equipment would begin to fail. Salt pond berm maintenance is required to prevent overtopping and long-term weakening of the berms. If no berm maintenance occurs, it is likely that within the term covered by the proposed Project one or more berms would breach and brine would be released to the Bay. Once one berm is breached, the increased water levels in the breached pond would put pressure on adjacent berms, and a cascade effect of breaching may ensue. There could also be flooding effects on surrounding areas as the incidental flood management function provided by the salt ponds is lost. Therefore, because the No Project alternative would not meet the Project objectives and may lead to substantial adverse environmental consequences, the No Project alternative is not considered feasible.

Another alternative to the proposed Project could be to conduct more limited maintenance activities by, for example, deferring any SLR adaptation activities. Conducting more limited maintenance activities would have the same result as the No Project alternative in the long-term: Cargill facilities would continue to deteriorate and/or berms would breach given the reality that SLR will begin to impact the Project site. While this outcome would likely occur later than under the No Project alternative, this alternative would not meet the objectives of allowing Cargill to continue to operate the solar salt system and to conduct preliminary SLR adaptation.

Consequently, there are no feasible alternatives to the Project that would reduce substantial adverse effects. Furthermore, the BMPs included as part of the proposed Project would reduce most potentially significant adverse effects to a less-than-significant level. The few impacts that are potentially significant can be mitigated to a less-than-significant level.

3.15 CUMULATIVE AND IRREVERSIBLE EFFECTS

3.15.1 Cumulative Effects

Cumulative impacts occur when the combined effects of past projects, the current projects identified in the Project vicinity, and probable future projects would result in a substantial adverse impact.

Cumulative projects consist of two categories: 1) restoration projects and other projects with similar types of activities (e.g., maintenance of berms and water control structures), and 2) development projects that could contribute to traffic, noise, and air quality impacts during and following construction. There are seven restoration and related projects that have been identified for purposes of the cumulative impacts analysis for the proposed Project:

- Eden Landing Restoration Project occurring north of Newark Plant 1,
- South Bay Salt Pond Restoration Project Alviso (south of Newark Plant 2)
- Ravenswood Restoration Project (south of the Redwood City Plant)
- South San Francisco Bay Shoreline Project (south of Newark Plant 2)
- Cargill's proposed Mixed Sea Salt Enhanced Processing and Removal Project
- Cargill's recently completed Plummer Creek a bridge and head gate structure, and
- Port of Redwood City deepwater channel dredging (the channel was dredged in fall 2023 to remove accumulated sediment; this is referred to as maintenance dredging).

The three restoration projects and the South San Francisco Shoreline Project are either in the permitting or construction stage. The MSS Project is in the development stage and would involve enhanced processing and removal of MSS from Ponds P2-12 and P2-13. Cargill's SLR Assessment, which assumed that berms would remain at their current elevations (i.e., that Cargill would not increase the height of the berms), identified the second most significant mid-term risk of SLR to the Project area as the susceptibility of the MSS ponds to berm overtopping and potential scour-related failure during a 100-year storm surge. This risk is projected to become significant after mid-century (2050). The goal of the MSS Project, a collaboration with EBDA, is to ensure that the MSS will be fully processed and removed prior to mid-century. The MSS project would deploy innovative technology to achieve enhanced recovery of commercial product from the MSS. Residual salts would then be blended into the EBDA wastewater conveyance system for ultimate discharge into the Bay, in full compliance with EBDA's NPDES permit. A key element of the MSS project is increased pumping of water from Plummer Creek. As described in the Draft EIR for the MSS project, to obtain water to dissolve the MSS, a new pump station (the Plummer Creek Pump Station) would be installed in the FMC ditch that would pump water indirectly from Plummer Creek to a new dissolution water pond. This would be achieved by connecting the existing head gate structure on Plummer Creek via an existing 48-inch corrugated high-density polyethylene (HDPE) pipe through the berm to a new 48-inch corrugated HDPE pipe that would connect to the collection chamber, or wet well, of the Plummer Creek Pump Station. The estimated pumping rate for the new pump station would be

up to 3,400 gpm, or 15 acre-feet per day. If maximum pumping is conducted year-round, this would equate to 5,475 acre-feet per year, an approximately 90% increase over the estimated maximum intake from Plummer Slough (6,000 afy) under the proposed Project.

A non-binding term sheet for this proposed project was signed by the EBDA in July 2020, and CEQA review of the initially-proposed eastern alignment was completed in 2023. However, due to constructability considerations, including possible conflicting construction schedules with public improvements including a bicycle path in the initially-proposed alignment, Cargill is now working toward approval of the western alignment. Additional design and CEQA review of the western alignment are expected to require until approximately 2026 - 2027, with installation of the pipeline estimated to be complete by 2030 assuming CEQA certification and project approval. The MSS Project is separate from the Solar Salt System Maintenance and Operation Activities Project because the two projects are not dependent on each other, would be permitted separately, and are on different timelines.

All seven projects identified previously would involve some the same types of activities as the proposed Project, specifically transporting, excavating and placing soils; in addition, the restoration projects, South San Francisco Bay Shoreline Project, and Port of Redwood City dredging may also affect Bay habitat, including mudflats and/or tidal marsh. The restoration projects may also require pumping of Bay water as part of dredged sediment delivery operations during restoration. In addition, as described previously the MSS Project may use one of the intakes currently being used for intake of Bay water; this could increase the total volume of water taken in at this intake. The proposed intake for the MSS project is at Plummer Slough, near FMC Pond 3. The estimated annual intake at this intake location (Bay Water Pump for Green Hornet #1) would be approximately 7,500 afy; this compares to 18,000 afy at Cargill's main intakes on Alameda Creek.

Numerous development projects are planned in the vicinity of the Newark and Redwood City Plants. These projects could contribute to cumulative construction-related air emissions, traffic and noise if they are implemented at the same time as maintenance activities at the plants. While the Cities of Newark, Fremont and Union City have a combined 46 projects that are proposed, approved, under construction or recently completed, only three of these projects are within 0.5 miles of the Newark Plants. One project, the Mowry Village Project in Newark, is located immediately east of the crystallizers. The project site consists of a 29-acre site currently developed as an auto part and scrap metal salvage lot. The proposed project would demolish the existing on-site structures, remediate the site, and construct 203 single-family detached homes and supporting utilities and parking. The project would require the import of 56,000 CY of fill to raise the project site to an elevation above projected SLR. The proposed project would also include off-site improvements and widening of Mowry Avenue. The Sanctuary West project would be constructed on open space Baylands to the east of the Mowry Village Project. That project would truck in 1.67 million cubic yards of fill (100,000 truckloads) to raise the elevation of these open-space Baylands out of the 100-year flood zone, constructing 469 single-family, detached executive houses on a series of elevated peninsulas, surrounded by wetlands and requiring the construction of four bridges to connect the developed areas (Save Newark Wetlands 2024). These two projects are being opposed by local community groups due to the

loss of habitat and other open space they would entail (Scoop 2023). The proposed Sanctuary West housing development has been approved by the Newark City Council, but that approval has been challenged in court. Nonetheless, because the development has received approval, it is considered reasonably foreseeable for the purposes of the cumulative impact analysis. A draft EIR for the Mowry Village Project was released in September 2023 (City of Newark 2024). The third project is the City of Fremont's I-880 Innovation Bridge and Trail project, which consists of a pedestrian/bike bridge over I-880 and approximately 800 feet of associated trail segments. It is located 0.4 miles north of the I-880/Mission Boulevard/W. Warren Avenue interchange, approximately 2,200 ft west of Pond P2-5.

The cities of Redwood City and Menlo Park have a combined 52 development projects that are either approved, under construction or recently completed, and an additional 26 projects currently under review (proposed). Of these, 12 projects and 2 proposed projects are located within 0.5 miles of the Redwood City Plant. Additional projects are located within 0.5 miles of the brine pipeline alignment; however, due to the very low level of operations and maintenance activities associated with the pipeline, these projects are not considered in the cumulative impact analysis. The majority of the projects located within 0.5 miles of the Redwood City Plant are located south or west of a major traffic artery, either U.S. 101, SR 84 (East Bayshore Road) or Seaport Boulevard. Four of the projects in Redwood City are large office or medical complexes, potentially generating substantial increases in personal vehicle traffic. They are:

- **505 Broadway**

  Phase II of the Stanford in Redwood City office campus consisting of 250,000 sq.ft. commercial office space (two five- story 125,000 sq.ft. buildings), a 4,000 sq.ft. one-story amenity building and 1,063 parking spaces within a six-level parking structure.

- **440/500/510 Broadway and 2111 Bay Rd**

  Stanford Health Care propose to demolish the existing building and develop a 265,000-square foot medical office building and 928 parking spaces comprised of a two-level freestanding parking structure and surface parking.

- **1401-1501 Broadway**

  This project consists of replacement of an existing retail strip mall located at 1401 Broadway and office building located at 1055 Broadway with a mixed-use project consisting of approximately 398 market-rate residential units, 120 affordable residential units, 420,000 sq.ft. of office space, 26,000 sq.ft. of retail space including a stand-alone CVS pharmacy (at 2111 Bay Road), a 10,000-sq.ft. child care center, public and private open space, and shared underground parking.

- **320-350 Blomquist Ave**

  This project is a proposed high-tech office campus with four 7-story office buildings, one 4-story and one 6-story parking structure, and a two-story employee amenities building. The Project includes 765,000 sq.ft. of commercial office use, in addition to 35,000 square feet of

amenities use. The development includes up to 2,591 on-site parking spaces. The Project would implement a Transportation Demand Management Program (TDM) to reduce vehicle trips by 30%. The project included a General Plan and Zoning Map Amendment to change the General Plan land use designation from Industrial-Light (LI) and Industrial-Port Related (IP) to Commercial Office Professional/Technology (CP) and change the Zoning Map district from Industrial Restricted (IR) and General Industrial (GI) to Commercial Park (CP).

Projects planned for Menlo Park are generally smaller; however, the approved project located closest to the Redwood City Plant, at 3272 Haven Avenue, is in Menlo Park. It is located approximately 600 feet south of the plant and adjacent to potential sensitive receptors (the closest mobile home park is less than 200 feet west of that project site). The project would demolish an existing non-medical office building and construct a new eight-story, 163-room hotel, approximately 58,000 square feet in size and consisting of three stories of podium parking and five stories of hotel rooms.

Potential cumulative impacts are discussed by resource area in the following subsections.

3.15.1.1 Air Quality

Project incremental emissions are less than the BAAQMD CEQA significance thresholds (refer to Tables 3.3-5 and 3.3-6). Therefore, the Project would not make cumulatively considerable contributions to the Bay Area's regional problems with ozone or particulate matter. Cumulative emission impacts would be less than significant.

As shown in Table 3.3-7 and Table 3.3-8, the cumulative cancer risk, HI, and $PM_{2.5}$ levels at the MESRs near the Newark and Redwood City sites are all be below all the BAAQMD cumulative significance thresholds. Project TAC risk/hazard/ $PM_{2.5}$ levels at any location in the zones of influence would be much less than those required to threaten adverse health impacts under the CEQA project-level significance thresholds. Thus, the Project's contribution to cumulative TAC impacts at any location in the zones of influence would be less than considerable, and since the cumulative thresholds are not exceeded, the overall cumulative TAC impacts would be less than significant.

3.15.1.2 Biological Resources

As discussed in Section 3.4, with implementation of the BMPs shown in Section 2.13 and the mitigation measures included in Section 3.4, the proposed Project is anticipated to have less than significant impacts on biological resources. The nature of the proposed work remains the same or similar to that permitted under the existing Operations and Maintenance permit. Changes from the baseline operations would include:

- A potential increase in lock access/egress events
- The vinyl sheet pile pilot study
- Placement of a small quantity of new riprap (i.e., riprap placed in areas that are currently not armored), and
- Installation and operation of fish screens at the Coyote Intake, resulting in the removal of up to 0.5 acres combined of tidal marsh and mudflat habitat as part of the installation

Most maintenance activities would remain unchanged. The Project also includes updated BMPs and mitigation measures to ensure that any impact on biological resources from current operations and maintenance activities is less than significant. Placement of up to 7,800 square feet of new riprap (of which only a portion would be in the intertidal zone) would not make cumulatively considerable contributions to adverse effects of riprap placement or loss of sensitive habitat. The total quantity of new riprap placed would be small, and the cumulative projects identified in this analysis also have little or no riprap placement. Consequently, there is little regional impact, and the cumulative effect of the proposed riprap placement would be less than significant. Removal of up to 0.5 acres combined of mud flat and marsh habitat associated with fish screen construction would be mitigated to a less than significant impact with implementation if Mitigation Measure Bio-4, and as a result would not contribute to a cumulatively significant impact.

The MSS Project may require Bay water via one of the existing water intakes. This additional intake of water would be in addition to the intake of water associated with the proposed Project. With incorporation of the updated BMPs and new mitigation measures associated with intake of water and avoidance and minimization of impacts to special-status aquatic species, and given the limited size of the foreseeable impacts relative to adjacent areas and the larger Bay ecosystem, the combined effects of past projects, the current projects identified in the Project vicinity, and probable future projects would not result in a significant adverse impact.

3.15.1.3 Cultural Resources

Cultural resources impacts due to the proposed Project are potentially significant, and less than significant with mitigation. The combination of past, present, and reasonably foreseeable future projects along the Bay shoreline and in the region could result in a significant loss of Native American and historical archeological resources, including Native American remains. This would be considered a significant cumulative impact in the area of cultural resources. No impacts to known cultural resources would occur as result of implementation of the proposed Project. Mitigation measures identified in Section 3.5 would reduce the impact of the proposed Project to unknown archeological resources that may inadvertently be encountered to a less-than-significant level. The proposed Project's implementation of mitigation measures would reduce the impacts of the Project on cultural resources to a less-than-significant level, and thus would serve to address Project-related contribution to cumulative impacts on cultural resources. Therefore, the proposed Project would not have a cumulatively considerable impact on cultural resources because the incremental effects of the Project would not be considerable when viewed in connection with the effects of past, current and probable future projects. The cumulative impact of the proposed Project on cultural resources would be less than significant.

3.15.1.4 Geology and Soils

Potential impacts associated with this resource are specific to the Project area; therefore, activities at the Project area would not contribute to a cumulative effect within the region. There would be no cumulative impact.

3.15.1.5 Greenhouse Gases

As discussed in Section 3.8, by their nature GHG emissions are assessed for their contribution to a cumulative effect on climate change.

According to the BAAQMD CEQA Air Quality Guidelines (2022) Chapter 6, Project-Level Climate Impacts:

> *"Global climate change caused by GHG emissions is the quintessential cumulative environmental impact … GHG emissions from an individual project are not likely to have any detectable impact on the global climate, but they will contribute to what is a significant cumulative problem … Proposed projects are therefore significant for purposes of CEQA if they will be making a cumulatively considerable contribution to the significant cumulative climate impact resulting from GHG emissions globally … The Air District recommends that lead agencies use a "fair share" approach for determining whether an individual project's GHG emissions would be cumulatively considerable … a project cannot include sources that will "lock in" GHG emissions for decades into the future. A project that locks in GHG sources, without a clear path to reduce the emissions from those sources, prevents the State from achieving the climate goals."*

The existing solar salt system relies largely on the energy provided by the sun, wind and tides to produce its products. The purpose of the Project is to continue existing maintenance activities of the existing solar sea salt system in Newark and Redwood City. The standard maintenance methods will continue to maintain the integrity of the berms while also adapting to SLR, including for the MSS ponds. The Project would allow the solar sea salt system to continue in operation at about the same salt production levels as at present. Thus, the Project will not introduce new natural gas appliances/plumbing or "lock in" other GHG sources to the sites; it will not result in wasteful, inefficient, or unnecessary energy use from on-site sources; and because salt production and product transport would remain at present levels, there would be no substantial VMT increase from present levels (thus, no increase in GHG emissions from product haul trucks; in fact such truck GHG emissions would decrease to zero gradually as electrically powered trucks replace fossil-fueled trucks, as planned for by the State of California). There would be no significant cumulative impact.

3.15.1.6 Hazards and Hazardous Materials

The proposed Project would use small quantities of hazardous materials as part of routine operations. The other projects would likely use similar types and quantities of materials. Use, management, transportation, and disposal of hazardous materials is heavily regulated to prevent impacts to human health and the environment. All projects can reasonably be assumed to be compliant with these requirements, as would the proposed Project. Consequently, there would be no cumulatively significant impact.

3.15.1.7 Hydrology and Water Quality

Impacts to water quality due to the proposed Project are potentially significant, and less than significant with mitigation. The MSS Project would address potential impacts of the mid-term risk of SLR by gradually processing and removing the MSS from Ponds 2-12 and P2-13. Additional information is necessary to evaluate potential impacts from overtopping. Potential

impacts of near-term overtopping resulting in scouring during extreme storm events have not been fully evaluated. With implementation of mitigation measure MM-HYD-1, the potential impacts to hydrology and water quality are less than significant.

The MSS Project may require Bay water via one of the existing water intakes. This additional intake of water would be in addition to the intake of water associated with the proposed Project. While this could increase the total volume of water taken in at this intake, the overall volume from all intakes combined would be generally equivalent to the overall volume of water currently pumped in a year. The cumulative flowrate in Plummer Slough from the proposed Project and the MSS Project would not be expected to lead to erosion of the slough or adjacent berms. BMPs and new mitigation measures associated with intake of water (Section 3.15.1.2) would be implemented to minimize potential impacts to be equivalent to or less than those associated with the current operations and maintenance activities analyzed under this environmental document. As a result, there would be no cumulative significant impact.

3.15.1.8 Noise

As discussed in Section 3.10, estimated incremental noise levels at ambient receptors consist of the combined existing noise levels at the receptor locations and the incremental noise levels associated with the proposed Project. Consequently, the impact analysis in Section 3.10 considered the cumulative noise levels at the receptor locations. The estimated incremental noise levels are less than significant, and there would be no cumulative impact. Vibration effects are highly localized. The proposed Project would not result in a localized significant effect due to vibration, and therefore there would be no cumulative effect.

3.15.1.9 Transportation

As discussed in Section 3.11, the Project is anticipated to have less than significant impacts on the transportation system as the nature of the work remains the same as previously permitted. Furthermore, Cargill has recently completed the Plummer Slough Bridge project, which has rerouted heavy vehicular and equipment movement associated with salt production to minimize any potential impacts to a new residential development and proposed public trail. As a result, there would be no significant cumulative impact.

3.15.1.10 Tribal Cultural Resources

Tribal cultural resources impacts due to the proposed Project are potentially significant, and less than significant with mitigation. While no impacts to tribal cultural resources have been identified to date, a mitigation measure was added in the event that previously unknown tribal cultural resources are encountered during excavation activities. Mitigation measures have been included in Section 3.5, Cultural Resources, and 3.12, Tribal Cultural Resources, that would serve to protect tribal cultural resources in the event any are inadvertently encountered during the various maintenance activities of the Project. With implementation of mitigation measures MM-TCR-1 in Section 3.12, and MM CUL-1 and CUL-2, described in Section 3.5, potential contributions by the proposed Project to a significant cumulative impact would be less than significant. Section 3.15.1.3 provides further information.

3.15.1.11 Utilities and Service Systems

The only potential Project-related impact associated with this resource area pertains to the use of solid waste management facilities (landfills). The only increase in off-haul from the Project area would be up to 360 CY per year of sediment removed from in front of intakes. This is a very small quantity compared to existing landfill capacity. The other projects are also much more likely to import than export material. Consequently, due to the fact that Cargill imports clean material that would otherwise be taken to a landfill, and the low potential volume of off-hauled material, there would be no cumulatively significant impact.

3.15.2 Irreversible Effects

BCDC's regulations contained in 14 CCR § 11521(c) require that the EA identify all irreversible environmental impacts that the proposed activity may cause. CEQA Guidelines Section 15126.2(c) clarifies that when analyzing project impacts for an EIR, use of non-renewable resources during the initial and subsequent phases of a project may be "irreversible", if a *large commitment* of non-renewable resources may make subsequent discontinuance or removal of the project thereafter unlikely. The proposed Project is similar in nature to the work that has been previously permitted and the continuation of these efforts does not irreversibly change the baseline of resources committed.

Implementation of the proposed Project would result in the use of natural resources including fossil fuels and building materials associated with the various maintenance activities. However, the use of resources under these activities are relatively minor and, with implementation of the required avoidance and mitigation measures will be less than significant both individually and cumulatively, as discussed in this EA. In addition, much of the imported clean material would be reused material such as from construction projects. Furthermore, should Cargill decide to discontinue maintenance activities, the Project areas could be converted to other uses. Thus, the proposed Project would not result in an irreversible use of resources.

3.16 ENVIRONMENTAL JUSTICE

As defined by the State of California (OAG 2012) and USEPA (2020), environmental justice (EJ) is "The fair treatment and meaningful involvement of all people regardless of race, color, culture, national origin, income, and educational levels with respect to the development, implementation, and enforcement of protective environmental laws, regulations, and policies." Fair treatment, in turn, is defined as "The principle that no group of people, including a racial, ethnic or a socioeconomic group, should bear a disproportionate share of the negative environmental consequences from industrial, municipal and commercial operations or the execution of federal, state, local and tribal programs and policies."[28] (USEPA 2020). Fair treatment also requires meaningful engagement, which involves informing the community, as well as involving the community in project discussions and seeking community input (DOE 2020).

CEQA only addresses EJ analysis for General Plans. However, consistent with State policy regarding EJ, BCDC amended the Bay Plan in May 2020 (BCDC 2020a) to include findings and policies pertaining to EJ. Other state agencies, including the RWQCB, State Lands Commission, CDFW and Caltrans, have also adopted EJ policies. In addition, EJ analysis is a requirement under the National Environmental Policy Act (NEPA), and some federal agencies may rely on information contained in portions of this EA for their NEPA review. BCDC therefore conducted an EJ analysis for the proposed Project, considering both state (BCDC) and federal criteria. Additionally, BCDC worked with Cargill to ensure that the public, including disadvantaged and vulnerable communities, were provided meaningful opportunity to comment on the proposed Project during the development of the EA (BCDC 2024).

BCDC defined the EJ study area to be composed of census tracts within one-half mile of the plant site boundaries. For this study area, BCDC performed an evaluation to determine whether communities that meet the criteria for being disadvantaged and/or vulnerable communities are present. (For ease of discussion, in this analysis these communities, which may include minority and low-income communities, as well as communities with moderate or higher social, pollution or flood vulnerability, are collectively referred to as disadvantaged communities.) The evaluation of whether disadvantaged communities exist in the EJ study area included both BCDC and federal criteria. Data from the U.S. Census Bureau (U.S. Census 2019a-c, 2022a-e), the CalEnviroScreen 4.0 model, the BCDC Vulnerability Mapping tool, and the Adapting to Rising Tides Flood Vulnerability Mapping tool were used to evaluate whether any disadvantaged communities exist within the study area (BCDC 2024). Data on poverty and racial composition for the potentially affected areas were compared to reference locations (surrounding communities). The locations of these disadvantaged communities are then considered with respect to potential impacts to assess whether there would be a disproportionate impact on these communities due to the implementation of the proposed Project.

[28] In implementing its programs USEPA has expanded the concept of fair treatment to include not only consideration of how burdens are distributed across all populations, but the distribution of benefits as well (USEPA 2020).

3.16.1 Regulatory Setting

Federal and state laws and regulations pertaining to this issue area and relevant to the Project are described in Table D-1.

3.16.1.1 Federal Regulatory Setting

Federal guidelines, as defined in Executive Order (EO) 12898, require federal agencies to identify and address disproportionately high and adverse human health or environmental effects, including social and economic effects of their programs, policies, and activities on minority populations and low-income populations, but EO 12898 does not address thresholds of significance.

3.16.1.2 State Regulatory Setting

California Senate Bill 1000 (State of California 2016) requires certain local governments to add EJ policies to their General Plans. In addition, a number of state agencies require that consideration be given to potential EJ implications of project implementation. In addition to BCDC, all of the State agencies with jurisdiction or potential jurisdiction over the proposed Project (CDFW, Caltrans, RWQCB and the State Lands Commission), have developed EJ goals. A summary of the EJ policies of these agencies is provided in the *Updated Socioeconomics and Environmental Justice Review – Memorandum for Environmental Assessment - Cargill Solar Sea Salt System Maintenance and Operations Activities* (BCDC 2024). BCDC's policies are contained in the Bay Plan, as described in the next subsection.

3.16.1.3 San Francisco Bay Plan

For BCDC, EJ entails the fair treatment and meaningful involvement of people of all races, cultures, and incomes with respect to the implementation and enforcement of the McAteer-Petris Act, Suisun Marsh Preservation Act, Bay Plan and amendment process, Suisun Marsh Protection Plan, BCDC Regulations, BCDC permit process (including the Design Review Board and Engineering Criteria Review Board processes), and the Adapting to Rising Tides Program, as well as the development of BCDC's Strategic Plan. Social equity means ensuring that this and future generations have full public access to San Francisco Bay and that development approved through BCDC's permit process promotes everyone's opportunity to participate (BCDC 2019).

The Bay Plan's Environmental Justice and Social Equity Finding h defines vulnerable, disadvantaged, and underrepresented communities (BCDC 2020). As stated previously, for this evaluation, the term "disadvantaged community" is used as an umbrella term to cover all types of communities that may be addressed by the environmental and social justice policies.

Pursuant to the new Environmental Justice and Social Equity policies, applicants must demonstrate "meaningful community involvement" for major projects and appropriate minor projects in underrepresented and/or identified vulnerable and or disadvantaged communities (Environmental Justice and Social Equity Policy 3). The decision whether the proposed Project is considered a major project or a minor project covered by BCDC's EJ policies will be made as part of the permitting process. Nonetheless, identifying whether a community would be disproportionately impacted by a project is an important initial step in addressing environmental justice. Taking steps to reduce such disproportionality can help ensure people

are being treated fairly regardless of race, culture, and income (refer to Bay Plan Environmental Justice and Social Equity Finding e.). As defined in Bay Plan Environmental Justice and Social Equity Finding f, "fair treatment means no group of people should bear a disproportionate share of the negative environmental consequences resulting from industrial, governmental and commercial operations or policies."

In addition, the following Bay Plan policies may potentially be applicable to the proposed Project:

Environmental Justice and Social Equity Policy 3. Equitable, culturally-relevant community outreach and engagement should be conducted by local governments and project applicants to meaningfully involve potentially impacted communities for major projects and appropriate minor projects in underrepresented and/or identified vulnerable and/or disadvantaged communities, and such outreach and engagement should continue throughout the Commission review and permitting processes. Evidence of how community concerns were addressed should be provided. If such previous outreach and engagement did not occur, further outreach and engagement should be conducted prior to Commission action.

Environmental Justice and Social Equity Policy 4. If a project is proposed within an underrepresented and/or identified vulnerable and/or disadvantaged community, potential disproportionate impacts should be identified in collaboration with the potentially impacted communities. Local governments and the Commission should take measures through environmental review and permitting processes, within the scope of their respective authorities, to require mitigation for disproportionate adverse project impacts on the identified vulnerable or disadvantaged communities in which the project is proposed.

Mitigation Policy 3. For major and appropriate minor projects that require compensatory mitigation, communities surrounding both the project and the compensatory mitigation site should be meaningfully involved in an equitable and culturally-relevant manner. In particular, vulnerable, disadvantaged, and/ or underrepresented communities should be involved. This should include consultation with the community in the identification and prioritization of potential projects, and in the monitoring and programming of a mitigation site. If such previous outreach and engagement did not occur, further outreach and engagement should be conducted prior to Commission action.

Public Access Policy 5. Public access that substantially changes the use or character of the site should be sited, designed, and managed based on meaningful community involvement to create public access that is inclusive and welcoming to all and embraces local multicultural and indigenous history and presence. In particular, vulnerable, disadvantaged, and/or underrepresented communities should be involved. If such previous outreach and engagement did not occur, further outreach and engagement should be conducted prior to Commission action.

Shoreline Protection Policy 2. Equitable and culturally-relevant community outreach and engagement should be conducted to meaningfully involve nearby communities for all shoreline protection project planning and design processes – other than maintenance and in-kind repairs to existing protection structures or small shoreline protection projects – in order to supplement

technical analysis with local expertise and traditional knowledge and reduce unintended consequences. In particular, vulnerable, disadvantaged, and/or underrepresented communities should be involved. If such previous outreach and engagement did not occur, further outreach and engagement should be conducted prior to Commission action.

3.16.1.4 Local Regulatory Setting

The City of Fremont General Plan's Policy 6-6.1 states that Fremont will "Promote Fremont as a city that has a broad variety of occupations and family incomes, ethnic and lifestyle diversity and a variety of housing accommodations, a broad range of commercial services, educational opportunities, and many recreational options."

The City of Hayward General Plan 2040 Community Health and Quality of Life Element includes Goal HQL-1.6 to "…address health inequities in Hayward by striving to remove barriers to healthy living, avoiding disproportionate exposure to unhealthy living environments, and providing a high quality of life for all residents, regardless of income, age or ethnicity."

The City of Menlo Park, City of Newark and Redwood City General Plans do not specify goals or policies associated with EJ.

3.16.2 Environmental Setting

Four cities and two counties have jurisdiction over portions of the Project area. Two jurisdictions may apply to a specific plant and county jurisdictions may apply to multiple plants. For example, the Redwood City Plant is located in Redwood City and San Mateo County. Newark Plant 1 is located in the City of Fremont within Alameda County. Pond B-3C, located immediately north of the Alameda Creek, is in Hayward. Most of Newark Plant 2 is located in Newark, but a portion is also located in the City of Fremont. The analysis conducted to determine whether a disadvantaged community exists in the vicinity of one or more of Cargill's plants is based in part comparing the data on persons living poverty and racial composition data for the potentially affected communities in the Environmental Justice Study Area to the applicable reference locations. The Environmental Justice Study Area consists of the census tracts located with 0.5 mile of the three plant sites (refer to Section 3.16.3). Reference locations were defined as the cities immediately adjacent to the Cargill Plant sites; the reference locations for the Newark Plants 1 and 2 Study Area, which includes Pond B-3C, are the cites of Fremont, Hayward, and Newark. The reference location for the Redwood City Plant Study Area is the City of Redwood City.

3.16.2.1 Socioeconomics

The socioeconomic climate around Newark Plants 1 and 2 and the Redwood City Plant is that of large, developed communities with strong economies. Population growth between 2010 and 2022 in the Newark Plants 1 and 2 area ranged from 6.9% for Fremont to 11.5% for Newark. The population of Redwood City increased 8.2%. The population of Alameda County grew 10.2% between 2010 and 2022 while that of San Mateo County increased 5% (U.S. Census 2022b).

Since 2010, employment in the area has continued to grow, and as a result these communities were experiencing a low unemployment rate as of the most recent available yearly data. The

majority of the jobs are in the Service Providing; Professional and Business Services; Trade, Transportation, and Utilities occupations sectors (EDD 2022). 2022 unemployment rates for all four cities and the two counties were 3.8%or less.

The Newark Plants 1 and 2 Study Area contains only a small percentage (6.4 percent) of the local population within the cities of Fremont, Hayward and Newark. More than one third (37 percent) of Redwood City's population resides within the six census tracts that comprise the Redwood City Plant Study Area (U.S. Census 2019b, 2022b,c).

The Newark plants are located in southern Alameda County while the Redwood City Plant is located in San Mateo County. The mean income for these counties is relatively high, $164,668 and $216,684, respectively as of 2022 (Table 3.16-1). These incomes are above the state and national mean incomes. The poverty rate for Alameda County based on the American Communities Survey 5-year 2022 estimate is 9.2 percent compared to 6.4 percent for San Mateo County (U.S. Census 2019a, 2022a).

Within the Project area, Hayward had the highest population living in poverty at 9.6 percent (above the Alameda County rate), while Newark had the lowest at 4 percent, below the Alameda County rate. Five of the six census tracts in the Redwood City Plant Study Area had a higher population living in poverty than Redwood City and San Mateo County (both at 6.4percent). The population weighted-average poverty rate in the Redwood City Plant Study Area is 10.1 percent. This is a substantially higher percentage of individuals living below the poverty line than in Redwood City as a whole. In comparison with the regional population, the Newark Plants 1 and 2 Study Area has higher income levels and lower poverty, while the Redwood City Plant Study Area has lower income levels and higher poverty rates (U.S. Census 2019c, 2022d,e).

Table 3.16-1. Reference Area Income and Poverty Rates

Site	Jurisdiction	Population	Mean Household Income	Persons in Poverty (%)
Redwood City Plant	San Mateo County	754,250	$216,684	6.4
	Redwood City	83,077	$211,981	6.4
Newark Plant 1 and Newark Plant 2	Alameda County	1,663,823	$164,668	9.2
	Hayward	160,602	$129,952	9.6
	Fremont	228,795	$203,058	5.3
	Newark	47,470	$191,873	4.0
Compare With:	State of California	39,356,104	$130,718	12.1

Source: U.S. Census Bureau 2022 ACS 5-Year Estimates Table DP03, 2022 ACS 5-Year Estimates Table S1701

3.16.2.2 Racial Composition

As shown in Table 3.16-2, the racial composition of communities in the Environmental Justice Study Area varies. The percentages of white-only residents range from 14.6 percent (Hayward) to 39.3 percent (Redwood City). There are more Asians in Fremont (61.7 percent) than in any

other jurisdiction in the Project area, and Asians represent the racial majority in this city. Hayward, followed by Redwood City, has the highest Latino population at 39.7 percent and 36.1 percent, respectively (U.S. Census 2022b).

The Newark Plants 1 and 2 Study Area has a slightly higher percentage of non-white residents than its reference cities as a whole. The Redwood City Plant Study Area has non-white population is 32.8 percentage points higher than Redwood City as a whole. Hispanic or Latino is the largest race/ethnicity group (making up 61.1 percent of the total population) within the Redwood City Plant Study Area, while Asian is the largest minority group within the Newark Plants 1 and 2 Study Area making up 54.9 percent of the population based on the 5-year 2022 estimate (U.S. Census 2019b, 2022b).

Table 3.16-2. Reference Racial Composition Data for the Study Area

Plant Site	Jurisdiction	American Indian and Alaska Native Alone (%)	Asian Alone (%)	Black or African American Alone (%)	Hispanic or Latino (%)	White Alone (%)
Redwood City Plant	San Mateo County	0.1	30.3	2.1	23.9	37.0
	Redwood City	0.2	16.7	1.8	36.1	39.3
Newark Plant 1 and Newark Plant 2	Alameda County	0.3	31.9	9.9	22.2	29.3
	Hayward	0.3	29.2	8.7	39.7	14.6
	Fremont	0.3	61.7	3.1	12.0	18.1
	Newark	0.3	41.4	3.1	30.4	19.5
	Population-Weighted Average	0.3	47.5	5.2	24.2	17.0
Compare With:	State of California	0.3	14.9	5.3	39.7	35.2
	United States	0.6	5.7	12.1	18.7	58.9

Source: 2022 U.S. Census Bureau American Community Survey 5-Year Demographic and Housing Estimates Table DP05.

3.16.3 Methodology

The study area for environmental justice was defined to include census tracts within one-half mile of the three plant sites. The study area contains 5 census tracts associated with Newark Plants 1 and 2 (4415.03, 4443.02, 4445, 4446.01 and 4446.02), and 6 census tracts associated with the Redwood City Plant (6102.01, 6102.02, 6103.02, 6104, 6105, and 6117). Newark Plants 1 and 2 are contained within census tracts 4415.03 and 4443.02. The Redwood City Plant is entirely contained within census tract 6103.02. Due to the low level of potential maintenance activities associated with the Cargill West Bay areas, analysis of census tracts associated with these areas was omitted.

BCDC employed six criteria to determine whether a census tract met the definition of a disadvantaged community (BCDC 2024). These included three criteria based on information compiled by BCDC (social vulnerability, contamination vulnerability, and flooding potential as defined by the Adapting to Rising Tides flood vulnerability potential), the percentile ranking from the State of California's CalEnviroScreen 4.0 model, and the two federal criteria provided in Council on Environmental Quality (CEQ) guidance (CEQ 1997) and USEPA guidance (USEPA 2016): minority population and low-income population. Table 3.16-3 summarizes the results of the analysis. Detailed information regarding the analysis is provided in the Updated Environmental Justice and Social Equity Review Memorandum (BCDC 2024).

Table 3.16-3. Analysis of Disadvantaged Communities

Plants	Census Tract	BCDC Criteria Social Vulnerability	BCDC Criteria Contamination Vulnerability	BCDC Criteria CalEnviro-Screen Percentile (2019)	BCDC Criteria CalEnviro-Screen Percentile (2021)	BCDC Criteria Adapting to Rising Tides Vulnerability Potential for Flooding with 12" SLR and King Tide[1]	BCDC Criteria Disadvantaged Community Based on BCDC Criteria?	Federal Criteria Greater than 50% Minority Population?	Federal Criteria Poverty Level Greater than Reference[2]	Federal Criteria Disadvantaged Community Based on Federal Criteria?
Newark Plants 1 and 2 Study Area	4415.03	**Moderate**	**Highest**	41.92	45	**Yes (129 units)**	Yes	Yes	No (4.1%)	Yes
	4443.02	**Moderate**	Lower	**58.68**	48	No	Yes	Yes	No (3.4%)	Yes
	4445	**Moderate**	Lower	**67.52**	**64**	No	Yes	Yes	No (4.8%)	Yes
	4446.01	**Moderate**	**Moderate**	**78.74**	**65**	No	Yes	Yes	No (2.8%)	Yes
	4446.02	Low	**Moderate**	**54.92**	34	No	Yes	Yes	No (3.2%)	Yes
Redwood City Plant Study Area	6102.01	**Highest**	**High**	**80.21**	**84**	No	Yes	Yes	**Yes (12.2%)**	Yes
	6102.02	**High**	**Moderate**	**69.08**	**76**	**Yes (132 units)**	Yes	Yes	**Yes (8.4%)**	Yes
	6103.02	**Moderate**	**Highest**	**63.83**	**53**	**Yes (1,188 units)**	Yes	Yes	**Yes (7.4%)**	Yes
	6104	**High**	**Moderate**	**62.73**	**60**	No	Yes	Yes	**Yes (11.7%)**	Yes
	6105	**High**	Lower	**68.68**	**75**	No	Yes	Yes	**Yes (16.1%)**	Yes
	6117	**Moderate**	Lower	45.49	**60**	No	Yes	Yes	No (4.9%)	Yes

Sources: BCDC 2020, U.S. Census Bureau 2022, CalEnviroScreen 4.0. Federal criteria from CEQ 1997, USEPA 2016.
Notes:
[1] Vulnerability Potential for Flooding (residential exposure to sea level rise): Units counts are from the Adapting to Rising Tides Flooding Potential Query Tool (BCDC 2020e). The methodology assumes that once a parcel is exposed to any amount of flooding, the entire number of residential units within that parcel is impacted.
[2] Poverty Rates for Surrounding Areas:

- The surrounding areas poverty rate for the Newark Plant Sites is the average of the poverty rates for the Cities of Hayward, Newark, and Fremont (6.7%, population-weighted).
- The surrounding areas poverty rate for the Redwood City Plant Site is the City of Redwood City overall poverty rate (6.4%).

For the purposes of this EA, if a census tract met one or more of the criteria for disadvantage, the census tract was considered a disadvantaged community. The six criteria are:

- Social vulnerability: highest, high or moderate social vulnerability
- Contamination vulnerability: highest, high or moderate contamination vulnerability
- Adapting to Rising Tides flood vulnerability potential: potential for flooding of any portion of the census tract with 12 or more inches of sea level rise
- CalEnviroScreen 4.0 model: 50th percentile or higher
- Minority population: 50 percent or higher minority population
- Low-income population: low-income population higher than the reference location.

The reference locations for the low-income population criterion were the surrounding cities. For the portion of the study area adjacent to the Redwood City Plant, the reference location is the City of Redwood City as a whole. For Newark Plants 1 and 2, the reference location is the population-weighted average data for the cities of Fremont, Hayward, and Newark. Based on this analysis, all census tracts in the study area are defined as disadvantaged communities based on federal criteria, as well as on BCDC criteria. Given the results of this analysis, the entire EJ study area was evaluated with respect to potential disproportionate impacts.

3.16.4 Impact Analysis

3.16.4.1 Air Quality

Project and cumulative air quality impacts are addressed in Section 3.3 according to the methodology and significance criteria of the BAAQMD as documented in their *CEQA Air Quality Guidelines* (BAAQMD 2017b). Project emissions of criteria air pollutants from Redwood City and Newark plant maintenance activities are considered to be a regional (Bay Area wide) issue, and were found to be substantially below the BAAQMD's average daily and annual thresholds that gauge the potential for significant impact on Bay-Area-wide ozone and ambient particulate levels. Thus, the entire Bay Area population, regardless of race, color, culture, national origin, income, and educational levels, would not be subject to significant worsening of ambient ozone or particulate levels caused by continued facility maintenance activity.

Health risk and particulate matter analysis are evaluated on a local scale. BAAQMD defines 1,000 feet as the "zone of influence" for health risk and particulate matter analysis. Most of the area within 1,000 feet of the Redwood City and Newark plant sites consists of San Francisco Bay water surface, public recreational open space, wildlife habitat, or areas containing primarily commercial/industrial land uses, all of which are considered by the BAAQMD as less sensitive to TAC exposures than residential areas, schools, hospitals, nursing homes, and other similar land uses. But there are TAC-sensitive receptors in the Cargill plants' zones of influence, termed maximally exposed sensitive receptors (MESRs) for this analysis. In Redwood City, just south of the Cargill southern boundary, mobile home parks occupy a substantial area between Cargill and U.S. 101 (i.e., the RC Mobile Home Park, Redwood Mobile Estates, Harbor Village Mobile Home Park, and Trailer Rancho, as identified in Google Earth); other single-family residential

uses extend south of U.S. 101, east of 2nd Street. In Newark, the only residential development in the zone of influence is at the south end of Central Avenue. At both of these locations, some residents may be located less than 100 feet from a potential maintenance location, which is well within the 1,000-foot zone of influence typically used to evaluate potential cumulative air quality impacts.

Project health risk and particulate matter impacts were found to be substantially below the BAAQMD's thresholds that evaluate the potential for significant cancer risk, non-cancer chronic health hazard, and fine particulate exposures on local sensitive receptors. Thus, the local population in all residential areas in the Cargill zones of influence, regardless of race, color, culture, national origin, income, and educational levels, would not be subject to significant Project health risk or particulate levels caused by continued facility maintenance activity.

3.16.4.2 Biology

The Project would not result in significant biology impacts; therefore, the Project would not have a disproportionate impact on disadvantaged communities near the Project area, and no mitigation is required.

3.16.4.3 Cultural Resources

The Project would not result in any known significant impacts in the area of cultural and historical resources. Mitigation measures are in place in the event unknown archaeological resources or human remains are inadvertently encountered during earthwork activity. No Environmental Justice issues would result in the area of cultural resources.

3.16.4.4 Geology and Soils

The proposed Project would not create any new structures in disadvantaged communities or that would affect any disadvantaged communities, and there would be no impacts associated with potential failure of new Project-related structures. Therefore, the Project would not have a disproportionate impact on disadvantaged communities near the Project area.

3.16.4.5 Greenhouse Gases

Project GHG emission impacts are addressed in Section 3.7 according to the methodology and significance criteria of the BAAQMD as documented in their *CEQA Air Quality Guidelines* (BAAQMD 2017b). Project emissions of GHGs are considered to be a global concern that could lead to local effects such as flooding due to SLR. Project GHG emissions from Redwood City and Newark plant maintenance activities were found to be substantially below the BAAQMD's annual threshold that evaluates the potential for a project's significantly contributing to global climate change. Thus, the entire Bay Area population, regardless of race, color, culture, national origin, income, and educational levels, would not be subject to significant worsening of global climate and associated consequences as a result of Project-related GHG emissions.

3.16.4.6 Hazards and Hazardous Materials

The proposed Project would use small quantities of hazardous materials as part of routine operations. All such use would be in accordance with applicable regulations and would be consistent with existing levels of use. Two of the census tracts in the Environmental Justice

study area are rated as having the highest contamination vulnerability, and one is rated as having high contamination vulnerability. The contamination vulnerability indicator assesses the potential for a community to be exposed to elevated levels of pollution should flooding occur. The continued routine use of small quantities of hazardous materials would not exacerbate this risk, and would not cause a disproportionate impact to disadvantaged communities.

Hydrology and Water Quality

As discussed in Section 3.16.4.4, maintaining the berms and conducting SLR adaptation activities would minimize the risk of overtopping and scour potentially leading to a berm failure as a result of an extreme storm event, thereby minimizing the risk of flooding associated with berm failure. The Project would not result in significant hydrology/water quality impacts; therefore, the Project would not have a disproportionate impact on disadvantaged communities near the Project area, and no mitigation is required.

3.16.4.7 Noise

The Project, including its waterfront improvements, is located near existing communities with disadvantaged populations. However, the Project's maintenance activities would not generate significant noise level increases compared with existing onsite operational activities.

Newark Plants 1 and 2

Some residential area near the Newark City Plants 1 and 2 have minority populations exceeding 50 percent; some areas also have meaningfully greater poverty levels than the Fremont/Hayward/Newark area as a whole. As discussed in Section 3.10, the Project's noise impacts would be less than significant. Accordingly, the environmental justice impact due to noise or vibration impacts to these identified disadvantaged communities would be less than significant.

Redwood City Plant

The mobile homes and RVs adjacent to the Redwood City Plant have minority populations substantially greater than Redwood City as a whole, and are identified as being in a moderately vulnerable area by the BCDC mapping tool. This area also has a substantially higher poverty rate than Redwood City as a whole. However, the Project's new maintenance activities would not be significantly louder at those adjacent dwellings than existing maintenance work. As discussed in Section 3.10, noise level increases at these dwellings are predicted to be less than 1.5 dBA L_{dn} greater in magnitude than the existing maintenance noise levels that are already permitted. These adjacent dwellings are already exposed to loud freeway noise levels greater than 70 dBA L_{dn}. Therefore, because the Project's noise impacts to the adjacent mobile homes and RVs would be less than significant, their residents would not be exposed to a significant environmental justice impact.

Other vulnerable communities within a 0.5-mile radius of the Redwood City Plant would not be impacted by Project noise or vibration levels. At those distances, Project noise levels would be lower than the ambient noise levels predominantly from traffic, so those communities would not experience noise impacts from this Project. Therefore, there would be no disproportionate noise impacts to disadvantaged communities in the vicinity of the Redwood City Plant.

3.16.4.8 Transportation

The proposed Project would require no more than 120 truck trips per day as part of soil and concrete import operations. This relatively small volume of trucks is consistent with current levels of activity and will be dispersed over multiple routes and throughout the day, so there would not be substantive changes to transportation operations in the local residential areas near the truck travel routes. The truck destinations are generally removed from residential communities. The Project would therefore not result in significant transportation impacts and would not have a disproportionate impact on disadvantaged communities near the Project area.

3.16.4.9 Tribal Cultural Resources

The Project would not result in any known significant impacts in the area of tribal cultural resources. Tribal consultation and outreach to Native American tribal representatives has taken place and comments were received from two representatives. However, it is possible that previously unknown tribal cultural resources are encountered during excavation activities. Mitigation Measure TCR-1 was added in the event that previously unknown tribal cultural resources are encountered during excavation activities. With implementation of Mitigation Measure TCR-1 and further mitigation provided as part of overall cultural resources protection (discussed in Section 3.5), the proposed Project would not have a disproportionate impact on disadvantaged communities near the Project area.

3.16.4.10 Utilities and Service Systems

The Project would not result in any significant impacts to utilities and service systems; therefore, the Project would not have a disproportionate impact on disadvantaged communities near the Project area, and no mitigation is required.

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6.0 GLOSSARY

Term	Description
Anadromous (fish)	Fish that migrate from salt water to spawn in fresh water
Benthic	Pertaining to the biogeographic region that includes the bottom of a lake, sea, or ocean, and the littoral and supralittoral zones of the shore
Berm or Earthen Berm	Sloped soil dike structures with flat tops constructed to separate Cargill's solar salt system from the Bay and from local streams and flood control channels
Bittern	Historical term for mixed sea salts (MSS).
Brine	Sea or ocean water, water saturated with salt. Concentrated salt water in the evaporation salt ponds.
Brine Channel (or Brine Ditch)	Brine channels (also known as brine ditches) are narrow, earthen, unvegetated channels used to convey brines between salt ponds. They serve the same purpose as pipes.
Choker Berm	A very small berm (typically 6 inches high or less, and less than 1 foot wide) on the outer side of an outboard berm top.
Concentrator	A solar evaporative pond that increases the salinity of Bay water or lower salinity brine. Also called an evaporator.
Crystallizer	The high salinity ponds where the salt is precipitated for harvest.
Donuts (pumping)	Pumping donuts are small ponds with berms, similar to locks that have tidal gates that collect Bay water.
Evaporator (Pond)	Same as "concentrator"; a solar evaporative pond that increases the salinity of Bay water or lower salinity brine.
Inboard	The interior or pond side (versus Bay side) of the earthen berms.
Internal	Berms on the interior of the pond system, with no contact with Bay waters.
Intake Structures	Intake structures consist of tide gates and pumps to bring Bay water into the system under controlled conditions. They are located at the beginning of the salt pond system.
Lock	Locks are small ponds, generally less than 1 acre in size, that are used by water-borne equipment to access salt ponds. Use of the locks prevents a direct connection between a salt pond and external (Bay or slough) waters.

Term	Description
Mallard	From 1952 until 2016, Cargill utilized the excavation vessel "Mallard" to maintain the pond berms when using land-based equipment was not feasible. The Mallard has been decommissioned.
Mixed Sea Salts	After the majority of the NaCl is precipitated, the remaining brine, which primarily contains salts that are more soluble than NaCl, is referred to as mixed sea salts. The mixed sea salts contain chloride, bromide, sulfate, sodium, potassium, and magnesium, as well as residual NaCl. Also referred to as "bittern."
NaCl	Sodium chloride (table salt)
Outboard	Fronting the Bay, sloughs, or creeks
Pickle	High salinity feedstock brine for the crystallizers.
Pickle Pond	A salt pond containing highly concentrated, saturated brine that is stored prior to harvest and where additional evaporation may occur.
Pelagic	Organisms living in the open ocean, usually at or near the surface
Refuge	The Don Edwards San Francisco Bay National Wildlife Refuge
Roosting (birds)	Birds resting on a pond or berm.
Siphon	A pipe that passes underneath a slough, channel, or creek to connect two salt ponds.
Special-Status Species	Designated (rare, threatened, or endangered) and candidate species for listing by the California Department of Fish and Wildlife (CDFW) and designated (threatened or endangered) and candidate species for listing by the U.S. Fish and Wildlife Service (USFWS).
Silt Curtains	Portable underwater "screens" (made from a variety of materials) used to prevent disturbed silt from migrating away from the disturbance site.
Tide Gate	An inlet control gate, operated by a turning "screw" mechanism to raise and lower the gate, to control the flow of Bay water into the pond system. The tide gate is usually connected to a culvert (pipe).
Transbay Pipeline	A 7,000-foot, 20-inch-diameter steel pipeline slip-lined with 16-inch PVC that crosses the Bay from the Redwood City Plant to Plant 1 in Newark. The pipeline has multiple pumps in series that provide the capacity to transfer brine in both directions.

Term	Description
Wash Pond	A wash pond holds brine used to wash sediment out of harvested salt. Wash brine is reused after sediment in used wash brine has settle out in the wash ponds.
Williamson Act	The Williamson Act, also known as the California Land Conservation Act of 1965, enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use.

APPENDIX A USACE Approval Letter for Mitigation in Perpetuity

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, CORPS OF ENGINEERS
211 MAIN STREET
SAN FRANCISCO, CALIFORNIA 94105-1905

REPLY TO
ATTENTION OF:

Regulatory Branch

Subject: File Number 19009S98

Mr. Bob Douglass
Cargill Salt
7220 Central Avenue
Newark, California 94560-4206

Dear Mr. Douglass:

Enclosed are two copies of a Department of the Army (DA) permit to perform solar salt production activities in South San Francisco Bay, in Alameda, Santa Clara and San Mateo Counties, California.

Please sign both copies on the line designated for permittee. Your signature should be notarized and both copies of the permit must be returned for my signature along with a check for $100 made payable to "F&A Officer, USAED, Sacramento." We will then forward one copy of the permit for your records, at which time you will be authorized to commence work.

Under this permit, the Corps hereby issues specific approval for the commencement of activities related to restoring 49 acres of salt marsh habitat as described in Attachment D, entitled "Salt Evaporator Pond B-1 Tidal Marsh Restoration" revised July 1995. Approval to perform the other activities described in the 1995-1996 Annual work plan will be forthcoming once the Corps has completed its evaluation of the plan following review by the cooperating Agencies and interested public.

The 49-acre restoration project is intended to satisfy the compensatory mitigation requirement for activities associated with the ongoing solar salt production in south San Francisco Bay over the life of this permit, and, if the nature of the work remains the same, beyond to subsequent permits as well.

Sincerely,

Michael J. Walsh
Lieutenant Colonel, Corps of Engineers
District Engineer

Enclosures

2000.005: Da

Mapelli, Pat D. - Pat_Mapelli@cargill.com

From: Paula.C.Gill@spd02.usace.army.mil
Sent: Monday, March 09, 2009 2:57 PM
To: Mapelli, Pat D. - Pat_Mapelli@cargill.com
Subject: LTC Walsh Mitigation Letter

Dear Mr. Mapelli-

We will honor the first transmittal letter for the 1995 Operations and Maintenance permit signed by LTC Walsh, provided the nature of the work remains the same.

Please note that there are still outstanding consultations with the USFWS and the NMFS for effects to federally-listed species and essential fish habitat. I spoke with Gary Stern, he hopes to review the submittal and determine if he requires any additional information by the end of the month.

We will notify you when we have more information regarding the consultation process.

Best,
Paula Gill

U.S. Army Corps of Engineers
Regulatory Division, 16th Floor
1455 Market Street
San Francisco, CA 94103
(415) 503-6776

APPENDIX B Example Completion Report

Cargill

August 1, 2023

Lt. Col. Timothy Shebesta
District Commander
U.S. Army Corps of Engineers
San Francisco District
450 Golden Gate Avenue
4th Floor
San Francisco, CA 94102-3404

Mr. Lawrence J. Goldzband
Executive Director
San Francisco Bay
Conservation and
Development Commission
375 Beale St., Suite 510
San Francisco, CA 94105

Mr. Brian Wines
Water Resource Control Engineer
Watershed Management Division
San Francisco Bay Regional Water
Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612

Subject: Cargill Salt's Maintenance Completion Report June 2022 to May 2023
USACE File Number: 2008-00160S
BCDC Permit 1993.004.18
RWQCB 401 Water Quality Certification

Dear Colonel Shebesta, Mr. Goldzband, and Mr. Wines:

Please find attached the Maintenance Completion Report for Cargill's maintenance activities of its Solar Salt Operations from June 2022 to May 2023, as required under our U.S. Army Corps of Engineers dredge and fill permit (USACE File Number 2008-00160S), San Francisco Bay Conservation and Development Commission maintenance and operations permit (BCDC Permit 1993.004.18), and Section 401 water quality certification. All completed tasks are authorized in the 2022-2023 approved work plan. Attached is a narrative summary, tabulated task list of completed activities, a map of the completed activity locations, wildlife monitoring summary, predator management report, and the Public Mailing List.

The agency contacts are:

Greg Brown, Permit Manager
U.S. Army Corps of Engineers
San Francisco District, South Section
450 Golden Gate Avenue, 4th Floor
San Francisco, CA 94102-3404
(415) 503-6791

&

Steve Goldbeck
Chief Deputy Director
San Francisco Bay Conservation and
Development Commission
375 Beale St., Suite 510
(415) 352-3611
San Francisco, CA 94105

&

Brian Wines
Water Resource Control Engineer
Watershed Management Division
San Francisco Bay Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612
(510) 622-5680

Narrative Activities Summary

Details for each of these projects are provided in the attached tabulated task list and locations are presented on the attached map.

Baumberg:
No maintenance activity tasks were conducted during this period.

West Bay:
No maintenance activity tasks were conducted during this period.

Redwood City Plant:
Work completed involve repair and replacement of platforms and brine pump station structures and repair of a foot and truck bridge over a brine ditch.

Plant 1:
Work completed involves routine berm maintenance activities, including placement of gravel on berm tops for all-weather access, building up berm tops in low areas, routine discing and grading of berm tops for vehicle and equipment access, maintenance of new and existing rip rap areas, and in-kind repair and replacement of platforms and structures.

Plant 2:
Work completed involves routine berm maintenance activities, including placement of gravel on berm tops for all-weather access, building up berm tops in low areas, in-kind repair and replacement of walkway platforms, and routine discing and grading of berm tops for vehicle and equipment access, and removal of sediment accumulation.

As you may know, Cargill historically has reserved its right to assert that the type and location of the work described in the enclosed report is outside the jurisdiction of USACE and/or exempt from permit requirements under section 404(f) of the Clean Water Act, 33 U.S.C. § 1344(f). Cargill has similarly and consistently asserted that BCDC's jurisdiction over Cargill's operations is limited to work in the Bay, in the 100-foot shoreline band, and in relation to the saltwater evaporation ponds. By submitting the enclosed report and supporting materials, Cargill does not waive - and expressly reserves - its position that some of the work described in the report is outside BCDC's and USACE's jurisdiction and/or exempt from permit requirements. This is included as a footnote within the report. Consistent with these representations, however, Cargill recognizes that its relationship with both agencies has been cooperative and productive, and we intend to continue to work with you and your staff to assure timely and effective completion of essential work in and around the historic San Francisco Bay salt ponds.

Sincerely,

Claudecir Pagnussatto
Complex Manager
Cargill Salt
(510) 790-8107

Task No.	Ponds Involved	Activity/Function	Duration of Activity	COE[1]	BCDC[1]	Planned Length (ft)	On Berm/Inboard of Berms/Outboard of Berms	Comments	Completed Length (ft)	Completed Width (ft)	Completed Area (sf)	Completed Volume (cy)	Biological Survey Requirements
Baumberg													
1	2C	Plug Cal-Hill transfer Pump pipeline	TBD	1a	2b	TBD	Berm	Plug Cal-Hill transfer pump pipeline.					
2	3C	Grading/Berm road maintenance	Ongoing	N/A	2b	8,600	Berm	Routine grading of berm top to provide vehicle access.					
3	3C	Remove or plug pipe from CP-4C to 3C	Ongoing	1a	2b	Earth plugs at each end	Berm	Plug existing pipe from CP-4C to 3C. CP-4C is operated by CDFW.					
4	3C	General berm maintenance	Ongoing	2a	2a	750	Inboard	Repair/Maintain berm erosion on beach face using earthen material with land-based equipment as needed.					
5	3C	Place rock on roads	Ongoing	N/A	2b	6,300	Berm	Allow all weather access.					
West Bay													
6	SF2	To transfer brines between Redwood City and Newark	Ongoing	2f	2c	20	Berm	Relocate portable pump on berm to dedicated pump pad.					
7	SF2	General berm maintenance	Ongoing	2a	2a	500	Inboard	Build up low areas on berm top as needed with land-based equipment.					
8	SF2	Rip Rap	Ongoing	1e	2a	250	Inboard	Maintenance of existing rip rap areas.					
9	SF2	Rip Rap	Ongoing	2h	2a	250	Inboard	Installation of rip rap in new areas as necessary.[2]					
10	R2 Donut	Other work	Ongoing	1a	2b	20	Outboard	Repair pump station structure.					
11	R2 Donut	Other work	Ongoing	2g	2c	60	Outboard	Repair Cofferdam.					
Redwood City Plant Site													
12	7A, 7B, 7C,	Grading/Berm road maintenance	Ongoing	N/A	2b	34,570	Berm	Routing grading of berm top to provide vehicle access.					
13	8W, 7A,B,C, Pickle Pond Ditch	Other work	TBD	2g	2c	40	Inboard	Build cofferdams to allow concentration of brines.					
14	8W, 7A, 7B	Other work	TBD	1a	2b	100	Inboard	Install new box and gates between 8W, 7A, and 7B.					
15	7A, 7B, 7C,	Routine Maintenance	Ongoing	1a	2b	10	Inboard	Repair in-kind existing gates/depth gauge/weir box/platforms/sheds/structures.					
16	PP-7B	General berm maintenance	Ongoing	2a	2a	3,000	Inboard	Build up/Maintain low areas as needed with land based equipment.					
17	PP-7C	General berm maintenance	Ongoing	2a	2a	2,500	Inboard	Build up/Maintain low areas as needed with land based equipment.					
18	PP-7C	General berm maintenance	Ongoing	2a	2a	400	Outboard	Spot repair outboard berm using earthen material.					
19	PP-7C	General berm maintenance	Ongoing	1e	1d	400	Outboard	Spot repair outboard berm using rip rap.					
20	PP-7C	General berm maintenance	Ongoing	2a	2a	400	Inboard	Repair erosion to outboard berm face due to storm water channel run off into berm caused by county/city storm water channel at Belle Haven Pump, using earthen material.					
21	PP-7C	General berm maintenance	Ongoing	1e	2a or 1d	400	Berm and Outboard	Repair erosion to outboard berm face due to storm water channel run off into berm caused by county/city storm water channel at Belle Haven Pump, using rip rap.					
22	7C	Place rock on berm road top	Ongoing	N/A	2b	5,000	Berm	Place rock on road for all weather access.					
23	9A	Rip Rap	Ongoing	1e	1d	200	Outboard	Maintenance of existing rip rap areas.					
24	9A	Rip Rap	Ongoing	2h	1d	200	Outboard	Installation of rip rap in new areas as necessary.[2]					
25	9	Rip Rap	Ongoing	1e	1d	350	Outboard	Maintenance of existing rip rap areas.					
26	9	Rip Rap	Ongoing	2h	1d	350	Outboard	Installation of rip rap in new areas as necessary.[2]					
27	10	Rip Rap	Ongoing	1e	1d	500	Outboard	Maintenance of existing rip rap areas.					
28	10	Rip Rap	Ongoing	2h	1d	500	Outboard	Installation of rip rap in new areas as necessary.[2]					
29	Brine Ditch	General berm maintenance	Ongoing	2a	2d	5,000	Berm	Compact internal core of berm as needed.					
30	Brine Ditch	Other work	Ongoing	1c	2b	200	Inboard	Platform and Bridge Repair in-kind within the footprint of existing structures.					
31	CX 1-3	General berm maintenance	Ongoing	2a	2a	600	Berm, Inboard and Outboard	Repair berm erosion, build up berm with land based equipment, and repair internal core as needed, with earthen material.					
32	CX 1-3	Rip Rap	Ongoing	2h	1d	300	Outboard	Installation of rip rap in new areas as necessary.[2]					
33	7B	Routine Maintenance	Ongoing	1a	2b	20	Inboard	Repair and replace donut outlet structures.					
34	7B	Routine Maintenance	Ongoing	1a	2b	10	Inboard	Repair and replace donut inlet structures.					
35	Brine Ditch	Routine Maintenance	Ongoing	1a	2b	20	Inboard	Repair and replace brine pump station structures.	15	5	75	1	If work done between March 1 and September 14, coordinate with USFWS (or call WRA) regarding snowy plover nesting locations and maintain 600 foot buffer from nest sites. If work in wetlands or potential SMHM habitat, contact WRA for biological inspection and recommendations.
36	PP-8W	Routine Maintenance	Ongoing	1a	2b	100	Inboard	Repair and replace gate from PP-8W to CX feed ditch.					
37	8E	Routine Maintenance	Ongoing	1a	2b	80	Inboard	Repair and replace gate from 8E to CX feed ditch.					
38	RWC Return Pump #1	Other work	Ongoing	1a	2d	20	Inboard	Remove accumulation of sediment from pump sump under platform.					
39	RWC Return Pump #1	Other work	Ongoing	1a	2b	20	Inboard	Repair platform.					
40	8E	Other work	Ongoing	1a	2d	80	Inboard	Remove accumulation of sediment from Pond 8E to CX feed ditch structures.					
41	8E	Routine Maintenance	Ongoing	1a	2b	40	Inboard	Remove and replace various structures and install new wooden walkway.					

[1]Cargill historically has reserved its right to assert that the type and location of the work described in the enclosed work plan is outside the jurisdiction of USACE and/or exempt from permit requirements under the Clean Water Act, 33 U.S.C. § 1344(f). Cargill has similarly and consistently asserted that BCDC's jurisdiction over Cargill's operations is limited to work in the Bay, in the 100-foot shoreline band, and in relation to the salt water evaporation ponds. By submitting the Proposed Work Plan and supporting materials, Cargill does not waive - and expressly reserves - its position that some of the work described in the Proposed Work Plan is outside BCDC's and USACE's jurisdiction and/or exempt from permit requirements.

[2]Installation of rip rap in new areas will only be completed as necessary and using the minimum amount necessary to protect berms against erosion.

Task No.	Ponds Involved	Activity/Function	Duration of Activity	COE[1]	BCDC[1]	Planned Length (ft)	On Berm/Inboard of Berms/Outboard of Berms	Comments	Completed Length (ft)	Completed Width (ft)	Completed Area (sf)	Completed Volume (cy)	Biological Survey Requirements
42	8E	Routine Maintenance	Ongoing	1a	2d	40	Inboard	Remove accumulation of sediment from bittern pump pipes.					
43	First Slough	Routine Maintenance	Ongoing	1b	1c	100	Outboard	Remove sediment from intake channel to facilitate pump operation					
44	Bittern Pump Intake	Routine Maintenance	Ongoing	1a	2b	20	Inboard	Remove and replace bittern pump intake structures.					
45	Bittern Pump Station	Routine Maintenance	Ongoing	1a	2b	20	Inboard	Remove and replace bittern pump station structures.					
46	Bittern Pump Station	Routine Maintenance	Ongoing	1a	2c	8,500	Inboard	Install new piping from pump to 8E, brine ditch, and CX 4 and various equipment.					
47	Pond 10 / Bittern Ditch	Other work	Ongoing	1a	2b	40	Outboard	Repair sloughside platforms (3) near bay water intake.					
48	10	Routine Maintenance	Ongoing	1a	2d	30	Inboard	Remove accumulation of sediment from Pond 10 drain gate and pipe.					
49	10	Routine Maintenance	Ongoing	1a	2b	30	Inboard	Remove and replace Pond 10 drain gate structures.					
50	RWC Return Pump	Routine Maintenance	Ongoing	1a	2d	20	Inboard	Remove accumulation of sediment and debris from pipe, CX feed ditch, and pump sump.					
51	RWC Return Pump #1	Routine Maintenance	Ongoing	1a	2b	20	Inboard	Repair in-kind existing gates/depth gauge/weir box/platforms/sheds/structures.					
52	RWC Return Pump #2	Routine Maintenance	Ongoing	1a	2b	20	Inboard	Repair in-kind existing gates/depth gauge/weir box/platforms/sheds/structures.					
53	CX 1-9	Other work	TBD	2g	2c	20	Inboard	Build cofferdams to seal CX 1-3 gates.					
54	CX 1-9	Routine Maintenance	Ongoing	1a	2b	500	Inboard	Repair in-kind existing gates/depth gauge/weir box/platforms/sheds/fencelines/structures.					
55	CX Ditch	Routine Maintenance	Ongoing	1a	2b	200	Inboard	Repair crystallizer ditch gates and bridges.					
56	Ditch Pump Station	Routine Maintenance	Ongoing	1a	2b	20	Inboard	Repair and replace pump station structures and retaining wall.					
57	Ditch Pump Station	Other work	Ongoing	1g	2b	50	Inboard	Maintain berm erosion from pump using various equipment e.g. rip rap					
58	Brine Ditch	Routine Maintenance	Ongoing	1a	2b	40	Inboard	Remove and replace structures at CX feed ditch pipe.					
59	Brine Ditch	Routine Maintenance	TBD	1a	2b	30	Inboard	Repair foot and truck bridges over brine ditch.	20	3	60	1	If work done between March 1 and September 14, coordinate with USFWS (or call WRA) regarding snowy plover nesting locations and maintain 600 foot buffer from nest sites. If work in wetlands or potential SMHM habitat, contact WRA for biological inspection and recommendations.
Plant 1													
60	1-9, 1A – 4A, 4B, PP1	Grading	Ongoing	N/A	2b	65,000	Berm	Routine grading of berm top to provide vehicle access.					
61	1-9, 1A – 4A, 4B, PP1	Place rock on roads	Ongoing	N/A	2b	56,000	Berm	Allow all weather access.	2600	8	20800	195	If work done between March 1 and September 14, coordinate with USFWS (or call WRA) regarding snowy plover nesting locations and maintain 600 foot buffer from nest sites.
62	1A	General berm maintenance	Ongoing	2a	2a	1,700	Berm, Inboard and Outboard	Repair berm erosion, build up berm with land based equipment, and repair internal core as needed, with earthen material.					
63	1A	Berm topping or beaching	Ongoing	2a	2e	6,500	Berm and Inboard	Repair berm using muds from within salt production cell or earthen material.					
64	1A	Rip Rap	Ongoing	1e	2a	100	Inboard	Maintenance of existing rip rap areas.					
65	1A	Rip Rap	Ongoing	2h	2a	1,000	Inboard	Installation of rip rap in new areas as necessary.[2]					
66	1A	Plug Cal-Hill transfer pump pipeline	TBD	1a	2b	TBD	Berm	Plug Cal-Hill transfer pump pipeline.					
67	1A	Other work	Ongoing	1a	2b	15	Inboard	Remove old pump platform structure from pond.					
68	1A	Routine Maintenance	TBD	1a	2b	20	Inboard	Repair in-kind existing gates/depth gauge/weir box/platforms/sheds/supports/structures.					
69	1A	Other work	TBD	2f	2c	1	Berm	Install posts for wireless communication project supports on Coyote Intake.					
70	1A	Maintain inlet channel to Coyote intake pump platform	TBD	1b	1h	300	Outboard	Remove sediment buildup from intake channel to facilitate pump operation.					
71	2A	General berm maintenance	Ongoing	2a	2a	1,000	Berm, Inboard and Outboard	Repair berm erosion, build up berm with land based equipment, and repair internal core as needed, using earthen material.	40	5	200	80	If work done between March 1 and September 14, coordinate with USFWS (or call WRA) regarding snowy plover nesting locations and maintain 600 foot buffer from nest sites. If work in wetlands or potential SMHM habitat, contact WRA for biological inspection and recommendations.
72	2A	Berm topping or beaching	Ongoing	2a	2e	6,500	Berm and Inboard	Repair berm using muds from within salt production cell or earthen material.					
73	2A	Rip Rap	Ongoing	1e	1d	300	Outboard	Maintenance of existing rip rap areas.	20	5	100	40	If work done between March 1 and September 14, coordinate with USFWS (or call WRA) regarding snowy plover nesting locations and maintain 600 foot buffer from nest sites.
74	2A	Rip Rap	Ongoing	2h	1d	600	Outboard	Installation of rip rap in new areas as necessary.[2]	40	5	200	80	If work done between March 1 and September 14, coordinate with USFWS (or call WRA) regarding snowy plover nesting locations and maintain 600 foot buffer from nest sites. If work in wetlands or potential SMHM habitat, contact WRA for biological inspection and recommendations.
75	2A	Rip Rap	Ongoing	1e	2a	150	Inboard	Maintenance of existing rip rap areas.					
76	2A	Rip Rap	Ongoing	2h	2a	600	Inboard	Installation of rip rap in new areas as necessary.[2]					
77	2A	General berm maintenance	Ongoing	2a	2a	600	Berm, Inboard and Outboard	Build up lock berm with land based equipment.					
78	2A	Enter lock	TBD	2d	1a	150	Berm, Inboard and Outboard	Enter lock for maintenance on system berms.					
79	2A	Exit lock	TBD	2d	1a	150	Berm, Inboard and Outboard	Exit lock.					

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[2]Installation of rip rap in new areas will only be completed as necessary and using the minimum amount necessary to protect berms against erosion.

Task No.	Ponds Involved	Activity/Function	Duration of Activity	COE[1]	BCDC[1]	Planned Length (ft)	On Berm/Inboard of Berms/Outboard of Berms	Comments	Completed Length (ft)	Completed Width (ft)	Completed Area (sf)	Completed Volume (cy)	Biological Survey Requirements
80	2A	Routine Maintenance	TBD	1a	2b	20	Inboard	Repair in-kind existing gates/depth gauge/weir box/platforms/sheds/structures.					
81	3A	General berm maintenance	Ongoing	2a	2a	200	Berm, Inboard and Outboard	Repair berm erosion, build up berm with land based equipment, and repair internal core as needed using earthen material.					
82	3A	Berm topping or beaching	Ongoing	2a	2e	10,000	Berm and Inboard	Repair berm using muds from within salt production cell or earthen material.					
83	3A	Routine maintenance	Ongoing	1a	2b	-	Inboard	Repair or replace 36" pipe and gate (3A to 4A).					
84	3A	Other work	TBD	1a	2b	20	Inboard	Repair in-kind existing gates/depth gauge/weir box/platforms/sheds/structures.					
85	4A	General berm maintenance	Ongoing	2a	2a	3,500	Berm, Inboard and Outboard	Repair berm erosion, build up berm with land based equipment, and repair internal core as needed using earthen material.					
86	4A	Berm topping or beaching	Ongoing	2a	2e	6,800	Berm and Inboard	Repair berm using muds from within salt production cell or earthen material.					
87	4A	Rip Rap	Ongoing	1e	2a	100	Inboard	Maintenance of existing rip rap areas.					
88	4A	Rip Rap	Ongoing	2h	2a	600	Inboard	Installation of rip rap in new areas as necessary.[2]					
89	4A	Other work	TBD	2f	2c	-	Berm	Install 4"x4" posts for wireless communication project supports.					
90	4A	Other work	TBD	1a	2b	30	Inboard	Repair in-kind existing gates/depth gauge/weir box/platforms/sheds/structures.					
91	4B	General berm maintenance	Ongoing	2a	2a	3,500	Berm and Inboard	Repair berm erosion, build up berm with land based equipment, and repair internal core as needed using earthen material.					
92	4B	Berm topping or beaching	Ongoing	2a	2e	300	Berm and Inboard	Repair berm using muds from within salt production cell or earthen material.					
93	4B	Rip Rap	Ongoing	1e	2a	100	Inboard	Maintenance of existing rip rap areas.					
94	4B	Rip Rap	Ongoing	2h	2a	300	Inboard	Installation of rip rap in new areas as necessary.[2]					
95	PP1	General berm maintenance	Ongoing	2a	2a	6,000	Inboard	Repair berm erosion, build up berm with land based equipment, and repair internal core as needed using earthen material.	20	8	160	5	If work done between March 1 and September 14, coordinate with USFWS (or call WRA) regarding snowy plover nesting locations and maintain 600 foot buffer from nest sites. If work in wetlands or potential SMHM habitat, contact WRA for biological inspection and recommendations.
96	PP1	Berm topping or beaching	Ongoing	2a	2e	4,500	Berm and Inboard	Repair berm using muds from within salt production cell or earthen material.					
97	PP1	Rip Rap	Ongoing	1e	2a	200	Inboard	Maintenance of existing rip rap areas.					
98	PP1	Rip Rap	Ongoing	2h	2a	300	Inboard	Installation of rip rap in new areas as necessary.[2]					
99	PP1	Rip Rap	Ongoing	1e	1d	200	Outboard	Maintenance of existing rip rap areas.					
100	PP1	Rip Rap	Ongoing	2h	1d	300	Outboard	Installation of rip rap in new areas as necessary.[2]					
101	PP1	Other work	TBD	2f	2c	-	Berm and Inboard	Install 4"x4" posts for wireless communication project supports.					
102	PP1	Other work	TBD	1a	2b	50	Inboard	Structure for secondary containment for brine pipelines.	10	20	200	5	If work done between March 1 and September 14, coordinate with USFWS (or call WRA) regarding snowy plover nesting locations and maintain 600 foot buffer from nest sites. If work in wetlands or potential SMHM habitat, contact WRA for biological inspection and recommendations.
103	PP1	Other work	TBD	1a	2b	70	Inboard	Repair in-kind existing gates/depth gauge/weir box/platforms/sheds/structures.	30	20	600	10	If work done between March 1 and September 14, coordinate with USFWS (or call WRA) regarding snowy plover nesting locations and maintain 600 foot buffer from nest sites. If work in wetlands or potential SMHM habitat, contact WRA for biological inspection and recommendations.
104	1	General berm maintenance	Ongoing	2a	2a	6,000	Inboard	Repair berm erosion, build up berm with land based equipment, and repair internal core as needed using earthen material.					
105	1	Other work	Ongoing	1d	2b	80	Inboard	Remove old fencing and pole at Green Hornet #3.					
106	1	Berm topping or beaching	Ongoing	2a	2e	4,100	Berm and Inboard	Repair berm using muds from within salt production cell or earthen material.					
107	1	Rip Rap	Ongoing	1e	2a	600	Inboard	Maintenance of existing rip rap areas.					
108	1	Rip Rap	Ongoing	2h	2a	600	Inboard	Installation of rip rap in new areas as necessary.[2]					
109	1	Rip Rap	Ongoing	1e	1d	100	Outboard	Maintenance of existing rip rap areas.					
110	1	Rip Rap	Ongoing	2h	1d	300	Outboard	Installation of rip rap in new areas as necessary.[2]					
111	1	Routine Maintenance	Ongoing	2b	2d	300	Berm, Outboard	Clean out sediment in lock and repair berm erosion.					
112	1	Routine Maintenance	Ongoing	1a	2b	80	Inboard	Repair in-kind existing gates/depth gauge/weir box/platforms/sheds/structures.					
113	2	General berm maintenance	Ongoing	2a	2a	7,400	Berm, Inboard and Outboard	Repair berm erosion, build up berm with land based equipment, and repair internal core as needed using earthen material.					
114	2	Berm topping or beaching	Ongoing	2a	2e	8,000	Berm and Inboard	Repair berm using muds from within salt production cell or earthen material.					
115	2	Rip Rap	Ongoing	1e	2a	100	Inboard	Maintenance of existing rip rap areas.					

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[2]Installation of rip rap in new areas will only be completed as necessary and using the minimum amount necessary to protect berms against erosion.

Task No.	Ponds Involved	Activity/Function	Duration of Activity	COE[1]	BCDC[1]	Planned Length (ft)	On Berm/Inboard of Berms/Outboard of Berms	Comments	Completed Length (ft)	Completed Width (ft)	Completed Area (sf)	Completed Volume (cy)	Biological Survey Requirements
116	2	Rip Rap	Ongoing	2h	2a	250	Inboard	Installation of rip rap in new areas as necessary.[2]					
117	2	Rip Rap	Ongoing	1e	1d	100	Outboard	Maintenance of existing rip rap areas.					
118	2	Rip Rap	Ongoing	2h	1d	250	Outboard	Installation of rip rap in new areas as necessary.[2]					
119	2	Enter lock	TBD	2d	1a	150	Berm, Inboard and Outboard	Enter lock					
120	2	Exit lock	TBD	2d	1a	150	Berm, Inboard and Outboard	Exit lock					
121	2	Other work	Ongoing	2f	2c	30	Inboard	Construct pump platform to facilitate siphon functionality.					
122	2	Other work	TBD	1a	2b	80	Inboard	Repair in-kind existing gates/depth gauge/weir box/platforms/sheds/structures.					
123	2	General berm maintenance	Ongoing	2a	2a	400	Inboard	Build up siphon donut berm with land based equipment using earthen material.					
124	2	Place rock on berm road top	Ongoing	N/A	2b	1,000	Berm	Place rock on road for all weather access.					
125	2	General berm maintenance	Ongoing	2g	2c	175	Inboard	Build cofferdam around dredge at the corner of CP2.					
126	3	General berm maintenance	Ongoing	2a	2a	6,000	Berm, Inboard and Outboard	Repair berm erosion, build up berm with land based equipment, and repair internal core as needed using earthen material.					
127	3	Berm topping or beaching	Ongoing	2a	2e	20,000	Berm and Inboard	Repair berm using muds from within salt production cell or earthen material.					
128	3	Rip Rap	Ongoing	1e	2a	100	Inboard	Maintenance of existing rip rap areas.					
129	3	Rip Rap	Ongoing	2h	2a	250	Inboard	Installation of rip rap in new areas as necessary.[2]					
130	3	Rip Rap	Ongoing	1e	1d	250	Outboard	Maintenance of existing rip rap areas.					
131	3	Rip Rap	Ongoing	2h	1d	500	Outboard	Installation of rip rap in new areas as necessary.[2]					
132	3	Other work	Ongoing	1a	2b	TBD	Berm	Replace Transbay Pump 36" discharge pipe to HDPE section.					
133	3	Other work	Ongoing	1a	2b	-	Inboard	Repair or replace 36" pipe and gate (3 to 2) tranfering brines between salt production cells.					
134	3	Other work	Ongoing	2a	2e	36	Inboard	Cut three (3) 12' gap in cross berm of CP-3 and Old Beard Creek using land based equipment.					
135	3	Place rock on berm road top	Ongoing	N/A	2b	4,000	Berm	Place rock on road for all weather access.					
136	3	Discing	Ongoing	N/A	2b	8,000	Berm	Routine discing of berm top to provide vehicle access.					
137	3	Other work	Ongoing	1a	2b	1	Inboard	Repair in-kind existing gates/depth gauge/weir box/platforms/sheds/structures.					
138	4	General berm maintenance	Ongoing	2a	2a	1,500	Berm, Inboard and Outboard	Repair berm erosion, build up berm with land based equipment, and repair internal core as needed using earthen material.					
139	4	Berm topping or beaching	Ongoing	2a	2e	8,000	Berm and Inboard	Repair berm using muds from within salt production cell or earthen material.					
140	4	Rip Rap	Ongoing	1e	2a	100	Inboard	Maintenance of existing rip rap areas.					
141	4	Rip Rap	Ongoing	2h	2a	250	Inboard	Installation of rip rap in new areas as necessary.[2]					
142	4	Rip Rap	Ongoing	1e	1d	250	Outboard	Maintenance of existing rip rap areas.					
143	4	Rip Rap	Ongoing	2h	1d	500	Outboard	Installation of rip rap in new areas as necessary.[2]					
144	4	Routine maintenance	Ongoing	1a	2b	50	Inboard	Repair Little Joe Pump Platform in kind and within the existing platform footprint.					
145	4	Place rock on berm road top	Ongoing	N/A	2b	4,000	Berm	Place rock on road for all weather access.					
146	4	Other work	TBD	2f	2c	-	Berm and Inboard	Install 4"x4" posts for wireless communication project supports.					
147	4	Other work	Ongoing	1a	2b	60	Inboard	Repair in-kind existing gates/depth gauge/weir box/platforms/sheds/structures.					
148	5	General berm maintenance	Ongoing	2a	2a	1,000	Berm, Inboard and Outboard	Repair berm erosion, build up berm with land based equipment, and repair internal core as needed using earthen material.					
149	5	Berm topping or beaching	Ongoing	2a	2e	6,000	Berm and Inboard	Repair berm using muds from within salt production cell or earthen material.					
150	5	Rip Rap	Ongoing	1e	2a	50	Inboard	Maintenance of existing rip rap areas.					
151	5	Rip Rap	Ongoing	2h	2a	100	Inboard	Installation of rip rap in new areas as necessary.[2]					
152	5	Rip Rap	Ongoing	1e	1d	250	Outboard	Maintenance of existing rip rap areas.					
153	5	Rip Rap	Ongoing	2h	1d	500	Outboard	Installation of rip rap in new areas as necessary.[2]					
154	5	Place rock on berm road top	Ongoing	N/A	2b	6,000	Berm	Place rock on road for all weather access.					
155	5	Other work	Ongoing	1a	2b	20	Inboard	Repair in-kind existing gates/depth gauge/weir box/platforms/sheds/structures.					
156	6	Berm topping or beaching	Ongoing	2a	2e	4,000	Berm and Inboard	Repair berm using muds from within salt production cell or earthen material.					
157	6	Place rock on berm road top	Ongoing	N/A	2b	1,000	Berm	Place rock on road for all weather access.					
158	6	Rip Rap	Ongoing	1e	2a	50	Inboard	Maintenance of existing rip rap areas.					
159	6	Rip Rap	Ongoing	2h	2a	100	Inboard	Installation of rip rap in new areas as necessary.[2]					
160	6	Other work	Ongoing	1a	2b	20	Inboard	Repair in-kind existing gates/depth gauge/weir box/platforms/sheds/structures.					
161	7	General berm maintenance	Ongoing	2a	2a	5,200	Berm and Inboard	Repair berm erosion, build up berm with land based equipment, and repair internal core as needed using earthen material.					

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Task No.	Ponds Involved	Activity/Function	Duration of Activity	COE[1]	BCDC[1]	Planned Length (ft)	On Berm/Inboard of Berms/Outboard of Berms	Comments	Completed Length (ft)	Completed Width (ft)	Completed Area (sf)	Completed Volume (cy)	Biological Survey Requirements
162	7	Berm topping or beaching	Ongoing	2a	2e	10,000	Berm and Inboard	Repair berm using muds from within salt production cell or earthen material.					
163	7	Place rock on berm road top	Ongoing	N/A	2b	2,500	Berm	Place rock on road for all weather access.					
164	7	Other work	Ongoing	1a	2b	20	Inboard	Repair in-kind existing gates/depth gauge/weir box/platforms/sheds/structures.					
165	8	General berm maintenance	Ongoing	2a	2a	1,000	Berm and Inboard	Repair berm erosion, build up berm with land based equipment, and repair internal core as needed using earthen material.					
166	8	Berm topping or beaching	Ongoing	2a	2e	3,000	Berm and Inboard	Repair berm using muds from within salt production cell or earthen material.					
167	8	Rip Rap	Ongoing	1e	2a	100	Inboard	Maintenance of existing rip rap areas.					
168	8	Rip Rap	Ongoing	2h	2a	100	Inboard	Installation of rip rap in new areas as necessary.[2]					
169	8	Other work	Ongoing	2f	2c	20	Inboard	Installation of a walking platform to take pond readings.					
170	8	Other work	Ongoing	1a	2b	20	Inboard	Repair in-kind existing gates/depth gauge/weir box/platforms/sheds/structures.					
171	8	Place rock on berm road top	Ongoing	N/A	2b	4,500	Berm	Place rock on road for all weather access.					
172	9	General berm maintenance	Ongoing	2a	2a	2,000	Berm and Inboard	Repair berm erosion, build up berm with land based equipment, and repair internal core as needed using earthen material.					
173	9	Berm topping or beaching	Ongoing	2a	2e	3,000	Berm and Inboard	Repair berm using muds from within salt production cell or earthen material.					
174	9	Rip Rap	Ongoing	1e	2a	100	Inboard	Maintenance of existing rip rap areas.					
175	9	Rip Rap	Ongoing	2h	2a	100	Inboard	Installation of rip rap in new areas as necessary.[2]					
176	9	Other work	Ongoing	2f	2c	20	Inboard	Installation of a walking platform to take pond readings.					
177	9	Routine maintenance	TBD	1a	2b	20	Inboard	Repair in-kind existing gates/depth gauge/weir box/platforms/sheds/structures.					
178	9	Place rock on berm road top	Ongoing	N/A	2b	3,000	Berm	Place rock on road for all weather access.					
Plant 2													
179	1-6, PP7, PP8, 10-13, CX Area, 26	Grading	Ongoing	N/A	2b	70,800	Berm	Routine grading of berm top to provide vehicle access.	46000	8	368000	0	If work done between March 1 and September 14, coordinate with USFWS (or call WRA) regarding snowy plover nesting locations and maintain 600 foot buffer from nest sites.
180	1	General berm maintenance	Ongoing	2a	2a	17,000	Berm, Inboard and Outboard	Repair berm erosion, build up berm with land based equipment, and repair internal core as needed using earthen material.					
181	1	Berm topping or beaching	Ongoing	2a	2e	9,800	Berm and Inboard	Repair berm using muds from within salt production cell or earthen material.					
182	1	Rip Rap	Ongoing	1e	2a	50	Inboard	Maintenance of existing rip rap areas.					
183	1	Rip Rap	Ongoing	2h	2a	100	Inboard	Installation of rip rap in new areas as necessary.[2]					
184	1	Rip Rap	Ongoing	1e	1d	50	Outboard	Maintenance of existing rip rap areas.					
185	1	Rip Rap	Ongoing	2h	1d	200	Outboard	Installation of rip rap in new areas as necessary.[2]					
186	1	Other work	Ongoing	2f	2c	20	Inboard	Installation of a walking platform to take pond readings.					
187	1	Discing	Ongoing	N/A	2b	12,000	Berm	Routine discing of berm top to provide vehicle access.					
188	1	Maintain inlet channel to Mowry intake pump platform	TBD	1b	1h	300	Outboard	Remove sediment from intake channel to facilitate pump operation					
189	1	Place rock on berm road top	Ongoing	N/A	2b	5,000	Berm	Place rock on road for all weather access.					
190	1	Routine maintenance	TBD	1a	2b	60	Inboard	Repair in-kind existing gates/depth gauge/weir box/platforms/sheds/structures.	10	5	50	1	If work done between March 1 and September 14, coordinate with USFWS (or call WRA) regarding snowy plover nesting locations and maintain 600 foot buffer from nest sites. If work in wetlands or potential SMHM habitat, contact WRA for biological inspection and recommendations.
191	2	General berm maintenance	Ongoing	2a	2a	14,500	Berm, Inboard and Outboard	Repair berm erosion, build up berm with land based equipment, and repair internal core as needed using earthen material.					
192	2	Berm topping or beaching	Ongoing	2a	2e	9,800	Berm and Inboard	Repair berm using muds from within salt production cell or earthen material.					
193	2	Rip Rap	Ongoing	1e	2a	50	Inboard	Maintenance of existing rip rap areas.					
194	2	Rip Rap	Ongoing	2h	2a	100	Inboard	Installation of rip rap in new areas as necessary.[2]					
195	2	Rip Rap	Ongoing	1e	1d	50	Outboard	Maintenance of existing rip rap areas.					
196	2	Rip Rap	Ongoing	2h	1d	200	Outboard	Installation of rip rap in new areas as necessary.[2]					
197	2	Discing	Ongoing	N/A	2b	14,500	Berm	Routine discing of berm top to provide vehicle access.					
198	2	Routine maintenance	Ongoing	1a	2b	20	Inboard	Repair or replace 36" screw gate (2 to 3).					
199	2	Place rock on berm road top	Ongoing	N/A	2b	1,000	Berm	Place rock on road for all weather access.					
200	2	Routine maintenance	TBD	1a	2b	80	Inboard	Repair in-kind existing gates/depth gauge/weir box/platforms/sheds/structures.					
201	3	General berm maintenance	Ongoing	2a	2a	17,000	Berm, Inboard and Outboard	Repair berm erosion, build up berm with land based equipment, and repair internal core as needed using earthen material.					
202	3	Berm topping or beaching	Ongoing	2a	2e	2,200	Berm and Inboard	Repair berm using muds from within salt production cell or earthen material.					
203	3	Rip Rap	Ongoing	1e	2a	50	Inboard	Maintenance of existing rip rap areas.					
204	3	Rip Rap	Ongoing	2h	2a	100	Inboard	Installation of rip rap in new areas as necessary.[2]					
205	3	Rip Rap	Ongoing	1e	1d	50	Outboard	Maintenance of existing rip rap areas.					
206	3	Rip Rap	Ongoing	2h	1d	200	Outboard	Installation of rip rap in new areas as necessary.[2]					

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Task No.	Ponds Involved	Activity/Function	Duration of Activity	COE[1]	BCDC[1]	Planned Length (ft)	On Berm/Inboard of Berms/Outboard of Berms	Comments	Completed Length (ft)	Completed Width (ft)	Completed Area (sf)	Completed Volume (cy)	Biological Survey Requirements
207	3	Discing	Ongoing	N/A	2b	12,200	Berm	Routine discing of berm top to provide vehicle access.					
208	3	Routine Maintenance	Ongoing	1a	2b	100	Berm, Inboard and Outboard	Repair Mowry Intake pump pipeline and supports.					
209	3	Other work	Ongoing	1b	2d	135	Inboard	Clean and remove sediment buildup in front of siphon intake channel as needed.					
210	3	Place rock on berm road top	Ongoing	N/A	2b	5,000	Berm	Place rock on road for all weather access.					
211	3	Routine maintenance	Ongoing	1a	2b	80	Inboard	Repair in-kind existing gates/depth gauge/weir box/platforms/sheds/structures.	10	20	200	2	If work done between March 1 and September 14, coordinate with USFWS (or call WRA) regarding snowy plover nesting locations and maintain 600 foot buffer from nest sites. If work in wetlands or potential SMHM habitat, contact WRA for biological inspection and recommendations.
212	4	General berm maintenance	Ongoing	2a	2a	18,500	Berm, Inboard and Outboard	Repair berm erosion, build up berm with land based equipment, and repair internal core as needed using earthen material.					
213	4	Berm topping or beaching	Ongoing	2a	2e	9,000	Berm and Inboard	Repair berm using muds from within salt production cell or earthen material.					
214	4	Rip Rap	Ongoing	1e	2a	50	Inboard	Maintenance of existing rip rap areas.					
215	4	Rip Rap	Ongoing	2h	2a	100	Inboard	Installation of rip rap in new areas as necessary.[2]					
216	4	Rip Rap	Ongoing	1e or 2h	1d	50	Outboard	Installation of rip rap in new areas.					
217	4	Rip Rap	Ongoing	2h	1d	200	Outboard	Installation of rip rap in new areas as necessary.[2]					
218	4	Other work	Ongoing	1b	2d	35	Inboard	Clean and remove sediment buildup in front of siphon as needed.					
219	4	Other work	Ongoing	1a	2b	40	Inboard	Replace gate box between CP-4 and CP-5.					
220	4	Place rock on berm road top	Ongoing	N/A	2b	1,000	Berm	Place rock on road for all weather access.					
221	4	Routine maintenance	Ongoing	1a	2b	60	Inboard	Repair in-kind existing gates/depth gauge/weir box/platforms/sheds/structures.					
222	5	General berm maintenance	Ongoing	2a	2a	11,500	Berm, Inboard and Outboard	Repair berm erosion, build up berm with land based equipment, and repair internal core as needed using earthen material.					
223	5	Berm topping or beaching	Ongoing	2a	2e	9,000	Berm and Inboard	Repair berm using muds from within salt production cell or earthen material.	200	10	2000	200	If work done between March 1 and September 14, coordinate with USFWS (or call WRA) regarding snowy plover nesting locations and maintain 600 foot buffer from nest sites.
224	5	Rip Rap	Ongoing	1e	2a	50	Inboard	Maintenance of existing rip rap areas.					
225	5	Rip Rap	Ongoing	2h	2a	100	Inboard	Installation of rip rap in new areas as necessary.[2]					
226	5	Rip Rap	Ongoing	1e	1d	50	Outboard	Maintenance of existing rip rap areas.					
227	5	Rip Rap	Ongoing	2h	1d	200	Outboard	Installation of rip rap in new areas as necessary.[2]					
228	5	Other work	Ongoing	2f	2c	20	Inboard	Installation of a walking platform to take pond readings.					
229	5	Place rock on berm road top	Ongoing	N/A	2b	1,000	Berm	Place rock on road for all weather access.					
230	5	Routine maintenance	Ongoing	1a	2b	20	Inboard	Repair in-kind existing gates/depth gauge/weir box/platforms/sheds/structures.					
231	6	General berm maintenance	Ongoing	2a	2a	20,000	Berm, Inboard and Outboard	Repair berm erosion, build up berm with land based equipment, and repair internal core as needed using earthen material.	5	5	25	5	If work done between March 1 and September 14, coordinate with USFWS (or call WRA) regarding snowy plover nesting locations and maintain 600 foot buffer from nest sites. If work in wetlands or potential SMHM habitat, contact WRA for biological inspection and recommendations.
232	6	Berm topping or beaching	Ongoing	2a	2e	5,500	Berm and Inboard	Repair berm using muds from within salt production cell or earthen material.	80	5	400	80	If work done between March 1 and September 14, coordinate with USFWS (or call WRA) regarding snowy plover nesting locations and maintain 600 foot buffer from nest sites.
233	6	Rip Rap	Ongoing	1e	2a	50	Inboard	Maintenance of existing rip rap areas.					
234	6	Rip Rap	Ongoing	2h	2a	100	Inboard	Installation of rip rap in new areas as necessary.[2]					
235	6	Rip Rap	Ongoing	1e	1d	50	Outboard	Maintenance of existing rip rap areas.					
236	6	Rip Rap	Ongoing	2h	1d	200	Outboard	Installation of rip rap in new areas as necessary.[2]					
237	6	Discing	Ongoing	N/A	2b	6,000	Berm	Routine discing of berm top to provide vehicle access.					
238	6	Place rock on berm road top	Ongoing	N/A	2b	17,000	Berm	Place rock on road for all weather access.					
239	6	Routine maintenance	Ongoing	1a	2b	20	Inboard	Repair in-kind existing gates/depth gauge/weir box/platforms/sheds/structures.					
240	PP7	General berm maintenance	Ongoing	2a	2a	11,000	Berm, Inboard and Outboard	Repair berm erosion, build up berm with land based equipment, and repair internal core as needed using earthen material.	50	5	250	20	If work done between March 1 and September 14, coordinate with USFWS (or call WRA) regarding snowy plover nesting locations and maintain 600 foot buffer from nest sites. If work in wetlands or potential SMHM habitat, contact WRA for biological inspection and recommendations.
241	PP7	Berm topping or beaching	Ongoing	2a	2e	5,500	Berm and Inboard	Repair berm using muds from within salt production cell or earthen material.					
242	PP7	Rip Rap	Ongoing	1e	2a	100	Inboard	Maintenance of existing rip rap areas.					
243	PP7	Rip Rap	Ongoing	2h	2a	200	Inboard	Installation of rip rap in new areas as necessary.[2]					
244	PP7	Rip Rap	Ongoing	1e	1d	100	Outboard	Maintenance of existing rip rap areas.					
245	PP7	Rip Rap	Ongoing	2h	1d	200	Outboard	Installation of rip rap in new areas as necessary.[2]					
246	PP7	Other work	Ongoing	1a	2b	100	Inboard	Replace gate box between PP7 & PP8.					
247	PP7	Routine Maintenance	Ongoing	1a	2b	100	Inboard	Replace 36" gate and pipe between PP7 and brine ditch.					
248	PP7	Routine maintenance	Ongoing	1a	2b	60	Inboard	Repair wash water ditch pump platform in kind and in the same footprint.					
249	PP7	Routine maintenance	Ongoing	1a	2b	750	Berm, Inboard and Outboard	Repair pipe connecting the wash water ditch pump to CP3 pump.					
250	PP7	Other work	Ongoing	2b	2d	200	Inboard	Remove accumulation of sediment from around an intake gate and associated channel. The mud will be placed on inside berm toe of PP7.	60	10	600	60	Contact WRA for biological monitoring during construction, fence installation, and vegetation removal.

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251	PP7	Place rock on berm road top	Ongoing	N/A	2b	5,000	Berm	Place rock on road for all weather access.	5600	8	44800	420	If work done between March 1 and September 14, coordinate with USFWS (or call WRA) regarding snowy plover nesting locations and maintain 600 foot buffer from nest sites.
252	PP7	Routine Maintenance		2b	2d	300	Berm, Outboard	Clean out sediment in lock and repair berm erosion.					
253	PP7 and Washwater Ditch	Routine Maintenance	Ongoing	1a	2b	100	Inboard	Repair in-kind existing gates/depth gauge/weir box/platforms/sheds/structures.	20	20	400	5	If work done between March 1 and September 14, coordinate with USFWS (or call WRA) regarding snowy plover nesting locations and maintain 600 foot buffer from nest sites. If work in wetlands or potential SMHM habitat, contact WRA for biological inspection and recommendations.
254	PP8	General berm maintenance	Ongoing	2a	2a	11,000	Berm, Inboard and Outboard	Repair berm erosion, build up berm with land based equipment, and repair internal core as needed using earthen material.	20	8	160	20	If work done between March 1 and September 14, coordinate with USFWS (or call WRA) regarding snowy plover nesting locations and maintain 600 foot buffer from nest sites. If work in wetlands or potential SMHM habitat, contact WRA for biological inspection and recommendations.
255	PP8	Berm topping or beaching	Ongoing	2a	2e	1,000	Berm and Inboard	Repair berm using muds from within salt production cell or earthen material.					
256	PP8	Rip Rap	Ongoing	1e	2a	200	Inboard	Maintenance of existing rip rap areas.					
257	PP8	Rip Rap	Ongoing	2h	2a	300	Inboard	Installation of rip rap in new areas as necessary.[2]					
258	PP8	Rip Rap	Ongoing	1e	1d	200	Outboard	Maintenance of existing rip rap areas.					
259	PP8	Rip Rap	Ongoing	2h	1d	300	Outboard	Installation of rip rap in new areas as necessary.[2]					
260	PP8	Other work	Ongoing	1a	2b	50	Inboard	Replace gate box between PP8 & CX26 in kind and within the previously existing footprint.					
261	PP8	Routine Maintenance	Ongoing	1a	2b	150	Berm	Replace (3) 36" waterman gates in PP8 and Ditch within the existing footprint.					
262	PP8	Other work	Ongoing	2b	2d	200	Inboard	Remove sedimentation from around an intake gate, associated channel, and dredge lock as needed. The mud will be placed on inside berm toe of PP8.	60	10	600	60	Contact WRA for biological monitoring during construction, fence installation, and vegetation removal.
263	PP8	Place rock on berm road top	Ongoing	N/A	2b	9,000	Berm	Place rock on road for all weather access.	5500	8	44000	415	If work done between March 1 and September 14, coordinate with USFWS (or call WRA) regarding snowy plover nesting locations and maintain 600 foot buffer from nest sites.
264	PP8	Routine Maintenance		2b	2d	300	Berm, Outboard	Clean out sediment in lock and repair berm erosion.					
265	PP8	Routine maintenance	Ongoing	1a	2b	300	Inboard	Repair in-kind existing gates/depth gauge/weir box/platforms/sheds/structures.					
266	CX 1-28	Routine maintenance	Ongoing	1a	2b	1,000	Inboard	Repair in-kind existing gates/depth gauge/weir box/platforms/sheds/fenceline/structures.	100	5	500	10	If work done between March 1 and September 14, coordinate with USFWS (or call WRA) regarding snowy plover nesting locations and maintain 600 foot buffer from nest sites. If work in wetlands or potential SMHM habitat, contact WRA for biological inspection and recommendations.
267	Crystallizer 26	General berm maintenance	Ongoing	2a	2a	11,000	Berm, Inboard and Outboard	Repair berm erosion, build up berm with land based equipment, and repair internal core as needed using earthen material.	10	3	30	10	If work done between March 1 and September 14, coordinate with USFWS (or call WRA) regarding snowy plover nesting locations and maintain 600 foot buffer from nest sites. If work in wetlands or potential SMHM habitat, contact WRA for biological inspection and recommendations.
268	Crystallizer 26	Berm topping or beaching	Ongoing	2a	2e	1,000	Berm and Inboard	Repair berm using muds from within salt production cell or earthen material.					
269	Crystallizer 26	Rip Rap	Ongoing	1e	2a	100	Inboard	Maintenance of existing rip rap areas.					
270	Crystallizer 26	Rip Rap	Ongoing	2h	2a	200	Inboard	Installation of rip rap in new areas as necessary.[2]					
271	Crystallizer 26	Rip Rap	Ongoing	1e	1d	100	Outboard	Maintenance of existing rip rap areas.					
272	Crystallizer 26	Rip Rap	Ongoing	2h	1d	200	Outboard	Installation of rip rap in new areas as necessary.[2]					
273	Crystallizer 26	Enter lock	TBD	2d	1a	150	Berm, Inboard and Outboard	Enter lock at CX 26.					
274	Crystallizer 26	Routine Maintenance	Ongoing	2b	2d	300	Berm, Outboard	Clean out sediment in lock and repair berm erosion.					
275	Crystallizer 26	Place rock on berm road top	Ongoing	N/A	2b	11,000	Berm	Place rock on road for all weather access.					
276	10 De-Salting Pond	General berm maintenance	Ongoing	2a	2a	14,000	Berm, Inboard and Outboard	Repair berm erosion, build up berm with land based equipment, and repair internal core as needed using earthen material.					
277	10 De-Salting Pond	Rip Rap	Ongoing	1e	2a	100	Inboard	Maintenance of existing rip rap areas.					
278	10 De-Salting Pond	Rip Rap	Ongoing	2h	2a	200	Inboard	Installation of rip rap in new areas as necessary.[2]					
279	10 De-Salting Pond	Rip Rap	Ongoing	1e	1d	100	Outboard	Maintenance of existing rip rap areas.					
280	10 De-Salting Pond	Rip Rap	Ongoing	2h	1d	200	Outboard	Installation of rip rap in new areas as necessary.[2]					
281	10 De-Salting Pond	Place rock on berm road top	Ongoing	N/A	2b	5,000	Berm	Place rock on road for all weather access.					
282	11 De-Salting Pond	General berm maintenance	Ongoing	2a	2a	14,000	Berm, Inboard and Outboard	Repair berm erosion, build up berm with land-based equipment, and assess options for bolstering core strength/height of berms using earthen materials.	50	3	150	50	If work done between March 1 and September 14, coordinate with USFWS (or call WRA) regarding snowy plover nesting locations and maintain 600 foot buffer from nest sites. If work in wetlands or potential SMHM habitat, contact WRA for biological inspection and recommendations.
283	11 De-Salting Pond	Rip Rap	Ongoing	1e	2a	100	Inboard	Maintenance of existing rip rap areas.					
284	11 De-Salting Pond	Rip Rap	Ongoing	2h	2a	200	Inboard	Installation of rip rap in new areas as necessary.[2]					
285	11 De-Salting Pond	Rip Rap	Ongoing	1e	1d	100	Outboard	Maintenance of existing rip rap areas.					
286	11 De-Salting Pond	Rip Rap	Ongoing	2h	1d	200	Outboard	Installation of rip rap in new areas as necessary.[2]					

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287	11 De-Salting Pond	Place rock on berm road top	Ongoing	N/A	2b	7,000	Berm	Place rock on road for all weather access.					
288	12 Bittern Pond	General berm maintenance	Ongoing	N/A	2a	11,000	Berm, Inboard and Outboard	Repair berm erosion, build up berm with land-based equipment, and assess options for bolstering core strength/height of berms using earthen materials.	500	3	1500	500	If work done between March 1 and September 14, coordinate with USFWS (or call WRA) regarding snowy plover nesting locations and maintain 600 foot buffer from nest sites. If work in wetlands or potential SMHM habitat, contact WRA for biological inspection and recommendations.
289	12 Bittern Pond	Rip Rap (Inside)	Ongoing	1e	2a	200	Inboard	Maintenance of existing rip rap areas.					
290	12 Bittern Pond	Rip Rap (Inside)	Ongoing	2h	2a	300	Inboard	Installation of rip rap in new areas as necessary.[2]					
291	12 Bittern Pond	Rip Rap (Inside)	Ongoing	1e	1d	200	Outboard	Maintenance of existing rip rap areas.					
292	12 Bittern Pond	Rip Rap (Inside)	Ongoing	2h	1d	300	Outboard	Installation of rip rap in new areas as necessary.[2]					
293	12 Bittern Pond	Other work	Ongoing	1a	2b	30	Inboard	Replace gate box between BP-12 and DSP-11 in kind and within the same footprint.					
294	12 Bittern Pond	Other work	Ongoing	1a	2b	8	Inboard	Replace existing pump platform and pipes at southeastern corner within the existing footprint					
295	12 Bittern Pond	Routine Maintenance	Ongoing	1a	2b	100	Inboard	Replace 36" screw gate and pipe (36" x 50') at siphon donut within existing footprint.					
296	12 Bittern Pond	Place rock on berm road top	Ongoing	N/A	2b	5,000	Berm	Place rock on road for all weather access.	2500	8	20000	187	If work done between March 1 and September 14, coordinate with USFWS (or call WRA) regarding snowy plover nesting locations and maintain 600 foot buffer from nest sites.
297	12 Bittern Pond	Other work	Ongoing	2f	2c	6,000	Inboard	Clean out siphon and donut using various equipment e.g. temporary cofferdam.					
298	12 Bittern Pond Ditch	Routine Maintenance	Ongoing	N/A	2a	600	Inboard, Berm	Roll sides of ditch with sheepsfoot.					
299	13 Bittern Pond	General berm maintenance	Ongoing	N/A	2a	10,000	Berm, Inboard and Outboard	Repair berm erosion, build up berm with land-based equipment, and assess options for bolstering core strength/height of berms using earthen materials.	200	3	600	200	If work done between March 1 and September 14, coordinate with USFWS (or call WRA) regarding snowy plover nesting locations and maintain 600 foot buffer from nest sites. If work in wetlands or potential SMHM habitat, contact WRA for biological inspection and recommendations.
300	13 Bittern Pond	Rip Rap (Inside)	Ongoing	1e	2a	200	Inboard	Maintenance of existing rip rap areas.					
301	13 Bittern Pond	Rip Rap (Inside)	Ongoing	2h	2a	300	Inboard	Installation of rip rap in new areas as necessary.[2]					
302	13 Bittern Pond	Rip Rap (Inside)	Ongoing	1e	1d	200	Outboard	Maintenance of existing rip rap areas.					
303	13 Bittern Pond	Rip Rap (Inside)	Ongoing	2h	1d	300	Outboard	Installation of rip rap in new areas as necessary.[2]					
304	13 Bittern Pond	Routine Maintenance	Ongoing	1a	2b	100	Inboard	Replace 36" screw gate to BP 12 siphon donut in kind and within the same footprint.					
305	13 Bittern Pond	Enter lock	TBD	2d	1a	150	Berm, Inboard and Outboard	Enter lock					
306	13 Bittern Pond	Exit lock	TBD	2d	1a	150	Berm, Inboard and Outboard	Exit lock					
307	13 Bittern Pond	Other work	Ongoing	2f	2c	6,000	Inboard	Clean out siphon using various equipment e.g. temporary cofferdam.					
308	13 Bittern Pond	Place rock on berm road top	Ongoing	N/A	2b	6,000	Berm	Place rock on road for all weather access.	1400	8	11200	105	If work done between March 1 and September 14, coordinate with USFWS (or call WRA) regarding snowy plover nesting locations and maintain 600 foot buffer from nest sites.
309	FMC Area	Grading	Ongoing	N/A	2b	11,000	Berm	Routine grading of berm top to provide vehicle access.	4600	8	36800	0	If work done between March 1 and September 14, coordinate with USFWS (or call WRA) regarding snowy plover nesting locations and maintain 600 foot buffer from nest sites.
310	FMC Area	General berm maintenance	Ongoing	2a	2a	10,000	Berm, Inboard and Outboard	Build up berm with land based equipment and repair internal core as needed using earthen material.					
311	FMC Area	Rip Rap	Ongoing	1e	2a	200	Inboard	Maintenance of existing rip rap areas.					
312	FMC Area	Rip Rap	Ongoing	2h	2a	400	Inboard	Installation of rip rap in new areas as necessary.[2]					
313	FMC Area	Rip Rap	Ongoing	1e	1d	200	Outboard	Maintenance of existing rip rap areas.					
314	FMC Area	Rip Rap	Ongoing	2h	1d	400	Outboard	Installation of rip rap in new areas as necessary.[2]					
315	FMC Area	General berm maintenance	Ongoing	2a	2a	1,000	Berm, Inboard and Outboard	Berm repair from rain runoff using earthen material.					
316	FMC Area	Routine maintenance	Ongoing	1a	2b	400	Berm and Inboard	Repair or Replace gates and pipes in kind and within the same footprint.					
317	FMC Area	Other work	Ongoing	1a	2b	10	Berm and Outboard	Remove existing pump platform within tidal channel at entrance to FMC and relocate to the tidal channel on other side of berm with no increase in pump platform size or capacity.					
318	FMC Area	Routine maintenance	Ongoing	1a	2b	200	Berm	Repair or replace weir pipes.					
319	FMC Area	Other work	Ongoing	1a	2b	80	Berm and Inboard	Remove existing pump platform in FMC brine channel and replace with a new platform within the same footprint.					
320	FMC Area	Place rock on berm road top	Ongoing	N/A	2b	13,000	Berm	Place rock on roads for all weather access.	9200	8	73600	690	If work done between March 1 and September 14, coordinate with USFWS (or call WRA) regarding snowy plover nesting locations and maintain 600 foot buffer from nest sites.
321	FMC Area	Other work	Ongoing	1a	2b	8	Berm and Inboard	Replace existing pump platform at western end of deep toe ditch in kind and in the same footprint.					
322	FMC Area	Other work	Ongoing	2a	2e	72	Berm	Cut gap in cross berm of FMC 2 and FMC 4 using land based equipment.					

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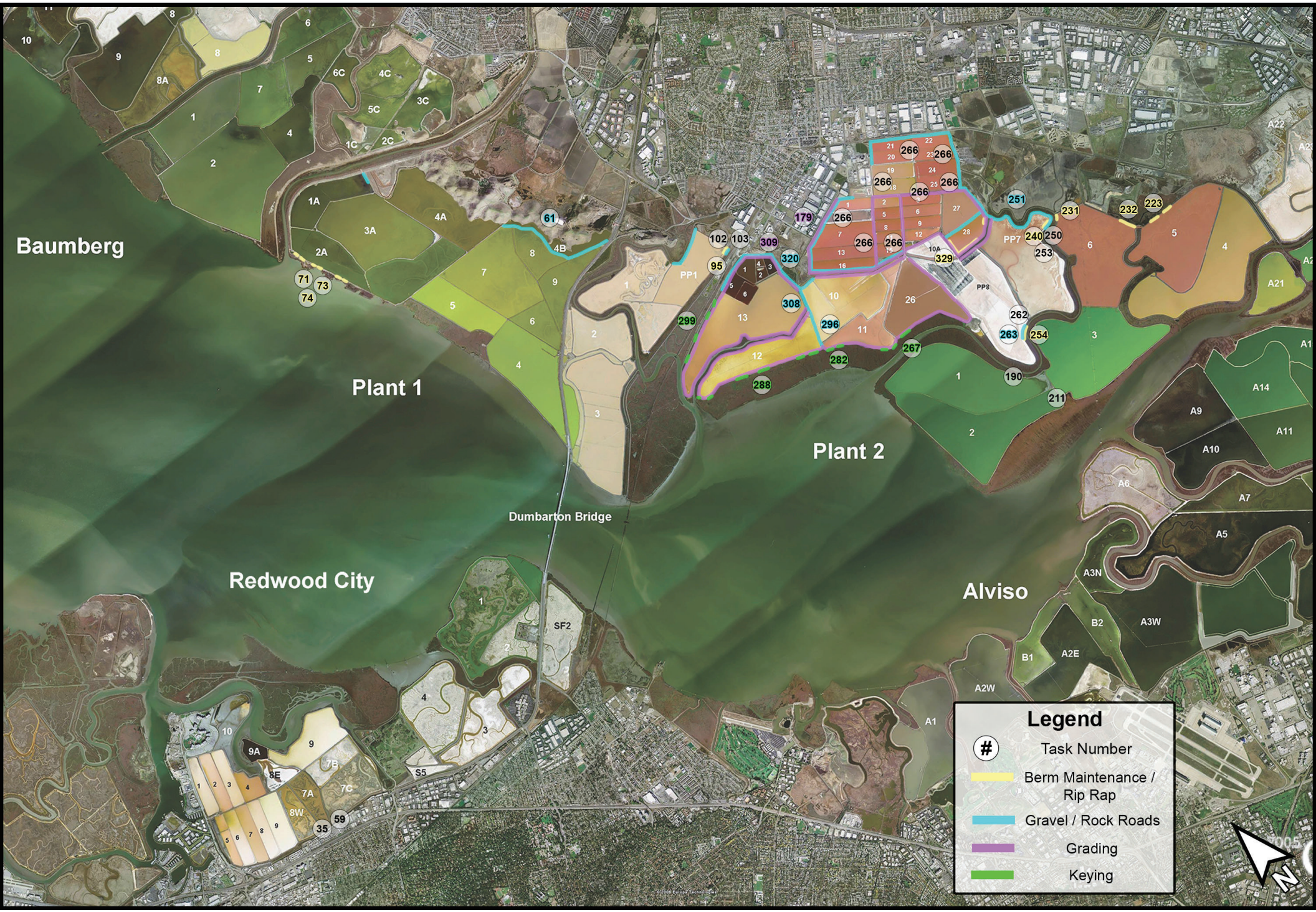
323	Brine Ditch	Other work	Ongoing	2f	2b	50	Inboard	Fill in channel/ditch to facilitate heavy vehicle movement on an existing levee road.					
324	Brine Ditch / E1 Ditch	General berm maintenance	TBD	2a	2a	1,000	Berm	Repair berm between brine ditch and E1 Ditch.					
325	FMC Ditch	Routine maintenance	Ongoing	1a	2b	150	Inboard	Replace 36" screw gates and pipe (36" x 50') within the same footprint. Install new gate between existing FMC cells.					
326	CX Ditch	Routine maintenance	Ongoing	1a	2b	150	Inboard	Replace concrete culverts in ditch between CX 16 and DSP 10 within the same footprint.					
327	Plummer Slough	Routine Maintenance	Ongoing	1a	2b	60	Outboard	Replace existing Plummer intake structure in-kind using various equipment e.g. temporary cofferdam.					
328	Plummer Slough	Routine Maintenance	Ongoing	1a	2b	30	Outboard	Replace existing Dunn Marsh fresh water intake structure in-kind.					
329	Multipurpose Ditch	Routine maintenance	Ongoing	2b	2d	150	Inboard	Remove accumulation of sediment from sump. The mud will be placed on the inside of berm toe of 10A.	2450	10	24500	600	If work done between March 1 and September 14, coordinate with USFWS (or call WRA) regarding snowy plover nesting locations and maintain 600 foot buffer from nest sites. If work in wetlands or potential SMHM habitat, contact WRA for biological inspection and recommendations.
330	Multipurpose Ditch	Routine maintenance	Ongoing	1a	2b	100	Inboard	Repair in-kind existing gates/depth gauge/weir box/platforms/sheds/structures.					
331	Mowry Slough	Maintain inlet channel to multi-purpose ditch	TBD	1b	1h	150	Outboard	Remove accumulated debris from inlet channel using land based equipment. Material to be placed on PP-7 inside berm beach. 40' x 150' x 6'					
332	Perimeter Berm	General berm maintenance	TBD	2a	2a	7,500	Berm, Inboard and Outboard	Build up the inboard perimeter berm with land based equipment.					
333	Perimeter Berm	Other work	Ongoing	1d	2b	4,200	Berm, Inboard and Outboard	Replace high voltage power poles like in kind.					
334	1	Other work	Ongoing	1a	1c	40	Outboard	Remove and Replace existing intake pump platform in Mowry Slough. Use temporary steel piles and trestles for demo/construction of new platform.					
335	DSP 11, BP 12, BP 13, and FMC Area	Other work	Ongoing	2a	2a	300	Inboard	New Work, contingent on agency approval. Berm strengthening evaluation in limited areas using sheet pile, per October 18, 2019 letter and related correspondence submitted to COE, BCDC, and RWQCB.					
336	10A	Other work	Ongoing	2f	2c	30	Inboard	Install a new 16-inch diameter pipe from bay water system to 10A underneath the berm.					

[1]Cargill historically has reserved its right to assert that the type and location of the work described in the enclosed work plan is outside the jurisdiction of USACE and/or exempt from permit requirements under the Clean Water Act, 33 U.S.C. § 1344(f). Cargill has similarly and consistently asserted that BCDC's jurisdiction over Cargill's operations is limited to work in the Bay, in the 100-foot shoreline band, and in relation to the salt water evaporation ponds. By submitting the Proposed Work Plan and supporting materials, Cargill does not waive - and expressly reserves - its position that some of the work described in the Proposed Work Plan is outside BCDC's and USACE's jurisdiction and/or exempt from permit requirements.

[2]Installation of rip rap in new areas will only be completed as necessary and using the minimum amount necessary to protect berms against erosion.

Cargill Salt 2022-2023 Completed Maintenance



United States Department of Agriculture

Marketing and Regulatory Programs

Animal and Plant Health Inspection Service

Wildlife Services

California State Office

3419A Arden Way
Sacramento, CA
95825
(916) 979-2675

Subject: Cargill Salt Predator Management Annual Report (June 1, 2022-May 31, 2023)

Date: July 17, 2023

To: Connie Lee

Predator management activities were conducted at the following locations: Ideal Marsh, Audubon/Dumbarton Marsh, Newark Plant 1, Newark Plant 2, Mowry North, and Mowry South. The main objective of this project is to protect the endangered California Ridgway's rail (Rallus obsoletus obso/etus) [formerly known as the California clapper rail (Rallus longirostis obso/etus)], endangered salt marsh harvest mouse (Reithrodontomys raviventris raviventris), threatened Pacific coast population of western snowy plover *(Charadrius a/exandrinus nivosus),* and endangered California least tern (*Sternula antillarum brownt)* from mammalian predators. Predator removal was conducted by USDA Wildlife Services District Supervisor Barry Lowry, Wildlife Biologists Dean Pyzik and Wildlife Specialists Dylan Bowman, Fletcher Perry and Aric Heath.

This report covers work done by WS as per agreement between WS and Cargill. The timeframe for work covered in this report is 6/1/22 through 5/31/23. As per the USFWS BO, work done under this agreement is broken down into areas of the refuge where Cargill is currently conducting salt harvesting or levee maintenance activities; Ideal Marsh, Audubon/Dumbarton Marsh, Newark Plants 1 and 2, and Mowry North and South. Work is ongoing within the areas of the refuge where Cargill operates.

Control methods used during this year consisted of shooting, cage traps, padded jaw foot hold traps, and spotlight/shooting. These methods were used to remove feral cats *(Felis catus),* Virginia opossums *(Oidelphis virginiana),* striped skunks *(Mephitis mephitis),* and raccoons (*Procyon lotor).* All euthanized mammals were euthanized using an injection of sodium pentobarbital or shooting; and disposed of following USDA WS directives, and all applicable state and federal laws and regulations. Most cats, raccoons, and opossums were euthanized on-site by shooting. All skunks in traps were euthanized on-site using sodium pentobarbital or shooting.

Lethal doses of sodium pentobarbital were administered through the use of a syringe or syringe pole. The injections were placed in the intraperitoneal cavity. The typical dosage rate is 1 cc for every 10 pounds of body weight. The effects of sodium pentobarbital are rapid unconsciousness, followed by a reduction of respiration and central nervous system activity, and ending with cardiac arrest. When injected into the heart, the results are almost instantaneous. Sodium

pentobarbital is a schedule II-controlled substance whose use is monitored by the U.S. Drug Enforcement Administration. Use of sodium pentobarbital by WS employees is restricted to those that have received training and are certified in its use.

The firearms used for euthanasia were Ruger Model M77/22 chambered for .22 Long Rifle rimfire with an AWC internal sound suppressor and Ruger 10/22 chambered for .22 Long Rifle rimfire with an AWC internal sound suppressor. Lethal shots were administered to target animals in cages with an emphasis on shot placement for a safe, quick, humane kill. Use of firearms by WS employees is restricted to those that have received training and are certified in firearms use.

No captured mammals were relocated. WS does not consider relocation of mammals to be a biologically sound practice in many situations. Relocated animals suffer considerable stress from relocation activities and territorial disputes. Studies indicate that those animals that do survive seldom remain at the release sites. The American Veterinary Medical Association, National Association of State Public Health Veterinarians, and the council of State and territorial Epidemiologists oppose relocation because of disease transmission (California Wildlife Services Directive 2.501). Relocation of wildlife is also prohibited by California Department of Fish & Game (CDF&G) Commission Regulations (Title 14) section 671.6 and section 679 (f) (4). Regulation 671.6 prohibits release of any wild animal that: 1) is not native to California; 2) is found to be diseased, or there is reason to suspect may have the potential for disease; 3) maybe genetically detrimental to agriculture or native wildlife; or 4) has not been successfully introduced to California prior to 1955 without written permission of the commission (CDF&G Commission Regulation Title 14 section 671.6). Section 679 states "Any healthy wildlife trapped in towns or cities or removed from under buildings or otherwise taken or trapped because of human/animal conflict shall be immediately released in the area where trapped or disposed of as directed or authorized by the department."

Fifteen striped skunks, three raccoons, four feral cats, and six opossums were removed. See the tables below for a breakdown of species captured at each location.

Table 1. Number of target mammalian predators removed by location and species.

Location	Red Fox	Cat	Raccoon	Skunk	Opossum	Total
Ideal Marsh	0	0	0	0	0	0
Audubon/Dumbarton	0	0	0	0	0	0
Newark Plant 1	0	2	1	1	0	4
Newark Plant 2	0	2	1	9	6	18
Mowry North	0	0	0	0	0	0
Mowry South	0	0	1	5	0	6
Total	**0**	**4**	**3**	**15**	**6**	**28**

Table 2. Number of non-target mammals captured by location and species.

Location	Gray Fox
Ideal Marsh	0
Audubon/Dumbarton	0
Newark Plant 1	0
Newark Plant 2	0
Mowry North	0
Mowry South	0
Total	**0**

Dean Pyzik
Wildlife Biologist
San Luis District
USDA Wildlife Services-California

wra
Environmental
Consultants

MEMORANDUM

TO:	Matt Pitcher, Cargill Matthew_Pitcher@cargill.com	**FROM:**	Justin Semion semion@wra-ca.com 415-524-7531
DATE:	July 27, 2023		
SUBJECT:	Fiscal Year 2022/2023 WRA Biological Monitoring Summary		

The purpose of this letter is to provide documentation of biological monitoring activities performed by WRA biologists at Cargill's facilities in Newark and Redwood City for the Maintenance Work Plan during fiscal year 2022/2023 (6/1/2022-5/31/2023). Monitoring was performed to ensure compliance with Cargill's regulatory permits, including authorizations from the U.S. Army Corps of Engineers, Regional Water Quality Control Board, National Marine Fisheries Service, U.S. Fish and Wildlife Service, and San Francisco Bay Conservation and Development Commission.

Biological monitoring conducted by WRA for the 2022/2023 Work Plan activities is summarized in the table below. The table includes monitoring date(s), location, Work Plan task number and description, surveys or BMPs implemented, and results. No adverse effects were noted during the monitoring surveys of the work tasks.

In addition to the 2022/2023 Work Plan tasks identified below, one western snowy plover (WSP) nest was observed by Cargill staff and WRA was notified. WRA confirmed and documented the nest on June 30, 2022 in Newark Plant 2 at the salt levee between PP-7 and PP-8. The nest had three eggs in it but no adult in sight. The levee is used for an access route but was closed off once the nest was observed by Cargill staff. No work was planned to occur along that levee or adjacent to the levee for the season and the nest was not further disturbed.

Please contact me if you have any questions.

Date	Location	Work Plan Task # / Description	Survey/BMP Summary	Survey/BMP Results
06/01/2022 – 06/14/2022*	Newark Plant 2 PP7, PP8	Task 240: *Repair berm erosion, build up berm with land based equipment, and repair internal core as needed using earthen material.* Task 250: *Remove accumulation of sediment from around an intake gate and associated channel. The mud will be placed on inside berm toe of PP7.* Task 251: *Place rock on road for all weather access.* Task 254: *Repair berm erosion, build up berm with land based equipment, and repair internal core as needed using earthen material.* Task 262: *Remove sedimentation from around an intake gate, associated channel, and dredge lock as needed. The mud will be placed on inside berm toe of PP8.* Task 263: Place rock on road for all weather access.	Preconstruction survey Biological monitoring Wildlife exclusion fence monitoring	Pre-construction surveys were completed, including surveys for nesting birds and special-status species including the western snowy plover (WSP) and salt marsh harvest mouse (SMHM). WRA biologists supervised vegetation removal and fence installation. Fence checks were conducted on a regular basis during work, and needed repairs were communicated to workers. Biological monitoring occurred during all periods that sensitive species could be impacted. No special status species were harmed.

07/11/2022, 07/12/2022, 07/14/2022, 07/19/2022, and 08/04/2022*	Newark Plant 2 Multipurpose Ditch	Task 329: Routine maintenance *Remove accumulation of sediment from sump. The mud will be placed on the inside of berm toe of 10A.*	Preconstruction survey Biological monitoring Wildlife exclusion fence monitoring	Pre-construction surveys completed for special status species (SMHM). No exclusion fencing was installed but vegetation clearing by hand was conducted on 500 feet of potential dispersal habitat for SMHM prior to beginning work within the work area. Two unoccupied mouse nests were found and one live mouse was seen running away from biologist out of the work area, but no animals were harmed. Following vegetation removal and confirmation of no special status species in the work area sediment was placed along the levee where vegetation was removed.
09/14/2022*	Newark Plant 1 Bayshore Pond 2A	Tasks 71: *Repair berm erosion, build up berm with land based equipment, and repair internal core as needed, using earthen material.* Task 73: *Maintenance of existing rip rap areas.* Task 74: *Installation of rip rap in new areas as necessary.*	Preconstruction survey Biological monitoring	A pre-construction survey for special status species (SMHM) was performed. The work area was checked by hand for mouse nests or live mice but no animals or nests were observed. Vegetation was sparse and removed completely. No fencing was recommended. The crew also cleared out invasive Russian thistle. All repair work occurred from the levee top.
11/30/2022, 04/05/2023 – 04/14/2023*	Newark Plant 1 Green Hornet 2 – PP1	Task 102: *Structure for secondary containment for brine pipelines.* Task 103: *Repair in-kind existing gates/depth gauge/weir box/platforms/ sheds/structures.*	Preconstruction survey Biological monitoring	A pre-construction survey for special status species (SMHM) was performed. The work area was checked by hand for mouse nests or live mice and cleared for vegetation removal. Biologist monitored vegetation removal. Work was paused during the winter, and biologist monitoring resumed once work resumed. The site was again cleared of special status species and nesting birds and daily pre-construction surveys were performed. No special status species were observed.

Cargill Salt Maintenance Report Distribution List, Revised 7/21/2023

First Name	Last Name	Title	Organization	Address	City	State	Zip	Email	Phone
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Mr.	Steve	Carroll	Regional Biologist	Ducks Unlimited, Inc.	3074 Gold Canal Dr	Rancho Cordova	CA	95670	scarroll@ducks.org	(916) 717-3094
Mr.	Ryan	Clausnitzer	General Manager	Ala. Co. Mosquito Abatement	23187 Connecticut St	Hayward	CA	94545	ryan@mosquitoes.org	(510) 783-7744
Mr.	Soren	Fajeau	Public Works Director	City of Newark	37101 Newark Blvd	Newark	CA	94560	soren.fajeau@newark.org	
Mr.	Dan	Gilardoni	Land Agent	Pacific Gas & Electric	111 Almaden Blvd. Room 814	San Jose	CA	95113	pgeplanreview@pge.com	
Mr.	Lawrence	Goldzband	Executive Director	SFBCDC	375 Beale St., Ste 150	San Francisco	CA	94105	larry.goldzband@bcdc.ca.gov	
Ms.	Marcia	Grefsrud	Environmental Scientist	CA Dept. of Fish & Wildlife	2825 Cordelia Rd.	Fairfield	CA	94534	Marcia.Grefsrud@wildlife.ca.gov	
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Ms.	Eileen	White	Executive Officer	San Francisco Bay Regional Water Board	1515 Clay Street, Ste 1400	Oakland	CA	94612	Eileen.White@waterboards.ca.gov	
Mr.	Brian	Wines	Water Resources Control Engineer	SFRWQCB	1515 Clay Street Ste 1400	Oakland	CA	94612	brian.wines@waterboards.ca.gov	
			ATTN: Central Review Team	Pacific Gas & Electric	6111 Bollinger Canyon Road, 3rd Floor, Mail Code: BR1Y3A	San Ramon	CA	94583	pgeplanreview@pge.com	

APPENDIX C Soil Import Acceptance Criteria and Quality Assurance Project Plan

SOIL IMPORT ACCEPTANCE CRITERIA AND QUALITY ASSURANCE PROJECT PLAN

Cargill Salt Facilities

7220 Central Avenue, Newark, California

295 Seaport Boulevard, Redwood City, California

Revised July 16, 2024

Cargill, Incorporated
7220 Central Avenue
Newark, CA 94560

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Abbreviations, Acronyms, & Symbols

%R	percent recovery
<	Less than
≤	less than or equal to
≥	greater than or equal to
°C	degrees Celsius
ASTM	American Society for Testing and Materials
BCDC	San Francisco Bay Conservation and Development Commission
bgs	below ground surface
CARB	California Air Resources Board
Cargill	Cargill, Incorporated
Characterization Report	Import Material Characterization Report
Checklist	Import Soil Evaluation Checklist
CLP	Contract Laboratory Procedure
CY	cubic yards
DI-WET	deionized water
DTSC	Department of Toxic Substance Control
ELAP	California or Environmental Laboratory Accreditation Program
EPA	U.S. Environmental Protection Agency
ER-L	effects range low
ER-M	effects range-median
ESA	Environmental Site Assessment
ESL	Environmental Screening Levels
HQ	hazard quotient
IDs	identifications
LCS	Laboratory Control Samples
MDL	method detection limit
mg/kg	milligrams per kilogram
MSS	Mixed Sea Salts
NaCl, i.e., table salt	sodium chloride
Newark Site	7200 Central Avenue in Newark, California
PAHs	polycyclic aromatic hydrocarbons
PARCC	precision, accuracy, representativeness, comparability, and completeness
PCBs	polychlorinated biphenyl
ppt	parts per thousand

Progress Reports	Soil Import Progress Reports
QA	quality assurance
QAPP	Quality Assurance Project Plan
QC	quality control
RECs	Recognized Environmental Conditions
Refuge	Don Edwards San Francisco Bay National Wildlife Refuge
Redwood City Site	295 Seaport Boulevard in Redwood City, California
RL	reporting limit
RPD	relative percent difference
SFBRWQCB	San Francisco Bay Regional Water Quality Control Board
SIM	selected ion monitoring
SMP	Site Management Plan
SVOCs	Semi-volatile organic compounds
SWPPP	Stormwater Pollution Prevention Plan
the Project	Sites for berm maintenance and general system maintenance
TPH	total petroleum hydrocarbons
TPH-d	total petroleum hydrocarbons quantified as diesel
TPH-g	total petroleum hydrocarbons as gasoline
TPH-MO	total petroleum hydrocarbons as motor oil
UCL	upper confidence limit
USFWS	U.S. Fish and Wildlife Service
VOCs	volatile organic compounds

1. Introduction

This Soil Import Acceptance Criteria and Quality Assurance Project Plan (QAPP) for the Cargill, Incorporated (Cargill) solar salt facilities located at 7220 Central Avenue in Newark and Fremont, California ("Newark Site") and 295 Seaport Boulevard in Redwood City, California ("Redwood City Site," collectively with the Newark Site, referred to as the "Sites") was prepared at regulatory agencies' request, to be implemented by Cargill. This plan will cover the import of soil material authorized under Cargill's next cycle of its maintenance and operating permits/certifications from the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB), San Francisco Bay Conservation and Development Commission (BCDC), the United States Army Corps of Engineers (USACE), and associated resource agencies. See Figure 1 for a site map.

Cargill plans to import suitable surplus soils from different potential suppliers to the Sites for berm maintenance and general system maintenance as per its activities authorized by applicable permits (the Project). This QAPP presents a framework to review, approve, and document soil import activities for the Project. It defines procedures for the sampling and analysis of potential soil import materials, wetland sediment screening levels (numerical acceptance criteria), and procedures for evaluating soil sampling results against the wetland acceptance criteria.

This QAPP is applicable for environmental characterization of imported soil materials that would be used at various locations within the salt pond system for berm maintenance and general system maintenance. This QAPP does not address geotechnical requirements or characterization of other materials including, but not limited to, crushed rock/gravel, pea gravel, recycled concrete, or flowable material. This QAPP does not address other soil uses or other construction activities at the Sites.

The wetland acceptance criteria presented herein are protective of ecological habitat within and surrounding the salt ponds. The wetland acceptance criteria herein are the same as those previously authorized in the Master QAPP for Don Edwards San Francisco Bay National Wildlife Refuge (Refuge QAPP) and substantially similar to the Eden Landing Ecological Reserve QAPP. The wetland acceptance criteria for the Project may be updated if changes are adopted in the Refuge QAPP or the Eden Landing Ecological Reserve QAPP.

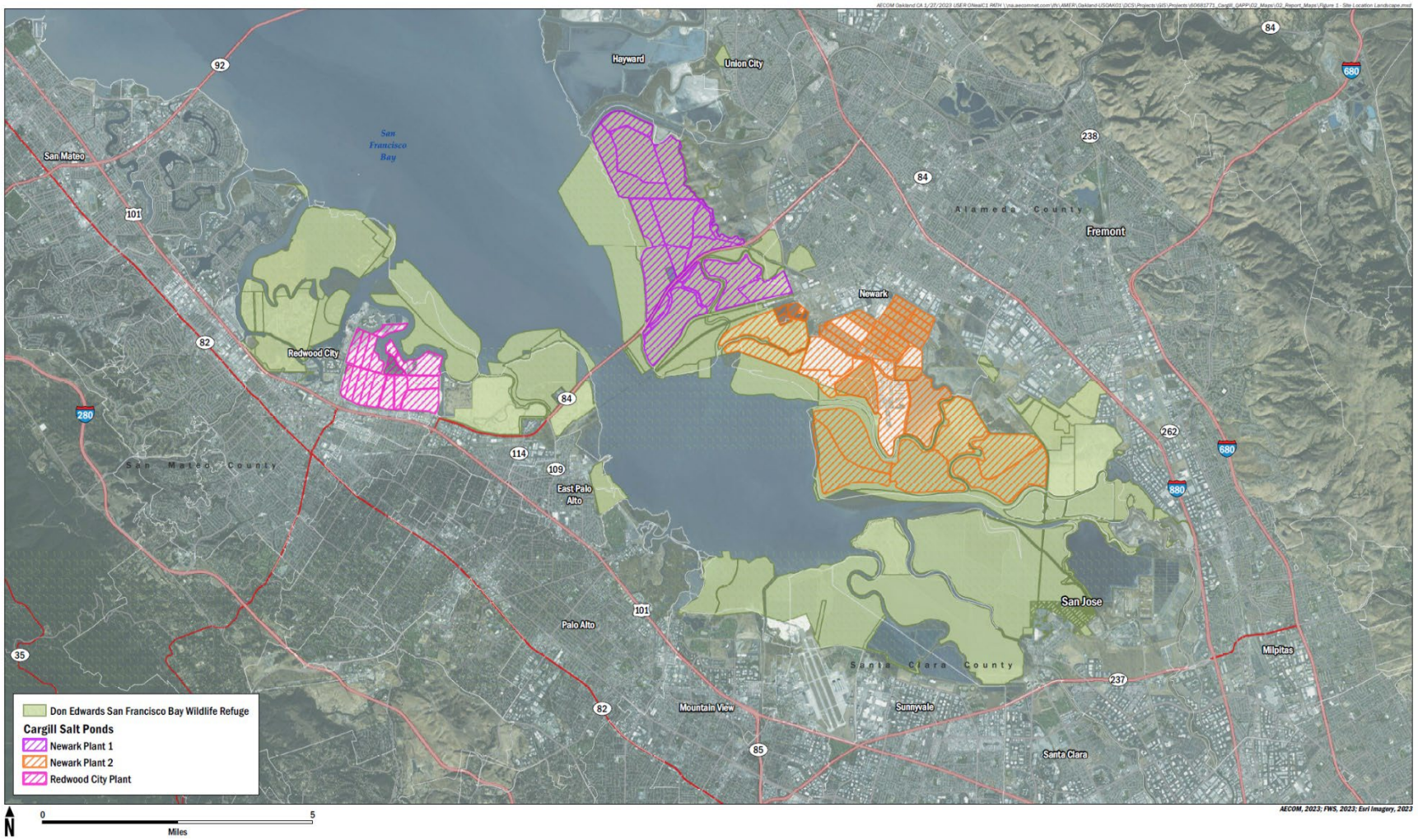

Figure 1. Sites Location Map

1.1 Description of the Cargill Sites

The Cargill solar salt system is comprised of one sea salt system with two solar salt facilities (Figure 1). Of the two solar salt facilities, the Newark Site is comprised of Plant 1 and Plant 2, which are approximately 4,100 and 6,400 acres in size respectively (Figure 2). The Redwood City Site is approximately 1,433 acres in size (Figure 3). Approximately 8,000 acres of the Sites are within the Don Edwards San Francisco Bay National Wildlife Refuge (Refuge). The Sites contain diverse features, ranging from an industrial refinery to a series of shallow salt evaporation ponds contained within berms. Some of the ponds provide wildlife habitat for endangered species, shorebirds, and waterfowl (Cargill 2021).

The solar salt production process requires ponds with a range of salinity levels at varying distances from the Bay water intakes, resulting in salt ponds with differing habitat characteristics and, ultimately, differing capacities to support flora and fauna. Earthen berms surrounding the ponds are a key infrastructure feature, as the Cargill's solar salt system is separated from San Francisco Bay and from local streams and flood control channels by a system of approximately 166 linear miles of earthen berms, many of which are berms abutting the Bay, sloughs, and tidal marsh habitats. The berms enclose the salt ponds and were built for the exclusive purpose of producing salt in the shallow ponds. In addition to containing the system, roads on top of the berms are used to access the salt ponds. In this unique environmental setting, salinity is a key factor for ponds potentially providing viable wetland habitat with a benthic macrofauna community as a foraging resource, or for ponds having little to no capacity to support foraging resources, but possibly providing roosting or nesting opportunities.

The types of salt ponds found at the Cargill facilities include the following, in order of their stage in the salt production cycle:

1. Concentration Ponds – Sea water from the Bay is introduced into concentrators (also known as evaporation ponds), where a substantial portion of the water evaporates resulting in a concentrated brine.
2. Pickle Ponds – These ponds store feedstock brine for the crystallizers.
3. Crystallizers – Saturated brine is transferred into the crystallizer ponds where precipitation of sodium chloride (NaCl, i.e., table salt) and harvesting occur.
4. Desalting Ponds – Brine with additional sodium chloride is recovered in these ponds and recycled back into earlier steps in the pond system.
5. Mixed Sea Salt (MSS) Ponds – Brine primarily containing salts more soluble than NaCl continues through the salt production process and the MSS precipitates in these ponds.
6. FMC Ponds – Magnesium chloride brine, or liquid bittern, is transferred to the FMC Ponds and harvested to produce additional commercial products.

Typically, concentrator ponds closest to the crystallizers have higher salinities. With the exception of the crystallizers, FMC Ponds, pickle ponds and two of the desalting ponds, the remainder are essentially adjacent to the Bay. Some of the Newark pickle ponds and desalting ponds are directly adjacent to Mowry Slough or Plummer Creek (Figure 2). The Newark crystallizers are in upland areas, are the farthest from the Bay, and range from approximately 5,400 feet to 12,500 feet inland of the shoreline. At the Redwood City plant, the MSS ponds and the desalting pond are directly adjacent to Westpoint Slough or First Slough, but the Redwood City plant crystallizer ponds border the "Pond 10 Finger," and therefore are not directly adjacent to First Slough (Figure 3).

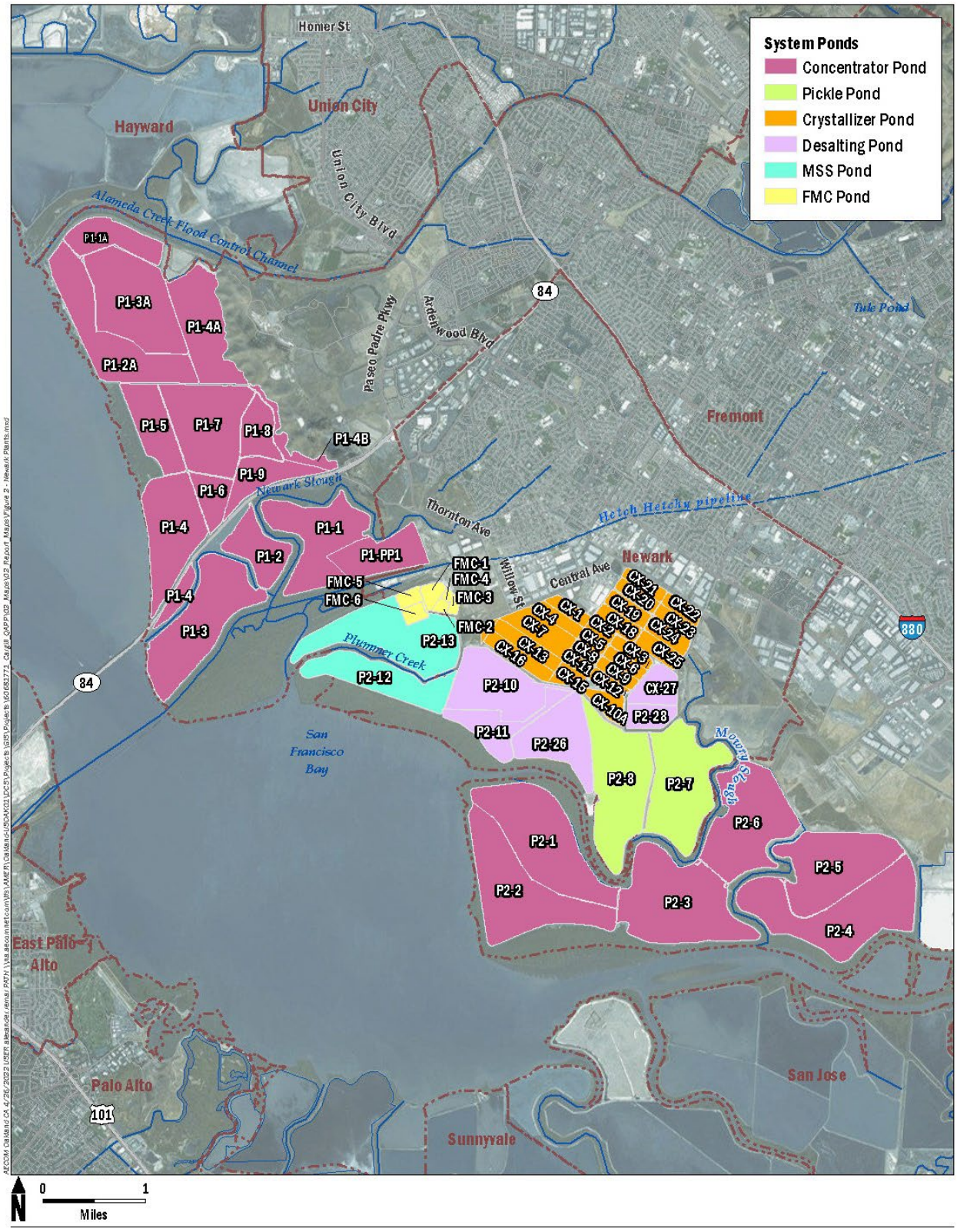

Figure 2. Cargill Solar Salt Facility – Newark Plants

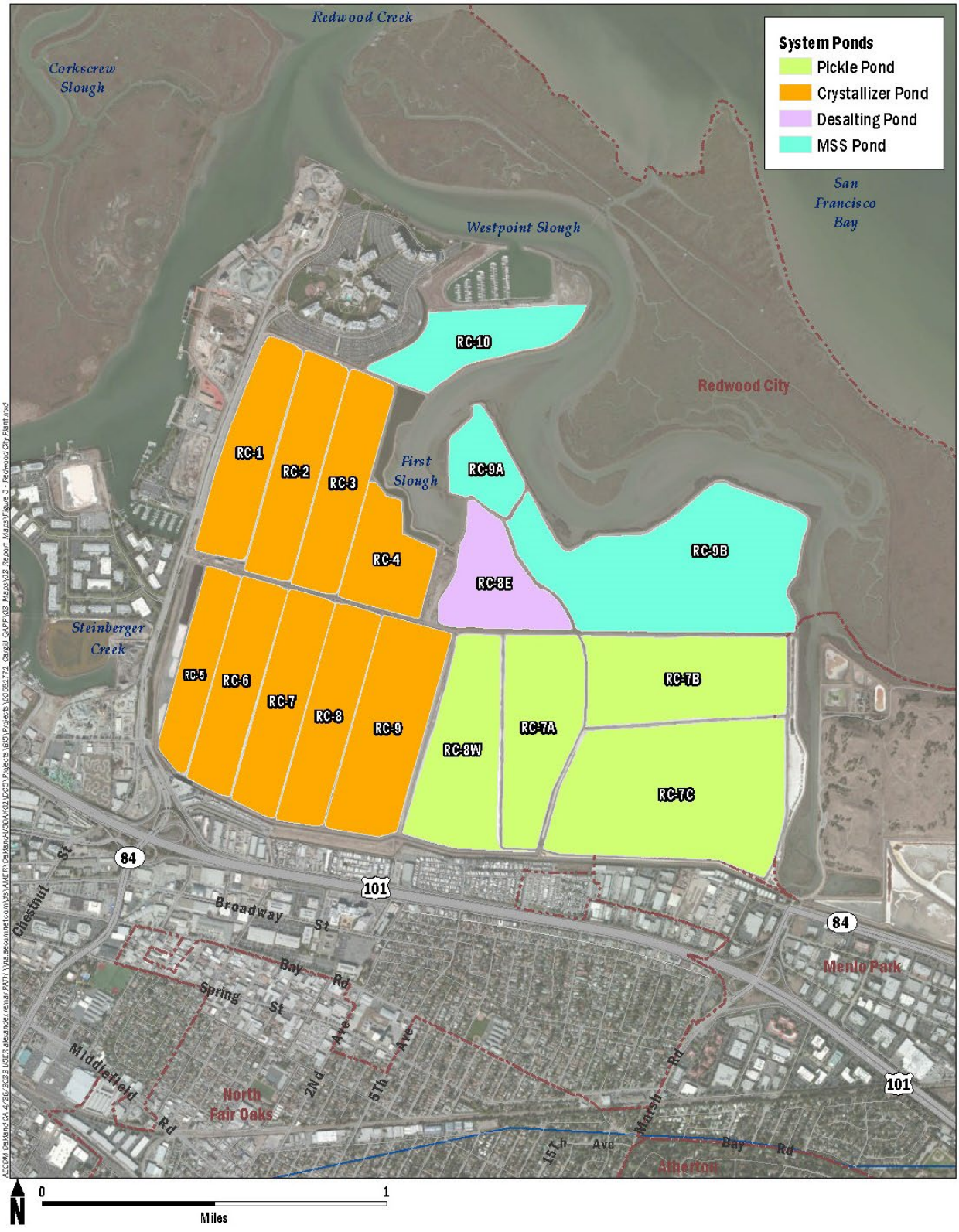

Figure 3. Cargill Solar Salt Facility – Redwood City Plant

Normal South Bay water salinities range from 10 to approximately 30 parts per thousand (ppt), depending on the time of year, whereas the brines at the point of salt precipitation reach approximately 350 ppt (10 or more times that of Bay water). The salinity of various types of salt ponds are presented below in Table 1; this information was extracted from the *South Bay Salt Pond Restoration Feasibility Analysis* (Siegel and Bachand 2002).

Table 1. Salinity Levels in South Bay Salt Ponds and Adjacent Areas

Description	Approximate Salinity [A]	
	parts per thousand (ppt)	degrees Baume (°Be)
Physical Location		
Ocean seawater	35	4.3
Bay water near intakes (dry season)	18 – 30	3.0 – 3.9
Concentrator Ponds	21 – 304	3.2 – 25
Pickle Ponds	312	25.6
Crystallizers	356 – 369 [B]	29 – 30
Desalting Ponds and MSS Ponds	395 – 447	32 – 36
FMC Ponds	447	36
Precipitation		
Calcium carbonate precipitation	66 – 187	6.7 – 16
Gypsum precipitation	147 – 374 [C]	12.9 – 30.4
Sodium chloride precipitation	312 – 369 [D]	25.6 – 30
MSS precipitation	317 – 447	26 – 36

Source: Siegel and Bachand, 2002, Tables 3-3 and 6-2.

Notes:

[A] Exact salinity levels at a given pond vary seasonally and annually due to variations in annual climate and Cargill operational variability.

[B] To avoid precipitation of gypsum and MSS in the crystallizer ponds, a narrow salinity range of 356 to 369 ppt (29 to 30 °Be) is maintained by withdrawing MSS brine and adding fresh pickle.

[C] Ninety percent of the gypsum is precipitated from water column at 304 ppt (25°Be).

[D] Most of the sodium chloride is precipitated from solution at 369 ppt (30°Be).

As the brine becomes more concentrated, salinity increases and this affects the suitability of the ponds as habitat for various species of plants, invertebrates, birds, fish, and mammals. Most species in the system use low salinity ponds. For example, 83 percent of waterfowl were found in ponds with salinities ranging between 20 and 93 ppt, with most birds preferring water with salinities of 20 to 33 ppt (Takekawa et al. 2000, as cited in Siegel and Bachand 2002). Some invertebrates can tolerate higher salinities. For instance, water boatmen are found in a wide range of salinity levels from 20 to 170 ppt, with optimum ranges at 35 to 80 ppt, and brine shrimp are found in ponds with a salinity of 70 to 200 ppt, with optimum ranges at 90 to 150 ppt (Larsson 2000, as cited in Siegel and Bachand 2002).

Dramatic shifts in temperature and/or salinity can influence the ability of the ponds to support aquatic photosynthetic organisms, benthic invertebrate populations, and their predators (GAIA Consulting 2021). Fish and most invertebrates cannot survive in the medium- to high-salinity ponds (e.g., ponds greater than 140 ppt), and the dominant photosynthetic organism of these ponds is a single-celled green algal species, *Dunaliella salina*, which, along with other species of halobacteria, cyanobacteria, dissolved organics, and organic particulates, produces the rich pigments characteristic of the San

Francisco Bay salt ponds. Invertebrate species richness declines progressively with increasing salinity, especially above 35 ppt; species abundance also shows an inverse relationship with salinity (GAIA Consulting 2021).

Based on the characteristics of the various ponds, with salinity being the key factor, the low to medium salinity evaporation ponds (e.g., ponds less than 140 ppt) most closely resemble natural wetlands and likely provide roosting and foraging habitat for aquatic-dependent birds as well as limited habitat for certain fish, brine shrimp, and other species, depending on the level of saline and hypersaline conditions. Whereas, the pickle, crystallizer, desalting, MSS, and FMC Ponds are hypersaline and do not have characteristics that support aquatic and benthic communities within the ponds, i.e., primary food sources for aquatic-dependent birds and mammals. These less desirable ponds for wetland organisms may provide roosting or nesting opportunities for wildlife, but the primary pathway of ecological exposure to environmental contaminants (consumption of plants and prey) is incomplete.

Aside from salinity, the other consideration is proximity to the Bay. Although berms abutting the Bay can have hardened features such as riprap, they are more likely to have characteristics that resemble adjacent natural wetlands and provide roosting and foraging habitat for aquatic-dependent birds. As such, the Bay-facing berms on the desalting and MSS ponds may support wetland functions despite the high salinity concentrations within the ponds themselves.

1.2 Problem Definition

As part of facility operations over the next ten year permit cycle, the Sites require regular import of suitable soil import material for permitted projects, including:

- Import material for resurfacing of the berm crest and side slopes. This work includes grading the berms, application of a geotechnical filter fabric, placement of sufficient soil in lifts to restore the berm up to its required elevation, compaction, and placement of gravel on top of the berms.
- Import material for internal berm core compaction. This work includes excavation of the centers of the berms. The excavated core section is subsequently backfilled with low permeability material that is compacted in place. The excavated material from the core of the berm is placed on the inboard (salt pond) side of the berm.
- Import material for maintaining the berms to account for wind/wave erosion and sea level rise. Maintaining select berms is proposed for the ongoing maintenance and repair of areas where erosion is occurring.

The SFBRWQCB and BCDC will review and approve the final QAPP before soil import material can be imported and used for these listed purposes specific to ongoing berm maintenance activities and for general system maintenance.

1.3 Purpose of QAPP

The purpose of this QAPP is to set forth the process for evaluating soil import materials from import material sites, so that the quality of the soil import materials imported to the Sites is suitable and acceptable. This QAPP establishes the process and details for implementation, describes soil import material screening procedures, describes transport and placement procedures, provides screening levels for contaminants in the imported soil materials, and specifies the laboratory testing methods that, when properly implemented, provide a high level of confidence that the soils imported to the Sites will be protective of ecological habitat within and surrounding the Sites.

1.4 Basis for QAPP Criteria and Procedures

For soil import material to be approved, the import material site proponent must demonstrate that the soil import material has contaminant levels below the screening limits established in this QAPP. The contaminant screening limits in this QAPP are based on those in the Refuge QAPP (U.S. Fish and Wildlife Service [USFWS] 2021) which were developed using the SFBRWQCB's Beneficial Reuse of Dredged Materials: Sediment Screening and Testing Guidelines (SFBRWQCB 2000) for use of soil import material in wetland environments, the SFBRWQCB- approved QAPP for Inner Bair Island Fill Import and Placement (USFWS 2008), the Saltwater Ecotoxicity Environmental Screening Levels in the SFBRWQCB's Environmental Screening Levels (SFBRWQCB 2019), and 2020 updated screening levels for metals approved by SFBRWQCB for the South Bay Shoreline Project (Lichten 2020). The screening levels are based on the greater of either levels derived from effects-based studies or ambient levels of constituents in San Francisco Bay sediments. As additional effects-based studies and ambient levels are updated, this QAPP can be updated to incorporate the latest science into the screening levels.

Screening procedures in this QAPP are based on those in the Refuge QAPP (USFWS 2021), which were developed using the QAPP for Inner Bair Island Fill Import and Placement (USFWS 2008), the California Department of Toxic Substance Control's (DTSC's) Information Advisory: Clean Imported Fill Material (DTSC 2001), and the U.S. Environmental Protection Agency's (EPA's) Guidance for Quality Assurance Project Plans (EPA 2002).

The following key structural elements were critical to the successful implementation of the Refuge QAPP. Therefore, these elements are also incorporated in this QAPP.

- Clearly defined project roles to provide robust oversight of soil screening methods, analysis of soil screening results, and soil import.
- Use of a qualified, detail-oriented soil import material contractor with a track record of successfully implementing QAPP procedures.
- Use of a gatekeeper to screen the source of soil in all soil import trucks entering the Sites.
- Oversight of the soil import material contractor and gatekeeper by an independent quality assurance officer.
- Oversight of soil screening results by a peer reviewer prior to soil acceptance by the quality assurance officer, combined with regular coordination with the SFBRWQCB and BCDC.
- Coordination with the SFBRWQCB by the quality assurance officer prior to acceptance of soil when laboratory results have a reporting limit (RL) that exceeds a screening criterion, but a method detection limit (MDL) that does not exceed the screening criterion. When evaluating constituents for which MDLs do not exceed screening criteria, SFBRWQCB staff will review laboratory reports for any factors (e.g., dilution of samples for analysis or quality control sample results that are outside of acceptable ranges) that may indicate that a constituent may actually be present at a level that exceeds the MDL. SFBRWQCB staff will also consider the potential for these constituents to be present in the soil, based on review of the import material site history and the number of constituents in the same chemical group (e.g., volatile organic compounds [VOCs], pesticides, polycyclic aromatic hydrocarbons [PAHs], or polychlorinated biphenyls [PCBs]) that are detected in the sampling data. If PAHs have high MDLs, results for heavy hydrocarbons (e.g., total petroleum hydrocarbons as motor oil [TPH-MO]) shall be reviewed to assess the likely presence of PAHs. The quality assurance office will concurrently coordinate with BCDC, copy them on SFBRWQCB communications, and request concurrence from BCDC staff on resulting SFBRWQCB findings and recommendations.
- Coordination with the SFBRWQCB by the quality assurance officer prior to acceptance of the soil import material when laboratory results have a MDL for one or more chemical constituents that

exceeds the screening criterion. When evaluating constituents for which MDLs exceed screening levels, SFBRWQCB staff will consider the potential for these constituents to be present in the soil, based on review of the import material site history and the number of constituents in the same chemical group (e.g., VOCs, pesticides, PAHs, or PCBs) that are detected in the sampling data. If PAHs have high MDLs, results for heavy hydrocarbons (e.g., TPH-MO) shall be reviewed to assess the likely presence of PAHs. The quality assurance office will concurrently coordinate with BCDC, copy them on SFBRWQCB communications, and request concurrence from BCDC staff on resulting SFBRWQCB findings and recommendations.

2. Project Team Organization and Responsibilities

This section identifies the parties involved with implementing this QAPP and their respective roles. Sites that will serve as potential sources for soil import material for O&M activities are referred to as import material sites. Note that a single entity could fulfill more than one role where appropriate. Cargill, or contractors acting on their behalf, may fulfill multiple roles listed below.

- Quality Assurance Officer—The quality assurance officer is responsible for verifying that all QAPP procedures and contaminant screening criteria are met and has the following key responsibilities:
  - The quality assurance officer will verify that the import material site sampling procedures identified in this QAPP are followed. Specifically, the quality assurance officer will:
    - Review the Phase 1 Import Material Site Analysis (Phase 1 Analysis), the Import Material Site Sampling Plan (Site Sampling Plan), and the Phase 2 Import Material Site Analysis (Phase 2 Analysis);
    - Make a minimum of one visit to each import material site; and
    - Review import material site sampling results relative to screening limits for contaminants as specified in this QAPP.
  - After the quality assurance officer and peer reviewer are satisfied that the proposed import material site meets the contaminant screening criteria outlined in this QAPP, the quality assurance officer will prepare an import material site characterization memorandum for submission to Cargill. The import material site characterization memorandum will document that the soil import material meets the contaminant screening levels.
  - The quality assurance officer will maintain a record of the names, addresses, and the depths and volumes of acceptable soil import materials at import material sites.
  - The quality assurance officer will monitor construction to verify that QAPP procedures are followed during import material site excavation and soil import material placement. Monitoring includes making random, unannounced visits to the import material sites during excavation and random, unannounced visits during soil import material placement to monitor compliance with this QAPP. The quality assurance officer also will verify that the gatekeeper is accepting and tracking trucks in accordance with this QAPP.
  - The quality assurance officer will prepare and submit the quarterly reports described in Section 3.7.
  - The quality assurance officer will consult with the SFBRWQCB and BCDC when a sample procedure or result does not strictly meet QAPP requirements, but there is reason to believe that the soil could be acceptable for use.
- Import Material Site Proponent—The import material site proponent will carry out the Phase 1 Analysis to screen sources of potential import material, develop the Site Sampling Plan, sample the import material site in accordance with the Site Sampling Plan, and send the soil samples to a laboratory approved by the quality assurance officer for contaminant screening.
- Import Material Contractor—The import material contractor will identify and review potential import material sites, orient and guide the import material site proponent through QAPP procedures, and submit the Phase 1 and Phase 2 Analyses to the quality assurance officer. If soil import material is approved by the quality assurance officer, the contractor will transport and place the soil import material on site. The contractor will issue a daily Truck Dispatch Log, which may be transmitted by email, to Cargill and the quality assurance officer documenting the approximate number of trucks in operation that day, the origin of soil being imported, and the approximate timing of soil delivery.

The import material contractor will also prepare a Soil Acceptance Form which will be delivered to the import material site to be handed to each truck by the contractor.

- Peer Reviewer—The peer reviewer will review laboratory analysis methods for suitability based on the QAPP goals and will provide a second level of review of the Site Sampling Plan and import material site sampling results. The peer reviewer will be contractually independent of the import material site proponent.
- Gatekeeper—The gatekeeper is an employee of the import material contractor. The gatekeeper will ensure that only trucks carrying soil import material from approved import material sites are allowed onto the Sites. The gatekeeper will monitor the entrance to the applicable Site full time during soil import material transport. The gatekeeper will keep a Gatekeeper Log to document the number of trucks entering the Site, the borrow source location of each truck, the trucking company, and the truck number (also referred to as tractor number) printed on the outside of the truck. The gatekeeper will verify that Soil Acceptance Forms are accurately completed and will collect a unique physical hard-copy Soil Acceptance Form from each truck upon entry (Section 3.6). Trucks without an accurately completed Soil Acceptance Form from an approved source shall be rejected from entry to the Sites.
- Cargill—Cargill will manage the roles and responsibilities of all parties involved throughout the life of this QAPP. Cargill also will review quarterly reports provided by the quality assurance officer.
- Persons Responsible for QAPP Update and Maintenance—Changes and updates to this QAPP will be made after a review of the rationale for change by the quality assurance officer and with the concurrence of SFBRWQCB, BCDC, and Cargill. Cargill will identify an agent (e.g., the quality assurance officer) to make changes to this QAPP, submit drafts for review, prepare a final copy, and submit the final version for review and approval by SFBRWQCB and BCDC.

3. Soil Import Material Analysis Procedures and Contaminant Screening Criteria

This QAPP will be implemented in accordance with the procedures and soil import material screening criteria described below. Figure 4 summarizes the screening decision tree process for approving import material sites.

3.1 Initial Screening

The import material contractor will work with the import material site proponent to determine whether an import material site is potentially suitable for use as a source for fill based on the import material site location, land use history, timing, and the quantity of material available. Sites that have any history of industrial or commercial activities likely to lead to contamination (e.g., gas stations and dry cleaners) will not be considered as a source, unless SFBRWQCB or DTSC have determined that the site has been appropriately remediated and sampling and analysis (see Section 3.3) confirms that residual contaminants do not exceed screening levels. At sites with a history of agricultural use, the upper 3 feet of the site may be discarded from consideration if they are contaminated by agricultural pesticides. If an import material site is potentially suitable, then the import material contractor will request a Phase 1 Analysis from the import material site proponent. The import material site proponent will make appropriate due diligence inquiries into the previous ownership and uses of the site including, but not limited to, review of previous environmental site assessments (if available), review of city and historical records, interviews with the current property owner and other persons associated with the subject and adjoining properties, and searches of environmental databases, such as the California State Water Resources Control Board's GeoTracker. Import material sites are likely to be located in the San Francisco Bay Area. The import material contractor will review the initial import material site characteristics, including review of GeoTracker, EnviroStor, prior Phase 1 or Phase 2 environmental site assessments, and any other available site history documents including available environmental and geotechnical reports.

3.2 Phase 1 Import Material Site Analysis

Phase 1 Analysis is a qualitative analysis carried out by the import material site proponent to help the import material contractor and quality assurance officer identify potential environmental hazards present in the soil import material. Either party may reject part or all of an import material site that has a high likelihood of contamination based on the results of the Phase 1 Analysis (Figure 4). The import material site proponent is responsible for carrying out the Phase 1 Analysis and providing a Phase 1 Analysis report to the import material contractor and quality assurance officer for review. In the case that no formal Phase I Environmental Site Assessment (*ASTM E1527 - 13 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process; 40 Code of Federal Regulations, Section 312*) has been performed or is unavailable, the import material contractor is responsible for providing the information listed below.

A complete Phase 1 Analysis report will include the following information:

- Name of import material site proponent.
- A map showing the location and extent of the potential import material site.
- Current and previous landowners' names and dates of ownership.

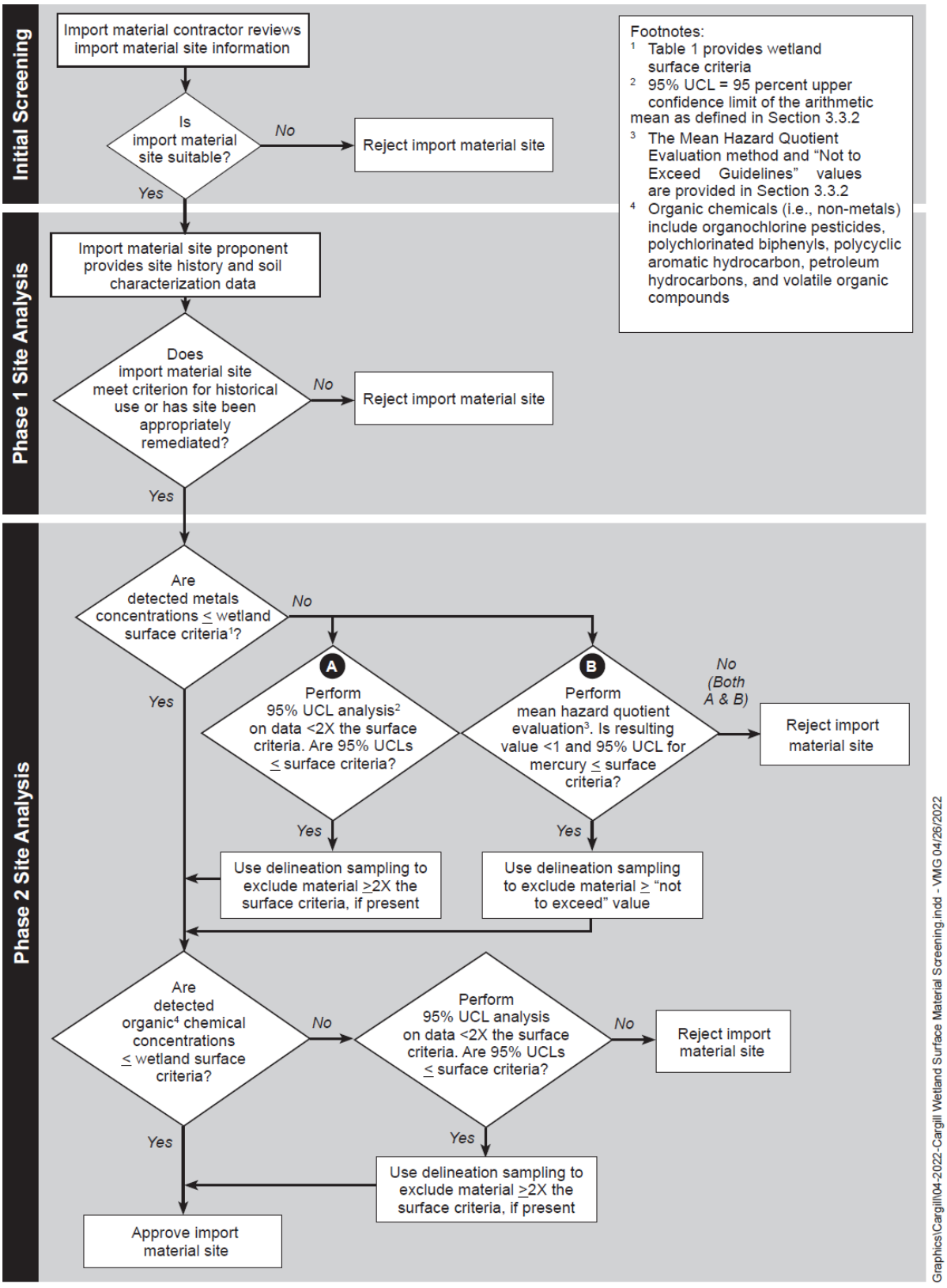

Figure 4. Screening Guideline Decision Tree for Approving Import Material Sites as Import Material Based on Wetland Surface Criteria

- A description of current and past site use(s) and any possible environmental conditions that could lead to contamination of soil import material, including the likelihood that VOCs may be present in the soil import material.
- Photos of the import material site with descriptions that can inform the type of analysis to perform.
- Any previously collected contaminant data for the site.
- The approximate volume of anticipated soil import material acceptable for use at the Sites.

The following steps are involved with carrying out Phase 1 Analysis:

- The import material site proponent writes the Phase 1 Analysis report and provides it to the import material contractor.
- The import material contractor prescreens the Phase 1 Analysis report for accuracy and completeness and then provides the Phase 1 Analysis report to the quality assurance officer for review.
- If requested by the quality assurance officer, the import material contractor and quality assurance officer will perform a site visit to confirm site conditions and identify potential sources of contamination.

3.3 Phase 2 Import Material Site Analysis

Phase 2 Analysis consists of conducting the quantitative assessment of contaminant concentrations in the potential borrow material. Following completion of the Phase 2 Analysis, the import material contractor will review the sampling plan to confirm alignment with QAPP procedures and screen laboratory data results against the contaminant screening criteria. If contamination levels in the potential soil import material are below the threshold levels identified in this QAPP (Sections 3.3.2 and 3.4), the import material contractor will prepare a Phase 2 Analysis report for review by the quality assurance officer.

A complete Phase 2 Analysis report will include the following information:

- A Site Sampling Plan (described below).
- A description of the sampling methods used and summary of whether the methods deviated from those described in the Site Sampling Plan (and if so, why).
- A description of laboratory contaminant analysis methods.
- Laboratory contaminant results and identification of any contaminants exceeding the screening criteria presented in Section 3.4 or any non-detects with RLs or MDLs above those screening criteria.
- Conclusions with an accurate map of the areas and depths that the import material contractor recommends be accepted or rejected for use.

The following steps are involved with carrying out the Phase 2 Analysis:

- The import material site proponent develops a Site Sampling Plan (Section 3.3.1).
- The import material contractor provides the Site Sampling Plan to the quality assurance officer.
- The Site Sampling Plan is reviewed by the quality assurance officer and peer reviewer. If needed, the import material site proponent will revise the Site Sampling Plan to address concerns.
- The Site Sampling Plan is approved by the quality assurance officer.

- The import material site proponent carries out the Site Sampling Plan.
- The quality assurance officer may make site visits during sampling of the soil import material to verify that methods are being followed.
- The import material site proponent sends samples for analysis to an approved laboratory.
- Laboratory results are sent to the import material site proponent, import material contractor, and quality assurance officer.
- If some or all portions of the import material site meet the contaminant screening criteria, the import material contractor will prepare a Phase 2 Analysis report and provide it to the quality assurance officer.
- The quality assurance officer and peer reviewer will review the Phase 2 Analysis report and then determine whether the soil import material meets the screening requirements in this QAPP. The quality assurance officer may either approve the import material site (with peer reviewer concurrence), reject the import material site, or request that the import material contractor and import material site proponent conduct further sampling and testing and resubmit the results for review.

3.3.1 Site Sampling Plan

The Site Sampling Plan will be developed by the import material site proponent before samples are collected. The Site Sampling Plan will be submitted to the quality assurance officer by the import material contractor and will:

- Include accurate maps showing the proposed import material site, any areas of environmental concern identified in the Phase 1 Analysis report, and sample locations and depths;
- Identify the expected volume and acreage of the import material site;
- Describe the rationale for the sampling design (the number of samples should, at a minimum, meet DTSC recommendations (Table 2) (DTSC 2001);
- Describe the methods for sample collection, including:
  - Global Positioning System or other navigation method to proposed sample locations;
  - Sampling equipment (e.g., coring device; type of buckets, glass jars, coolers);
  - Sampling procedures to prevent contamination of samples (e.g., decontamination of equipment and sample containers, and clean handling techniques to prevent contaminating the samples);
  - Depth of samples;
  - Sample compositing plan, if any; and
  - Sample handling (i.e., identification, labeling, transport, storage, holding time, and disposal);
- Provide contact information for the selected laboratory where samples will be analyzed;
- Specify the chain-of-custody form and procedure that will be followed from sample collection through laboratory analysis so that the physical possession of samples is known at all points in the project;
- Identify the analytical parameters to be tested (Section 3.5.1); and
- Identify the laboratory's RL for each constituent being sampled compared to the contaminant screening criteria below. If the RL is greater than the contaminant screening criteria for a constituent(s), the MDL for the constituent(s) also will be provided (see section 3.5.2). If the Phase 1 analysis indicates the potential presence of a specific contaminant at the import material

site, the selected analytical laboratory should be able to provide MDLs that are below the screening value for that contaminant.

Table 2. Minimum Sampling Requirements

Area or Volume	Minimum Number of Samples Required
Area of Individual Borrow Area	
2 acres or less	Four samples
2-4 acres	One sample every 0.5 acre
4-10 acres	Eight samples
Volume of Borrow Area Stockpile	
Up to 1,000 cubic yards	One sample per 250 cubic yards
1,000 to 5,000 cubic yards	Four samples for first 1,000 cubic yards and one sample for each additional 500 cubic yards
Greater than 5,000 cubic yards	12 samples for first 5,000 cubic yards and one sample for each additional 1,000 cubic yards

Source: DTSC 2001

3.3.2 Acceptance or Rejection of the Soil Import Material

Figure 4 provides the decision tree the quality assurance officer will use to accept or reject import material. This process is described in detail in the subsections below. Minimum sampling requirements (Table 2) must be met for all contaminants for the quality assurance officer to accept an import material site.

3.3.2.1 Screening of Soil Import Material

If a constituent is detected, then the reported concentration will be used for comparison to the screening criterion protective of organisms residing at the wetland surface, regardless of berm placement depth or habitat conditions surrounding the berm. As per the SFBRWQCB's request, screening criteria applicable to wetland foundation material and screening criteria protective of terrestrial organisms will not be used to screen soil import material for berms. If the RL is greater than the contaminant screening criteria for a constituent and the test result is non-detect, the SFBRWQCB shall be contacted for approval to report down to the MDL (see Section 3.5.2) and BCDC will be contacted to review and provide concurrence with the SFBRWQCB approval. In these instances, the MDL should be below the screening criterion. The laboratory results based upon the MDL will then be compared to the screening criterion to determine the likelihood that a specific contaminant is present at a concentration greater than the screening criterion. When using the MDL to assess the potential absence of a constituent at levels above its screening criterion, data for other constituents in the same chemical class and the site use history will also be used in assessing the potential presence of the constituent. In addition, SFBRWQCB staff will review the laboratory reports for any factors in the analysis (e.g., dilution of samples prior to analysis or quality assurance samples with results outside of acceptable ranges) that may contribute to underestimating the actual concentration of a contaminant in the sample.

If the results of the Phase 2 Analysis indicate that the import material site contains soil import material that is suitable as import material, the quality assurance officer will summarize the conclusions in an import material site approval memorandum submitted to the import material contractor, Cargill staff, BCDC, and the SFBRWQCB. The memorandum will document the name and address of the

acceptable import material site, the volume of material at the site, the volume of soil import material approved as import material, and their location(s) and depths in the borrow area. The Phase 1 and 2 Analysis reports will be included as attachments.

If a sample analysis method or result does not strictly meet the QAPP requirements but the quality assurance officer has scientific rationale supporting the opinion that the soil could be acceptable for use, the quality assurance officer will consult with the SFBRWQCB and notify BCDC prior to completion of the import material site approval memorandum. In this case, SFBRWQCB approval and BCDC concurrence of the import material site will be required prior to soil acceptance and import.

3.3.2.2 Overview of Analysis Methods for Metals

If all soil import material samples meet the metal contaminant criteria for wetland surface material, the site will then be evaluated for suitability with respect to non-metals. If one or more constituents exceed a wetland surface material screening criterion for metals, the 95 percent upper confidence limit of the arithmetic mean (95% UCL) for the constituent(s) may be calculated to determine if the soil volume meets the wetland screening criteria. If the 95% UCL of one or more metals exceeds the screening criteria for those metals, the mean hazard quotients evaluation method may be used to evaluate the proposed site with respect to metals. If the material passes for metals using direct comparison to criteria, 95% UCL calculations, or the hazard quotient evaluation for metals, the import material site will be evaluated for suitability with respect to non-metals (see Figure 4).

3.3.2.3 Overview of Analysis Methods for Non-Metals

Non-metals include organochlorine pesticides, PCBs, PAHs, petroleum hydrocarbons, and VOCs. If the site is suitable with respect to metals and all samples from the import material site meet the contaminant criteria for wetland surface material for non-metals, the import material site may be approved as soil import material. If one or more non-metal constituents exceed a wetland surface material screening criterion, the 95% UCL for the constituent(s) may be calculated to determine if the soil volume meets the wetland screening criteria for non-metals. If the material passes for both metals and for non-metals, the import material site will be deemed acceptable for use (see Figure 4).

3.3.2.4 95% UCL Calculation

The 95% UCL statistical analysis is used to demonstrate that an estimated mean concentration, derived as a confidence interval about the true mean, is below established screening levels. The 95% UCL method for data evaluation is a remediation industry-standard approach for making environmental decisions. This method may be used for evaluation of all constituents (metals and non-metals). The 95% UCL is derived in accordance with the guidance provided in EPA's ProUCL Technical Guide (EPA 2022) and using the latest version of EPA's ProUCL software. For this application, the 95% UCL calculated for a specific constituent indicates 95% confidence that the mean constituent concentration of the entire soil volume is less than or equal to the 95% UCL value. By comparing the 95% UCL against the screening criterion, instead of comparing individual values, outlying data may be included based on an acceptable threshold of statistical significance.

This QAPP has the following limits on use of the 95% UCL method for evaluating surface material:

- Locations represented by samples with constituent exceedances equal to or greater than two times their respective screening criterion or greater than the "2020 Not to Exceed Criteria" listed in Table 3 will be excluded from the 95% UCL calculation for that constituent. These exceedances need to be resolved by excluding the portion of the import material site represented by the exceedances. This may be done by delineating the import material site using the location of existing acceptable samples, or through additional delineation sampling (such as step-out-sampling) to isolate and exclude the identified hot-spot(s) from acceptable soil (see Figure 4).
- The 95% UCL calculation is based on evaluation of an entire soil volume and placing such soil in different areas of the Sites would alter the statistical significance of the calculation. Therefore, if a

source of soil is approved through the use of a 95% UCL calculation, that soil should be placed in a single Site location rather than split out among multiple areas.

Table 3. Not to Exceed Guidelines for Metals When Performing Mean Hazard Quotient Evaluation (mg/kg)

Metal[1]	2000 Wetland Foundation Material Screening Guidelines[2]	2020 Not to Exceed Criteria	Basis
Arsenic	70	70	ER-M
Cadmium	9.6	9.6	ER-M
Chromium	370	370	ER-M
Copper	270	270	ER-M
Lead	218	218	ER-M
Nickel	120	120	ER-M
Selenium	--	4.0	**
Silver	3.7	3.7	ER-M
Zinc	410	410	ER-M

Notes:

[1] Although there is a wetland foundation material screening guideline for mercury, it is not applicable in the mean hazard quotient approach as described the "Mean Hazard Quotient Evaluation" Section of 3.3.2.5.

[2] Values from the Draft Staff Report, Beneficial Reuse of Dredged Material: Sediment Screening and Testing Guidelines (SFBRWQCB 2000).

ERM = Effects Range Median – A level above which effects are anticipated.

** - Value based on the absence of observed toxicity to fish and birds for selenium concentrations of less than 4 mg/kg in soils and sediment per email communication between SFBRWQCB and USACE on November 3, 2020.

3.3.2.5 Mean Hazard Quotient Evaluation

If an import material site exceeds the wetland surface criteria (Section 3.4) for one or more metals listed in Table 3 by direct comparison or by comparison with the 95% UCL, then it may be evaluated using the Hazard Quotient method. The first step is to determine if any metals exceed the "2020 Not to Exceed Criteria" listed in Table 3. If any of the specified criteria in Table 3 are exceeded, then the material represented by that result is not suitable for use as import material. When one or more metals (other than mercury) exceed the wetland surface criteria but not the Table 3 criteria, calculation of a mean hazard quotient may be used to determine the suitability of the potential import material site with respect to metals. A hazard quotient for each metal shall be determined by dividing the import material site's 95% UCL for each metal (other than mercury) by its respective wetland surface screening criterion in Section 3.4. Due to its bioaccumulative nature, mercury concentrations in the soil import material will not be evaluated using the mean hazard quotient method; only the more conservative 95% UCL method is acceptable for mercury evaluation. The mean value of the hazard quotients for all metals (except mercury) will then be calculated. If the mean value of the hazard quotients is less than 1, then the potential import material site will be considered acceptable for unrestricted use, regarding metals. As with the use of 95% UCL calculation, the mean hazard quotient evaluation is based on an entire soil volume and placing such soil in different areas of the Sites would invalidate the method. Therefore, if a source of soil is approved through the use of a mean hazard quotient, that soil should be placed in a single Site location rather than split out and delivered to multiple areas. An example of this process is shown in Table 4.

Table 4. Example Calculations for the Mean Hazard Quotient for Metals (Excluding Mercury)

Metal*	Column A Import Source Concentration	Column B 2020 Updated Screening Levels	Hazard Quotient Col A/Col B	2020 Not to Exceed Criteria
Arsenic	0.68	15.3	0.04	70
Cadmium	0.25	1.2	0.21	9.6
Chromium	240	112	2.14	370
Copper	92	68.1	1.35	270
Lead	0.63	46.7	0.01	218
Nickel	120	112	1.07	120
Selenium	0.5	1.6	0.31	4.0
Silver	0.5	1.0	0.50	3.7
Zinc	75	158	0.47	410
Mean Hazard Quotient			0.68	

Source: USFWS and H.T. Harvey & Associates, 2021

Notes:

* For this potential import material site there are no metals concentrations greater than the "Not to Exceed" criteria and the mean hazard quotient is less than 1, therefore the material is acceptable, regarding metals.

3.3.2.6 Approval of Portions of Import Material Sites

If only a portion of the samples collected at a potential import material site meet the criteria for the soil import material based on the analysis methods above, the quality assurance officer will specify on a map the volume and extent of the portion of the site that is approved for use as soil import material, based on sample locations and depths along with the associated analytical results. At the discretion of the quality assurance officer, additional sampling may be required to delineate the extent of the suitable soil import material. In that case, the location of and rationale for delineation sampling will included in the import material site approval memorandum described above in Section 3.3.2.

3.4 Contaminant Screening Criteria

The contaminant screening criteria for soil import material used at the Sites are provided in Table 5 and are consistent with the wetland surface criteria developed in the Refuge QAPP (USFWS and H.T. Harvey & Associates, 2021). . As discussed above, per the SFBRWQCB's request, screening criteria protective of organisms residing at the wetland surface (i.e., most highly exposed) will be used to screen the soil import material, regardless of berm placement depth or habitat conditions surrounding the berm. Screening criteria for wetland foundation material and screening criteria protective of terrestrial organisms will not be applied.

The contaminant limits in this QAPP are based on the Refuge QAPP and those in the SFBRWQCB's Beneficial Reuse of Dredged Materials: Sediment Screening and Testing Guidelines (SFBRWQCB 2000). Updated and supplemental screening criteria are also included from the QAPP for Inner Bair Island Fill Import and Placement (USFWS 2008), Saltwater Ecotoxicity Environmental Screening Levels in Environmental Screening Levels published by SFBRWQCB (SFBRWQCB 2019), and the 2020 updated screening levels approved by SFBRWQCB for the South Bay Shoreline Project (Lichten 2020). These contaminant screening levels reflect the SFBRWQCB's current understanding of the appropriate physical, chemical and biological quality requirements for use or reuse of soil in wetlands.

Specifically, the SFBRWQCB 2000 contaminant screening criteria were adopted in this QAPP with the following exceptions:

- Total Hydrocarbon Components—Screening criteria for total hydrocarbon components are not covered in SFBRWQCB 2000. Therefore, wetland surface material screening criteria for total hydrocarbon components are based on the limits approved by the SFBRWQCB in the QAPP for Inner Bair Island Fill Import and Placement (USFWS 2008).
- Total Polycyclic Aromatic Hydrocarbons—For PAHs, the screening criteria for total PAHs are shown for wetland surface material in Table 5. For wetland material, total and individual PAH screening limits are based on updated ambient levels reported in the San Francisco Estuary Institute 2015. The screening criteria for PAHs is the sum of the concentrations of individual PAHs detected (total PAH concentration). However, screening limits for individual PAHs are provided in Table 4. If a sample's total PAHs exceeds the total PAH value in Table 5, then the screening criteria for individual PAHs will be compared to each PAH's detected concentration. If all individual PAHs are below the individual screening criteria, re-use of material exceeding the PAH total may be proposed to the SFBRWQCB and BCDC.
- Volatile Organic Compounds—Screening criteria for VOCs are not covered in SFBRWQCB 2000 or the QAPP for Inner Bair Island Fill Import and Placement (USFWS 2008). Therefore, screening criteria for VOCs are based on Saltwater Ecotoxicity Environmental Screening Levels in SFBRWQCB 2019 Environmental Screening Levels (SFBRWQCB 2019). These screening levels were developed by the SFBRWQCB to help expedite the identification and evaluation of potential environmental concerns in soils (and other media).
- Revised Screening Levels for Metals. The criteria in SFBRWQCB 2000 for metals were all based on Bay ambient conditions at the time the guidelines were published. Some of the Bay ambient metals concentration are less than the Effects Range Low (ER-L) for that metal. The ER-L represents concentrations below which effects are not anticipated; therefore, setting levels below these values may preclude the use of soil import material which would not be anticipated to pose significant risk to the environment. For this reason, an updated set of criteria for select metals was provided in the Refuge QAPP in 2020 and is incorporated in Table 5.

As guidance for SFBRWQCB screening levels are modified, the contaminant screening criteria in this QAPP are to be revised.

Table 5. Contaminant Screening Criteria for Wetland Surface Material

Constituent	Screening Criterion
Metals (mg/kg, dry weight)	
Arsenic	15.3[a]
Cadmium	1.2[d]
Chromium	112.0[a]
Copper	68.1[a]
Lead	46.7[d]
Mercury	0.43[a]
Nickel	112.0[a]
Selenium	1.6[d]
Silver	1.0[d]
Zinc	158.0[a]
Organochlorine Pesticides/Polychlorinated Biphenyls (µg/kg, dry weight)	
DDTs, sum	7.0[a]

Constituent	Screening Criterion
Chlordanes, sum	2.3[a]
Dieldrin	0.72[a]
Hexachlorocyclohexane, sum	0.78[a]
Hexachlorobenzene	0.485[a]
Polychlorinated biphenyls, sum	22.7[a]
Polycyclic Aromatic Hydrocarbons (µg/kg, dry weight)	
Polycyclic Aromatic Hydrocarbons, total	4,540[e]
1-Methylnaphthalene	13.4[e]
1-Methylphenanthrene	37.6[e]
2,3,5-Trimethylnapthalene	7.43[e]
2,6-Dimethylnaphthalene	13[e]
2-Methylnaphthalene	20.8[e]
Acenaphthene	13.5[e]
Acenaphthylene	32.6[e]
Anthracene	80.1[e]
Benz(a)anthracene	212[e]
Benzo(a)pyrene	428[e]
Benzo(e)pyrene	244[e]
Benzo(b)fluoranthene	231[e]
Benzo(g,h,i)perylene	416[e]
Benzo(k)fluoranthene	231[e]
Biphenyl	11.7[e]
Chrysene	252[e]
Dibenz(a,h)anthracene	49.9[e]
Fluoranthene	620[e]
Fluorene	27.1[e]
Indeno(1,2,3-c,d)pyrene	337[e]
Naphthalene	56.4[e]
Perylene	216[e]
Phenanthrene	176[e]
Pyrene	791[e]
Total Petroleum Hydrocarbons (mg/kg, dry weight)	
Total Petroleum Hydrocarbons from Gasoline	100.0[b]
Total Petroleum Hydrocarbons from Jet Fuel, Kerosene, Diesel Fuel, or Motor Oil	200.0[b]
Volatile Organic Compounds (µg/kg, dry weight)	
Acetone	36.0[c]
Benzene	69.0[c]
Bromodichloromethane	352.0[c]
Bromoform (Tribromomethane)	115.0[c]
Bromomethane	21.0[c]
Carbon tetrachloride	1.9[c]
Chlorobenzene	58.0[c]
Chloroform	198.0[c]

Constituent	Screening Criterion
Chloromethane	143.0[c]
Dibromochloromethane	352.0[c]
Constituent	Screening Criterion
1,2-Dibromoethane	560.0[c]
1,2-Dichlorobenzene	53.0[c]
1,3-Dichlorobenzene	400.0[c]
1,4-Dichlorobenzene	57.0[c]
1,1-Dichloroethane	15.0[c]
1,2-Dichloroethane	40.0[c]
1,1-Dichloroethene	1.0[c]
cis-1,2-Dichloroethene	236.0[c]
trans-1,2-Dichloroethene	236.0[c]
1,2-Dichloropropane	24.0[c]
1,3-Dichloropropene	57.0[c]
1,4-Dioxane	8,840.0[c]
Ethylbenzene	194.0[c]
Hexachlorobutadiene	27.0[c]
Hexachloroethane	18.0[c]
Methylene chloride	352.0[c]
Methyl ethyl ketone	630.0[c]
Methyl isobutyl ketone	22.0[c]
tert-Butyl methyl ether	960.0[c]
Naphthalene	225.0[c]
tert-Butyl alcohol	6,660.0[c]
1,1,1,2-Tetrachloroethane	800.0[c]
1,1,2,2-Tetrachloroethane	10.0[c]
Tetrachloroethene	8.5[c]
Toluene	299.0[c]
1,2,4-Trichlorobenzene	350.0[c]
1,1,1-Trichloroethane	27.0[c]
1,1,2-Trichloroethane	26.0[c]
Trichloroethene	49.0[c]
Vinyl chloride	172.0[c]
Xylenes	380.0[c]

Source: USFWS and H.T. Harvey & Associates, 2021

Notes: DDT = dichloro-diphenyl-trichloroethane; mg/kg = milligrams per kilogram; µg/kg = micrograms per kilogram.

[a] Contaminant screening criteria from SFBRWQCB's Beneficial Reuse of Dredged Materials: Sediment Screening and Testing Guidelines (SFBRWQCB 2000).

[b] Total petroleum hydrocarbon guidelines from the Quality Assurance Project Plan for Inner Bair Island Fill Import and Placement (USFWS 2008).

[c] Values calculated from SFBRWQCB July 25, 2019 Environmental Screening Levels. San Francisco Bay Region (SFBRWQCB 2019). The values were calculated using the following ecological risk assessment equation: Aquatic environmental screening level (for sediment) = lowest aquatic habitat goal level x organic carbon partition coefficient x fraction of organic carbon (assumed 1%).

[d] Values from SFBRWQCB July 17, 2020 memorandum to U.S. Army Corps of Engineers for the South Bay Shoreline Project (Lichten 2020).

[e] Based on ambient values in Updated Ambient Concentrations of Toxic Chemicals in San Francisco Bay Sediments (San Francisco Estuary Institute 2015)

3.5 Laboratory Analysis Methods

The following laboratory methods will be used during the Phase 2 Analysis. With approval from the quality assurance officer and the SFBRWQCB, laboratories may use professional judgment to modify the protocols described below. The quality assurance officer will include BCDC on communications with SFBRWQCB staff that request lab protocol modifications to notify BCDC of approved protocol modifications.

3.5.1 Chemical Constituents

Soil import material samples will be collected and analyzed for specific chemical compounds using the methodologies set forth in EPA's Test Methods for Evaluating Solid Waste, Physical and Chemical Methods (EPA 1986). Analyses for metals will follow the EPA Methods 6000/7000 series, analyses for organochlorine pesticides will follow EPA Method 8081B, analyses for polychlorinated biphenyls will follow EPA Method 8082A, and analyses for polycyclic aromatic hydrocarbons will follow EPA Method 8270. If the Phase 1 Analysis determines there is potential VOC contamination in the proposed import soils, laboratory analysis for VOCs will follow EPA Method 8260B. If the Phase 1 Analysis indicates there is no potential for VOC contamination, there will be no test for VOCs. Analytical results for compounds will be reported in dry weight.

3.5.2 Method Detection Limits and Reporting Limits

The MDL is the lowest concentration at which an analyte can be detected in a sample that does not cause matrix interferences (typically determined using spiked reagent water). "Detected" in this context means that a sample that contains the analyte detected at the MDL can be distinguished from a blank with 99 percent certainty. Soil samples are more complex matrices than reagent water and are likely to introduce matrix interferences into the analytical process. In addition to the likely effects of matrix interferences in the soil, the process of extracting constituents from the soil matrix also introduces some uncertainty into the analytical process. Therefore, it is possible that a sample that is reported as non-detect for a contaminant may actually contain the contaminant at a concentration greater than the MDL. MDLs for each analyte will be determined by the analytical laboratory using the applicable Solid Waste (SW)-846 protocol (EPA 1986) or the method specified in Title 40 Code of Federal Regulations Part 136, Appendix B (GPO 2015).

The laboratory will then develop RLs that represent concentration levels that can be consistently measured within the margins of error considered acceptable for the specified analytical method. The RLs for data submitted by analytical laboratories will, to the extent feasible, be below the contaminant screening criteria identified above. In cases when it is not feasible to obtain a RL for a constituent that is less than the screening criterion, the SFBRWQCB shall be contacted for approval to report down to the MDL and BCDC will be notified of the results of the approval request. In these instances, the MDL should be below the screening criterion. The laboratory results based upon the MDL will then be compared to the screening criterion to determine the likelihood that a specific contaminant is present at a concentration greater than the screening criterion. Constituents expected to regularly require comparison to the MDL include cadmium, mercury, selenium, silver, chlordane, dieldrin, hexachlorocyclohexane (sum), polychlorinated biphenyls (sum), and 1,2- dibromo-3-chloropropane.

The SFBRWQCB shall review data for constituents that are reported at levels below the RL. Based on these data, the SFBRWQCB may either 1) reject the use of the proposed source of the soil import material, based on data above the MDL; approve the use of the proposed source of the soil import material; or request that the analysis be repeated using a different testing method and/or laboratory. The quality assurance office will request concurrence from BCDC on the SFBRWQCB's determination. When evaluating constituents for which MDLs exceed screening levels, SFBRWQCB staff will consider the potential for these constituents to be present in the soil, based on review of the import material site history and the number of constituents in the same chemical group (e.g., VOCs,

pesticides, PAHs, or PCBs) that are detected in the sampling data. If PAHs have high MDLs, results for heavy hydrocarbons (e.g., TPH-MO) shall be reviewed to assess the likely presence of PAHs.

Finding laboratories with the required MDLs is not anticipated to be an issue. However, if meeting the MDL is an issue for a particular contaminant at a particular site, the quality assurance officer is encouraged to work with the laboratory to determine a course of action to attempt to reduce the MDL below the screening criterion (e.g., selecting an alternative analytical method that may achieve the screening levels, or collecting additional soil to be re-analyzed). In the case where the MDL is above the screening criterion for a particular analyte and soil otherwise appears suitable for import, the quality assurance officer will defer to the SFBRWQCB and BCDC to determine whether the sample/soil source is approvable prior to soil import and placement.

3.5.3 Accuracy

Accuracy is the degree of closeness between laboratory contaminant concentration results and the actual contaminant concentrations in the samples. Accuracy will be assessed through the evaluation of the percent recoveries associated with laboratory control samples and matrix spikes and matrix spike duplicates (MS/MSDs). Accuracy is generally expressed as percent recovery (%R), which is defined as:

$$\%R = 100\% \times \frac{s - C}{T}$$

where:
s = measured spike sample concentration,
C = sample concentration, and
T = true or actual concentration of the spike.

Accuracy will be controlled by comparing percent recoveries to the acceptable control limits in the SW-846 tables (EPA 1986).

3.5.4 Precision

Precision is a measurement of the reproducibility of data under a specific set of conditions (e.g., variation in contaminant concentrations among laboratory replicates of a given sample). It is a quantitative measure used to assess the variability of a data set in reference to the calculated average value. Precision will be assessed by the evaluation of the day-to-day variances in the laboratory control samples. Precision will be evaluated for matrix effects using the MS/MSDs. Results of the duplicate analysis are used to calculate the relative percent difference (RPD) or relative standard deviation (RSD).

The RPD is defined as:

$$RPD = 100\% \times \frac{(\chi 1 - \chi 2)}{(\chi 1 + \chi 2) / 2}$$

where:
$\chi 1$ = first duplicate concentration, and
$\chi 2$ = second duplicate concentration.

The RSD is defined as:

$$RSD = 100\% \times \frac{S}{X_m}$$

where:
S = standard deviation, and
X_m = arithmetic mean of replicate analysis.

The laboratory analysis will meet the acceptance limits of precision identified by method in SW-846 (EPA 1986).

3.6 Quality Assurance during Soil Import Material Transport and Placement

The following measures will be implemented to ensure that only soil import material from approved import material sites is used for ongoing berm maintenance activities and for general system maintenance.

3.6.1 Truck Dispatch Log

The import material contractor will dispatch trucks carrying approved soil import material to a designated location at the Sites. A daily Truck Dispatch Log will be maintained by the import material contractor to keep track of how many trucks are anticipated to leave each approved import material site, the size of the trucks used for the day (e.g., super dumps or double bottoms), and each truck's approved delivery destination within the Sites. The Truck Dispatch Log will be communicated at the start of work each day by the import material contractor via a PDF or email to the gatekeeper, quality assurance officer, and Cargill staff.

The Truck Dispatch Log will include the following information:

- Approximate number of trucks and total volume of the soil import material approved for transport.
- Truck size (e.g., super dumps or double bottoms).
- Import material site origination name and address.
- Location in the Sites where the imported soil import material will be used.
- Approximate time when soil delivery will take place.

The import material contractor will keep a running total of the volume of the import material brought on site. It is the responsibility of the import material contractor to ensure that the volume of soil import material brought on site does not exceed the estimated volume approved in the import material site characterization memorandum.

3.6.2 From Import Material Site to Truck

The quality assurance officer will make unannounced visits to import material sites to verify that approved material is being loaded. At the start of import from each import material site, the quality assurance officer will attend a kick off meeting with the import material contractor at the import material site to review the locations and depths of approved import material and to review the import material contractor's Soil Acceptance Forms. The quality assurance officer will visually spot-check the suitability of material loaded in trucks for the Sites using indicators, such as color, texture, and odor. If questionable or anomalous material is encountered, the quality assurance officer will halt transport of soil import material until suitability is confirmed. If an import material site has segregated soil import material into material acceptable and unacceptable for Site use, the quality assurance officer will

conduct periodic site visits to the import material site to confirm that acceptable material is loaded for transport to the Sites. The quality assurance officer also will confirm that proper best management practices are being implemented at the import material site. For example, incoming trucks must be clean of soils and debris (including seed from invasive plant species) from other sites, and loading equipment must be clean and in good working order.

Prior to leaving the import material site, the import material contractor will provide a Soil Acceptance Form that is unique to that truckload of soil to each truck. The Soil Acceptance Forms will clearly identify:

- Date of import.
- Trucking company.
- Unique truck number as written on the side of the truck.
- Approved import material site source.
- Destination within the Sites.

3.6.3 From Truck to the Sites

The entrance to the import material site will be monitored by a gatekeeper on a full-time basis. When trucks arrive, the gatekeeper will fill out a Gatekeeper Log with the soil source location, the trucking company, unique truck number as written on the side of the truck, and time of arrival.

Soil Acceptance Forms will be collected upon entry. Trucks without a Soil Acceptance Form from an approved source and a corresponding unique truck number on the side of the truck will be rejected from entry to the import material site.

The import material contractor will keep a running total of the volume of soil import material for use as import material. The import material contractor will ensure that the volume of soil import material allowed on site will not exceed the estimated quantity approved in the import material site characterization memorandum.

For the duration of the soil material import, the quality assurance officer will make random, unannounced visits to review the gatekeeper's work.

3.6.4 Soil Import Material Placement at the Sites

The quality assurance officer will monitor placement of soil import material at the start of new work and then make random, unannounced visits throughout the duration of soil import material placement to determine whether the intent of this QAPP is being met. If questionable or anomalous material is encountered, the quality assurance officer will halt placement of soil import material until suitability in accordance with this QAPP is confirmed.

Operational Roles and Responsibilities—The import material contractor is responsible for ensuring that soil import material placement at the applicable Site is in compliance with permits and specifications, including review and approval of testing data, agency reporting, required notifications, oversight of on-site stockpiling of soil import material, and soil import material placement during project construction.

The import material contractor is responsible for:

- Tracking the delivery and volume of appropriately screened import material to the Sites.
- Ensuring that the soil import material is excavated from approved locations at each import material site and placed in approved locations at the Sites.

- Transmitting documentation of these activities to the quality assurance officer and Cargill staff for inclusion in quarterly reports to the SFBRWQCB and BCDC.

Soil Import Material Tracking Procedures—The import material contractor shall prepare and maintain a sequencing and placement plan for each location at the Sites. The sequencing and placement plan shall include the following information:

- Import material site project name.
- Volume of soil import material to be imported.
- Estimated schedule for start and end of soil import material delivery to the Sites.
- Stockpile locations at the Sites for import material.
- Destination within the applicable Site for import material.

The import material contractor shall maintain a written copy of the sequencing and placement plan for soil import material at the project site. A revised plan shall be posted at the project site whenever the sequencing plan is revised.

During periods of active soil import material transport and placement, the import material contractor shall provide daily notifications to Cargill staff of any changes to the amount, type, and timing of incoming material at the applicable Site.

Verification of Soil Import Material Tracking Procedures—Whenever a project accepts soil import material, the gatekeeper shall verify that incoming soil has been placed in appropriate stockpiles for each day that the gatekeeper is on site.

3.7 Reporting Requirements

The quality assurance officer shall provide quarterly reports to the SFBRWQCB and BCDC during projects that require soil import material import and placement. Reports shall identify the location of the import material site(s), the quantity of soil import material moved and placed during the prior quarter by import material site, the balance of approved soil import material volume remaining by import material site, and the approximate location of soil import material placed by import material site. Import material site characterization memoranda (including sample plans, sample maps, Phase 1 reports, test data, and other associated reports related to soil import material acceptance) approving sources during the preceding quarter will be attached as appendices to quarterly reports. Field notes, dispatch/truck logs, Soil Acceptance Forms, and Gatekeeper Logs shall be included as appendices to the quarterly report.

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Appendix A Addendum to Cargill's QAPP

The following sequence of action items will occur for Cargill to identify import material, review required documentation, and provide a report to the SFBRWQCB and BCDC staff for approval for each source of soil import material imported to Cargill (i.e., the import material site approval memorandum).

1. Cargill identifies an opportunity to receive import material and issues a request for additional information to import material contractors as needed.
2. Contractor will provide Cargill with documentation as specified in the QAPP for designated Cargill staff and/or the Quality Assurance Officer to assess the suitability of material as detailed in Section 3 of the QAPP (e.g., Phase 1, soil chemistry results, etc.)
3. Designated Cargill staff and/or the Quality Assurance Officer will review documentation/results from the contractor and determines acceptability of material.
4. Designated Cargill staff and/or the Quality Assurance Officer will develop a Source Load Report (import material site approval memorandum) for submittal to the regulatory agencies as detailed below.

Required content for the QAPP Import Report / Import Material Site Approval Memorandum:

Section 1: Applicable Permits for Cargill to conduct maintenance activities will be listed:

- U.S. Army Corps of Engineers O&M permit #SPN-2008-00160.
- San Francisco Bay RWQCB CWIQS Place ID: 717473 (bkw) CWIQS Reg. Meas. ID: 391060.
- San Francisco Bay Conservation and Development Commission Permit No. 1993.004.22 (Amendment No. 22).

Section 2: Project Team Members — As detailed in Section 2 of the QAPP, the project team members and their qualifications will be listed in a table (resumes will be provided as an appendix). This includes the project-specific Quality Assurance Officer, the personnel on the project management team, the contractor, and the project-specific Peer Reviewer (resume will be included). Note that a single entity could fulfill more than one role where appropriate. Cargill, or contractors acting on their behalf, may fulfill multiple roles. An example of the table format is provided below.

Table A.1 Project Team Members

Team Member	Affiliation	Role	Contact
	Cargill	Quality Assurance Officer	
		Import Material Site Proponent	
		Import Material Contractor	
		Peer Reviewer	
		Gatekeeper	

Section 3: Evaluation of Import Material

This section will provide the following:

- A list of the sources and their locations (with figures).

- Site History – Geotechnical report, Phase 1, or other report.
- Sampling and Analysis Plan (i.e., Site Sampling Plan).
- Sampling and analysis results.
- Acceptability Determination – This section will compare data to criteria in the QAPP. It will also summarize the evaluation conducted using the available background and comparison of chemistry information to criteria to determine acceptability of the proposed import material.
- Conclusions.

Section 4: Material Handling — All import material will be placed at one of the Stockpile locations, either at the Newark or Redwood City Plants. The Stockpile location will be shown with a figure in this section.

Section 5: Schedule — Scheduling details for reviewing the Source Load Report (import material site approval memorandum) as well as any additional scheduling details will be provided in this section.

Cargill will face competition with other entities to obtain material from various sources. Therefore, it will be critical for the regulatory agencies to conduct their reviews expeditiously in order for Cargill to successfully acquire the necessary material to conduct maintenance activities.

Attachment A: Resumes — Resumes for the Quality Assurance Officer and the Peer Reviewer(s) will be provided.

APPENDIX D Summary of Applicable Federal and State Regulations

Table D-1. Federal (U.S.) and State (CA) Laws, Regulations, and Policies Potentially Applicable to the Project

Relevant Section	Jurisdiction	Regulation	Summary
3.3 Air Quality	US	Federal Clean Air Act (FCAA) (42 USC 7401 et seq.)	The FCAA requires the U.S. Environmental Protection Agency (USEPA) to identify National Ambient Air Quality Standards (NAAQS) to protect public health and welfare. National standards are established for ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter (PM_{10} and $PM_{2.5}$), and lead (Pb). In 2007, the U.S. Supreme Court ruled that carbon dioxide (CO_2) is an air pollutant as defined under the FCAA, and that the USEPA has authority to regulate GHG emissions. Pursuant to the 1990 FCAA Amendments, USEPA classifies air basins (or portions thereof) as in "attainment" or "nonattainment" for each criteria air pollutant, based on whether or not the NAAQS are achieved. The classification is determined by comparing monitoring data with State and Federal standards. • An area is classified as in "attainment" for a pollutant if the pollutant concentration is lower than the standard. An area is classified as in "nonattainment" for a pollutant if the pollutant concentration exceeds the standard. • An area is designated "unclassified" for a pollutant if there are not enough data available for comparisons.
3.3 Air Quality	CA	California Clean Air Act of 1988 (CCAA) (Assembly Bill [AB] 2595)	The CCAA requires all air districts in the State to endeavor to achieve and maintain State ambient air quality standards for O_3, CO, SO_2, NO_2, and PM; attainment plans for areas that did not demonstrate attainment of State standards until after 1997 must specify emission reduction strategies and meet milestones to implement emission controls and achieve more healthful air quality. California's ambient air standards are generally stricter than national standards for the same pollutants; the State has also established standards for sulfates, hydrogen sulfide (H_2S), vinyl chloride, and visibility-reducing particles. The 1992 CCAA Amendments divide O_3 nonattainment areas into four categories of pollutant levels (moderate, serious, severe, and extreme) to which progressively more stringent requirements apply.

Relevant Section	Jurisdiction	Regulation	Summary
3.3 Air Quality	CA	California Global Warming Solutions Act of 2006 (AB 32), as amended by SB 32 (2016)	Under Assembly Bill [AB] 32, CARB is responsible for monitoring and reducing GHG emissions in the State and for establishing a statewide GHG emissions cap for 2020 that is based on 1990 emissions levels. CARB (2009) has adopted the AB 32 Climate Change Scoping Plan (Scoping Plan), which contains the main strategies for California to implement to reach the 2020 and 2050 emission goals. The Scoping Plan breaks down the amount of GHG emissions reductions the CARB recommends for each emissions sector of the State's GHG inventory, but does not directly discuss GHG emissions generated by construction activities. The First Update to the Scoping Plan was approved by CARB on May 22, 2014 and focuses on energy, transportation, agriculture, water, waste management, natural and working lands, short-lived climate pollutants, green buildings, and the cap- and-trade program. In 2016, the Senate Bill 32 amended AB 32 to set a target of reducing emissions to 40% below 1990 levels by 2030.
3.3 Air Quality	CA	Senate Bill (SB) 97 and 375	Pursuant to SB 97, the State Office of Planning and Research prepared and the Natural Resources Agency adopted amendments to the State CEQA Guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions. Effective as of March 2010, the revisions to the CEQA Environmental Checklist Form (Appendix G) and the Energy Conservation Appendix (Appendix F) provide a framework to address global climate change impacts in the CEQA process; State CEQA Guidelines section 15064.4 was also added to provide an approach to assessing impacts from GHGs.
3.3 Air Quality	CA	Assembly Bill 1493	AB 1493 requires CARB to develop and implement regulations to reduce automobile and light truck GHG emissions. These stricter emissions standards apply to automobiles and light trucks beginning with the 2009 model year.

Relevant Section	Jurisdiction	Regulation	Summary
3.3 Air Quality	CA	Executive Orders (EOs)	• Under EO S-01-07, which set forth a low carbon fuel standard for California, the carbon intensity of California's transportations fuels is to be reduced by at least 10 percent by 2020. • EO S-3-05 established statewide GHG emission targets of reducing emissions to 2000 levels by 2010, to 1990 levels by 2020, and to 80 percent below the 1990 level by 2050. • Executive Order B16-12 provides a target of reducing GHG emissions from the transportation sector by 80 percent below 1990 emissions levels for the transportation sector by 2050. • Executive Order B-55-18 (2018) established an additional statewide goal of achieving carbon neutrality as soon as possible, but no later than 2045, and maintaining net negative emissions thereafter. It states, "The California Air Resources Board shall work with relevant state agencies to develop a framework for implementation and accounting that tracks progress toward this goal."
3.3 Air Quality	CA	Other	• Under California's Diesel Fuel Regulations, diesel fuel used in motor vehicles, except harbor craft, has been limited to 500 parts per million (ppm) sulfur since 1993. The sulfur limit was reduced to 15 ppm beginning September 1, 2006, and harbor craft were included starting in 2009. • CARB's Heavy Duty Diesel Truck Idling Rule (13 CCR § 2485) prohibits heavy-duty diesel trucks from idling for longer than 5 minutes at a time. Truck idling for longer than 5 minutes while queuing is allowed, however, provided the queue is located beyond 100 feet (30 meters) from any homes or schools. • The Statewide Portable Equipment Registration Program (PERP) establishes a uniform program to regulate portable engines/engine-driven equipment units. Once registered in the PERP, engines and equipment units may operate throughout California without the need to obtain individual permits from local air districts.

Relevant Section	Jurisdiction	Regulation	Summary
3.4 Biology	U.S.	Endangered Species Act (FESA) (7 USC 136, 16 USC 1531 et seq.)	The FESA provides guidance for the conservation of species designated as Endangered and Threatened and their habitats. When applicants are proposing projects with a Federal nexus that "may affect" a federally listed or proposed species, the Federal agency is required to consult with the USFWS or NMFS, as appropriate, under Section 7. Section 7 provides that each Federal agency must ensure that any actions authorized, funded, or carried out by the agency are not likely to jeopardize the continued existence of any endangered or threatened species listed under the FESA or result in the destruction or adverse modification of areas determined to be critical habitat. USFWS and/or NMFS issue Biological Opinions summarizing findings for activities that could affect a listed species. Section 9 prohibits the "take" of any member of a listed species. • Take is defined as "...to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." • Harass is "an intentional or negligent act or omission that creates the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavior patterns that include, but are not limited to, breeding, feeding, or sheltering." • Harm is defined as "...significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering."

Relevant Section	Jurisdiction	Regulation	Summary
3.4 Biology	U.S.	Magnuson-Stevens Fishery Conservation and Management Act (MSA) (16 USC 1801 et seq.)	The MSA is the primary law governing marine fisheries management in U.S. Federal waters. The MSA was first enacted in 1976 and amended in 1996. Amendments to the 1996 MSA require the identification of Essential Fish Habitat (EFH) for federally managed species and the implementation of measures to conserve and enhance this habitat. The MSA requires Federal agencies to consult with the NMFS regarding actions that may affect EFH for Pacific coast groundfish, coastal pelagic species, and Pacific salmon. The MSA defines EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." EFH is the habitat (waters and substrate) required to support a sustainable fishery and a managed species' contribution to a healthy ecosystem. Waters include aquatic areas and their associated physical, chemical, and biological properties that are used by fish. Substrate includes sediment, hard bottom, structures underlying the waters, and associated biological communities. Any project requiring Federal authorization, such as a USACE permit, is required to complete and submit an EFH Assessment with the application and either show that no significant impacts to the essential habitat of managed species are expected or identify mitigations to reduce those impacts. Under the MSA, Congress defined EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity" (16 USC 1802(10)). Pursuant to section 305(b)(2), Federal agencies shall consult with the NMFS regarding any action they authorize, fund, or undertake that might adversely affect EFH.
3.4 Biology	U.S.	Marine Mammal Protection Act (16 USC 1361–1407)	The purpose of this act is to conserve marine mammals. With certain exceptions, the act prohibits the taking and importation of marine mammals as well as products from them. The act also prohibits harassment of marine mammals; it applies to harbor seals that use the Project area.
3.4 Biology	U.S.	Other	• The Bald and Golden Eagle Protection Act makes it illegal to import, export, take (including molest or disturb), sell, purchase or barter any bald eagle or golden eagle or parts thereof. • Clean Water Act (33 USC 1251 et seq.) (3.3.8, Hydrology and Water Quality) • Executive Order 13112 requires Federal agencies to use authorities to prevent introduction of invasive species, respond to and control invasions in a cost-effective and environmentally sound manner, and to provide for restoration of native species and habitat conditions in ecosystems that have been invaded. • Rivers and Harbors Act (33 USC 401) (3.3.8, Hydrology and Water Quality)

Relevant Section	Jurisdiction	Regulation	Summary
3.4 Biology	U.S.	Executive Order 11990: Protection of Wetlands (May 24, 1977)	Established a national policy to avoid adverse impacts on wetlands whenever there is a practicable alternative.
3.4 Biology	CA	California Endangered Species Act (CESA) (Fish & G. Code, § 2050 et seq.)	CESA provides for the protection of rare, threatened, and endangered plants and animals, as recognized by the California Department of Fish and Wildlife (CDFW), and prohibits the taking of such species without its authorization. Furthermore, CESA provides protection for those species that are designated as candidates for threatened or endangered listings. Under CESA, CDFW has the responsibility for maintaining a list of threatened species and endangered species (Fish & G. Code, § 2070). CDFW also maintains a list of candidate species, which are species that CDFW has formally noticed as under review for addition to the threatened or endangered species lists. CDFW also maintains lists of Species of Special Concern that serve as watch lists. Pursuant to the requirements of CESA, an agency reviewing a proposed project within its jurisdiction must determine whether any State-listed endangered or threatened species may be present in the project site and determine whether the proposed project will capture, injure or kill such species. In addition, CDFW encourages informal consultation on any proposed project that may affect a candidate species.
3.4 Biology	CA	California Endangered Species Act (CESA) (Fish & G. Code, § 2050 et seq.)	CESA regulates the "take" of a species listed as Threatened or Endangered under the State act. CESA requires a permit to take a State-listed species through incidental or otherwise lawful activities (§ 2081, subd. (b)). If take of a California listed species may occur, CDFW would require a Fish and Game Code Section 2081 Incidental Take Permit (ITP). An ITP requires that impacts by minimized and fully mitigated in addition to a determination that the species would not be jeopardized by the issuance of the permit. CESA does not require formal consultation; however, CESA does require that the CDFW act as a reviewing agency for all CEQA documents if the fish and wildlife resources of the State may be affected by the proposed action.

Relevant Section	Jurisdiction	Regulation	Summary
3.4 Biology	CA	Other relevant California Fish and Game Code sections	• The California Native Plant Protection Act (Fish & G. Code, § 1900 et seq.) is intended to preserve, protect, and enhance endangered or rare native plants in California. This Act includes provisions that prohibit the taking of listed rare or endangered plants from the wild and a salvage requirement for landowners. The Act directs the CDFW to establish criteria for determining what native plants are rare or endangered. Under section 1901, a species is endangered when its prospects for survival and reproduction are in immediate jeopardy from one or more causes. A species is rare when, although not threatened with immediate extinction, it is in such small numbers throughout its range that it may become endangered. • The California Species Preservation Act (Fish & G. Code §§ 900-903) provides for the protection and enhancement of the amphibians, birds, fish, mammals, and reptiles of California. • Fish and Game Code sections 3503 & 3503.5 prohibit the taking and possession of native birds' nests and eggs from all forms of needless take. These regulations also provide that it is unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nests or eggs of any such bird except as otherwise provided by this Code or any regulation adopted pursuant thereto. • Fish and Game Code sections 3511 (birds), 4700 (mammals), 5050 (reptiles and amphibians), & 5515 (fish) designate certain species as "fully protected." Fully protected species, or parts thereof, may not be taken or possessed at any time without permission by the CDFW.
3.4 Biology	CA	California Native Plant Protection Act (Fish & G. Code, § 1900 et seq.)	This Act is intended to preserve, protect, and enhance endangered or rare native plants in California. This Act includes provisions that prohibit the taking of listed rare or endangered plants from the wild and a salvage requirement for landowners. The Act directs the CDFW to establish criteria for determining what native plants are rare or endangered. Under section 1901, a species is endangered when its prospects for survival and reproduction are in immediate jeopardy from one or more causes. A species is rare when, although not threatened with immediate extinction, it is in such small numbers throughout its range that it may become endangered.
3.4 Biology	CA	California Fish and Game Code: Stream Alteration (Fish and Game Code Sections 1601–1603)	State and local agencies are required to notify the CDFW prior to any project that would divert, obstruct, or change the natural flow, bed, channel, or bank of any river, stream, or lake. When an existing fish or wildlife resource may be substantially adversely affected, the CDFW is required to propose reasonable project changes to protect the resource. These modifications are formalized in a Streambed Alteration Agreement that becomes part of the plans, specifications, and bid documents for the project.

Relevant Section	Jurisdiction	Regulation	Summary
3.4 Biology	CA	California Fish and Game Code: Fully Protected Species (Fish and Game Code Sections 3511, 4700, 5050, and 5515)	This is the State's effort to identify and provide additional protection to those animals that were rare or faced possible extinction. Fully protected species may not be taken or possessed at any time, and no licenses or permits may be issued for their take. Exceptions are allowed for collecting these species for necessary scientific research and relocating bird species for the protection of livestock. Many fully protected species are also listed under the FESA and/or the CESA.
3.4 Biology	CA	Porter-Cologne Water Quality Control Act (Cal. Water Code § 13000 et seq.) (Porter-Cologne)	Porter-Cologne is the principal law governing water quality in California. The Act established the SWRCB and nine RWQCBs which have primary responsibility for protecting State water quality and the beneficial uses of State waters. Under Porter-Cologne, waters of the State are assigned beneficial uses. Several of the beneficial uses support biological resources, including the following beneficial uses: estuarine habitat; fish migration, fish spawning, preservation of rare and endangered species, cold freshwater habitat, wildlife habitat, and warm freshwater habitat.
3.5 Cultural Resources	U.S.	Archaeological Resources Protection Act (ARPA)	The ARPA states that archaeological resources on public lands and Indian lands are an accessible and irreplaceable part of the nation's heritage and: • Establishes protection for archaeological resources to prevent loss and destruction due to uncontrolled excavations and pillaging; • Encourages increased cooperation and exchange of information between government authorities, the professional archaeological community, and private individuals having collections of archaeological resources prior to the enactment of this Act; • Establishes permit procedures to permit excavation or removal of archaeological resources (and associated activities) located on public or Indian land; and • Defines excavation, removal, damage, or other alteration or defacing of archaeological resources as a "prohibited act" and provides for criminal and monetary rewards to be paid to individuals furnishing information leading to the finding of a civil violation or conviction of a criminal violator. ARPA has both enforcement and permitting components. The enforcement provision provides for the imposition of both criminal and civil penalties against violators of the Act. The ARPA's permitting component allows for recovery of certain artifacts consistent with the standards and requirements of the National Park Service (NPS) Federal Archeology Program.

Relevant Section	Jurisdiction	Regulation	Summary
3.5 Cultural Resources	U.S.	National Historic Preservation Act (NHPA) (16 USC 470 et seq.)	This applies only to Federal undertakings, which is a project, activity, or program either funded, permitted, licensed, or approved by a Federal Agency. Archaeological resources are protected through the NHPA, as amended, and it's implementing regulation, Protection of Historic Properties (36 CFR 800), the AHPA, and the 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. The California Office of Historic Preservation (OHP), within the California Department of Parks and Recreation, implements the policies of the NHPA on a statewide level and advises Federal agencies regarding potential effects on historic properties. The OHP also administers and coordinates the California Historic Resources Information System 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.
3.5 Cultural Resources	U.S.	Federal Antiquities Act of 1906	Paleontological resources were first protected under the Federal Antiquities Act of 1906 (PL 59-209; 16 United States Code 431 et seq.; 34 Stat. 225). This statute calls for the protection of historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest on federal lands.

Relevant Section	Jurisdiction	Regulation	Summary
3.5 Cultural Resources	CA	California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.)	As the CEQA lead agency, BCDC is responsible for complying with the requirements of CEQA that relate to archaeological and historical resources (CEQA Guidelines Section 15064.5) A historical resource includes: (1) a resource listed in, or eligible for listing in, the California Register of Historic Resources (CRHR); (2) a resource included in a local register of historical or identified as significant in an historical resource surveys; and (3) any resource that a lead agency determines to be historically significant for the purposes of CEQA, when supported by substantial evidence in light of the whole record. The CRHR was created to identify resources deemed worthy of preservation on a State level and was modeled closely after the National Register. The criteria, which are nearly identical to those of the National Register but focus on resources of statewide significance (State CEQA Guidelines § 15064.5, subd. (a)(3)), are defined as any resource that meets any of the following criteria: (1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage; (2) Is associated with lives of persons important in our past; (3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or (4) Has yielded, or may be likely to yield, information important in prehistory or history. Properties listed, or formally designated as eligible for listing, on the National Register are automatically listed on the CRHR, as are certain State Landmarks and Points of Interest. The fact that a resource is not listed in, or determined to be eligible for listing in the CRHR, not included in a local register of historical resources, or identified in an appropriately completed survey, does not preclude a lead agency from determining that the resource may be an historical resource as defined in Public Resources Code (PRC) sections 5020.1, subdivision (j), or 5024.1 (State CEQA Guidelines § 15064.5, subd. (a)(4)). CEQA also applies to effects on archaeological sites, per Guidelines Section 15064.5(c).
3.5 Cultural Resources	CA	Health and Safety Code § 7050.5	This code states that if human remains are exposed during construction, no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to PRC section 5097.998. The Coroner has 24 hours to notify the Native American Heritage Commission (NAHC) if the remains are determined to be of Native American descent. The NAHC will contact most likely descendants, who may recommend how to proceed.
3.6 Geology and Soils	U.S.	None applicable.	Not applicable
3.6 Geology and Soils	CA	Alquist-Priolo Earth-quake 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 across the trace of an active fault.

Relevant Section	Jurisdiction	Regulation	Summary
3.6 Geology and Soils	CA	California Building Code (CBC) (CCR, Title 23)	The CBC contains requirements related to excavation, grading, and construction of pipelines alongside existing structures. A grading permit is required if more than 50 cubic yards of soil are moved. Sections 3301.2 and 3301.3 contain provisions requiring protection of the adjacent property during excavations and require a 10-day written notice and access agreements with the adjacent property owners.
3.7 Greenhouse Gas Emissions (Refer to the Air Quality and Transportation sections)	Not applicable	Not applicable	Not applicable
3.8 Hazards and Hazardous Materials	U.S.	Clean Water Act (CWA) (33 USC 1251 et seq.)	The CWA is comprehensive legislation (it generally includes reference to the Federal Water Pollution Control Act of 1972, its supplementation by the CWA of 1977, and amendments in 1981, 1987, and 1993) that seeks to protect the nation's water from pollution by setting water quality standards for surface water and by limiting the discharge of effluents into waters of the U.S.
3.8 Hazards and Hazardous Materials	U.S.	California Toxics Rule (40 CFR 131)	In 2000, the USEPA promulgated numeric water quality criteria for priority toxic pollutants and other water quality standards provisions to be applied to waters in the State of California. USEPA promulgated this rule based on the Administrator's determination that the numeric criteria are necessary in the State of California to protect human health and the environment. (Under CWA section 303(c)(2)(B), the USEPA requires states to adopt numeric water quality criteria for priority toxic pollutants for which the USEPA has issued criteria guidance, and the presence or discharge of which could reasonably be expected to interfere with maintaining designated uses.) These Federal criteria are legally applicable in California for inland surface waters, enclosed bays, and estuaries.
3.8 Hazards and Hazardous Materials	U.S.	Hazardous Materials Transportation Act (HMTA) (49 USC 5901)	The HMTA delegates authority to the United States Department of Transportation (DOT) to develop and implement regulations pertaining to the transport of hazardous materials and hazardous wastes by all modes of transportation. Additionally, the USEPA's Hazardous Waste Manifest System is a set of forms, reports, and procedures for tracking hazardous waste from a generator's site to the disposal site. Applicable Federal regulations are contained primarily in CFR Titles 40 and 49.

Relevant Section	Jurisdiction	Regulation	Summary
3.8 Hazards and Hazardous Materials	U.S.	National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 CFR 300)	Authorized under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), 42 USC 9605, as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), Pub. L. 99 through 499; and by CWA section 311(d), as amended by the Oil Pollution Act of 1990 (OPA), Pub. L. 101 through 380. The NCP outlines requirements for responding to both oil spills and releases of hazardous substances. It specifies compliance, but does not require the preparation of a written plan. It also provides a comprehensive system for reporting, spill containment, and cleanup. The United States Coast Guard (USCG) and USEPA co-chair the National Response Team. In accordance with 40 CFR 300.175, the USCG has responsibility for oversight of regional response for oil spills in "coastal zones," as described in 40 CFR 300.120.
3.8 Hazards and Hazardous Materials	U.S.	Oil Pollution Act (OPA) (33 USC 2712)	The OPA requires owners and operators of facilities that could cause substantial harm to the environment to prepare and submit plans for responding to worst-case discharges of oil and hazardous substances. The passage of the OPA motivated California to pass a more stringent spill response and recovery regulation and the creation of the Office of Spill Prevention and Response (OSPR) to review and regulate oil spill plans and contracts.
3.8 Hazards and Hazardous Materials	U.S.	Resource Conservation and Recovery Act (RCRA) (42 USC 6901 et seq.)	The RCRA authorizes the USEPA to control hazardous waste from "cradle-to-grave," which encompasses its generation, transportation, treatment, storage, and disposal. RCRA's Federal Hazardous and Solid Waste Amendments from 1984 include waste minimization and phasing out land disposal of hazardous waste as well as corrective action for releases. The Department of Toxic Substances Control (DTSC) is the lead State agency for corrective action associated with RCRA facility investigations and remediation.
3.8 Hazards and Hazardous Materials	U.S.	Other	• Rivers and Harbors Act (33 USC 401)
3.8 Hazards and Hazardous Materials	CA	Other	• California Seismic Hazards Mapping Act (Pub. Resources Code, § 2690) and Seismic Hazards Mapping Regulations (CCR Title 14, Div. 2, Ch. 8, Art. 10) • The Hazardous Waste Control Act (CCR, Title 26) defines requirements for proper management of hazardous materials. • Porter-Cologne Water Quality Control Act (Cal. Water Code, § 13000 et seq.)

Relevant Section	Jurisdiction	Regulation	Summary
3.9 Hydrology and Water Quality	U.S.	Clean Water Act (CWA) (33 USC 1251 et seq.)	The CWA is a comprehensive piece of legislation that generally includes reference to the Federal Water Pollution Control Act of 1972, and its substantial supplementation by the CWA of 1977. Both Acts were subsequently amended in 1981, 1987, and 1993. Overall, the CWA seeks to protect the nation's water from pollution by setting water quality standards for surface water and by limiting the discharge of effluents into waters of the U.S. These water quality standards are promulgated by the USEPA and enforced in California by the State Water Resources Control Board (SWRCB) and nine Regional Water Quality Control Boards (RWQCBs). CWA sections include: Water Quality Control Boards (RWQCBs). CWA sections include: • State Water Quality Certification. Section 401 (33 USC 1341) requires certification from the State or interstate water control agencies that a proposed water resources project is in compliance with established effluent limitations and water quality standards. U. S. Army Corps of Engineers (USACE) projects, as well as applicants for Federal permits or licenses are required to obtain this certification. • National Pollution Discharge Elimination System (NPDES). Section 402 (33 USC 1342) establishes conditions and permitting for discharges of pollutants under the NPDES.
3.9 Hydrology and Water Quality	U.S.	Rivers and Harbors Act (33 USC 401)	This Act governs specified activities in "navigable waters" (waters subject to the ebb and flow of the tide or that are presently used, have been used in the past, or may be susceptible for use to transport interstate or foreign commerce). Specifically, it limits the construction of structures and the discharge of fill into navigable waters of the U.S. Under section 14 of the Rivers and Harbors Act, the Secretary of the Army on the recommendation of the Chief of Engineers, may grant permission for the temporary occupation or use of any sea wall, bulkhead, jetty, dike, levee, wharf, pier or other work built by the United States. This permission will be granted by an appropriate real estate instrument in accordance with existing real estate regulations.

Relevant Section	Jurisdiction	Regulation	Summary
3.9 Hydrology and Water Quality	CA	Porter-Cologne Water Quality Control Act (Cal. Water Code § 13000 et seq.) (Porter-Cologne)	Porter-Cologne is the principal law governing water quality in California. The Act established the SWRCB and nine RWQCBs which have primary responsibility for protecting State water quality and the beneficial uses of State waters. Porter-Cologne also implements many provisions of the Federal CWA, such as the National Pollutant Discharge Elimination System (NPDES) permitting program. Pursuant to the CWA § 401, applicants for a Federal license or permit for activities that may result in any discharge to waters of the U. S. must seek a Water Quality Certification (Certification) from the State in which the discharge originates. Such Certification is based on a finding that the discharge will meet water quality standards and other appropriate requirements of State law. In California, RWQCBs issue or deny certification for discharges within their jurisdiction. The SWRCB has this responsibility where projects or activities affect waters in more than one RWQCB's jurisdiction. If the SWRCB or a RWQCB imposes a condition on its Certification, those conditions must be included in the Federal permit or license. Statewide Water Quality Control Plans include: individual RWQCB Basin Plans; the California Ocean Plan; the San Francisco Bay/Sacramento-San Joaquin Delta Estuary Water Quality Control Plan (Bay-Delta Plan); the Water Quality Control Plan for Enclosed Bays and Estuaries of California; and the Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California (Thermal Plan). These Plans contain enforceable standards for the various waters they address. For example: • Basin Plan. Porter-Cologne (§ 13240) requires each RWQCB to formulate and adopt a Basin Plan for all areas within the Region. Each RWQCB must establish water quality objectives to ensure the reasonable protection of beneficial uses and a program of implementation for achieving water quality objectives within the basin plans. 40 CFR 131 requires each State to adopt water quality standards by designating water uses to be protected and adopting water quality criteria that protect the designated uses. In California, the beneficial uses and water quality objectives are the State's water quality standards.
3.10 Noise	U.S.	Noise Control Act (42 USC 4910)	Required the USEPA to establish noise emission criteria, as well as noise testing methods (40 CFR Chapter 1, Subpart Q). These criteria generally apply to interstate rail carriers and to some types of construction and transportation equipment. The USEPA published a guideline (USEPA 1974) containing recommendations for acceptable noise level limits affecting residential land use of 55 dBA L_{dn} for outdoors and 45 dBA L_{dn} for indoors.

Relevant Section	Jurisdiction	Regulation	Summary
3.10 Noise	U.S.	Department of Housing and Urban Development Environmental Standards (24 CFR Part 51)	Sets forth the following exterior noise standards for new home construction (for interior noise levels, a goal of 45 dBA is set forth and attenuation requirements are geared to achieve that goal): ○ 65 Ldn or less – Acceptable ○ 65 Ldn and < 75 Ldn – Normally unacceptable, appropriate sound attenuation measures must be provided ○ > 75 Ldn – Unacceptable
3.10 Noise	U.S.	NTIS 550\9-74-004, 1974 ("Information on Levels of Environmental Noise Requisite to Protect Health and Welfare with an Adequate Margin of Safety").	In response to a Federal mandate, the USEPA provided guidance in this document, commonly referenced as the, "Levels Document," that establishes an L_{dn} of 55 dBA as the requisite level, with an adequate margin of safety, for areas of outdoor uses including residences and recreation areas. The USEPA recommendations contain a factor of safety and do not consider technical or economic feasibility (i.e., the document identifies safe levels of environmental noise exposure without consideration for achieving these levels or other potentially relevant considerations), and therefore should not be construed as standards or regulations.
3.10 Noise	CA	None applicable.	Not applicable
3.11 Transportation	U.S.	None applicable.	Not applicable
3.11 Transportation	CA	SB 743 (Public Resources Code Section 21099(b)(1)	Senate Bill 743 was codified in PRC section 21099. It required changes to the guidelines implementing CEQA (CEQA Guidelines) (CCR, Title 14, Div. 6, Ch. 3, § 15000 et seq.) regarding the analysis of transportation impacts. Pursuant to Section 21099, the criteria for determining the significance of transportation impacts must "promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses."
3.11 Transportation	CA	SB 391	Senate Bill 391 requires the California Transportation Plan to support 80 percent reduction in GHGs below 1990 levels by 2050.
3.11 Transportation	CA	Executive Orders	• Executive Order B-16-12 (2012) specifies a GHG emissions reduction target of 80 percent below 1990 levels by 2050 specifically for transportation. • Executive Order B-55-18 (2018) established an additional statewide goal of achieving carbon neutrality as soon as possible, but no later than 2045, and maintaining net negative emissions thereafter. It states, "The California Air Resources Board shall work with relevant state agencies to develop a framework for implementation and accounting that tracks progress toward this goal."

Relevant Section	Jurisdiction	Regulation	Summary
3.11 Transportation	CA	California Vehicle Code	Chapter 2, Article 3 of the Vehicle Code defines the powers and duties of the California Highway Patrol, which has enforcement responsibilities for the vehicle operation and highway use in the State.
3.11 Transportation	CA	Other	• The California Air Resources Board Mobile Source Strategy (2016) describes California's strategy for containing air pollutant emissions from vehicles, and quantifies VMT growth compatible with achieving state targets. • The California Air Resources Board's 2017 Climate Change Scoping Plan Update: The Strategy for Achieving California's 2030 Greenhouse Gas Target describes California's strategy for containing GHG emissions from vehicles, and quantifies VMT growth compatible with achieving state targets.
3.12 Tribal Cultural Resources	CA	California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.)	AB 52 established a formal consultation process for California Native American tribes as part of the CEQA process and equated significant impacts on "tribal cultural resources" with significant environmental impacts (PRC Section 21084.2). A Tribal Cultural Resource is a site feature, place, cultural landscape, sacred place or object, which is of cultural value to a Tribe and is either on or eligible for the CRHR or a local historic register, or one such resources that the lead agency chooses to treat as a Tribal Cultural Resource.

Relevant Section	Jurisdiction	Regulation	Summary
3.12 Tribal Cultural Resources	CA	Public Resources Code Sections 21080.3.1 and 21084.2	PRC section 21084.2 states that "[a] project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment." To help determine whether a project may have such an effect, the PRC requires a lead agency to consult with any California Native American tribe that requests consultation and is traditionally and culturally affiliated with the geographic area of a proposed project. PRC Section 21080.3.1 states "…Native American tribes traditionally and culturally affiliated with a geographic area may have expertise concerning their tribal cultural resources that may inform the lead agency in its identification and determination of the significance of tribal cultural resources" and therefore establishes the following requirements for consultation. • "Prior to determining whether a negative declaration, mitigated negative declaration, or environmental impact report is required for a project, the lead agency shall begin consultation with a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project if: 1) The California Native American tribe requested to the lead agency, in writing, to be informed by the lead agency through formal notification of proposed projects in the geographic area that is traditionally and culturally affiliated with the tribe, and 2) The California Native American tribe responds, in writing, within 30 days of receipt of the formal notification and requests the consultation." • Section 21074 of the PRC defines "tribal cultural resources" as either "(1) Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a tribe that are listed, or determined to be eligible for listing, in the national or state register of historical resources, or listed in a local register of historic resources; or (2) a resource that the lead agency determines, in its discretion, is a tribal cultural resource."
3.13 Utilities and Service Systems	None Applicable	None Applicable	None Applicable

Abbreviations used in this table:
AB = Assembly Bill
BCDC = Bay Conservation and Development Commission
CARB = California Air Resources Board
CDFW = California Department of Fish and Wildlife
CEQA = California Environmental Quality Act
CFR = Code of Federal Regulations
CWA = Clean Water Act
EO = Executive Order

NMFS = National Marine Fisheries Service
RWQCB = Regional Water Quality Control Board
SB = Senate Bill
SWRCB = State Water Resources Control Board
USACE = U.S. Army Corps of Engineers
USC = U.S. Code
USEPA = U.S. Environmental Protection Agency
USFWS = U.S. Fish and Wildlife Service

APPENDIX E Special-Status Species Tables

Appendix E – Special-Status Species Tables

The special-status species tables have been divided into plants (Table E-1) and wildlife (Table E-2). Refer to Section 3.4.2.1 of the Environmental Assessment for a discussion on the how the likelihood of occurrence was determined.

Table E-1. Special-Status Plant Species Identified in Records Searches

Scientific Name	Common Name	Status[a] Federal	Status[a] State	Status[a] CNPS	Habitat	Blooming Period	Likelihood of Presence
Acanthomintha obovata ssp. *duttonii*	San Mateo thorn-mint	E	E	1B.1	Chaparral and valley and foothill grasslands. Grows in serpentine soils.	April to June	**Absent.** No suitable habitat is present within the Biological Study Area (BSA).
Allium peninsulare var. *franciscanum*	Franciscan onion	None	None	1B.2	Cismontane woodland, valley and foothill grassland. Grows in volcanic and serpentine soils.	May to June	**Absent.** No suitable habitat is present within the BSA.
Amsinckia lunaris	bent-flowered fiddleneck	None	None	1B.2	Cismontane woodland, valley and foothill grassland, coastal bluff scrub. Grows in the San Francisco Bay Area and the woods of the coastal and inland mountains just north.	March to June	**Absent.** No suitable habitat is present within the BSA.
Androsace elongata ssp. *acuta*	California androsace	None	None	4.2	Chaparral, cismontane woodland, coastal scrub, meadows and seeps, pinyon and juniper woodland, and valley and foothill grassland.	March to June	**Absent.** No suitable habitat is present within the BSA.
Arctostaphylos regismontana [b]	Kings Mountain manzanita	None	None	1B.2	Broad-leafed upland forest, chaparral, and North Coast coniferous forest. Grows in granitic or sandstone soils.	December to April	**Absent.** No suitable habitat is present within the BSA.
Astragalus tener var. *tener*	alkali milk-vetch	None	None	1B.2	Low ground, alkali flats, and flooded lands; in annual grassland or in playas or vernal pools. 0-170 m.	March to June	**Unlikely to occur.** There is only marginally suitable habitat within and around the BSA.
Atriplex depressa	brittlescale	None	None	1B.2	Chenopod scrub, meadows and seeps, playas, valley and foothill grassland, and vernal pools. Grows in alkaline, clay soils.	April to October	**Unlikely to occur.** Dry salt ponds are similar to playa habitat, but this species has not been documented in salt ponds. There is one CNDDB record outside the BSA but within two miles of the BSA.
Atriplex minuscula	lesser saltscale	None	None	1B.1	Chenopod scrub, playas, and valley and foothill grassland. Grows in alkaline, sandy soils.	May to October	**Unlikely to occur.** There is only marginally suitable habitat within and around the BSA. There is one CNDDB record outside the BSA but within two miles of the BSA.
Calandrinia breweri	Brewer's calandrinia	None	None	4.2	Chaparral and coastal scrub. Grows in sandy or loamy, disturbed sites and burns.	(January) March to June	**Absent.** No suitable habitat is present within the BSA.
Centromadia parryi ssp. *congdonii*	Congdon's tarplant	None	None	1B.1	Valley and foothill grassland. Grows in alkaline soils.	May to October (November)	**Potential to occur.** There is potentially suitable habitat within the outboard areas on the outboard side of outboard berms where maintenance or access work infrequently occur. Two CNDDB records within the BSA and an additional three CNDDB records outside the BSA but within 2 miles of the BSA.
Chloropyron maritimum ssp. *palustre*	Point Reyes bird's-beak	None	None	1B.2	In coastal salt marshes.	July to October	**Potential to occur.** There is suitable habitat within the outboard BSA. One CNDDB record within BSA and an additional three CNDDB records outside the BSA but within 2 miles of the BSA.
Chorizanthe robusta robusta	robust spineflower	E	None	1B.1	Chaparral (maritime), cismontane woodland (openings), coastal dunes, and coastal scrub. Grows in sandy or gravelly soils.	April to September	**Absent.** No suitable habitat is present within the BSA.
Cirsium fontinales var. *fontinale*	Crystal Springs fountain thistle	E	E	1B.1	Chaparral (openings), cismontane woodland, meadows and seeps, and valley and foothill grassland. Grows in serpentine seeps.	(April) May to October	**Absent.** No suitable habitat is present within the BSA.

Scientific Name	Common Name	Status[a] Federal	Status[a] State	Status[a] CNPS	Habitat	Blooming Period	Likelihood of Presence
Cirsium praeteriens	lost thistle	None	None	1A	Known only from Santa Clara County, where it was collected it in Palo Alto in 1897 and 1901. It is presumed extinct.	June to July	**Absent.** Presumed extirpated in California.
Clarkia concinna ssp. *Automixa*	Santa Clara red ribbons	None	None	4.3	Chaparral and cismontane woodland.	(April) May to June (July)	**Absent.** No suitable habitat is present within the BSA.
Collinsia corymbosa	round-headed collinsia	None	None	1B.2	Coastal dunes.	April to June	**Absent.** No suitable habitat is present within the BSA.
Collinsia multicolor	San Francisco collinsia	None	None	1B.2	Closed-cone coniferous forest and coastal scrub. Often grows in serpentine soils.	(February) March to May	**Absent.** No suitable habitat is present within the BSA.
Dirca occidentalis	western leatherwood	None	None	1B.2	Broadleafed upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, North Coast coniferous forest, riparian forest, and riparian woodland. Grows in mesic soils.	January to March (April)	**Absent.** No suitable habitat is present within the BSA.
Eleocharis parvula[c]	Small spikerush	None	None	4.3	In coastal salt marshes.	April to September	**Potential to occur.** Suitable habitat is present within the BSA. This species is not tracked in the CNDDB.
Eryngium aristulatum var. *hooveri*	Hoover's button-celery	None	None	1B.1	Vernal pools. Grows in mesic soils.	(June) July (August)	**Unlikely to occur.** There is only marginally suitable habitat within and around the BSA.
Eryngium jepsonii	Jepson's coyote thistle	None	None	1B.2	Valley and foothill grassland and vernal pools.	April to August	**Unlikely to occur.** There is only marginally suitable habitat within and around the BSA. There are no CNDDB records within two miles of the BSA.
Extriplex joaquinana	San Joaquin spearscale	None	None	1B.2	Chenopod scrub, meadows and seeps, playas, valley and foothill grassland. Grows in alkaline soils.	April to October	**Unlikely to occur.** Dry salt ponds are similar to playa habitat, but this species has not been documented in salt ponds. There are two CNDDB records within the BSA.
Fritillaria liliacea	fragrant fritillary	None	None	1B.2	Coastal scrub, valley and foothill grassland, coastal prairie, cismontane woodland. Grows in serpentinite soils. Ranges over parts of southwestern Northern California, USA, especially Solano and Sonoma Counties and at coastal locations south to Monterey County.	February to April	**Absent.** No suitable habitat is present within the BSA.
Hesperolinon congestum	Marin western flax	T	T	1B.1	Chaparral, valley and foothill grassland. Grows in serpentinite soils, especially in dry native bunch grasses. Known to occur only in San Mateo, San Francisco and Marin County, California, USA.	April to July	**Absent.** No suitable habitat is present within the BSA.
Iris longipetala[c]	coast iris	None	None	4.2	Coast prairie, lower montane coniferous forest, meadows and seeps.	March to June	**Unlikely to occur.** There is only marginally suitable habitat in the BSA. There are two CNDDB records within BSA and an additional one CNDDB record outside the BSA but within two miles of the BSA.
Lasthenia conjugens	Contra Costa goldfields	E	None	1B.1	Vernal pools and mesic soils within cismontane woodland, playas (alkaline), and valley and foothill grassland.	March to June	**Unlikely to occur.** There is only marginally suitable habitat within and around the BSA. There are two CNDDB records within the BSA and an additional one CNDDB record outside the BSA but within two miles of the BSA.

Scientific Name	Common Name	Status[a] Federal	Status[a] State	Status[a] CNPS	Habitat	Blooming Period	Likelihood of Presence
Leptosiphon ambiguous[c]	serpentine leptosiphon	None	None	4.2	Cismontane woodland, coastal scrub, valley and foothill grassland.	March to June	**Unlikely to occur.** There is only marginally suitable habitat in the BSA. This species is not tracked in the CNDDB.
Leptosiphon aureus[c]	bristly leptosiphon	None	None	4.2	Chaparral, cismontane woodland, coastal prairie, valley and foothill grassland.	April to June	**Absent.** No suitable habitat is present within the BSA.
Leptosiphon latisectus[c]	broad-lobed leptosiphon	None	None	4.3	Broadleafed upland forest, cismontane woodland	April to June	**Absent.** No suitable habitat is present within the BSA.
Lessingia hololeuca	woolly-headed lessingia	None	None	3	Broadleafed upland forest, coastal scrub, lower montane coniferous forest, and valley and foothill grassland. Grows in clay and serpentine soils.	June to October	**Absent.** No suitable habitat is present within the BSA.
Lessingia tenuis[c]	spring lessingia	None	None	4.3	Chaparral, cismontane woodland, lower montane coniferous forest	May to July	**Absent.** No suitable habitat is present within the BSA.
Lathyrus jepsonii var. *jepsonii*[b]	Delta tule pea	None	None	1B.2	Marshes and swamps (freshwater and brackish). Grows in mesic soils.	May to July (August to September)	**Unlikely to occur**. There is only suitable habitat within the external BSA, where maintenance or access work infrequently occurs and would not impact salt marsh habitat.
Malacothamnus arcuatus	arcuate bush-mallow	None	None	1B.2	Chaparral and cismontane woodland.	April to September	**Absent.** No suitable habitat is present within the BSA.
Malacothamnus davidsonii[b]	Davidson's bush-mallow	None	None	1B.2	Chaparral, cismontane woodland, coastal scrub, and riparian woodland.	June to January	**Absent.** No suitable habitat is present within the BSA.
Malacothamnus hallii	Hall's bush-mallow	None	None	1B.2	Chaparral and coastal scrub.	(April) May to September (October)	**Absent.** No suitable habitat is present within the BSA.
Micropus amphibolus[b]	Mt. Diablo cottonweed	None	None-	3.2	Broadleafed upland forest, chaparral, cismontane woodland, and valley and foothill grassland. Grows in rocky soils.	March to May	**Absent.** No suitable habitat is present within the BSA.
Monolopia gracilens	woodland woolythreads	None	None	1B.2	Broadleafed upland forest (openings), chaparral (openings), cismontane woodland, North Coast coniferous forest (openings), and valley and foothill grassland. Grows in serpentine soils.	(February) March to July	**Absent.** No suitable habitat is present within the BSA.
Navarretia myersii ssp. *myersii*[b]	pincushion navarretia	None	None	1B.1	Vernal pools. Often grows in acidic soils.	April to May	**Unlikely to occur.** There is only marginally suitable habitat within and around the BSA.
Navarretia paradoxiclara[b]	Patterson's navarretia	None	None	1B.3	Meadows and seeps. Grows in serpentine and vernally mesic soils.	May to June (July)	**Absent.** No suitable habitat is present within the BSA.
Navarretia prostrata	prostrate vernal pool navarretia	None	None	1B.2	Vernal pools and mesic soils in coastal scrub, meadows and seeps, and valley and foothill grassland (alkaline).	April to July	**Unlikely to occur.** There is only marginally suitable habitat within and around the BSA. There is one CNDDB record within the BSA and an additional record outside the BSA but within two miles of the BSA.
Plagiobothrys chorisianus var. *chorisianus*	Choris' popcornflower	None	None	1B.2	Chaparral, coastal prairie, and coastal scrub. Grows in mesic soils.	March to June	**Absent.** No suitable habitat is present within the BSA.
Plagiobothrus chorisianus var. *hickmanii*[c]	Hickman’s popcornflower	None	None	4.2	Closed-coned coniferous forest, Chaparral, Coastal scrub, marshes and swamps, vernal pools.	April to June	**Unlikely to occur.** There is only marginally suitable habitat within and around the BSA. This species is not tracked in the CNDDB.

Scientific Name	Common Name	Status[a] Federal	Status[a] State	Status[a] CNPS	Habitat	Blooming Period	Likelihood of Presence
Plagiobothrys glaber	hairless popcornflower	None	None	1A	Meadows and seeps (alkaline) and marshes and swamps (coastal salt).	March to May	**Absent.** Presumed extirpated in California. Additionally, there is only suitable habitat within the external BSA, where maintenance or access work infrequently occurs and would not impact salt marsh habitat.
Puccinellia simplex	California alkali grass	None	None	1B.2	Vernal pools in chenopod scrub, meadows and seeps, and valley and foothill grassland.	March to May	**Unlikely to occur.** There is only marginally suitable habitat within and around the BSA. There is one CNDDB record within BSA.
Sagittaria sanfordii[c]	Sanford's arrowhead	None	None	1B.2	Freshwater marshes and swamps.	May to November	**Unlikely to occur.** There is only marginally suitable habitat within the BSA. There are no CNDDB records within two miles of the BSA.
Senecio aphanactis	chaparral ragwort	None	None	2B.2	Chaparral, cismontane woodland, and coastal scrub. Grows in alkaline soils.	January to April (May)	**Absent.** No suitable habitat is present within the BSA.
Spergularia macrotheca var. *longistyla*	long-styled sand-spurrey	None	None	1B.2	Meadows and seeps and marshes and swamps. Grows in mesic soils.	February to May (June)	**Absent.** There is only suitable habitat within the external BSA, where maintenance or access work infrequently occurs and would not impact salt marsh habitat.
Stuckenia filiformis ssp. *alpina*	slender-leaved pondweed	None	None	2B.2	Marshes and swamps (assorted shallow freshwater). Grows in mesic soils.	May to July	**Absent.** No suitable habitat is present within the BSA.
Suaeda californica	California seablite	E	None	1B.1	Marshes and swamps (coastal salt). Grows in mesic soils.	July to October	**Unlikely to occur.** There is only marginally suitable habitat within and around the BSA. There is one CNDDB record within BSA and one additional CNDDB record outside the BSA but within two miles of the BSA.
Trifolium amoenum	two-fork clover	E	None	1B.1	Usually occurs in wetlands in valley and foothill grassland and wetland-riparian areas. Has a weak affinity for serpentine soils.	April to June	**Absent.** No suitable habitat is present within the BSA.
Trifolium hydrophilum	saline clover	None	None	1B.2	Marshes and swamps, alkaline grassland, and vernal pools. Found in areas with alkaline soils. Majority of occurrences are within the San Francisco Bay Area.	August to June	**Unlikely to occur.** There is only suitable habitat within the external BSA, where maintenance or access work infrequently occurs and would not impact salt marsh habitat. There is one CNDDB record within BSA and one additional CNDDB record outside the BSA but within two miles of the BSA.
Tropidocarpum capparideum	caper-fruited tropidocarpum	None	None	1B.1	Valley and foothill grassland (alkaline hills).	March to April	**Absent.** No suitable habitat is present within the BSA.

[a]Status designations are as follows:
Federal Designations:
E = Federally Endangered, T = Federally Threatened
State Designations:
E = State Endangered, T = State Threatened
California Native Plant Society (CNPS) California Rare Plant Rank:
1A = Presumed extirpated in California and either rare or extinct elsewhere
1B = Rare, threatened, or endangered in California and elsewhere
2B = Rare, threatened, or endangered in California, but more common elsewhere
3 = More information is needed - a review list
4 = Limited distribution - a watch list

Threat Rank:
0.1 = Seriously threatened in California (more than 80% of occurrences threatened/high degree and immediacy of threat)
0.2 = Fairly threatened in California (20 to 80% of occurrences threatened/moderate degree and immediacy of threat)
0.3 = Not very threatened in California (less than 20% of occurrences threatened/low degree and immediacy of threat or no current threats known)
[b] Species did not appear in 2024 database queries but did appear in 2020 database queries.
[c] Species did appear in 2024 database queries but did not appear in 2020 database queries.
Sources:
California Department of Fish and Wildlife (CDFW). 2024. California Natural Diversity Database, Biogeographic Data Branch. California Department of Fish and Wildlife. Sacramento, CA. Accessed January 30, 2024. https://www.wildlife.ca.gov/data/cnddb.
California Native Plant Society (CNPS). 2024. Online Inventory of Rare, Threatened and Endangered Plants of California. Accessed January 30, 2024. http://www.rareplants.cnps.org/advanced.html
U.S. Fish and Wildlife Service (USFWS). 2024. Environmental Conservation Online System: Information, Planning and Conservation System (IPaC), 2024. January 30, 2024. https://ecos.fws.gov/ipac/ .

Table E-2. Special-Status Wildlife Species Identified in Records Searches

Species	Scientific Name	Common Name	Status[a] Federal	Status[a] State	Status[a] CDFW	Habitat	Likelihood of Presence
Fish	*Acipenser medirostris*	green sturgeon	T	None	SSC	These are the most marine species of sturgeon. Abundance increases northward of Point Conception. Spawns in the Sacramento River. Spawns at temps between 8-14° C. Preferred spawning substrate is large cobble but can range from clean sand to bedrock.	**Potential to occur**. Suitable foraging habitat is present within open water and intertidal mudflats (during high tide) of the BSA. The BSA is within designated critical habitat. Sturgeon have the potential to be present within the BSA year-round. There are no CNDDB records for this species within two miles of the BSA. Cargill's operating salt ponds do not provide habitat for this species.
	Acipenser transmontanus[d]	white sturgeon	None	C	SSC	Lives in estuaries of large rivers, moving into freshwater to spawn. Most abundant in brackish portions of estuaries. Adults concentrate in deep areas with soft bottoms.	**Likely to Occur**. Suitable foraging habitat is present within open water and intertidal mudflats (during high tide) of the BSA. Sturgeon have the potential to be present within the BSA year-round. This species is not tracked in the CNDDB.
	Entosphenus tridentatus[d]	Pacific lamprey	None	None	SSC	Found in Pacific Coast streams north of San Luis Obispo County, however regular runs also occur in the Santa Clara River. Swift-current gravel-bottomed areas for spawning with water temps between 12-18°C.	**Present.** Suitable habitat is present, and species is known to be present in portions of the BSA including Alameda Creek (ACWD 2023b).
	Hypomesus transpacificus	delta smelt	T	E	None	Sacramento-San Joaquin Delta. Seasonally in Suisun Bay, Carquinez Strait and San Pablo Bay. Seldom found at salinities > 10 ppt. Most often at salinities <2 ppt.	**Absent.** This species resides in the Sacramento-San Joaquin Delta and the biological study area exceeds salinity that this species occurs.
	Oncorhynchus mykiss irideus	steelhead - central California coast Distinct Population Segment	T	None	SSC	From Russian River, south to Soquel Creek and to, but not including, Pajaro River. Also San Francisco and San Pablo Bay basins.	**Seasonally present**. Suitable habitat is present, and species is known to be present in open water of the BSA; however, this species is unlikely to occur between July and October. There are no CNDDB records for this species within two miles of the BSA. Cargill's operating salt ponds do not provide habitat for this species**.**
	Oncorhynchus tsawytscha[d]	Chinook salmon - Central Valley fall / late fall-run ESU	None	C	SSC	Populations spawning in the Sacramento and San Joaquin rivers and their tributaries.	**Seasonally Present.** Suitable habitat is present. Species strays into portions of the BSA and spawn in Alameda Creek (ACWD 2023b). This species is not tracked in the CNDDB.
	Spirinchus thaleichthys	longfin smelt	E	T	None	Euryhaline, nektonic, and anadromous. Found in open waters of estuaries, mostly in middle or bottom of water column.	**Likely to occur.** There is potentially suitable habitat within aquatic habitat in the outboard areas of the BSA, where maintenance or access work infrequently occurs. The San Francisco Bay Study has detected this species in small numbers at sampling stations near the BSA (CDFW 2024a), and the species was recently found in restored salt marsh habitat in the Coyote Creek Watershed immediately south of the BSA (Lewis et al. 2020). These observations have been consistently made during the winter and spring months, and these studies have not observed longfin smelt in the South Bay between June and September (CDFW 2024a). This species is not tracked in the CNDDB. Cargill's operating salt ponds do not provide habitat for this species**.**
Invertebrates	*Bombus occidentalis occidentalis*	western bumble bee	None	C	None	Open grassy areas, urban parks and gardens, chaparral and shrub areas, and mountain meadows.	**Unlikely to occur.** Required flowering plants and suitable habitat is not present within the BSA. There are two CNDDB records within the BSA and one additional CNDDB record outside the BSA but within two miles of the BSA.
	Branchinecta conservation[c]	conservancy fairy shrimp	E	None	None	Endemic to the grasslands of the northern two-thirds of the Central Valley; found in large, turbid pools.	**Absent.** No suitable habitat is present within the BSA.
	Branchinecta lynchi	vernal pool fairy shrimp	T	None	None	Endemic to the grasslands of the central valley, central coast mountains and south coast mountains in rain-filled vernal pools and swales.	**Unlikely to occur.** A vernal pool is located adjacent to the BSA in Milpitas, however there is no suitable habitat in the BSA. There are no CNDDB records within two miles of the BSA.

Species	Scientific Name	Common Name	Status[a] Federal	Status[a] State	Status[a] CDFW	Habitat	Likelihood of Presence
	Callophrys mossii bayensis[b]	San Bruno elfin butterfly	E	None	None	Coastal, mountainous areas with grassy ground cover, mainly in the vicinity of San Bruno mountain, San Mateo county. Colonies are located on steep, north-facing slopes within the fog belt. Larval host plant is *Sedum spathulifolium*.	**Absent.** No suitable habitat is present within the BSA.
	Danaus plexippus plexippus[c]	Monarch – California overwintering population	C	None	None	Winter roost sites extend along the coast from northern Mendocino to Baja California, Mexico. Roosts located in wind-protected tree groves (eucalyptus, Monterey pine, cypress), with nectar and water sources nearby.	**Potential to Occur.** There are no known or potential overwintering sites within Cargill's operating ponds. However, there are several documented overwintering sites, and three CNDDB records outside the BSA but within two miles of BSA.
	Euphydryas editha bayensis[b]	Bay checkerspot butterfly	T	None	-None	Native grasslands on outcrops of serpentine soil. *Plantago erecta* is the primary host plant; *Orthocarpus densiflorus* and *Orthocarpus purpurscens* are the secondary host plants.	**Absent.** No suitable habitat is present within the BSA.
	Lepidurus packardi	vernal pool tadpole shrimp	E	None	None	Occur in a wide variety of seasonal habitats, including vernal pools, clay flats, alkaline pools, ephemeral stock tanks, roadside ditches, and road ruts. The vernal pool tadpole shrimp has not been reported as utilizing strongly saline habitats.	**Unlikely to occur.** BSA is too saline for this species. A vernal pool is located adjacent to the BSA in Milpitas, however there is no suitable habitat in the BSA. There are two CNDDB records within two miles of the BSA.
Amphibians	*Ambystoma californiense*	California tiger salamander - Central Valley DPS	T	T	None	Need underground refuges, especially ground squirrel, gopher, or other fossorial mammal burrows, and for breeding uses vernal pools or other generally seasonal water sources.	**Unlikely to occur.** No suitable habitat is present within the BSA. There are three CNDDB records within two miles of the BSA.
	Rana aurora draytonii	California red-legged frog	T	None	SSC	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. May travel up to 2 miles in upland habitat between breeding sites, using fossorial mammal burrows, rocks, vegetation, or artificial structures for shelter.	**Absent.** No suitable habitat is present within the BSA. There are no CNDDB records within two miles of the BSA.
	Spea hammondii[c]	Western Spadefoot	PT	None	SSC	Occurs primarily in grassland habitats, but can be found in valley-foothill hardwood woodlands. Vernal pools are essential for breeding and egg-laying.	**Absent.** No suitable habitat is present within the BSA. There are no CNDDB records within two miles of the BSA.
Reptiles	*Chelonia mydas*	green sea turtle	T	T	None	Spend most of their time in shallow, coastal waters with lush seagrass beds, inshore bays, lagoons, and shoals with lush seagrass meadows.	**Absent.** No suitable habitat is present within the BSA.
	Emys marmorata[c]	Western pond turtle	PT	None	SSC	A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation, below 6,000 ft elevation. Needs basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 km from water for egg-laying.	**Potential to occur**. Brackish creeks and sloughs in the BSA provide suitable aquatic habitat and adjacent uplands provide potentially suitable nesting habitat. Species is not expected to be present in outboard areas or salt ponds where maintenance would occur. There is one CNDDB record outside BSA but within two miles of the BSA.
	Masticophis lateralis euryxanthus	Alameda whipsnake	T	T	None	Typically found in chaparral and scrub habitats but will also use adjacent grassland, oak savanna and woodland habitats. Mostly south-facing slopes and ravines, with rock outcrops, deep crevices, or abandoned rodent burrows.	**Absent.** No suitable habitat is present within the BSA.
	Thamnophis sirtalis tetrataenia	San Francisco garter snake	E	E	FP	Vicinity of freshwater marshes, ponds and slow-moving streams in San Mateo County and extreme northern Santa Cruz County.	**Absent.** No suitable habitat is present within the BSA.
Birds	*Agelaius tricolor*	tricolored blackbird	None	T	SSC	Requires open water, protected nesting substrate which may also occur in uplands, and foraging area with insect prey within a couple miles of the colony.	**Potential to occur**. Marginally suitable foraging habitat is present within the external areas of the BSA. Cargill's operating salt ponds do not provide habitat for this species**.** There are two CNDDB records within the BSA, and an additional two CNDDB records outside the BSA but within two miles of the BSA.

Species	Scientific Name	Common Name	Status[a] Federal	Status[a] State	Status[a] CDFW	Habitat	Likelihood of Presence
	Asio flammeus	short-eared owl	None	None	SSC	Found in marsh lands, both fresh and salt; lowland meadows; irrigated alfalfa fields.	**Present.** Suitable foraging habitat is present within the external areas of the BSA. Species documented by USFWS during Ridgway's rail survey at Newark Plant in 2019. There is one CNDDB record outside the BSA but within two miles of the BSA. Cargill's operating salt ponds do not provide habitat for this species**.**
	Athene cunicularia	burrowing owl	None	None	SSC	Open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation.	**Potential to occur**. Suitable foraging habitat is present within outboard berms and other upland areas within the BSA. There are two CNDDB records within the BSA and an additional eight CNDDB records outside the BSA but within two miles of the BSA.
	Brachyramphus marmoratus	marbled murrelet	None	T	None	Spend the majority of their lives on the ocean but come inland to nest. They generally nest in old-growth forests, characterized by large trees, multiple canopy layers, and moderate to high canopy closure.	**Absent.** No suitable habitat is present within the BSA. There are no CNDDB records within two miles of the BSA.
	Charadrius nivosus nivosus	western snowy plover	T	None	SSC	Sandy beaches, salt pond berms and shores of large alkali lakes. Needs sandy, gravelly or friable soils for nesting.	**Present**. Suitable foraging and nesting habitat is present within the BSA and this species is known to occur at berms and intertidal mudflats within the BSA. There are five CNDDB records within the BSA, and an additional four CNDDB records outside the BSA but within two miles of the BSA.
	Circus cyaneus	northern harrier	None	None	SSC	Coastal salt and freshwater marshes, nesting and foraging habitats in grasslands, agricultural fields, and high marsh.	**Present**. Suitable foraging habitat is present within outboard areas of the BSA and this species is known to occur in tidal marsh habitat within the BSA. There are three CNDDB records within the BSA, and an additional three CNDDB records outside the BSA but within two miles of the BSA.
	Coccyzus americanus occidentalis	western yellow-billed cuckoo	T	E	None	Nests in riparian jungles of willow, often mixed with cottonwoods, with lower story of blackberry, nettles, or wild grape.	**Absent**. No suitable habitat is present within the BSA. There are no CNDDB records within two miles of the BSA.
	Coturnicops noveboracensis	yellow rail	None	None	SSC	Nests in shallow freshwater sedge marshes; winters in wet meadows and marshes with cordgrass, salt grass, sedges, and other low vegetation. Not found in deeper areas with tall vegetation, such as cattail marshes.	**Unlikely to occur.** Marginally suitable habitat is present within tidal marsh habitat in the external area of the BSA; however, only during the winter. There are four CNDDB records within two miles of the BSA.
	Elanus leucurus	white-tailed kite	None	None	FP	Rolling foothills and valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland.	**Present**. Suitable foraging habitat is present within the BSA and this species has been observed within the BSA. Presence within the BSA is limited to fly overs or foraging. Cargill's operating ponds lack suitable trees for nesting. There is one CNDDB record within the BSA, and an additional five CNDDB records outside the BSA but within two miles of the BSA.
	Falco peregrinus anatum[b]	American peregrine falcon	DL	DL	FP	Wetlands, lakes, rivers, or other water; on cliffs, banks, dunes, mounds; also, human-made structures. Nest consists of a scrape or a depression or ledge in an open site.	**Present.** Suitable foraging habitat is present within the BSA. Have been observed annually by USFWS at the Newark Plant. Cargill's operating salt ponds do not provide suitable nesting habitat for this species**.**
	Geothlypis trichas sinuosa	salt marsh common yellowthroat	None	None	SSC	Resident of the San Francisco Bay region, in freshwater and salt water marshes. Requires thick, continuous cover down to water surface for foraging; tall grasses, tule patches, willows for nesting.	**Present.** Suitable habitat is present within tidal marsh in the external areas of Project and may transit or forage in other parts of the BSA. There are five CNDDB records within the BSA, and an additional four CNDDB records outside the BSA but within two miles of the BSA. Cargill's operating salt ponds do not provide suitable nesting habitat for this species**.**
	Gymnogyps californianus[c]	California condor	E	E	FP	Require vast expanses of open savannah, grasslands, and foothill chaparral in mountain ranges of moderate altitude.	**Absent.** No suitable habitat is present within the BSA.
	Lanius ludovicianus[b]	loggerhead shrike	None	None	SSC	Broken woodlands, savannah, pinyon-juniper, Joshua tree, and riparian woodlands, desert oases, scrub and washes.	**Potential to occur.** Suitable foraging habitat is present within the BSA. Cargill's operating salt ponds do not provide suitable nesting habitat for this species**.**

Species	Scientific Name	Common Name	Status[a] Federal	Status[a] State	Status[a] CDFW	Habitat	Likelihood of Presence
	Laterallus jamaicensis coturniculus	California black rail	None	T	FP	Freshwater marshes, wet meadows, and shallow margins of saltwater marshes. Needs dense vegetation for nesting habitat.	**Present.** Suitable habitat is present within the BSA and this species is known to occur in tidal marsh habitat within the BSA. There are three CNDDB records within the BSA, and an additional nine CNDDB records outside the BSA but within two miles of the BSA. Cargill's operating salt ponds do not provide suitable nesting habitat for this species**.**
	Melospiza melodia pusillula	Alameda song sparrow	None	None	SSC	Resident of salt marshes bordering south arm of San Francisco Bay. Inhabits *Salicornia* marshes; nests low in *Grindelia* bushes (high enough to escape high tides) and in *Salicornia*.	**Present.** Suitable foraging and nesting habitat is present within the BSA and this species is known to occur in tidal marsh habitat within the BSA. There are six CNDDB records within the BSA, and an additional nine CNDDB records outside the BSA but within two miles of the BSA.
	Pelecanus occidentalis californicus[b]	California brown pelican	DL	DL	FP	Nests on coastal islands of small to moderate size which afford immunity from attack by ground-dwelling predators. Roosts communally.	**Likely to occur.** Suitable foraging habitat is present in external areas and a limited number of internal portions of the BSA. Nesting habitat is not present within the BSA as the BSA is outside of its nesting range.
	Rallus obsoletus obsoletus	California Ridgway's rail	E	E	FP	Salt water and brackish marshes with tidal sloughs. Associated with abundant growths of pickleweed (*Salicornia* spp.) but feeds away from cover on invertebrates from mud-bottomed sloughs.	**Present.** Suitable foraging and nesting habitat is present within the BSA and this species is known to occur in tidal marsh habitat within the BSA. There are six CNDDB records within the BSA, and an additional seven CNDDB records outside the BSA but within two miles of the BSA. Cargill's operating salt ponds do not provide suitable nesting habitat for this species**.**
	Riparia riparia	bank swallow	None	T	None	Colonial nester; nests primarily in riparian and other lowland habitats west of the desert. Required vertical banks or cliffs with fine-textured/sandy soils near streams, rivers, lakes, and ocean to dig nesting hole.	**Unlikely to occur.** No suitable nesting habitat within the BSA. There is one CNDDB record within two miles of the BSA.
	Rynchops niger[b]	black skimmer	None	None	SSC	Nests on gravel bars, low islets, and sandy beaches, in unvegetated sites. Nesting colonies usually less than 200 pairs.	**Likely to occur.** Suitable habitat is present in external areas and a limited number of internal portions of the Project.
	Sternula antillarum browni	California least tern	E	E	FP	Nests along the coast from San Francisco Bay south to northern Baja California, Mexico on bare sparsely vegetated, flat substrates such as sand beaches, alkali flats, landfills, or paved areas.	**Present.** The species is known to forage within the BSA. No nesting occurs in the BSA. There are two CNDDB records within the BSA, and a further three CNDDB records outside the BSA but within two miles of the BSA.
Mammals	*Reithrodontomys raviventris*	salt marsh harvest mouse	E	E	FP	Only found in the saline emergent wetlands of San Francisco Bay and its estuaries. Pickleweed is primary habitat. Does not burrow, builds loosely organized nests. Requires higher areas for flood escape.	**Present**. Suitable habitat is present within the BSA and this species is known to occur in tidal marsh habitat within some areas of the BSA, and should be presumed present elsewhere. Species has been documented in Newark Plants 1 and 2 by USFWS and confirmed via genetic testing by UC Davis. There are fifteen CNDDB records within the BSA, and an additional twelve CNDDB records outside the BSA but within two miles of the BSA.
	Sorex vagrans halicoetes	salt marsh wandering shrew	None	None	SSC	Salt marshes of the south arm of San Francisco Bay.	**Likely to occur**. Suitable habitat is present within the BSA and this species is known to occur in tidal marsh habitat within the BSA. There are three CNDDB records within the BSA, and an additional two CNDDB records outside the BSA but within two miles of the BSA.
	Taxidea taxus	American badger	None	None	SSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils.	**Absent.** No suitable habitat is present within the BSA.
	Vulpes macrotis mutica[c]	San Joaquin Kit Fox	E	T	None	Annual grasslands or grassy open spaces with scattered shrubby vegetation.	**Absent.** No suitable habitat is present within the BSA.
Marine Mammals	*Phoca vitulina richardsi*	Pacific harbor seal	MMPA	None	None	Favor near-shore coastal waters and are often seen on rocky islands, sandy beaches, mudflats, bays, and estuaries. Use various intertidal substrates that are exposed at low to medium tide levels for resting and breeding.	**Present**. Suitable habitat is present within the outboard areas of the BSA and this species is known to occur within the open water and intertidal mudflat habitat of the BSA. Pupping sites are known to be present along Mowry Slough and Newark Slough. This species is not tracked in the CNDDB. Cargill's operating salt ponds do not provide habitat for this species**.**

Species	Scientific Name	Common Name	Status[a] Federal	Status[a] State	Status[a] CDFW	Habitat	Likelihood of Presence
	Phocoena phocoena	harbor porpoise	MMPA	None	None	Cool temperate waters along the coasts of the North Pacific, North Atlantic, and the Black Sea. In California they occur north of Pt. Conception.	**Unlikely to occur.** Known to occur in San Francisco Bay occasionally, but rare to occur south of the San Mateo Bridge and therefore outside of the BSA.
	Zalophus californianus	California sea lion	MMPA	None	None	Shallow waters of the eastern North Pacific Ocean. Use various intertidal substrates that are exposed at low to medium tide levels for resting and breeding. Noted for using anthropogenic structures such as floating docks, piers, and buoys to haul out of the water to rest.	**Present.** Suitable habitat is present within the external areas of the BSA and this species is known to occur. There are no known haul-out locations in the BSA. This species is not tracked in the CNDDB. Cargill's operating salt ponds do not provide habitat for this species**.**

[a] Status designations are as follows:

Federal Designations:

E = Federally Endangered, T = Federally Threatened, PT = Proposed Threatened, C = Candidate, DL = Delisted, MMPA = Marine Mammal Protection Act

State Designations:

E = State Endangered, T = State Threatened, C = Candidate, DL = Delisted

California Department of Fish and Wildlife (CDFW) Designations:

SSC = Species of Special Concern, FP = Fully Protected

[b] Species did not appear in 2024 database queries but did appear in 2020 database queries.

[C] Species appeared in 2024 database queries but did not appear in 2020 database queries.

[d] Species did not appear in database searches but is included because it is known to occur in the BSA.

Sources:

California Department of Fish and Wildlife (CDFW). 2019. Special Animals List. Periodic publication. 67 pp. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109406&inline.

California Department of Fish and Wildlife (CDFW). 2020. *Fish Distribution Map*, www.dfg.ca.gov/delta/data/BayStudy/CPUE_Map.asp. Accessed June 29, 2020.

California Department of Fish and Wildlife (CDFW). 2024. California Natural Diversity Database, Biogeographic Data Branch. California Department of Fish and Wildlife. Sacramento, CA. Accessed January 30, 2024. https://www.wildlife.ca.gov/data/cnddb.U.S. Fish and Wildlife Service (USFWS). 2024. Environmental Conservation Online System: Information for Planning and Consultation (IPaC). 2024. Accessed January 30, 2024. https://ecos.fws.gov/ipac/.

National Marine Fisheries Service (NMFS). 2024. California Species List Tool. Queried for endangered and threatened species within Redwood Point, Palo Alto, Newark, Mountain View, and Milpitas USGS 7.5-minute topographic quadrangles. *https://archive.fisheries.noaa.gov/wcr/maps_data/california_species_list_tools.html*. Accessed January 30, 2024.

APPENDIX F Noise Calculations

Appendix F Noise Calculations

This appendix to the noise and vibration impact analysis presented in Section 3.10 provides additional detail regarding the analyses performed in support of the impact conclusions.

Table F-1 at the end of this appendix presents the calculated noise levels at each of the four nearest receptors, if relevant, for each of the existing and newly-proposed maintenance activities. The existing noise levels from Cargill's existing permitted operations form the baseline comparison to the changes proposed in maintenance activities for the next 10 years.

This appendix provides added information regarding the project noise levels associated with new maintenance activities as well as activities that are increasing in frequency or duration. The Project would implement the following new activities:

1. Installation of fish screens for the Coyote Intake, potentially including access piers requiring pile driving.
2. A vinyl sheet pile pilot study to evaluate the effectiveness of vinyl sheet pile for reducing the risk of erosion due to overtopping and increase resistance to permeation
3. Installation of new riprap on outboard berms to address areas of new erosion

Replenishment of materials stockpiles would use the same equipment as the current process, but may occur on a different schedule. Installation of new riprap would use the same equipment as repair of existing riprap, and would generally occur in the same areas as riprap repairs. Approximately 10% of the riprap to be placed is expected to be new riprap. Increasing the height of the berms surrounding MSS ponds P2-12 and P2-13 would be conducted as part of general berm maintenance activities, and is not considered a new activity.

In addition to the new activities listed above, the following activities are expected to increase in frequency or duration:

1. Locks access would approximately double from 1 event per year to an average of 2.25 events per year
2. Filling of berm gaps to vehicle access on internal berms (an average of 4 gaps filled per year)
3. Riprap repairs on outboard berms (from an average of around 80 cubic yards (CY) per year to an average of 1,050 CY/year)
4. Berm maintenance (from an average of 31.5 miles per year to an average of 37 miles as a result off additional berms being made drivable), and
5. Major and minor repair events (from an average of 1 major repair per year up to 12 major and minor repairs combined per year).

Riprap repairs are discussed together with new riprap placement below. The Project would also permit Cargill to develop and implement new maintenance methods, if more efficient, environmentally-friendly methods are identified. The use of new, more environmentally-friendly methods would not be expected to result in any increases in noise levels.

Therefore, the acoustical analysis of this Project focuses on the potential noise and vibration impacts where new activities would occur or where a significant increase in the magnitude of the noise levels at sensitive receptors may occur. For example, some activities would occur for more days per year than previously have occurred, but their noise or vibration level on any one day would not be greater than before and therefore their daily average noise or vibration levels would not increase.

EQUIPMENT NOISE LEVELS

Noise impacts from maintenance activities generally result when those activities occur during noise-sensitive times of the day (early morning, evening, or nighttime hours), in areas immediately adjacent to noise-sensitive receptors (primarily residential use), or when maintenance lasts over extended periods of time.

Noise levels from maintenance activities at or near the Project site would fluctuate depending upon the particular type, number, and duration of use of various pieces of construction equipment. Table 3.10-1 in Section 3.10.1 of the Environmental Assessment shows typical exterior noise levels generated by various types of construction equipment proposed for use in these maintenance activities. Table F-1 shows predicted maintenance noise levels at the nearest sensitive receptors from Project activities at Cargill's various ponds, based on consideration of the operation of three of the loudest equipment types simultaneously at full power with a 50 percent acoustical usage factor. The assumption of operation at full power is likely to overstate the actual noise generation, as most equipment rarely functions at full power, and it is unlikely that three pieces of equipment would do so simultaneously.

NEW MAINTENANCE ACTIVITIES

As discussed below, the magnitude of Project noise level increases compared with ambient noise levels in the vicinity of sensitive receptors without the new Project operations would be less than significant. Additionally, the resulting noise levels from these new maintenance activities would comply with regulatory standards. The potential noise generation associated with proposed new activities are discussed below.

Fish Screens and Access Pier Installation

Cargill proposes to construct new fish screens that would involve sediment removal at the Coyote intake, installation of vinyl sheet piling around the perimeter of the pump station's pier, installing six conical 6.5-foot diameter fish screens and pipes near the Coyote pump station, and constructing access to the fish screens for annual maintenance and any needed repairs. The fish screen installation would occur in the City of Newark. These six fish screens would each be supported by four piles that are driven deep into the earth primarily using a crane-suspended vibratory hammer.

Cargill has identified two options for providing access to these fish screens from the existing embankment access road less than 350 feet away: either (1) building an elevated, permanent platform (pier) supported by piles, or (2) building an earthen, raised embankment access road.

The number of piles needed to support the fish screens remains the same for both options at four micropiles per screen for a total of 24 micropiles.

In **Access Option 1**, a pier (pile-supported platform) for access to the fish screens would be constructed by driving 80 concrete piles, each measuring 18" by 18" square and 45 feet long. As for both options, the six new fish screens would also need to be supported by a total 24 12" by 12" square micropiles. All 104 piles would each be driven 40 feet into the ground with a vibratory driver, where possible. It is likely that the last 5 to 10 feet will be driven into stiff material, which may require use of an impact hammer. Each pile will take up to 15 minutes to install; with most of the time being vibratory driving. The last 5 minutes of pile-driving time for each pile may involve using impact pile driving. Driving all 104 piles would therefore take approximately 26 hours, with up to 8.7 hours consisting of impact pile driving.

In **Access Option 2**, a short earthen embankment access road would be built but it would not require any supporting piles. (The fish screens themselves would still require the same 24 micropiles as they would for Access Option 1.) Cargill estimates that construction of Access Option 2 would require 5 to 8 months. The noise impact associated with Option 2 would be lower than with Option 1 because up to 80 fewer piles would be driven compared to Option 1.

Cargill also proposes to install sheet piles to create a reservoir into which water from the fish screens would be discharged for intake by the pumps. These sheet piles would be driven with a vibratory hammer, or pushed into the ground with heavy equipment.

Construction of the fish screens would also involve hauling materials and removed sediment from the intake structures which may result in a slight increase in truck trips in the vicinity during the construction period. The estimated volume of sediment to be off-hauled would be similar to recent years, and daily loads (up to 24 trips per day) would be the same as estimated in the April 2021 Public Draft EA.

During construction work installing fish screens and an access pier, the loudest noise sources would be vibratory pile driving and impact pile driving for Access Option 1. A vibratory pile driver produces a maximum noise level of about 95 dBA L_{max} at 50 feet. An impact pile driver produces a maximum noise level of about 101 dBA L_{max} at 50 feet.

Other equipment that would be used includes a crane, crawler tractor, dump truck, excavator, off-highway haul truck, water truck, paver, paving equipment, roller, loader, sweeper, and amphibious excavator. The loudest of those, the excavator and haul truck, generate maximum noise levels of 85 dBA L_{max} and 84 dBA L_{max} respectively at 50 feet.

The nearest homes exposed to fish screen/access pier construction noise are near Pond B-3C along Monterey Way about 8,000 feet to the east. At those closest homes, the average noise level during fish screen and access pier construction calculates to about 54.1 dBA L_{eq} (Table F-1). The new noise source from impact pile driving 8,000 feet away at these homes would be at most 53.9 dBA L_{max},[1] or about 46 dBA L_{max} if reduced by atmospheric attenuation

[1] Calculation of noise level reduction at a location 8,000 feet (d_2) from construction, where dB_1 = 101 dBA L_{max} at 50 feet (d_1), then $dB_2 = dB_1 - 10 \times A \times LOG(d_2/d_1)$ = $101 - 10 \times 2.0 \times LOG(8{,}000'/50')$ = *56.9 dBA L_{max} (or 53.9 dBA L_{eq}) at 8,000 feet*

over that long distance (due to an approximate 1 dB loss per 1,000 feet increased distance). The maximum noise level from impact pile driving only would be much lower than the maximum-allowed daytime construction noise limits of 86 dBA L_{max} for homes in Union City or Newark. The impulsive character of pile driving noise is potentially more intrusive, but that would also not result in a significant noise impact, due to the large distances involved.

The nearest residences by Newark Plant 1 on Hidden Harbor Way are about 12,700 feet away where they would be exposed to average noise levels of up to 50.1 dBA L_{eq} during this construction work (Table F-1). If atmospheric attenuation losses are included, these fish screen and access pier installation noise levels drop to about 38 dBA L_{eq}.

Using an impact pile driver with a vibration level of 0.644 PPV in./sec. and L_V = 104 while installing piles to support the fish screens and access pier would generate vibration levels at the nearest homes 8,000 feet away of about 0.0001 PPV in/sec and 28.8 VdB,[2]which is well below applicable thresholds of significance.

The magnitude of the *increase* in noise levels would also be insignificant. The impact pile driving noise level when heard at the nearest homes 8,000 feet (1.5 miles) away would result in a noise level increase above ambient conditions of only about 0.3 dBA. That increase would not be significant because it is much less than the applicable threshold of significance of 3 dBA for such increases. When added to the ambient noise levels at these homes of about 57 to 60 dBA L_{eq}, this fish screen construction noise would mostly be inaudible. This construction noise would not constitute a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project. Temporary construction noise associated with fish screen construction would be minimal and be conducted only during daylight hours. After construction is complete, noise levels at these homes from the distant operation of these fish screens including their self-cleaning machinery will be inaudible and drop to existing levels.

Sea Level Rise Adaptation - Vinyl Sheet Pile Pilot Study

As part of this Project, Cargill may conduct a study for sea level rise adaptation that would include driving vinyl sheet pile on the inboard side of Pond P2-12. Vinyl sheet piles are driven using a vibratory driver or an excavator-mounted sheet pile driver. Because soils in the Project area are typically soft, low-impact energy drivers should be adequate for most pile installation.

To calculate the magnitude of the increase in noise levels during vinyl sheet pile installation work at the nearest sensitive receptors, first the baseline noise levels for berm maintenance in that area is calculated. Then the louder noise level during vinyl sheet pile installations there is calculated. Next both of those noise levels are calculated at the nearest sensitive receptors and added to the existing ambient noise level there. The difference between this existing noise level at the sensitive receptor location and the new noise level with vinyl sheet pile work can then be compared to the threshold of significance for noise level increases.

The nearest sensitive receptors to the study location for vinyl sheet pile installation on the exterior berm of Pond P2-12 are about 5,000 feet to the northeast in the westernmost portion

[2] $PPV_{Impact\ Pile\ Driver} = 0.644 \times (25/8{,}000)^{1.5} = 0.0001$ PPV (in/sec)
L_v(8,000 feet) = 104 VdB – 30 x Log(8,000/25) =28.8 VdB

of the FMC Parcel C residential subdivision at homes along Seawind Way, near Pond FMC-1. At that long distance of nearly a mile, such new construction activities would hardly be audible as shown below.

The first step in the noise analysis is to calculate the potential increase in noise with the new activity.

> Existing permitted operations to maintain this berm involve use of an excavator and a tractor/loader, which emit about a maximum of 85 and 84 dBA L_{max} respectively at a distance of 50 feet. Their combined maximum noise levels would be about 87.5 dBA L_{max} at 50 feet. At the nearest sensitive receptors about 5,000 feet away, that combined noise level would diminish to about **42.5 dBA L_{max}** due to distance and atmospheric absorption over that long distance.[3]
>
> The Project's new vinyl sheet pile installation with a vibratory pile driver would add about 95 dBA L_{max} to the noise levels of the excavator and a haul truck, for a combined average noise level of 92.7 dBA L_{eq} at 50 feet. (Table F-1). At the nearest sensitive receptors about 5,000 feet away, that combined noise level with the vibratory pile driver noise would diminish to about an average of 52.7 dBA L_{eq} due to just distance, or 47.7 dBA L_{eq} with additional loss to atmospheric absorption. [4]

The next step is to analyze the increase in noise levels these nearest residences would experience during vinyl sheet pile installations:

> When the permitted noise level of current Cargill operations of 42.5 dBA L_{eq} is added to these sensitive receptors' existing noise levels of between about 57 to 60 dBA L_{eq}, which is typical in residential areas in the daytime here, [5] the combined existing ambient noise level during current berm maintenance operations would be about 57.2 to 60.1 dBA L_{eq}.[6]

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[3] Calculation: Sound levels attenuate by about 6 dBA for each doubling of distance, so the noise level at that 5,000 foot distance would be 47.5 dBA L_{max}. Then an additional reduction of about 5.0 dBA for atmospheric absorption would reduce it further to **42.5 dBA L_{max}**. Atmospheric absorption typically reduces transmitted noise by about 5.0 dB in 5,000 feet. Source: http://www.sengpielaudio.com/calculator-air.htm

[4] Sound levels attenuate by about 6 dBA for each doubling of distance, so the noise level at that 5,000 foot distance would be 52.7 dBA L_{eq}. (Table F-1). Then with an additional reduction of about 5.0 dBA for atmospheric absorption, that combined noise level would reduce further to **47.7 dBA L_{eq}**.

[5] Refer to the 2013 *Trumark Dumbarton TOD Residential Project Supplemental EIR*, where a noise level measurement of 63.0 dBA L_{dn} at Site ST-1 was obtained near Enterprise Drive, just north of Willow Street, in Newark on May 30, 2013 by Illingworth & Rodkin, Inc., *https://www.newark.org/home/showdocument?id=212*. In such settings, an hourly measurement there would be approximately 6 dBA lower, or about **57 dBA L_{eq}**.
Also refer to the 2011 *Dumbarton TOD Specific Plan EIR*, p. 4.10-11, Fig. 3.10-2, Noise Measurement Locations, Site 1, describing a noise level measurement of **60.1 dBA L_{eq}** at Site 1 (the terminus of the Acorn Place cul-de-sac, in Newark, a residential neighborhood not near any highway). (Note that there is an error in that EIR's Table 3.10-3 where the site locations 1 and 2 got swapped, but 60.1 dBA was measured at Acorn Place.)
https://www.newark.org/home/showdocument?id=210

[6] Calculation of 42.5 dBA L_{eq} added to 57 or 60 dBA L_{eq}. Formula: $SPL_{(Total)} = 10 \times \log_{10}[10^{SPL(1)/10} + 10^{SPL(2)/10} + 10^{SPL(n)/10}]$

$SPL_{(Total)} = 10 \times \log_{10}[10^{(42.5/10)} + 10^{(57/10)}] = 57.2$ dBA L_{eq}

$SPL_{(Total)} = 10 \times \log_{10}[10^{(42.5/10)} + 10^{(60/10)}] = 60.1$ dBA L_{eq}

(Caltrans TeNS, eq. N-2135.3) Sound Pressure Level ("SPL");
California Department of Transportation, *Technical Noise Supplement*, 2009

When the Project's higher noise level during vinyl sheet pile installation work of as much as 47.7 dBA L_{eq} as measured at these homes 5,000 feet away is added to these sensitive receptors' existing noise levels of between about 57 to 60 dBA L_{eq}, their combined noise levels during pile installations would be about 57.5 to 60.3 dBA L_{eq}. [7]

The magnitude of the noise level increase from current operations of 57.2 to 60.1 dBA L_{eq} to a barely louder 57.5 to 60.3 dBA L_{eq} during vinyl sheet pile installations would represent an increase of only about 0.2 dBA to 0.3 dBA above existing ambient noise levels. An increase of less than 1 dBA is not generally audible to people in such residential settings. The noise impact from an increase like this in Project noise levels during vinyl sheet pile installation at the nearest sensitive receptors of less than 1.5 dBA is therefore considered to be less-than-significant. At more distant homes, this noise level increase would be lower yet and its noise impact would also be less-than-significant.

Installing vinyl sheet piles using a vibratory impact driver about 5,000 feet from the closest homes would create imperceptible vibration levels at these homes of at about 0.0006 PPV in/sec and 24.0 VdB. [8]

As calculated and shown in Table F-1, the Project's noise levels during vinyl sheet pile installation combined with berm maintenance would not exceed local noise standards at sensitive receptors. This new maintenance activity is far away so the noise levels would be decreased substantially by distance. Their noise levels would be less than 59 dBA L_{eq} at the nearest sensitive receptors. As such, the noise impact from new sea level adaptation work including vinyl sheet pile installation there would be less-than-significant.

New Riprap Placement and Repair or Replacement of Existing Riprap

The noise impacts during the new placement or replacement of riprap will remain largely unchanged compared to existing permitted repair work. Equipment used for riprap placement includes an excavator, a dump truck, and a haul truck or tractor (85, 84 and 84 dBA L_{max} at 50 feet, respectively.) The predicted construction noise levels during riprap placement/replacement work at the closest residences to Newark's Plant 1 and Plant 2 where

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[7] Calculation of 47.7 dBA L_{eq} added to 57 or 60 dBA L_{eq}. Formula: $SPL_{(Total)} = 10 \times \log_{10}[10^{SPL(1)/10} + 10^{SPL(2)/10} + 10^{SPL(n)/10}]$

$SPL_{(Total)} = 10 \times \log_{10}[10^{(47.7/10)} + 10^{(57/10)}] = 57.5$ dBA L_{eq}

$SPL_{(Total)} = 10 \times \log_{10}[10^{(47.7/10)}) + 10^{(60/10)}] = 60.3$ dBA L_{eq}

[8] The equation for the vibration level generated by impact pile drivers (Caltrans, 2020, p. 33, Equation 10) is:

$PPV_{Vibratory\ Pile\ Driver} = PPV_{Ref}\ (25/D)^n$ (in/sec)

Where:

PPV_{Ref} = 0.170 in/sec for a reference pile driver at 25 ft

D = distance from pile driver to the receiver in ft.

n = 1.5 (the value related to the attenuation rate through ground)

Thus, $PPV_{Vibratory\ Pile\ Driver} = 0.170 \times (25/5{,}000)^{1.5} = 0.170 \times 0.000354 =$ **0.0006 PPV** (in/sec)

Calculation: A vibratory pile driver has a typical vibration level (L_v) of 93 VdB at 25 feet, so therefore at a distance of 5,000 feet the vibration level would be 24.0 VdB. The estimated L_v is calculated as:

$L_v(D) = L_v(25\ feet) - 30\text{Log}(D/25)$ where:

$L_v(D)$= estimated velocity level in decibels at distance.

$L_v(25\ feet)$ = RMS velocity amplitude at 25 feet.

D= distance from equipment to receiver.

Here, $L_v(5{,}000\ feet) = 93\ VdB - 30 \times \text{Log}(5{,}000/25) = 93\ VdB - 30 \times 2.3 =$ **24.0 VdB**

riprap would be placed on interior berms (see Table F-1: 66.1 and 58.9 dBA L_{eq}) would not exceed the construction noise standards in those communities.

MAINTENANCE ACTIVITIES WITH INCREASES IN DURATION OR FREQUENCY

Material Stock Piles Replenishment and Off-Site Project Traffic Noise Level

While the average annual increase in combined soil and riprap imports is expected to only be on the order of 10 percent of the current volume, Cargill may modify its soil and riprap import process. Instead of receiving on-going deliveries during the construction season, Cargill now anticipates having both intermittent imported material deliveries and several larger import events during the proposed 10-year permit period. The delivery schedule and truck size for imported material is set by the project providing the material, so it is possible that Cargill may receive a greater volume of material on occasion, but the total daily number of truck trips would not exceed existing maximum levels. This would require importing approximately 45,000 Cy of materials during each of the 4 episodes, which would require approximately 40 days (8 5-day work weeks) of imports at 100 truckloads per day. During the time when imports would be occurring, this would represent an increase of approximately 85 truck trips per day. Cargill currently receives up to 120 truckloads per day, so there would be no increase in the maximum daily truck trips, and therefore the change in import material delivery patterns and the small increase in total material delivered is less than significant. Cargill's increases in personal vehicle trips would also be insignificant. Therefore, the noise impacts that might occur from this Project's increased material import and activities would be less-than-significant.

Use of material stockpiles would increase slightly (Cargill anticipates needing approximately 18,000 CY/per year combined of soil and riprap, compared to the current average of approximately 16,200 CY/year). The distance from the closest material stock pile by Pond CX-16 to homes on Cape Breeze Drive is about 1,000 feet. At that distance, the typical combined noise level of equipment used at a material stock pile (bulldozer, dump truck, and tractor/loader) of about 86.1 dBA L_{eq} at 50 feet (Table F-1) would reduce by distance to about 60.1 dBA L_{eq} at these homes.[9] When converted to the day-night weighted average for comparison with local noise standards, that noise level is at most 55.8 dBA L_{dn} (for stock pile work occurring from 8:00 a.m. to 5:00 p.m.).[10] The projected noise associated with the increase in use of the materials stockpiles is less than significant.

[9] Calculation of noise level reduction at a location 1,000 feet (d_2) from material stock pile work, where dB_1 =86.1 dBA L_{eq} at 50 feet (d_1), then $dB_2 = dB_1 - 10 \times A \times LOG(d_2/d_1)$ = 86.1 – 10 x 2.0 x LOG(1,000'/50') = *60.1 dBA L_{eq} at 1,000 feet*

[10] To calculate the dBA L_{dn} day-night weighted average at 1,000 feet distance in this case from homes on Cape Breeze Drive to the closest material stock pile, a combined noise level of about 60.1 dBA L_{eq} as discussed above is assigned to each of the assumed Project's operational nine hours from 8:00 am to 5:00 pm, and a non-operation noise level of 0 dBA L_{eq} is assumed for each of the remaining six daytime (non-work) hours, and 0 dBA L_{eq} is assumed for each of the nine nighttime (non-work) hours. $L_{dn} = 10*LOG[(1/24) * (9 *[10EXP(0.1*L_{d\text{-}work})] + (9 *[10EXP(0.1*L_{d\text{-}no\ work})] + 9 * [10EXP(0.1*(L_n + 10))])] =$ **55.8 dBA L_{dn}** (where * = multiplication; EXP = power function; $L_{d\text{-}work} = L_{eq}$ for the 9-hour daytime period working hours from 8 am – 5 pm; $L_{d\text{-}no\ work} = L_{eq}$ for the 6 hours in the daytime period from (7 am – 10 pm) with no work; and $L_n = L_{eq}$ for the 9-hour nighttime period (10 pm – 7 am).)

Using a bulldozer with a vibration level of 0.089 PPV in./sec. and L_V = 87 while replenishing material stock piles would generate vibration levels at the nearest homes 1,000 feet away of about 0.00035 PPV in./sec. and 38.9 VdB,[11] which is well below the thresholds of significance for vibration impacts.

Increased Lock Access

This Project would increase the number of times per year that lock access activities occur. The loudest equipment used for this work would be an excavator, grader and amphibious excavator. Locks are located adjacent to outboard pond berms, typically within areas surrounded by salt marsh. Lock access would occur at a distance of about 8,400 feet from sensitive receptors in the Newark Pond 1 area's vicinity, about 7,000 feet from homes in the Newark Plant 2 area's vicinity, and about 5,200 feet from sensitive receptors in the Redwood City Plant's vicinity. At the closest of these three distances, this lock access maintenance work would generate noise levels of about 46.4 dBA L_{eq} (Table F-1), not including a reduction for atmospheric attenuation. These noise levels would be less than the ambient noise levels at these homes. These maintenance activities would occur on more days per year, not more times per day. Therefore, these maintenance activities would not generate greater noise level increases by comparison to existing ambient noise levels at sensitive receptors during any one day. Even if they did, the noise level increase during lock access activities would be less than that during vinyl sheet pile installation, so their impact on sensitive receptors would be less yet. Operations associated with lock access would result in noise level increases that are less-than-significant. The noise level increase from the increased lock access activities would also comply with local standards at the nearest residences.

Using equipment identified above (with a vibration level of 0.089 PPV in./sec. and L_V = 87) while increasing lock access would generate imperceivable vibration levels at the nearest homes 5,200 feet away of about 0.00003 PPV in/sec and 18.0 VdB.[12]

Berm Gap Filling to Re-Establish Vehicle Access

The loudest equipment used for filling berm gaps, a bulldozer, grader, and tractor/loader, produce a combined average noise level of about 86.5 dBA Leq at 50 feet (Table F-1). The nearest berm gap at Newark Plant 1 is located about 3,750 feet from single-family homes being built at Hidden Harbor Way. At that distance from berm filling work, these homes would be exposed to insignificant and likely inaudible noise levels of less than 49.0 dBA L_{eq} (Table F-1), not including about 3 dB further reduction due to atmospheric attenuation. That noise level at any homes would be masked by other ambient noise levels of about 60 dBA L_{eq}, would not cause a substantial increase in noise levels, and would have a less-than-significant noise impact. Similarly at the closest distance of 3,750 feet to any home, any berm gap filling related ground-borne vibrations would be imperceptible.

[11] $PPV_{bulldozer}$ = 0.0890 x $(25/1{,}000)^{1.5}$ = 0.00035 PPV (in/sec)
L_v(1,000 feet) = 87 VdB – 30 x Log(1,000/25) =38.9 VdB

[12] $PPV_{Excavator}$ = 0.0890 x $(25/5{,}200)^{1.5}$ = 0.00003 PPV (in/sec)
L_v(5,200 feet) = 87 VdB – 30 x Log(5,200/25) = 18 VdB

Major and Minor Repairs

Noise impacts during the repair and replacement of older structures would remain unchanged compared to existing permitted repair work. The frequency of the repair and replacement activities is projected to increase compared to existing levels. However, as discussed above, an increase in the frequency or duration of an activity would not change the daily noise levels. Consequently, potential noise effects associated with increased repair and replacement of older structures would be less than significant.

For reference, the noisiest equipment used currently and as proposed for repair includes an air compressor, an excavator and a crane (83, 85 and 85 dBA L_{max} at 50 feet, respectively. The predicted construction noise levels during repair work at the closest residences in each Project pond vicinity (see Table F-1: 60.6, 67.1, 56.4, 77.2 dBA L_{eq}) would not exceed the construction noise standards in those communities. Furthermore, there would not be an increase in noise levels during these repair activities above existing levels.

Using equipment identified above, with a vibration level of 0.089 PPV in./sec. and L_V = 87, while repairing older structures would generate vibration levels at the nearest mobile homes adjacent to the Redwood city Plant as close as 140 feet away of about 0.007 PPV in/sec and 64.6 VdB.[13] These levels are well below the thresholds of significance for vibration of 80 VdB with respect to human annoyance for residential uses and 0.2 in/sec PPV for prevention of building damage to normal structures.

Berm Maintenance and Increase Height of Berms for Sea Level Rise Adaptation

To protect against sea level rise, Cargill plans to increase the height of its berms around Ponds P2-12 and P2-13 in Newark Plant 2. The work performed would be using the same methods as are currently used. However, because Cargill is focusing on these two ponds, the duration of these activities in this area would be of longer duration than typically occurs. As discussed earlier, when daily equipment use remains the same, the daily noise level would remain the same, and the impact would be less than significant.

For reference, the noisiest equipment proposed for increasing berm heights includes a bulldozer, excavator, and dump truck (85, 85 and 84 dBA L_{max} at 50 feet, respectively). Their combined noise levels are calculated at 86.5 dBA L_{eq} at 50 feet. The noise levels during this berm height increase work as calculated at the closest residences 1,070 feet away at Seawind Way would be about 59.8 dBA L_{eq} (Table F-1). That noise level, when converted to a day-night weighted average of 55.5 dBA L_{dn},[14] also complies with the City of Newark's normally-

[13] $PPV_{Excavator}$ = 0.0890 x $(25/140)^{1.5}$ = 0.0073 PPV (in/sec)
L_v(140 feet) = 87 VdB – 30 x Log(140/25) =64.6 VdB

[14] To calculate the dBA L_{dn} day-night weighted average noise level at 1,070 feet distance from condominiums on Seawind Way to the closest berm height raising activity, a combined noise level of about 59.8 dBA L_{eq} as discussed above is assigned to each of the assumed Project's operational nine hours from 8:00 am to 5:00 pm, and a non-operation noise level of 0 dBA L_{eq} is assumed for each of the remaining six daytime (non-work) hours, and 0 dBA L_{eq} is assumed for each of the nine nighttime (non-work) hours. L_{dn} = 10*LOG[(1/24) * (9 *[10EXP(0.1*$L_{d\text{-}work}$)] + (9 *[10EXP(0.1*$L_{d\text{-}no\ work}$)] + 9 * [10EXP(0.1*(L_n + 10))])] = **55.5 dBA L_{dn}** (where * = multiplication; EXP = power function; $L_{d\text{-}work}$ = L_{eq} for the 9-hour daytime period working hours from 8 am – 5 pm = 59.7 dBA L_{eq}; $L_{d\text{-}no\ work}$ = L_{eq} for the 6 hours in the daytime period from (7 am – 10 pm) with no work = 0; and L_n = L_{eq} for the 9-hour nighttime period (10 pm – 7 am) = 0.

acceptable noise standards at residences of up to 60 dBA L_{dn}. That noise level would not exceed the maximum local construction noise standards of 86 dBA L_{max}. Even if this new berm height raising work occurred at the same time as previously-permitted berm maintenance work at other near-by locations, where existing noise levels are about 57 dBA L_{dn}, it would increase the noise level at these nearest condominiums by only about 2.4 dBA[15] which is a less-than-significant impact.

Using an excavator with a vibration level of 0.089 PPV in./sec. and L_V = 87 while increasing berm heights would generate vibration levels at the nearest homes 1,070 feet away of about 0.0003 PPV in/sec and 38.1 VdB.[16] These values are well below the applicable thresholds of significance.

OTHER POTENTIAL CHANGES TO EXISTING NOISE LEVELS

One activity, berm keying, is anticipated to decrease in duration. Two miles of berm cores would be keyed under the proposed Project over a 10-year period. This is a reduction of approximately 50% relative to the baseline conditions, and a reduction of approximately 950 cubic yards of clean fill materials per year (however, as discussed in Section 2, there would be an overall increase in the volume of soil imported by the proposed Project). Cargill currently uses and proposes to continue using heavy equipment like an excavator, grader and scraper for its berm keying. That equipment produces a combined average noise level of about 86.5 dBA L_{eq} at 50 feet. This construction activity creates a maximum noise level of nearly 85 dBA L_{eq} (Table F-1) at the nearest homes, which is lower than the applicable noise standards for construction noise. This Project activity will not exceed current noise levels nor create a significant noise level increase.

Using a grader with a vibration level of 0.089 PPV in./sec. and L_V = 87 while compacting berm cores would generate vibration levels at the nearest homes 60 feet away of about 0.024 PPV in/sec and 75.6 VdB,[17] which is below the thresholds of significance for vibration impacts.

NOISE IMPACTS TO RECREATIONAL USERS

Recreational users of public trails in the salt ponds who are near maintenance project work areas could get close to operating heavy equipment, and could therefore experience high noise levels on a short-term basis. Assuming local trail users choose to walk past operating heavy equipment rather than avoid areas with active maintenance, they could be exposed to noise levels in excess of 65 dBA for a distance of up to 3,200 feet (1,600 feet in either direction from the operating equipment). At an average walking speed of 3 mph, trail users would be exposed to high levels of noise for up to 12 minutes. Given the short duration of the potential exposure

[15] Increase in noise level due to berm raising = (Existing ambient noise level + Contributed noise level just due to berm raising (*logarithmically added*) – Existing ambient noise level = (*57 + 55.7*) - 57 = 59.4 – 57 = 2.4 dBA increase.

[16] $PPV_{Excavator}$ = 0.0890 x $(25/1,070)^{1.5}$ = 0.0003 PPV (in/sec)
L_v(60 feet) = 87 VdB – 30 x Log(1,070/25) =38.1 VdB

[17] PPV_{Grader} = 0.089 x $(25/60)^{1.5}$ = 0.024 PPV (in/sec)
L_v(60 feet) = 87 VdB – 30 x Log(60/25) =75.6 VdB

and the opportunity to use other berms for recreation, the potential impact to recreational users of the berms is less than significant.

Project maintenance activity noise would not significantly impact the other nearby recreational facilities. Such noise impacts on people using the Bedwell Bayfront Park, the San Francisco Bay Trail, the Bayview Trail in Coyote Hills Regional Park, the Don Edwards San Francisco Bay National Wildlife Refuge, the Alameda Creek Regional Trail, the Newark Slough Trail, or the Bayshores Park would be less than significant because recreational users would be transiting through or near the Project areas only briefly to access other portions of the recreational areas that would be further away from Project maintenance operations.

As for vibration impacts to recreational trail users, groundborne vibration is almost never annoying to people who are outdoors. Although the motion of the ground may be perceived, without the effects associated with the shaking of a building, the motion does not provoke the same adverse human reaction. In addition, the rumble noise that usually accompanies the building vibration is perceptible only inside buildings. The ground motion caused by vibration is measured as particle velocity in inches per second and this is referenced as vibration decibels (VdB).

The Project's strongest vibration levels would occur with the impact pile driving at the Coyote Intake. At the nearest recreational trail located at least 150 feet from the fish screen related vinyl pile and impact pile driving work, such vibratory impacts will be negligible.

When vibratory pile driving occurs, the vibration level 150 feet away at the trail would typically be about 70 VdB[18] which is less than the FTA's Category 3 standard of 75 VdB for frequent daytime events even within buildings.[19] During impact pile driving, the vibration level at 150 feet to the trail would typically be at most about 80.7 VdB. [20] That outdoor vibration level is not excessive by FTA standards because it would occur outdoors. Trail users while walking would be farther away and not exposed to strong vibration levels within a few seconds. The human exposure to such pile driving vibration would thus be brief. Some heavy equipment use near this trail is already permitted under Cargill's existing maintenance permit. People walking nearby during such recreational activities are not considered to be sensitive receptors where they could experience sleep-disturbance or annoying interference with their work or household activities. Therefore, any recreational trail related vibration impacts during the fish screen installations and related pile driving work would be less-than-significant and this activity would be in compliance with applicable thresholds.

[18] Calculation: An impact pile driver has a typical vibration level (Lv) of 93 VdB at 25 feet, so therefore the vibration level would be 69.7 VdB at 150 feet. The estimated Lv is calculated as:
Lv(D) = Lv(25 feet) -30Log(D/25) where:
Lv(D)= estimated velocity level in decibels at distance.
Lv(25 feet) = RMS velocity amplitude at 25 feet.
D= distance from equipment to receiver.
Here, Lv(150 feet) = 93 VdB – 30 x Log(150/25) = 93 VdB – 30 x -0.78 = 69.7 VdB

[19] *See* FTA (May 2006) Transit Noise And Vibration Impact Assessment, Table 8-1, *https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/FTA_Noise_and_Vibration_Manual.pdf*.

[20] Calculation: Lv(150 feet) = 104 VdB – 30 x Log(150/25) = 104 VdB – 30 x -0.78 = 80.7 VdB

Table F-1. Maintenance Noise Levels at Nearest Sensitive Receptors from Project Activities

Activity	Loudest Equipment Used (dBA L_{max})	Combined Noise Level at 50 feet (dBA L_{eq})	Project Area Location	Distance to Nearest Sensitive Receptor (feet)	Noise Level at Nearest Sensitive Receptor (dBA L_{eq})
Berm Grading	Bulldozer (85) Dump Truck (84)	84.5	Pond B-3C	950	59.0
			Newark Plant 1	450	65.4
			Newark Plant 2	60	82.9
			Redwood City Plant	75	81.0
Maintain Berm Height and Width	Bulldozer (85) Excavator (85) Dump Truck (84)	86.5	Pond B-3C	950	60.9
			Newark Plant 1	450	67.4
			Newark Plant 2	60	84.9
			Redwood City Plant	75	82.9
Address Priority Berms for Sea Level Rise by Raising Berm Heights	Bulldozer (85) Excavator (85) Dump Truck (84)	86.5	Pond B-3C	Not applicable	--
			Newark Plant 1	Not applicable	--
			Newark Plant 2	1,070	59.8
			Redwood City Plant	Not applicable	--
Berm Keying	Excavator (85) Grader (85) Scraper (84)	86.5	Pond B-3C	950	60.9
			Newark Plant 1	450	67.4
			Newark Plant 2	60	84.9
			Redwood City Plant	75	82.9
Making Berms Driveable	Bulldozer (85) Grader (85) Dump Truck (84)	86.5	Pond B-3C	950	60.9
			Newark Plant 1	550	65.6
			Newark Plant 2	60	84.9
			Redwood City Plant	75	82.9
Outboard Riprap Erosion Repair (assumes outer faces of berms far from sensitive receptors)	Excavator (85) Haul Truck (84) Dump Truck (84)	86.1	Pond B-3C	Not applicable	Not applicable
			Newark Plant 1	15,000	36.6
			Newark Plant 2	5,000	46.1
			Redwood City Plant	Not applicable	Not applicable
Interior Berm Erosion Repair with Riprap	Dump Truck (84) Excavator (85) Tractor /Loader (84)	86.1	Pond B-3C	Not applicable	Not applicable
			Newark Plant 1	500	66.1
			Newark Plant 2	1,150	58.9
			Redwood City Plant	Not applicable	Not applicable

Activity	Loudest Equipment Used (dBA L_{max})	Combined Noise Level at 50 feet (dBA L_{eq})	Project Area Location	Distance to Nearest Sensitive Receptor (feet)	Noise Level at Nearest Sensitive Receptor (dBA L_{eq})
Lock Access	Excavator (85) Grader (85) Amphibious Excavator (85)	86.8	Pond B-3C	Not applicable	--
			Newark Plant 1	8,400	42.3
			Newark Plant 2	7,200	43.6
			Redwood City Plant	5,200	46.4
Vinyl Sheet Pile Pilot Study	Excavator (85) Tractor /Loader (84) Vibratory Pile Driver (95)	92.7	Pond B-3C	Not applicable	--
			Newark Plant 1	Not applicable	--
			Newark Plant 2	5,000	52.7
			Redwood City Plant	Not applicable	--
Material Stock Pile Replenishment	Bulldozer (85) Dump Truck (84) Tractor/Loader (84)	86.1	Newark Plant 2	1,000	60.1
Sediment Removal from Intakes	Dump Truck (84) Excavator (85) Fork Lift (79)	85.1	Pond B-3C	7,300	41.8
			Newark Plant 1	450	66.7
			Newark Plant 2	1,600	55.0
			Redwood City Plant	4,800 140	45.5 76.9
Minor Earthmoving Activities	Bulldozer (85) Dump Truck (84) Excavator (85)	86.5	Pond B-3C	950	60.9
			Newark Plant 1	450	67.4
			Newark Plant 2	60	84.9
			Redwood City Plant	75	82.9
Repair of Water Control Structures	Air Compressor (83) Excavator (85) Crane (85)	86.2	Pond B-3C	950	60.6
			Newark Plant 1	450	67.1
			Newark Plant 2	1,500	56.4
			Redwood City Plant	140	77.2
Repair of Access Structures	Air Compressor (83) Crane (85) Tractor (84)	85.9	Pond B-3C	7,300	42.6
			Newark Plant 1	450	64.8
			Newark Plant 2	1,550	54.0
			Redwood City Plant	3,500	46.9
Minor Maintenance and Repair	Air Compressor (83) Tractor /Loader (84) Crane (85)	84.6	Pond B-3C	950	60.4
			Newark Plant 1	450	65.5
			Newark Plant 2	1,700	55.2
			Redwood City Plant	140	76.9

Activity	Loudest Equipment Used (dBA L_{max})	Combined Noise Level at 50 feet (dBA L_{eq})	Project Area Location	Distance to Nearest Sensitive Receptor (feet)	Noise Level at Nearest Sensitive Receptor (dBA L_{eq})
Re-establishing Vehicle Access on Internal Berms by Berm Gap Filling	Bulldozer (85) Grader (85) Tractor /Loader (84)	86.5	Pond B-3C	Not applicable	Not applicable
			Newark Plant 1	3,750	49.0
			Newark Plant 2	Not applicable	Not applicable
			Redwood City Plant	Not applicable	Not applicable
Install Fish Screens and Access Pier	Excavator (85) Paver (85) Impact Pile Driver (101)	84.5	Pond B-3C	8,000	54.1
			Newark Plant 1	12,700	50.1
			Newark Plant 2	Not applicable	Not applicable
			Redwood City Plant	Not applicable	Not applicable
Algae Removal from Ponds	Bulldozer (85) Haul Truck (85) Pickup Truck (55)	84.5	Pond B-3C	950	59.0
			Newark Plant 1	450	65.4
			Newark Plant 2	60	82.9
			Redwood City Plant	75	81.0

Note:
These calculations assume a 50% *acoustical usage factor*. The acoustical usage factor is the fraction of time that the equipment generates noise at the maximum level. They also assume equipment is operated at full power.
L_{max} = Maximum sound level; the highest sound level measured during a single noise event.
The supporting calculations for Table F-1 noise level predictions are provided in Attachment F-1.

Attachment F-1 Supporting Calculations for Noise Level Predictions

CALCULATIONS OF NOISE LEVELS DURING PROJECT ACTIVITIES

ACTIVITY	PAGE
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Federal Highway Administration (FHWA), Roadway Construction Noise Model (RCNM), Version 1.1

BERM GRADING

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 03/28/2024
Case Description: Cargill Solar Sea Salt Maintenance - EA 2024

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Pond B-3C	Residential	1.0	1.0	1.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer - C	No	50	85.0		950.0	0.0
Dump truck - C	No	50	84.0		950.0	0.0

Results

Calculated (dBA)

Equipment	Lmax	Leq
Dozer - C	59.4	56.4
Dump truck - C	58.4	55.4
Total	59.4	59.0

**** Receptor #2 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Homes - Newark Plant 1	Residential	1.0	1.0	1.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer - C	No	50	85.0		450.0	0.0
Dump truck - C	No	50	84.0		450.0	0.0

Results

Calculated (dBA)

Equipment	Lmax	Leq
Dozer - C	65.9	62.9
Dump truck - C	64.9	61.9
Total	65.9	65.4

**** Receptor #3 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Homes - Newark Plant 2	Residential	1.0	1.0	1.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer - C	No	50	85.0		60.0	0.0
Dump truck - C	No	50	84.0		60.0	0.0

Results

Calculated (dBA)

Equipment	Lmax	Leq
Dozer - C	83.4	80.4
Dump truck - C	82.4	79.4
Total	83.4	82.9

**** Receptor #4 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Dwellings - Redwood City Plant	Residential	1.0	1.0	1.0

Equipment

Impact	Usage	Spec Lmax	Actual Lmax	Receptor Distance	Estimated Shielding

Description	Device	(%)	(dBA)	(dBA)	(feet)	(dBA)
Dozer - C	No	50	85.0		75.0	0.0
Dump truck - C	No	50	84.0		75.0	0.0

Results

Calculated (dBA)

Equipment		Lmax	Leq
Dozer - C		81.5	78.5
Dump truck - C		80.5	77.5
	Total	81.5	81.0

MAINTAIN BERM HEIGHT AND WIDTH

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 03/28/2024
Case Description: Cargill Solar Sea Salt Maintenance - EA 2024

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Homes - Pond B-3C	Residential	1.0	1.0	1.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer - C	No	50	85.0		950.0	0.0
Excavator - C	No	50	85.0		950.0	0.0
Dump truck - C	No	50	84.0		950.0	0.0

Results

Calculated (dBA)

Equipment		Lmax	Leq
Dozer - C		59.4	56.4
Excavator - C		59.4	56.4
Dump truck - C		58.4	55.4
	Total	59.4	60.9

**** Receptor #2 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Homes - Newark Plant 1	Residential	1.0	1.0	1.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer - C	No	50	85.0		450.0	0.0
Excavator - C	No	50	85.0		450.0	0.0
Dump truck - C	No	50	84.0		450.0	0.0

Results

Calculated (dBA)

Equipment	Lmax	Leq
Dozer - C	65.9	62.9
Excavator - C	65.9	62.9
Dump truck - C	64.9	61.9
Total	65.9	67.4

**** Receptor #3 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Homes - Newark Plant 2	Residential	1.0	1.0	1.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer - C	No	50	85.0		60.0	0.0
Excavator - C	No	50	85.0		60.0	0.0
Dump truck - C	No	50	84.0		60.0	0.0

Results

Calculated (dBA)

Equipment	Lmax	Leq
Dozer - C	83.4	80.4
Excavator - C	83.4	80.4
Dump truck - C	82.4	79.4
Total	83.4	84.9

**** Receptor #4 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Dwellings - Redwood City Plant	Residential	1.0	1.0	1.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer - C	No	50	85.0		75.0	0.0
Excavator - C	No	50	85.0		75.0	0.0
Dump truck - C	No	50	84.0		75.0	0.0

Results

Calculated (dBA)

Equipment	Lmax	Leq
Dozer - C	81.5	78.5
Excavator - C	81.5	78.5
Dump truck - C	80.5	77.5
Total	81.5	82.9

BERM CORE COMPACTION

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 03/28/2024
Case Description: Cargill Solar Sea Salt Maintenance - EA 2024

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Homes - Pond B-3C	Residential	1.0	1.0	1.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator - C	No	50	85.0		950.0	0.0
Grader - C	No	50	85.0		950.0	0.0
Scraper - C	No	50	84.0		950.0	0.0

Results

Calculated (dBA)

Equipment	Lmax	Leq
Excavator - C	59.4	56.4
Grader - C	59.4	56.4
Scraper - C	58.4	55.4
Total	59.4	60.9

**** Receptor #2 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Homes - Newark Plant 1	Residential	1.0	1.0	1.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator - C	No	50	85.0		450.0	0.0
Grader - C	No	50	85.0		450.0	0.0
Scraper - C	No	50	84.0		450.0	0.0

Results

Calculated (dBA)

Equipment	Lmax	Leq
Excavator - C	65.9	62.9
Grader - C	65.9	62.9
Scraper - C	64.9	61.9
Total	65.9	67.4

**** Receptor #3 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Homes - Newark Plant 2	Residential	1.0	1.0	1.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator - C	No	50	85.0		60.0	0.0
Grader - C	No	50	85.0		60.0	0.0
Scraper - C	No	50	84.0		60.0	0.0

Results

Calculated (dBA)

Equipment	Lmax	Leq
Excavator - C	83.4	80.4
Grader - C	83.4	80.4
Scraper - C	82.4	79.4
Total	83.4	84.9

**** Receptor #4 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night

Description	Land Use	Daytime	Evening	Night
Dwellings - Redwood City Plant	Residential	1.0	1.0	1.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator - C	No	50	85.0		75.0	0.0
Grader - C	No	50	85.0		75.0	0.0
Scraper - C	No	50	84.0		75.0	0.0

Results

Calculated (dBA)

Equipment	Lmax	Leq
Excavator - C	81.5	78.5
Grader - C	81.5	78.5
Scraper - C	80.5	77.5
Total	81.5	82.9

MAKING BERMS DRIVABLE

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 03/28/2024
Case Description: Cargill Solar Sea Salt Maintenance - EA 2024

**** Receptor #1 ****

Description	Land Use	Daytime	Evening	Night
Homes - Pond B-3C	Residential	1.0	1.0	1.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer - C	No	50	85.0		950.0	0.0
Grader - C	No	50	85.0		950.0	0.0
Dump truck - C	No	50	84.0		950.0	0.0

Results

Calculated (dBA)

Equipment	Lmax	Leq
Dozer - C	59.4	56.4
Grader - C	59.4	56.4
Dump truck - C	58.4	55.4
Total	59.4	60.9

**** Receptor #2 ****

Description	Land Use	Daytime	Evening	Night
Homes - Newark Plant 1	Residential	1.0	1.0	1.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer - C	No	50	85.0		450.0	0.0
Grader - C	No	50	85.0		450.0	0.0
Dump truck - C	No	50	84.0		450.0	0.0

Results

Calculated (dBA)

Equipment	Lmax	Leq
Dozer - C	65.9	62.9
Grader - C	65.9	62.9
Dump truck - C	64.9	61.9
Total	65.9	67.4

**** Receptor #3 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Homes - Newark Plant 2	Residential	1.0	1.0	1.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer - C	No	50	85.0		60.0	0.0
Grader - C	No	50	85.0		60.0	0.0
Dump truck - C	No	50	84.0		60.0	0.0

Results

Calculated (dBA)

Equipment	Lmax	Leq
Dozer - C	83.4	80.4
Grader - C	83.4	80.4
Dump truck - C	82.4	79.4
Total	83.4	84.9

**** Receptor #4 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Dwellings - Redwood City Plant	Residential	1.0	1.0	1.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer - C	No	50	85.0		75.0	0.0
Grader - C	No	50	85.0		75.0	0.0
Dump truck - C	No	50	84.0		75.0	0.0

Results

Calculated (dBA)

Equipment	Lmax	Leq
Dozer - C	81.5	78.5
Grader - C	81.5	78.5
Dump truck - C	80.5	77.5
Total	81.5	82.9

RIPRAP OUTBOARD EROSION REPAIR

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 03/28/2024
Case Description: Cargill Solar Sea Salt Maintenance - EA 2024

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Homes - Newark Plant 1	Residential	1.0	1.0	1.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator - C	No	50	85.0		15000.0	0.0
Haul Truck - C	No	50	84.0		15000.0	0.0
Dump truck - C	No	50	84.0		15000.0	0.0

Results

Calculated (dBA)

Equipment	Lmax	Leq
Excavator - C	35.5	32.4
Haul Truck - C	34.5	31.4
Dump truck - C	34.5	31.4
Total	35.5	36.6

**** Receptor #2 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Homes - Newark Plant 2	Residential	1.0	1.0	1.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator - C	No	50	85.0		5000.0	0.0
Haul Truck - C	No	50	84.0		5000.0	0.0
Dump truck - C	No	50	84.0		5000.0	0.0

Results

Calculated (dBA)

Equipment	Lmax	Leq
Excavator - C	45.0	42.0
Haul Truck - C	44.0	41.0
Dump truck - C	44.0	41.0
Total	45.0	46.1

RIPRAP INTERIOR EROSION REPAIR

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 03/28/2024
Case Description: Cargill Solar Sea Salt Maintenance - EA 2024

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Homes -Newark Plant 1	Residential	1.0	1.0	1.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dump truck - C	No	50	84.0		500.0	0.0
Excavator - C	No	50	85.0		500.0	0.0
Tractor - Loader	No	50	84.0		500.0	0.0

Results

Calculated (dBA)

Equipment	Lmax	Leq
Dump truck - C	64.0	61.0
Excavator - C	65.0	62.0
Tractor - Loader	64.0	61.0
Total	65.0	66.1

**** Receptor #2 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Homes - Newark Plant 2	Residential	1.0	1.0	1.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dump truck - C	No	50	84.0		1,150.0	0.0
Excavator - C	No	50	85.0		1,150.0	0.0
Tractor - Loader	No	50	84.0		1,150.0	0.0

Results

Calculated (dBA)

Equipment	Lmax	Leq
Dump truck - C	56.8	53.8
Excavator - C	57.8	54.8
Tractor - Loader	56.8	53.8
Total	57.8	**58.9**

LOCK ACCESS

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 03/28/2024
Case Description: Cargill Solar Sea Salt Maintenance - EA 2024

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Dwellings - Redwood City Plant	Residential	1.0	1.0	1.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator - C	No	50	85.0		5200.0	0.0
Amphibious Excavator	No	50	85.0		5200.0	0.0
Grader - C	No	50	85.0		5200.0	0.0

Results

Calculated (dBA)

Equipment	Lmax	Leq
Excavator - C	44.7	41.6
Amphibious Excavator	44.7	41.6
Grader - C	44.7	41.6
Total	44.7	46.4

**** Receptor #2 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Homes - Newark Plant 2	Residential	1.0	1.0	1.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator - C	No	50	85.0		7200.0	0.0
Amphibious Excavator	No	50	85.0		7200.0	0.0
Grader - C	No	50	85.0		7200.0	0.0

Results

Equipment	Calculated (dBA) Lmax	Leq
Excavator - C	41.8	38.8
Amphibious Excavator	41.8	38.8
Grader - C	41.8	38.8
Total	41.8	43.6

**** Receptor #3 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Homes - Newark Plant 1	Residential	1.0	1.0	1.0

Description	Equipment Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator - C	No	50	85.0		8400.0	0.0
Amphibious Excavator	No	50	85.0		8400.0	0.0
Grader - C	No	50	85.0		8400.0	0.0

Results

Equipment	Calculated (dBA) Lmax	Leq
Excavator - C	40.5	37.5
Amphibious Excavator	40.5	37.5
Grader - C	40.5	37.5
Total	40.5	42.3

VINYL SHEET PILE INSTALLATION STUDY

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 03/28/2024
Case Description: Cargill Solar Sea Salt Maintenance - EA 2024

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Homes - Newark Plant 2	Residential	1.0	1.0	1.0

Description	Equipment Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator - C	No	50	85.0		5000.0	0.0
Tractor - Loader	No	50	84.0		5000.0	0.0
Vibratory Pile Driver - C	No	50	95.0		5000.0	0.0

Results

Equipment	Calculated (dBA) Lmax	Leq
Excavator - C	45.0	42.0
Tractor - Loader	44.0	41.0
Vibratory Pile Driver - C	55.0	52.0
Total	55.0	52.7

STOCK PILE REPLENISHMENT

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 03/28/2024
Case Description: Cargill Solar Sea Salt Maintenance - EA 2024

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Homes - Newark Plant 2	Residential	1.0	1.0	1.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer - C	No	50	85.0		1000.0	0.0
Dump truck - C	No	50	84.0		1000.0	0.0
Tractor - Loader	No	50	84.0		1000.0	0.0

Results

Calculated (dBA)

Equipment	Lmax	Leq
Dozer - C	59.0	56.0
Dump truck - C	58.0	55.0
Tractor - Loader	58.0	55.0
Total	59.0	60.1

SEDIMENT REMOVAL FROM INTAKES

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 03/28/2024
Case Description: Cargill Solar Sea Salt Maintenance - EA 2024

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Pond B-3C	Residential	1.0	1.0	1.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dump truck - C	No	50	84.0		7300.0	0.0
Excavator - C	No	50	85.0		7300.0	0.0
Fork Lift	No	50	79.0		7300.0	0.0

Results

Calculated (dBA)

Equipment	Lmax	Leq
Dump truck - C	40.7	37.7
Excavator - C	41.7	38.7
Fork Lift	35.7	32.7
Total	41.7	41.8

**** Receptor #2 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Homes - Newark Plant 1	Residential	1.0	1.0	1.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dump truck - C	No	50	84.0		450.0	0.0
Excavator - C	No	50	85.0		450.0	0.0
Fork Lift	No	50	79.0		450.0	0.0

Results

Calculated (dBA)

Equipment	Lmax	Leq
Dump truck - C	64.9	61.9
Excavator - C	65.9	62.9
Fork Lift	59.9	56.9
Total	65.9	66.0

**** Receptor #3 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Homes - Newark Plant 2	Residential	1.0	1.0	1.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dump truck - C	No	50	84.0		1600.0	0.0
Excavator - C	No	50	85.0		1600.0	0.0
Fork Lift	No	50	79.0		1600.0	0.0

Results

Calculated (dBA)

Equipment	Lmax	Leq
Dump truck - C	53.9	50.9
Excavator - C	54.9	51.9
Fork Lift	48.9	45.9
Total	54.9	55.0

**** Receptor #4 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Dwellings - Redwood City Plant	Residential	1.0	1.0	1.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)

Dump truck - C	No	50	84.0	140.0	0.0
Excavator - C	No	50	85.0	140.0	0.0
Fork Lift	No	50	79.0	140.0	0.0

Results

	Calculated (dBA)	
Equipment	Lmax	Leq
Dump truck - C	75.1	72.0
Excavator - C	76.1	73.0
Fork Lift	70.1	67.0
Total	76.1	**76.2**

MINOR EARTHMOVING ACTIVITIES

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 03/28/2024
Case Description: Cargill Solar Sea Salt Maintenance - EA 2024

**** Receptor #1 ****

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Homes - Pond B-3C	Residential	1.0	1.0	1.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer - C	No	50	85.0		950.0	0.0
Excavator - C	No	50	85.0		950.0	0.0
Dump truck - C	No	50	84.0		950.0	0.0

Results

	Calculated (dBA)	
Equipment	Lmax	Leq
Dozer - C	59.4	56.4
Excavator - C	59.4	56.4
Dump truck - C	58.4	55.4
Total	59.4	60.9

**** Receptor #2 ****

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Homes - Newark Plant 1	Residential	1.0	1.0	1.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer - C	No	50	85.0		450.0	0.0
Excavator - C	No	50	85.0		450.0	0.0
Dump truck - C	No	50	84.0		450.0	0.0

Results

Calculated (dBA)

Equipment	Lmax	Leq
Dozer - C	65.9	62.9
Excavator - C	65.9	62.9
Dump truck - C	64.9	61.9
Total	65.9	67.4

**** Receptor #3 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Homes - Newark Plant 2	Residential	1.0	1.0	1.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer - C	No	50	85.0		60.0	0.0
Excavator - C	No	50	85.0		60.0	0.0
Dump truck - C	No	50	84.0		60.0	0.0

Results

Calculated (dBA)

Equipment	Lmax	Leq
Dozer - C	83.4	80.4
Excavator - C	83.4	80.4
Dump truck - C	82.4	79.4
Total	83.4	84.9

**** Receptor #4 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Dwellings - Redwood City Plant	Residential	1.0	1.0	1.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer - C	No	50	85.0		75.0	0.0
Excavator - C	No	50	85.0		75.0	0.0
Dump truck - C	No	50	84.0		75.0	0.0

Results

Calculated (dBA)

Equipment	Lmax	Leq
Dozer - C	81.5	78.5
Excavator - C	81.5	78.5
Dump truck - C	80.5	77.5
Total	81.5	82.9

REPAIR OF WATER CONTROL STRUCTURES

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 04/01/2024
Case Description: Cargill Solar Sea Salt Maintenance - EA 2024

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Homes - Pond B-3C	Residential	1.0	1.0	1.0

Description	Impact Device	Usage (%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Air Compressor - c	No	50	83.0		950.0	0.0
Excavator - C	No	50	85.0		950.0	0.0
Crane - c	No	50	85.0		950.0	0.0

Results

Equipment	Calculated (dBA) Lmax	Leq
Air Compressor - c	57.4	54.4
Excavator - C	59.4	56.4
Crane - c	59.4	56.4
Total	59.4	60.6

**** Receptor #2 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Homes - Newark Plant 1	Residential	1.0	1.0	1.0

Description	Impact Device	Usage (%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Air Compressor - c	No	50	83.0		450.0	0.0
Excavator - C	No	50	85.0		450.0	0.0
Crane - c	No	50	85.0		450.0	0.0

Results

Equipment	Calculated (dBA) Lmax	Leq
Air Compressor - c	63.9	60.9
Excavator - C	65.9	62.9
Crane - c	65.9	62.9
Total	65.9	67.1

**** Receptor #3 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Homes - Newark Plant 2	Residential	1.0	1.0	1.0

Description	Impact Device	Usage (%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Air Compressor - c	No	50	83.0		1550.0	0.0
Excavator - C	No	50	85.0		1550.0	0.0
Crane - c	No	50	85.0		1550.0	0.0

Results

Equipment	Calculated (dBA) Lmax	Leq
Air Compressor - c	53.2	50.2
Excavator - C	55.2	52.2
Crane - c	55.2	52.2
Total	55.2	56.4

**** Receptor #4 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Dwellings - Redwood City Plant	Residential	1.0	1.0	1.0

Description	Impact Device	Usage (%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)

Equipment	Calculated (dBA) Lmax	Leq
Air Compressor	74.1	71.0
Excavator - c	76.1	73.0
Crane - c	76.1	73.0
Total	76.1	77.2

REPAIR OF ACCESS STRUCTURES

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 03/28/2024
Case Description: Cargill Solar Sea Salt Maintenance - EA 2024

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Homes - Pond B-3C	Residential	1.0	1.0	1.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Air Compressor - C	No	50	83.0		7300.0	0.0
Crane - C	No	50	85.0		7300.0	0.0
Tractor - C	No	50	84.0		7300.0	0.0

Results

Equipment	Calculated (dBA) Lmax	Leq
Air Compressor - C	39.7	36.7
Crane - C	41.7	38.7
Crane - C	40.7	37.7
Total	41.7	42.6

**** Receptor #2 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Homes - Newark Plant 1	Residential	1.0	1.0	1.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Air Compressor - C	No	50	83.0		450.0	0.0
Crane - C	No	50	85.0		450.0	0.0

Tractor - C	No	50	84.0	450.0	0.0

Results

Equipment	Calculated (dBA) Lmax	Leq
Air Compressor - C	63.9	60.9
Crane - C	62.9	59.9
Tractor - C	61.9	58.9
Total	63.9	64.8

**** Receptor #3 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Homes - Newark Plant 2	Residential	1.0	1.0	1.0

Description	Impact Device	Usage (%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Air Compressor - C	No	50	83.0		1550.0	0.0
Crane - C	No	50	85.0		1550.0	0.0
Tractor - C	No	50	84.0		1550.0	0.0

Results

Equipment	Calculated (dBA) Lmax	Leq
Air Compressor - C	53.2	50.2
Crane - C	52.2	49.2
Tractor - C	51.2	48.2
Total	53.2	54.0

**** Receptor #4 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Dwellings - Redwood City Plant	Residential	1.0	1.0	1.0

Description	Impact Device	Usage (%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Air Compressor - C	No	50	83.0		3500.0	0.0
Crane - C	No	50	85.0		3500.0	0.0
Tractor - C	No	50	84.0		3500.0	0.0

Results

Equipment	Calculated (dBA) Lmax	Leq
Air Compressor - C	46.1	43.1
Crane - C	45.1	42.1
Tractor - C	44.1	41.1
Total	46.1	46.9

MINOR MAINTENANCE AND REPAIR

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 03/28/2024
Case Description: Cargill Solar Sea Salt Maintenance - EA 2024

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Homes - Pond B-3C	Residential	1.0	1.0	1.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Air Compressor - C	No	50	83.0		950.0	0.0
Tractor - Loader	No	50	84.0		950.0	0.0
Crane - C	No	50	81.0		950.0	0.0

Results

Calculated (dBA)

Equipment	Lmax	Leq
Air Compressor - C	57.4	54.4
Tractor - Loader	58.4	55.4
Crane - C	55.4	52.4
Total	58.4	59.0

**** Receptor #2 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Homes - Newark Plant 1	Residential	1.0	1.0	1.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Air Compressor - C	No	50	83.0		450.0	0.0
Tractor - Loader	No	50	84.0		450.0	0.0
Crane - C	No	50	81.0		450.0	0.0

Results

Calculated (dBA)

Equipment	Lmax	Leq
Air Compressor - C	63.9	60.9
Tractor - Loader	64.9	61.9
Crane - C	61.9	58.9
Total	64.9	65.5

**** Receptor #3 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Homes - Newark Plant 2	Residential	1.0	1.0	1.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Air Compressor - C	No	50	83.0		1700.0	0.0
Tractor - Loader	No	50	84.0		1700.0	0.0
Crane - C	No	50	81.0		1700.0	0.0

Results

Calculated (dBA)

Equipment	Lmax	Leq
Air Compressor - C	52.4	49.4
Tractor - Loader	53.4	50.4
Crane - C	50.4	47.4
Total	53.4	54.0

**** Receptor #4 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Dwellings - Redwood City Plant	Residential	1.0	1.0	1.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)

Air Compressor - C	No	50	83.0	140.0	0.0
Tractor - Loader	No	50	84.0	140.0	0.0
Crane - C	No	50	81.0	140.0	0.0

Results

	Calculated (dBA)	
Equipment	Lmax	Leq
Air Compressor - C	74.1	71.0
Tractor - Loader	75.1	72.0
Crane - C	72.1	69.0
Total	75.1	75.7

RE-ESTABLISHING VEHICLE ACCESS BY FILLING BERM GAPS

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 03/28/2024
Case Description: Cargill Solar Sea Salt Maintenance - EA 2024

**** Receptor #1 ****

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Homes-Newark Plant 1	Residential	1.0	1.0	1.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer - C	No	50	85.0		3750.0	0.0
Grader - C	No	50	85.0		3750.0	0.0
Tractor - Loader	No	50	84.0		3750.0	0.0

Results

	Calculated (dBA)	
Equipment	Lmax	Leq
Dozer - C	47.5	44.5
Grader - C	47.5	44.5
Tractor - Loader	46.5	43.5
Total	47.5	**49.0**

ALGAE REMOVAL FROM PONDS

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 03/28/2024
Case Description: Cargill Solar Sea Salt Maintenance - EA 2024

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Pond B-3C	Residential	1.0	1.0	1.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer - C	No	50	85.0		950.0	0.0
Haul Truck - C	No	50	84.0		950.0	0.0
Pickup Truck - C	No	50	55.0		950.0	0.0

Results

Calculated (dBA)

Equipment	Lmax	Leq
Dozer - C	59.4	56.4
Haul Truck - C	58.4	55.4
Pickup Truck - C	29.4	26.4
Total	59.4	59.0

**** Receptor #2 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Homes - Newark Plant 1	Residential	1.0	1.0	1.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer - C	No	50	85.0		450.0	0.0
Haul Truck - C	No	50	84.0		450.0	0.0
Pickup Truck - C	No	50	55.0		450.0	0.0

Results

Calculated (dBA)

Equipment	Lmax	Leq
Dozer - C	65.9	62.9
Haul Truck - C	64.9	61.9
Pickup Truck - C	35.9	32.9
Total	65.9	65.4

**** Receptor #3 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Homes - Newark Plant 2	Residential	1.0	1.0	1.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer - C	No	50	85.0		60.0	0.0
Haul Truck - C	No	50	84.0		60.0	0.0
Pickup Truck - C	No	50	55.0		60.0	0.0

Results

Calculated (dBA)

Equipment	Lmax	Leq
Dozer - C	83.4	80.4
Haul Truck - C	82.4	79.4
Pickup Truck - C	53.4	50.4
Total	83.4	82.9

**** Receptor #4 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Dwellings - Redwood City Plant	Residential	1.0	1.0	1.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)

Dozer - C	No	50	85.0	75.0	0.0
Haul Truck - C	No	50	84.0	75.0	0.0
Pickup Truck - C	No	50	55.0	75.0	0.0

Results

Calculated (dBA)

Equipment		Lmax	Leq
Dozer - C		81.5	78.5
Haul Truck - C		80.5	77.5
Pickup Truck - C		51.5	48.5
	Total	81.5	81.0

FISH SCREEN INSTALLATION AND ACCESS PIER

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 03/28/2024
Case Description: Cargill Solar Sea Salt Maintenance - EA 2024

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Homes - Pond B-3C	Residential	1.0	1.0	1.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator - C	No	50	85.0		8000.0	0.0
Haul Truck - C	No	50	84.0		8000.0	0.0
Impact Pile Driver - C	No	50	101.0		8000.0	0.0

Results

Equipment	Calculated (dBA) Lmax	Leq
Excavator - C	40.9	37.9
Haul Truck - C	39.9	36.9
Impact Pile Driver - C	56.9	53.9
Total	56.9	54.1

**** Receptor #2 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Homes - Newark Plant 1	Residential	1.0	1.0	1.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator - C	No	50	85.0		12700.0	0.0
Haul Truck - C	No	50	84.0		12700.0	0.0
Impact Pile Driver - C	No	50	101.0		12700.0	0.0

Results

Equipment	Calculated (dBA) Lmax	Leq
Excavator - C	36.9	33.9
Haul Truck - C	35.9	32.9
Impact Pile Driver - C	52.9	49.9
Total	52.9	50.1

FHWA RCNM

ADDRESS PRIORITY BERMS FOR SEA LEVEL RISE BY INCREASING BERM HEIGHTS

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 03/31/2024
Case Description: Cargill Solar Sea Salt Maintenance - EA 2024

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Homes - Newark Plant 2	Residential	1.0	1.0	1.0

Description	Impact Device	Usage (%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	50	85.0		1070.0	0.0
Excavator - C	No	50	85.0		1070.0	0.0
Dump truck - C	No	55	84.0		1070.0	0.0

Results

Equipment	Calculated (dBA) Lmax	Leq
Dozer	58.4	55.4
Excavator - C	58.4	55.4
Dump truck - C	57.4	54.8
Total	58.4	**59.8**

APPENDIX G Project Mailing List

(Will Be Included in the Final Environmental Assessment)