NORTH MARE ISLAND EXISTING CONDITIONS REPORT

Project Zeus

Mare Island, Vallejo, California

Prepared by:

Amec Foster Wheeler Environment & Infrastructure, Inc.

May 1, 2017

Project No. 6166150082

May 1, 2017

Project Zeus
Confidential Client

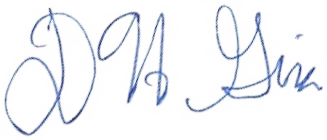
Subject: North Mare Island Existing Conditions Report
Project Zeus
Mare Island Site
Vallejo, California
Project No. 6166150082

Dear Project Zeus Client Team:

Amec Foster Wheeler Environment & Infrastructure, Inc. (Amec Foster Wheeler) is pleased to present this North Mare Island Existing Conditions Report for the Project Zeus Mare Island site, located in Vallejo, California. We appreciate the opportunity to work with you on this project. If you have any questions or require additional information, please feel free to contact Dan Gira at daniel.gira@amecfw.com or (805) 962-0992.

Sincerely,

Amec Foster Wheeler Environment & Infrastructure, Inc.



Dan Gira
Project Manager
Direct Tel.: (805) 962-0992
E-mail: daniel.gira@amecfw.com

TABLE OF CONTENTS

1. Introduction 1
1.2 Previous Environmental Review 5
1.3 Regulatory Setting 6
2. Environmental Resources Areas 8
2.1 Aesthetics 8
2.2 Agricultural and Forestry Resources 14
2.3 Air Quality 15
2.4 Biological Resources 22
2.5 Cultural Resources 28
2.6 Geology and Soils 34
2.7 Greenhouse Gas Emissions 35
2.8 Hazards and Hazardous Materials 41
2.9 Hydrology and Water Quality 45
2.10 Land Use and Planning 52
2.11 Mineral Resources 56
2.12 Noise 56
2.13 Population and Housing 62
2.14 Public Services 66
2.15 Recreation 68
2.16 Transportation/Traffic 70
2.17 Utilities and Service Systems 75
2.18 Energy Conservation 82
3. References 86

List of Acronyms and Abbreviations

$\mu g/m^3$	micrograms per cubic meter
AADT	annual average daily trips
AAQS	Ambient Air Quality Standards
AB	Assembly Bill
ABAG	Association of Bay Area Governments
ACM	asbestos-containing material
AF	acre feet
AFY	acre-feet per year
APS	Alternative Planning Strategy
AQI	Air Quality Index
AQMP	Air Quality Management Plan
BAAQMD	Bay Area Air Quality Management District
Basin Plan	San Francisco Bay Basin Water Quality Control Plan
BAU	business-as-usual
Bay Area Air Basin	San Francisco Bay Area Air Basin
Bay Plan	San Francisco Bay Plan
BCDC	San Francisco Bay Conservation and Development Commission
Bgs	below ground surface
BLM	Bureau of Land Management
BMP	best management practice
BRAC	Base Realignment and Closure
C_3H_4O	Acrolein
CAA	Clean Air Act
CAFÉ	Corporate Average Fuel Economy
CalARP	California Accidental Release Program
CalEPA	California Environmental Protection Agency
CALGreen	California Green Building Code
CalRecycle	California Department of Resources Recycling and Recovery
Caltrans	California Department of Transportation
CAP	Clean Air Plan
CARB	California Air Resources Board
CARE	Community Air Risk Evaluation
CASGEM	California Statewide Groundwater Elevation Monitoring
CBC	California Building Code
CCC	California Coastal Commission
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFC	Chloroflourocarbons
CFC	California Fire Code
CH_4	Methane
City	City of Vallejo

CLG	Certified Local Government
CMP	Congestion Management Program
CNDDB	California Natural Diversity Database
CO	carbon monoxide
CPT	cone penetration test
CRHR	California Register of Historic Resources
CUPA	California Unified Program Agency
CWA	Clean Water Act
Cy	cubic yards
dB	Decibel
dBA	A-weighted decibel scale
DOD	Department of Defense
DPM	Diesel Particulate Matter
DTSC	Department of Toxic Substances Control
DWR	Department of Water Resources
EFH	Essential Fish Habitat
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EOP	Emergency Operations Plan
EPCRA	Emergency Planning Community Right-to-Know Act
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FIRM	Flood Insurance Rate Map
FOST	Finding of Suitability to Transfer
FY	fiscal year
GHG	greenhouse gas
GVRD	Greater Vallejo Recreation District
GWh	gigawatt hours
HCFC	Hydrochloroflourocarbons
IPR	Installation Restoration Program
IR17	Installation Remediation site 17
IWMA	Integrated Waste Management Act
IWMP	Integrated Waste Management Plan
kWh	kilowatt hours
LCFS	low carbon fuel standard
Ldn	day-night average noise level
LHMP	Local Hazard Mitigation Plan
LID	low-impact design
LMD	Landscape Maintenance District
LOS	Level of Service
LUCE	Land Use and Circulation Element
MAP-21	Moving Ahead for Progress in the 21st Century
MBTA	Migratory Bird Treaty Act
mgd	million gallons per day
MINSY	Mare Island Naval Shipyard
MIRIS	Mare Island Reuse Infrastructure Study
MLD	Most Likely Descendants
MMT	million metric tons
MPO	metropolitan planning organization

MS4	municipal separate storm sewer system
MTC	Metropolitan Transportation Commission
$MTCO_2e$	metric tons of carbon dioxide equivalent
MW	Megawatt
N_2O	nitrous oxide
NAC	noise abatement criteria
NAHC	Native American Heritage Commission
National Register	National Register of Historic Places
NFIP	National Flood Insurance Program
NMFS	National Marine Fisheries Service
NO_2	nitrogen dioxide
NOAA Fisheries	National Oceanic and Atmospheric Administration, National Marine Fisheries Service
NOI	Notice of Intent
NOT	Notice of Termination
Nox	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
O_3	ozone
OPR	Office of Planning and Research
OSHA	Occupational Safety and Health Administration
PAH	polycyclic aromatic hydrocarbons
Pb	lead
PCB	polychlorinated biphenyl
PDA	Priority Development Area
PM_{10}	particulate matter up to 10 micrometers in size
$PM_{2.5}$	particulate matter up to 2.5 micrometers in size
Porter-Cologne	Porter-Cologne Water Quality Control Act
Ppm	parts per million
PRC	Public Resources Code
Psi	pounds per square inch
Psig	pounds per square inch gauge
RCPS	Regional Climate Protection Strategy
RMP	Regional Monitoring Plan
ROG	reactive organic gases
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Board
SAB	State Allocation Board
SB	Senate Bill
SB X7-7	2009 Water Conservation Act
SCS	Sustainable Communities Strategy
SEIR	Subsequent EIR
Sf	square feet
SGMA	Sustainable Groundwater Management Act
SHPO	State Historic Preservation Office
SO_2	sulfur dioxide

SOI	Sphere of Influence
SolTrans	Solano County Transit
SR	State Route
STA	Solano County Transportation Authority
STIP	State Transportation Improvement Program
SVOC	semi-volatile organic compound
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
SWRCY	State of California Solid Waste and Recycling Facilities
TAC	Toxic Air Contaminant
TCR	tribal cultural resources
TDA	Transportation Development Act
TMDL	Total Maximum Daily Load
tpd	tons per day
TSCA	Toxic Substances Control Act
U.S.	United States
U.S. EPA	United State Environmental Protection Agency
USACE	United States Army Corps of Engineers
USBR	United State Bureau of Reclamation
USFWS	United State Fish and Wildlife Service
UST	Underground Storage Tank
UWMP	Urban Water Management Plan
VCUSD	Vallejo City Unified School District
VdB	vibration decibel
VFD	Vallejo Fire Department
VMT	vehicle miles traveled
VOC	volatile organic compound
VPD	Vallejo Police Department
VSFCD	Vallejo Sanitation and Flood Control District
WSA	Water Supply Assessment
WTP	Water Treatment Plant
ZEV	zero-emission vehicles

1. INTRODUCTION

This document provides a detailed discussion of the current existing conditions of the Project site, Mare Island, and surrounding region. Below is a summary of the environmental setting and the regulatory framework that will guide potential redevelopment of the North Mare Island (Project) site for each resource area identified by the California Environmental Quality Act (CEQA) Guidelines.

1.1.1 Mare Island Background

The Project site is located on Mare Island within the City of Vallejo (City), just south and adjacent to State Route (SR) 37, and is bounded by the Mare Island Strait and the City to the east, and San Pablo Bay National Wildlife Refuge to the north (Figure 1). Historically, Mare Island was home to the Naval Shipyard Mare Island, which has since been decommissioned and whose parcels have been transferred to the State of California and the City (Figure 2).

1.1.2 Mare Island Historic Setting

Established in 1854 as the first Pacific naval installation in the United States (U.S.), the Mare Island Naval Shipyard (MINSY) began constructing naval sailing ships beginning in the 1860s. Over the course of operation, a total of 513 marine vessels were constructed and approximately 1,200 vessels were repaired or overhauled at the MINSY facilities (City of Vallejo 2013a). At the time of U.S. involvement in World War II, Mare Island reached the peak of its operational capacity, employing approximately 41,000 individuals.

Following the end of World War II, facility operations began to wane, and in the 1950s, the Navy designated the facility as a building and overhaul yard for submarines. Due to Federal budget cuts and a goal to reduce the national deficit, many defense facilities saw decreases in operations. As a result of such cutbacks, the footprint of installations within the MINSY began to gradually decline over time, and work forces dropped to approximately 10,000 employees in the late 1980s and an estimated 5,800 employees by the early 1990s (City of Vallejo 2013a).

Page 2

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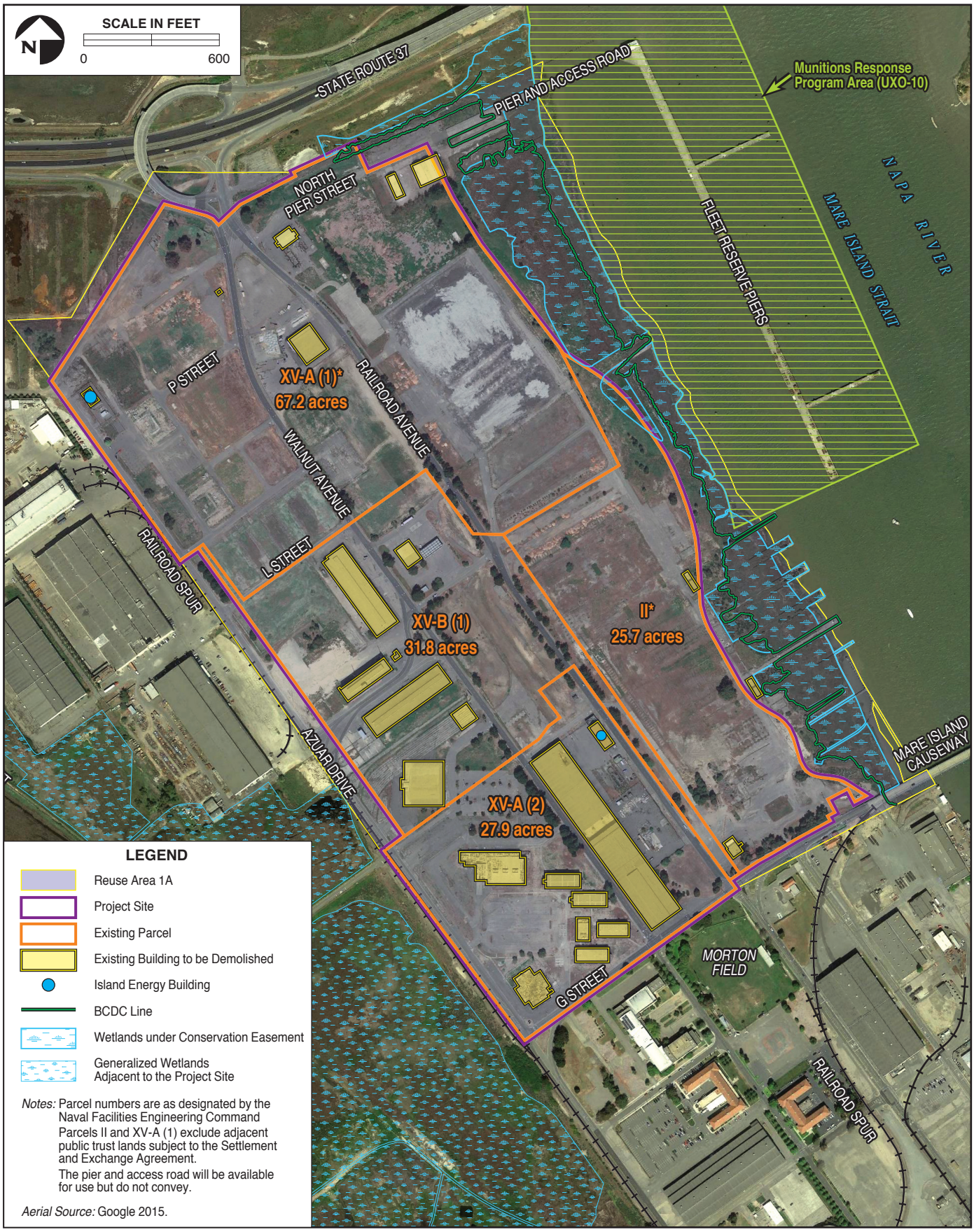
Regional Location

FIGURE 1



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Project Site

FIGURE 2

Historic North Mare Island circa 1958 (Left), circa 1974 (Center), and the present day Project site (Right). Prior to the height of base utilization and development during WWII, base activities and development saw an eventual decline. Over the 35 years leading up to the eventual closure of the MINSY, buildout of the base began to decline. In the era preceding World War II, much of the base remained largely developed. By the mid-'70s, several large facilities had already begun to be demolished, piers north of and adjacent to the Mare Island Causeway were largely no longer in use, and naval fleet storage/decommissioning activities were on the decline. Today, little remains of the historic MINSY except for a small handful of buildings, the northern Fleet Reserve Pier, and the skeletons of some historic infrastructure.

1.1.3 Mare Island Reuse Plan

Identified for closure in 1993 under the Base Realignment and Closure (BRAC) process, the MINSY began commencement of the decommissioning of onsite naval assets for the eventual transfer of Navy property to the City. Prior to full decommissioning and closure of the base in 1996, the City prepared the Mare Island Reuse Plan (1994) to identify and describe the findings, conclusions, and proposals regarding reuse of the MINSY. This preliminary planning document identifies the goals of the City and its vision for future use and economic feasibility of the island. The Mare Island Reuse Plan identified several districts and development areas, including the initial identification of the area north of the Mare Island Causeway for Light Industry reuse (City of Vallejo 1994). In 1994, the City accepted and adopted the Mare Island Reuse Plan as the guiding document for reuse activities on Mare Island.

1.1.4 Mare Island Specific Plan

The City prepared and adopted the Mare Island Specific Plan in 1999 in order to establish allowable land uses and guide development on the former Navy property. The Specific Plan was amended in 2013 to clarify development guidelines for the Project site and encourage industrial development. The Mare Island Specific Plan identified the Project site as "Reuse Area 1A" which is planned for 1.238 million sf of light industrial, commercial, office research and development and warehouse uses. Specifically, the proposed development program for Reuse Area 1A includes 54,000 sf of office/research and development space, 348,000 sf of retail space, 370,000 sf of warehouse space, 450,000 sf of light industrial, and 16,000 sf educational/civic space.

1.2 Previous Environmental Review

The City has prepared numerous environmental documents to evaluate the potential impacts associated with reuse and redevelopment of Mare Island, including redevelopment of the Project site. These documents include:

- 1998 Environmental Impact Statement (EIS)/Environmental Impact Report (EIR) for the Disposal and Reuse of Mare Island Naval Shipyard and 1999 Addendum
- 2003 Initial Study for the Mare Island Amended and Restated Specific Plan
- 2005 Subsequent EIR for the Mare Island Specific Plan, Amended and Restated and 2007 Amendment

1.2.1 1998 EIS/EIR for the Disposal and Reuse of Mare Island Naval Shipyard and 1999 Addendum

The 1998 EIS/EIR for the Disposal and Reuse of Mare Island Naval Shipyard and its 1999 Addendum (referred to entirely as the 1999 CEQA Documents) identified impacts resulting from implementation of the Mare Island Reuse Plan. The 1999 CEQA Documents analyzed the environmental impacts associated with disposal of the Navy base, as well as impacts associated with implementation of several reuse alternatives. Mitigation measures were

proposed, as necessary, to lessen or avoid the significant impacts associated with implementation of each reuse alternative. Under the Reuse Plan Alternative, reuse and redevelopment of the island would occur as described under the Mare Island Reuse Plan, which anticipated that buildout of Reuse Area 1 would total of 1,966,000 sf of non-residential development.[3]

1.2.2 2003 Initial Study for the Mare Island Amended and Restated Specific Plan

Following approval of the 1999 CEQA Documents, the City Council approved and adopted the 1999 Mare Island Specific Plan. The 1999 Mare Island Specific Plan incorporated the goals and visions of the Mare Island Reuse Plan and the mitigation measures identified in the 1999 CEQA Documents to better support reuse and redevelopment of the island in an environmentally and economically feasible manner. An initial study was prepared in 2003 to assess impacts and guide environmental review of implementing the amendments proposed by Lennar Mare Island – the City approved Master Developer of Reuse Areas 1B-10A located immediately southwest of Reuse Area 1A) – to the Mare Island Specific Plan.[4]

1.2.3 Mare Island Amended and Restated Specific Plan Subsequent EIR

In 2005, the City prepared a Subsequent EIR (SEIR) for the Mare Island Amended and Restated Specific Plan. This document was a focused EIR that analyzed resource areas identified as having potentially significant impacts by the 2003 Initial Study and focused on impacts resulting from the redevelopment of each Reuse Area identified under the 1999 Specific Plan. The 2005 SEIR evaluated a total developed area for Reuse Area 1A of 1,238,000 square feet (sf) of non-residential land uses, consisting of 54,000 sf of office, 450,000 sf of light industrial, 348,000 sf of retail, 370,000 sf of warehouse, and 16,000 sf of educational/civic uses. The area was proposed for comprehensive development with new buildings and an enhanced internal road network as a warehouse/distribution district or office park, similar to the plans of the proposed project. The 2005 SEIR was certified by the Vallejo City Council in October 2005.

1.3 Regulatory Setting

Land use and development potential within the Project site and vicinity are governed by the Specific Plan and the City's General Plan and Municipal Code, as discussed below.

1.3.1 City of Vallejo General Plan – Land Use Element/Land Use Map

Though not originally governed under the 1983 City General Plan, the City General Plan was amended in 1996 to reformat its organization and reflect closure and reuse of the MINSY. The City General Plan was most recently amended in 1999 to reflect newly adopted City policy. The Project site is subject to policies and regulations within the City's 1999 General Plan (as amended), with land uses designated on the site as "Employment." This is a broad designation that characterizes uses that generate significant employment including industrial, commercial, warehouse, research and development, and office uses (City of Vallejo 1999). The General Plan contains policies that defer guidance for development and specific development standards to the Mare Island Specific Plan. The Mare Island Specific Plan is consistent with the latest Draft

[3] What is referred to as Reuse Area 1 in the 1999 CEQA Documents was later subdivided into Reuse Area 1A and 1B in the 1999 Specific Plan.

[4] Amendments made to the 1999 Mare Island Specific Plan changes proposed by Lennar Mare Island were adopted in 2003 and are referred to as the 2003 Mare Island Specific Plan.

Propel Vallejo General Plan 2040 (2016) and does not propose any changes to the Mare Island Specific Plan.

1.3.2 City of Vallejo Zoning Ordinance

The City of Vallejo Zoning Ordinance zones the site as MUPD – Mixed Use Planned Development. The MUPD district is intended to integrate industrial, mixed use commercial, retail, and residential uses and implement policies of the General Plan and Specific Plan. These MUPD zoning district facilitates development or redevelopment of land which is not being utilized to its best advantage due to special circumstances which prevent its development or redevelopment through the conventional application of the regulations of the Zoning Ordinance (Section 16.112.010). Due to the special designation and specific development standards of the zoning district, planned development within MUPD zoned districts requires development and submittal of specific development standards to the City Economic Development Department, Planning Division.

1.3.3 Mare Island Amended and Restated Specific Plan

The Mare Island Specific Plan was developed to establish land uses and guide development of Mare Island following closure of the Naval Shipyard Mare Island and transfer of properties to the City. It was originally adopted by the City in 1999 and was amended and restated in 2005 and recently amended in 2013. Within the Specific Plan, the Project site is identified for the development of approximately 1.238 million sf of industrial, commercial, office research and development, and warehouse uses. Policies and regulations of the Specific Plan are intended to focus and guide reuse and redevelopment of the island in an economically beneficial manor while complying with the policies, goals, and regulations of all authoritative groups with jurisdictional relations to Mare Island.

2. ENVIRONMENTAL RESOURCES AREAS

2.1 Aesthetics

Mare Island is currently in various states of redevelopment, as recommended by the Mare Island Specific Plan after decommissioning of the Navy base. Mare Island is currently developed with over 3.5 million sf of industrial and commercial space and 324 residences. Mare Island includes some historic buildings, docks and structures along the waterfront from its days as a Navy base.

Looking west towards the Project site from River Park along Mare Island Way.

Visual Aesthetic of the Site

The Project site is surrounded by industrial and urban development and vacant lots. Views of the Project site are primarily from the City from across Mare Island Straight to the east, and from SR 37 to the north. The table below summarizes the land uses adjacent to the site with a visual description. The Project site is not located within the Mare Island Historic District Boundary, nor are any designated scenic resources located on the Project site.

Table 2.1-1: Description of Visual Quality of the Site

Location, Relevant to Project Site	Adjacent Land Use	Visual Description
North of Site	North Pier Street, a narrow stretch of tidal wetlands, then SR 37, a California Scenic Highway	Abandoned parking lot, abandoned stormwater basin, and SR 37 overpass over established wetlands and sloughs
East of Site	Tidal wetlands adjacent to Mare Island Straight. East of Mare Island Straight lies River Park, a city passive recreation park with views of Mare Island across the Mare Island Straight. Farther east of River Park are Wilson Avenue and the Vallejo Heights residential area	Tidal wetlands extend east of the Project site to the Mare Island Straight and from the eastern edge of Mare Island Straight to River Park, providing a natural buffer between Wilson Ave and the Project site. River Park encompasses 55 acres and includes a gazebo, rose garden, wetlands and a picnic area.
South of Site	G Street and the Causeway Bridge; Morton Field Park (sports complex), Historic Ships Memorial at Pacific Square, industrial use buildings, Vallejo City Unified School District Administrative Offices; nearest residence is 0.5-mile south	G Street is the primary two- to three-lane east-west arterial roadway conveying traffic to and from the Mare Island Causeway. Morton Field Park is a community sports grass playing field with bleachers, night lighting, a lighted scoreboard, and is surrounded by a chain link fence. The Vallejo Unified School District Building is a large stucco structure

		with a red tiled roof. The adjacent parking lot is extensive and has night lighting.
West of Site	Recycling facility, separated from the Project site by Azuar Drive; San Pablo Bay	Azuar Drive is a two-lane north-south oriented roadway which creates the western boundary of the site. The recycling facility contains a large metal warehouse and bales of metal pieces and heavy equipment to process metal outside. The recycling facility is separated from Azuar Drive by historic railroad spurs adjacent and to the west of the Project site. Further to the west are open space areas consisting of generalized wetlands.

Scenic Roadways

Caltrans designates State Scenic Highways to protect and enhance the natural beauty of the land adjacent to these highways. A highway is not officially 'designated' until the local governing body applies to Caltrans for scenic highway approval, adopts a Corridor Protection Program, and receives notification that the highway has been officially designated. There are no official Scenic Highways in Vallejo. However, SR 37 has been listed as eligible for this designation and Mare Island Way/ Wilson Avenue from SR 37 to Interstate 780 was surveyed for possible inclusion as a scenic route. Table 2.1-2 below notes specific features that may detract from the quality of scenic roadways.

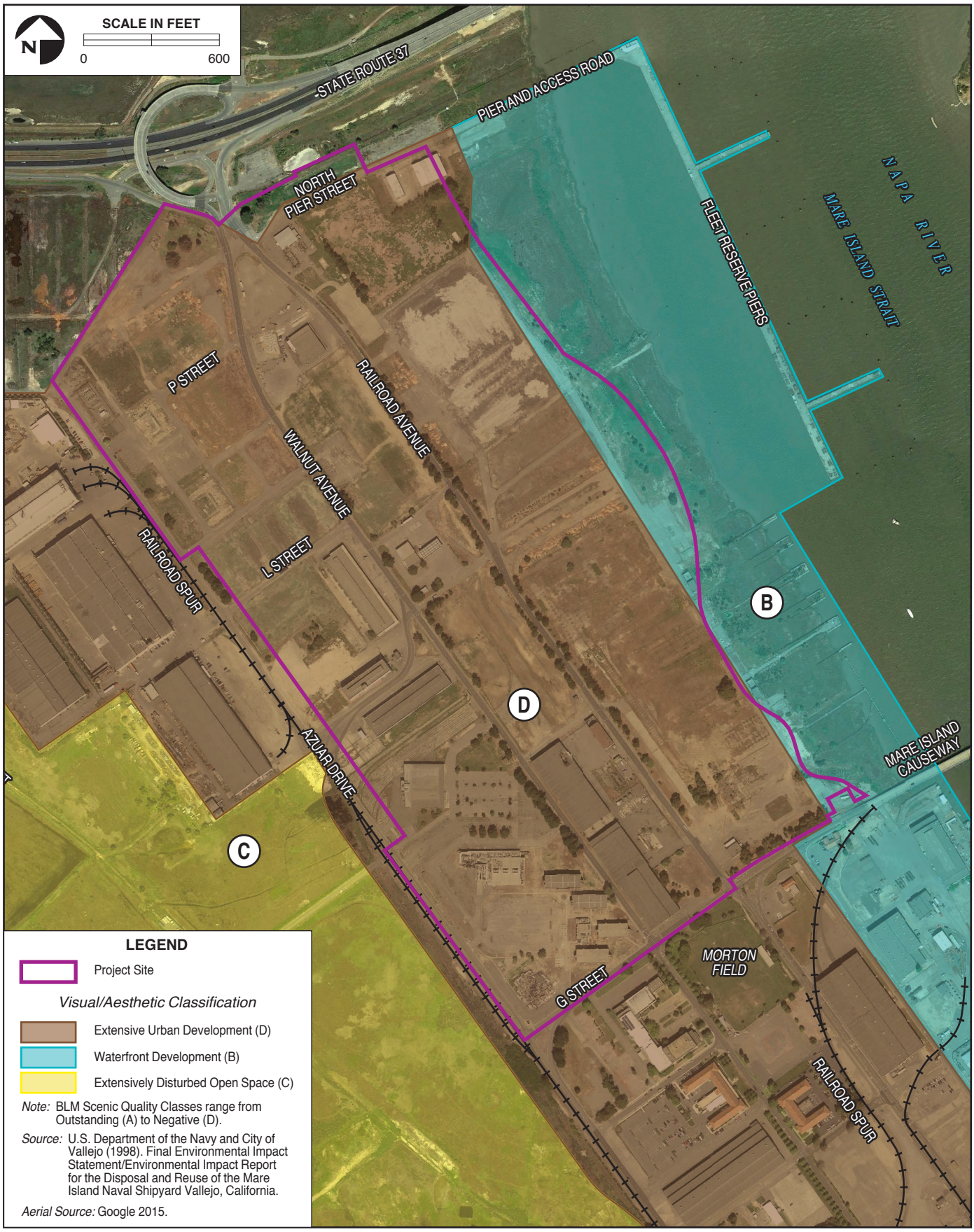
Table 2.1-2: Visually Distracting Features on the Project Site

Noted in the General Plan	Found on the Project Site
Excessive overhead wires	
Litter or fill dumping	X
Unkempt storage facilities	X
Uncoordinated development and undeveloped lots	X
Minimal amount of landscaping or lack of landscaping	X
Deteriorated structures	X
Cluttered signing	

Source: City of Vallejo 1999.

Views of the Project site from surrounding uses consist primarily of large industrial buildings, aging infrastructure, existing MINSY support structures that have been left in place and abandoned, and open space areas consisting of overgrown ruderal vegetation and degraded paved surfaces.

The current views of the Project site from the two potential scenic roadways (not yet officially designated) include dilapidated buildings, open land with no landscaping, and chain-link fence surrounding much of the site. The Project site can be characterized as a former Navy base with buildings in varying states of disrepair, dilapidated infrastructure, and unmaintained lowlands. As previously identified in the 1998 EIS/EIR, much of the site is characterized as Extensive Urban Development, including abandoned buildings and deteriorated parking areas, with a negative (D) Bureau of Land Management (BLM) Scenic Quality rating (Figure 3), due to the dilapidated state of the site, visual aesthetic of onsite structures, and the current nature of development.



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Visual/Aesthetic Classification

FIGURE 3

Existing Onsite Development

Of the 25 remnant U.S. Navy buildings, only two are still in use. Roughly half of the buildings were constructed between 1938 and 1946. With the exception of a reinforced concrete building constructed in 1959, the remainder of the buildings were constructed between 1971 and 1985 and have no redeeming architectural integrity. The buildings' visual attributes vary, including corrugated metal sided buildings, and concrete block buildings. Former uses include a former gas cylinder storehouse, gas station, barracks, training and storage facilities, warehouse, switching station, fire station, pier support areas, and a former paint factory (refer to Table 2.1-3). Infrastructure on site includes utility and sewer infrastructure, a railroad spur and an internal road network. Buildings are typically 1-2 stories in height, with several 3-4 story structures, and often border by large weedy deteriorating parking areas.

Table 2.1-3. Existing Onsite Structures

Navy Parcel	Existing Building Identification Number	Building Size (sf)	Floors	Date of Construction	Use/Construction Details
XV-A-1 (City)	653	278	1	1943	Exterior is clad in redwood drop siding on a poured concrete foundation. Originally constructed and currently used as a pump house.
	673	14,000	1	1942	Original function was "Gas Cylinder Storehouse".
	777	13,364	1	Unknown	Utilized by Island Energy; Contains 20 megawatt electrical transformer.
	791	12,000	1	1946	Clad corrugated metal over a wood frame.
	793	4,000	1	1946	Corrugated metal on concrete piers.
	989	5,415	1	1972	Corrugated aluminum siding on a concrete slab.
XV-A-2 (City)	571	137,408	2	1942	Corrugated steel exterior with a concrete foundation. Used to support shipbuilding activities.
	577	5,684	1	1942	Utilized by Island Energy; Corrugated steel exterior; Contains electric switching and used for equipment storage.
	897	34,800	1	1971	Concrete panel exterior.
	995	24,030	3	1975	3 story concrete construction.
	997	24,030	3	1979	3 story concrete construction.
	999	5,600	2	1979	Unknown.
	1013	24,030	3	1985	3 story concrete construction.
	1015	24,030	3		3 story concrete construction.
XV-B-1 (Federal)	499	42,000	1	1938	The building was originally part of the Paint Factory Complex.
	503	33,800	4	1940	Originally used as a paint shop.
	517	1,117	1	1941	Constructed of poured concrete and situated on a concrete foundation.

	601	88,000	2	1942	Reinforced concrete building.
	663	625	1	1993	Stucco exterior with continuous concrete foundation.
	857	871	1	1959	Reinforced concrete on a concrete foundation.
	993	6,000	1	1975	Vertical aluminum panels over a steel frame.
	1001	33,600	1	1981	Concrete panels with brick and redwood siding.
II (City)	589	2,848	1	1942	Electrical distribution center.
	593	2,848	1	1942	Electrical distribution center.
	641	6,554	2	1941	Reinforced concrete walls. Built and currently used as a fire station.

2.1.1 Regulatory Setting

State Policies and Regulations

California Scenic Highway Program: State Scenic Highways are designated by the California Department of Transportation (Caltrans) to promote the protection and enhancement of the natural scenic beauty of California's highways and adjacent corridors. Caltrans is the State agency responsible for the planning, construction, and maintenance of highway, bridge, and rail transportation. California's Scenic Highway Program was created by the Legislature in 1963. The State laws governing the Scenic Highway Program are found in the Streets and Highways Code, Section 260 *et seq*. The portion of SR 37 west of SR 29 is designated as a Scenic Highway.

California Energy Code (California Code of Regulations, Title 24, Part 6): California Energy Code (Part 6 of Title 24) contains standards for lighting that are intended to improve energy efficiency, and reduce light pollution and glare by regulating light power and brightness and sensor controls. The California Building Code (Part 2) also includes standards for outdoor lighting that are intended to improve energy efficiency, and reduce light pollution and glare by regulating light power and brightness, shielding, and sensor controls.

Regional Policies and Regulations

San Francisco Bay Conservation and Development Commission (BCDC): In 1969, the McAteer-Petris Act designated BCDC as the agency responsible for the protection of the San Francisco Bay and its natural resources. BCDC fulfills this mission through implementation of the San Francisco Bay Plan (Bay Plan), an enforceable plan that guides the future protection and use of San Francisco Bay and its shoreline. The Bay Plan includes a range of policies on public access, water quality, fill, and project design. The Bay Plan also designates shoreline areas that should be reserved for water-related purposes such as ports, industry, public recreation, airports, and wildlife areas. As a permitting authority along the San Francisco Bay shoreline, BCDC is responsible for granting or denying permits for any proposed fill, extraction of materials, or change in the use of any water, land, or structure within BCDC's jurisdiction. Their jurisdiction extends from all tidally influenced portions of the site up to the Mean High Tide and then continuing up to 100-feet inland. Proposed development in the project area that is located within 100 feet from the Bay shoreline is reviewed by BCDC under its established public

access design guidelines that seek to maximize public access to the water, encourage water-oriented uses, and protect valuable environmental resources along the shoreline.

Local Policies and Regulations

City of Vallejo Municipal Code: The City of Vallejo Municipal Code is organized by Title, Chapter, and Section. The most recent Municipal Code was passed on July 28, 2015 by Ordinance No. 1715N.C. (2d), and was updated on August 26, 2015. Title 16 is the Zoning Ordinance and contains development requirements for the City's Zoning Districts that regulate several aspects of development that affect visual character, such as building heights, landscaping, signage, yards, and lot coverage.

The following Chapters and Sections within the Zoning Ordinance also relate to aesthetics:

- **Chapter 16.70 – Screening and Landscaping Regulations** provides standards for screening, fences, walls, and landscaping within the City for the conservation and protection of property, the assurance of safety and security, the enhancement of privacy, the control of dust, the abatement or attenuation of noise, and the improvement of the visual environment, including the provision of a neat appearance in keeping with neighborhood character.
- **Chapter 16.72 – Performance Standards Regulations** provides standards for humidity, heat, cold, and glare. Section 16.72.100 requires that all commercial and industrial uses shall be operated to not produce glare that is readily detectible by the average person at the following points of determination for the following zones:
    - Within any residential, commercial, or special purpose Zoning District, the point of determination is at or beyond any lot line containing the uses.

Mare Island Specific Plan: The Mare Island Specific Plan provides guidelines and standards for architecture, site furnishings, lighting, signage, and urban design. The Plan includes the following guidelines intended to reduce the glare effects of exterior lighting:

- Illumination levels for surface parking and pedestrian walkways should be medium range lighting that provides sufficient light for safety without creating flare for adjacent properties.
- Lighting levels below City requirements may be utilized, as approved by the City Engineer, for residential streets in order to avoid over lighting in residential areas.
- In historic and residential areas, street lighting should be limited to approximately 16 feet in height to match the scale of existing lights.
- Light fixtures should be shielded or diffused to avoid flare to motorists, pedestrians, and residents.

2.2 Agricultural and Forestry Resources

The Project site is located within Reuse Area 1A, which is designated by the City of Vallejo as Employment under the City General Plan and planned for light industrial, warehouse, and office park spaces. The site does not contain any Prime Farmland or Farmland of Statewide Importance (Department of Conservation 2015a). There are no agricultural uses for the land, nor any Williamson Act contracts in the area (Department of Conservation 2013). Lastly, Mare Island does not contain any forest or timberland areas.

2.3 Air Quality

Regional Air Quality

The Project site is located in the San Francisco Bay Area Air Basin (Bay Area Air Basin), which covers all or portions of each of the nine counties surrounding the San Francisco Bay, including Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, southwestern Solano, and southern Sonoma Counties. The Bay Area Air Basin is governed by the Bay Area Air Quality Management District (BAAQMD), a public agency responsible for regulating stationary sources of air pollution in its jurisdiction.

In Solano County during summer and fall months, high pressure offshore, coupled with thermal low pressure in the Central Valley, draws marine air eastward through the Carquinez Strait almost daily. Temperatures along the coast and inland tend to remain moderate. Winter temperatures range from cool overnight to moderate during the day, while summer temperatures range from moderate overnight to warm during the day. Afternoon westerly winds are common in the southern portion of Solano County, along the Carquinez Strait. Annual rainfall in the Bay Area Air Basin totals range from 13 inches near the coast to 22 inches inland in Fairfield (BAAQMD 2016a).

Air pollutants in the Bay Area Air Basin are generated primarily from the regions concentration of industrial facilities, several airports, and a dense freeway and surface street network. On-road motor vehicles are the largest emission sources of carbon monoxide (CO), nitrogen oxides (NOx), and reactive organic gases (ROG). Low mountains and hills of the Coastal Range create a ring that surrounds most of the San Francisco Bay, including San Pablo Bay to the north, which can hold pollutants in the basin, particularly in the southeastern portions of the Bay Area Air Basin. Air pollutants leave the basin as winds carry them through gaps in the mountains, contributing to poor air quality in downwind basins (California Air Resources Board [CARB] 2016).

The major regional air pollutants of concern in the Bay Area Air Basin are ozone (O_3) in the summer and particulate matter up to 2.5 micrometers in size (PM2.5) in the winter. During summer months, most of Solano County is exposed to prevailing westerly winds through the Carquinez Strait, which mixes and reduces O_3 levels by drawing cooler, marine air from the Pacific Ocean and San Pablo Bay eastward. However, when the marine flow is weak or nonexistent, O_3 levels may exceed health standards on a few days each year. During winter months, PM2.5 concentrations can exceed health standards when air pollution is transported to Solano County from the Central Valley due to prevailing easterly winds. Local residential wood burning can also cause high particulate levels on cold, calm evenings during winter (BAAQMD 2016a).

The Bay Area Air Basin is currently in non-attainment of several state and federal air quality standards, including state standards for 8-hour O_3, 1-hour O_3, annual arithmetic mean for particulate matter up to 10 micrometers in size (PM10), 24-hour PM10, and the annual arithmetic mean for PM2.5; and federal standards for 8-hour O_3 and 24-hour PM2.5. Criteria pollutants that are currently in nonattainment of state or federal standards, as well as the applicable standard, are shown in Table 2.3-1.

Table 2.3-1: Criteria Air Pollutant in Non-attainment of State or Federal Standards

Pollutant	Averaging Time	California Standard		National Standard	
		Concentration	Status	Concentration	Status
O_3	8-hour	0.070 ppm	Nonattainment	0.070 ppm	Nonattainment
	1-hour	0.09 ppm	Nonattainment	N/A	N/A
PM10	Annual Arithmetic Mean	20 µg/m^3	Nonattainment	N/A	N/A
	24-hour	50 µg/m^3	Nonattainment	150 µg/m^3	Unclassified
PM2.5	Annual Arithmetic Mean	12 µg/m^3	Nonattainment	12 µg/m^3	Unclassified/ Attainment
	24-hour	N/A	N/A	35 µg/m^3	Nonattainment

Notes: ppm=parts per million, µg/m^3=micrograms per cubic meter, N/A = not applicable.
Source: BAAQMD 2015a.

In addition to state and federal standards, in September 2010 the BAAQMD adopted the Bay Area 2010 Clean Air Plan (CAP), which provides an integrated, multi-pollutant strategy to improve air quality, protect public health, and protect the climate. The BAAQMD has developed air quality control measures, which are described in their 2010 CAP, as well as air quality thresholds and guidelines, which are outlined in the BAAQMD CEQA Guidelines, Assessing the Air Quality Impacts of Projects and Plans (CEQA Guidelines), published in December 1999.

On March 5, 2012, the Alameda County Superior Court issued a judgment finding that the BAAQMD had failed to comply with CEQA when it adopted the thresholds of significance in the BAAQMD CEQA Air Quality Guidelines. In view of the court's order, the BAAQMD is no longer recommending that the thresholds of significance from the *2011 CEQA Air Quality Guidelines* be used as a generally applicable measure of a Project's significant air quality impacts. Following the court's order, the BAAQMD released revised *CEQA Air Quality Guidelines* in May of 2012 that include guidance on calculating air pollution emissions, obtaining information regarding the health impacts of air pollutants, and identifying potential mitigation measures, and which set aside the significance thresholds. The BAAQMD recognizes that lead agencies may rely on the previously recommended thresholds of significance contained in its 1999 CEQA Guidelines.

Table 2.3-2. BAAQMD 2011 Air Quality CEQA Thresholds of Significance

Pollutant	Construction-Related	Operational-Related	
Criteria Air Pollutants	**Average Daily Emissions (lbs/day)**	**Average Daily Emissions (lbs/day)**	**Maximum Annual Emissions (tons/yr)**
ROG	54	54	10
NO_X	54	54	10
PM10 (exhaust)	82	82	15
PM2.5(exhaust)	54	54	10
PM10/PM2.5 (fugitive dust)	BMPs	None	
Local CO	None	9.0 ppm (8-hour average), 20.0 ppm (1-hour average)	
Greenhouse Gas (GHG) Projects other than	None	Compliance with Qualified GHG Reduction Strategy OR 1,100 MT of CO_{2e}/yr	

Stationary Sources		OR 4.6 MT CO_{2e}/SP/yr (residents + employees)
GHGs Stationary Sources	None	10,000 MT/yr
Risks and Hazards – New Source (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 (Chronic or Acute) Ambient PM2.5 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 – New Source (Cumulative Thresholds)	Same as Operational Thresholds	Compliance with Qualified Community Risk Reduction Plan OR Cancer: > 100 in a million (from all local sources) Non-cancer: > 10.0 Hazard Index (from all local sources) (Chronic) PM2.5: > 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
Accidental Release of Acutely Hazardous Air Pollutants	None	Storage or use of acutely hazardous materials locating near receptors or receptors locating near stored or used acutely hazardous materials considered significant
Odors	None	Complaint History—5 confirmed complaints per year averaged over three years

Notes: CO = carbon monoxide; CO_{2e} = carbon dioxide equivalent; GHGs = greenhouse gases; lbs/day = pounds per day; MT = metric tons; NO_X = oxides of nitrogen; $PM_{2.5}$= fine particulate matter with an aerodynamic resistance diameter of 2.5 micrometers or less; PM_{10} = respirable particulate matter with an aerodynamic resistance diameter of 10 micrometers or less; ppm = parts per million; ROG = reactive organic gases; SP = service population; tons/yr = tons per year; yr= year.
Source: BAAQMD 2011.

Local Air Quality

CARB maintains several air quality monitoring stations in the Bay Area Air Basin. The monitoring station located nearest the Project site is approximately 2.25 miles to the southeast at 304 Tuolumne Street in Vallejo. All criteria pollutant measurements except for PM10 were from the Vallejo station. PM10 measurements were from a monitoring station in Vacaville, on Merchant Street. Table 2.2-2 shows historical measurements of pollutant levels exceeding state and federal ambient air quality standards for the four-year period of 2012 through 2015. The table shows the number of days that each standard was exceeded.

Table 2.2-2. Ambient Air Quality Standards for Criteria Pollutants

Pollutant/Standard	Number of Days Threshold Was Exceeded & Maximum Levels During Violations			
	2012	2013	2014	2015
Ozone				
State 1-Hour > 0.09 ppm	0 days	0 days	0 days	0 days
State 8-Hour > 0.07 ppm	0 day	0 day	0 days	1 days
Federal 8-Hour > 0.075 ppm	0 days	0 days	0 days	0 days

State Max. 1-Hour Conc. (ppm)	0.085 ppm	0.082 ppm	0.077 ppm	0.085 ppm
State Max. 8-Hour Conc. (ppm)	0.063 ppm	0.068 ppm	0.068 ppm	0.071 ppm
Federal Max. 8-Hour Conc. (ppm)	0.062 ppm	0.068 ppm	0.068 ppm	0.070 ppm
Carbon Monoxide				
State 8-Hour > 9.0 ppm	0 days	0 days	0 days	0 days
Federal 8-Hour > 9.0 ppm	0 days	0 days	0 days	0 days
Max. 8-Hour Conc. (ppm)	2.2 ppm	2.3 ppm	2.1 ppm	1.9 ppm
Nitrogen Dioxide				
State 1-Hour > 0.18 ppm	0 days	0 days	0 days	0 days
Max. 1-Hour Conc. (ppm)	0.052 ppm	0.049 ppm	0.050 ppm	0.044 ppm
Sulfur Dioxide				
State 24-Hour > 0.04 ppm	0 days	0 days	0 days	0 days
Max. 24-Hour Conc. (ppm)	0.0025 ppm	0.0025 ppm	0.0024 ppm	0.0017 ppm
Suspended Particulates (PM10)				
State 24-Hour > 50 µg/m^3	0 days	*	0 days	*
Federal 24-Hour > 150 µg/m^3	0 days	0 days	0 days	0 days
Max. 24-Hour Conc. (µg/m^3)	26.0 µg/m^3	36.6 µg/m^3	29.8 µg/m^3	42.5 µg/m^3
State Annual Average (µg/m^3)	11.7 µg/m^3	*	11.4 µg/m^3	*
Fine Particulates (PM2.5)				
Federal 24-Hour > 35 µg/m^3	1.0 days	6.0 days	1.1 days	3.0 days
Max. 24-Hour Conc. (µg/m^3)	36.8 µg/m^3	48.0 µg/m^3	45.0 µg/m^3	41.8 µg/m^3
State Annual Average (µg/m^3)	*	11.3 µg/m^3	10.0 µg/m^3	*
Federal Annual Average (µg/m^3)	9.0 µg/m^3	10.0 µg/m^3	9.9 µg/m^3	9.7 µg/m^3

** Indicates there was insufficient data available to determine the value.*
Source: BAAQMD 2015b; CARB 2016.

Table 2.3-3 below summarizes the highest daily Air Quality Index (AQI) value for air pollutants by each month in 2015 in the Bay Area Air Basin. O_3 is the main component of summertime smog, and reached its highest AQI values in the late summer to autumn months. Nitrogen Dioxide (NO_2) by itself rarely rises to concentrations that become unhealthy in the Bay Area, but it is one of the major precursor pollutants associated with the formation of O_3. Sulfur Dioxide (SO_2) rarely rises to concentrations that become unhealthy in the Bay Area. CO rarely accumulates to concentrations that become a problem in the outside air in the Bay Area. PM2.5 is primarily a problem in the wintertime in the Bay Area, when burning constitutes the major source, and reached the level “unhealthy for sensitive groups” in January 2015.

Table 2.3-3. Highest AQI Values of Air Pollutants Measured at Vallejo Monitoring Station

Year	Criteria Air Pollutant (AQI)				
2015	**O_3**	**NO_2**	**SO_2**	**CO**	**PM2.5**
January	31	42	6	16	116
February	37	35	4	12	65
March	49	38	6	12	54
April	71	38	4	10	54
May	48	30	3	8	52
June	50	21	7	7	61
July	37	16	1	5	40
August	93	18	3	8	84
September	100	33	6	9	51
October	74	40	4	10	53
November	39	39	4	17	76
December	35	36	3	18	76
Highest Yearly	**100**	**42**	**7**	**18**	**116**

AQI Key: Green = Good; Yellow = Moderate; Orange = Unhealthy for Sensitive Groups; Red = Unhealthy.
Notes: Some of the data is raw or unchecked data that may contain errors.
Source: BAAQMD 2016b.

2.3.1 Regulatory Setting

Federal and State Policies and Regulations

Ambient Air Quality Standards: The Clean Air Act (CAA) was passed in 1963 by the United States Congress and has been amended several times. The 1970 Clean Air Act amendments strengthened previous legislation and laid the foundation for the regulatory scheme of the 1970s and 1980s. In 1977, Congress again added several provisions, including nonattainment requirements for areas not meeting national Ambient Air Quality Standards (AAQS) and the Prevention of Significant Deterioration program. The 1990 amendments represent the latest in a series of federal efforts to regulate the protection of air quality in the United States. The CAA allows states to adopt more stringent standards or to include other pollution species. The California Clean Air Act, signed into law in 1988, requires all areas of the state to achieve and maintain the California AAQS by the earliest practical date. The California AAQS tend to be more restrictive than the national AAQS.

Criteria air pollutants are the air pollutants for which AAQS have been developed that are regulated under the CAA. The national and California AAQS are the levels of air quality considered to provide a margin of safety in the protection of the public health and welfare. They are designed to protect sensitive receptors—those most susceptible to further respiratory distress, such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollutant concentrations considerably above these minimum standards before adverse effects are observed.

The California and national AAQS regulate seven air pollutants, which are shown in Table 2.2-1. These pollutants include O_3, NO_2, CO, SO_2, PM10, PM2.5, and lead (Pb). In addition, the State has set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. The California AAQS tend to be more restrictive than the national AAQS based on even greater health and welfare concerns.

California has also adopted a host of other regulations that reduce criteria pollutant emissions, including:

- Assembly Bill (AB) 1493: Pavley Fuel Efficiency Standards
- Title 20, CCR: Appliance Energy Efficiency Standards
- Title 24, Part 6, CCR: Building and Energy Efficiency Standards
- Title 24, Part 11, CCR: Green Building Standards Code

Toxic Air Contaminants: California regulates Toxic Air Contaminants (TACs) primarily through AB 1807 (Tanner Air Toxics Act) and AB 2588 (Air Toxics "Hot Spot" Information and Assessment Act of 1987). The Tanner Air Toxics Act sets up a formal procedure for California Air Resources Board (CARB) to designate substances as TACs. Once a TAC is identified, CARB adopts an "airborne toxics control measure" for sources that emit designated TACs. If there is a safe threshold for a substance (i.e., a point below which there is no toxic effect), the control measure must reduce exposure to below that threshold. If there is no safe threshold, the measure must incorporate toxics best available control technology to minimize emissions. To date, CARB has established formal control measures for eleven TACs that are identified as having no safe threshold.

Under AB 2588, TAC emissions from individual facilities are quantified and prioritized by the air quality management district or air pollution control district. High priority facilities are required to perform a health risk assessment, and if specific thresholds are exceeded, are required to communicate the results to the public through notices and public meetings.

The major contributor to acute and chronic non-cancer health effects in the Bay Area Air Basin is acrolein (C_3H_4O). Major sources of acrolein are on-road mobile sources and aircraft, and areas with high acrolein emissions are near freeways and commercial and military airports. Currently, CARB does not have certified emission factors or an analytical test method for acrolein. Since the appropriate tools needed to implement and enforce acrolein emission limits are not available, BAAQMD does not conduct health risk screening analysis for acrolein emissions.

Regional Policies and Regulations

Bay Area Air Quality Management District: BAAQMD is the agency responsible for ensuring that the national and California AAQS are attained and maintained in the Bay Air Basin. BAAQMD is responsible for:

- Adopting and enforcing rules and regulations concerning air pollutant sources
- Issuing permits for stationary sources of air pollutants
- Inspecting stationary sources of air pollutants
- Responding to citizen complaints
- Monitoring ambient air quality and meteorological conditions
- Awarding grants to reduce motor vehicle emissions
- Conducting public education campaigns
- Air Quality management planning

Air quality conditions in the Bay Area Air Basin have improved significantly since BAAQMD was created in 1955. BAAQMD prepares air quality management plans (AQMPs), including ozone attainment plans for the national O_3 standard and clean air plans for the California O_3 standard. BAAQMD prepares these AQMPs in coordination with the ABAG and the Metropolitan

Transportation Commission (MTC). The most recent comprehensive plan is the *2010 Bay Area Clean Air Plan*, which was adopted by BAAQMD on September 15, 2010 and incorporates significant new scientific data, primarily in the form of updated emissions inventories, ambient measurements, new meteorological episodes, and new air quality modeling tools.

2010 Bay Area Clean Air Plan: The purpose of the 2010 CAP is to: 1) update the Bay Area 2005 Ozone Strategy in accordance with the requirements of the California Clean Air Act to implement all feasible measures to reduce O_3; 2) consider the impacts of O_3 control measures on PM, TAC, and GHG in a single, integrated plan; 3) review progress in improving air quality in recent years; and 4) establish emission control measures in the 2009 to 2012 timeframe. The 2010 CAP also provides the framework for the Bay Area Air Basin to achieve attainment of the California and national AAQS.

Draft 2016 Bay Area Clean Air Plan: The *Draft 2016 Clean Air Plan/Regional Climate Protection Strategy* (RCPS) will be a roadmap for BAAQMD's efforts over the next few years to reduce air pollution and protect public health and the global climate. The Plan is required by the California Clean Air Act to identify potential rules, control measures, and strategies for the Bay Area to implement in order to meet state standards for ozone. The update will include the Bay Area's first-ever comprehensive RCPS, which will identify potential rules, control measures, and strategies that BAAQMD can pursue to reduce greenhouse gases in the Bay Area.

Community Air Risk Evaluation Program: BAAQMD's Community Air Risk Evaluation (CARE) program was initiated in 2004 to evaluate and reduce health risks associated with exposure to outdoor TACs in the Bay Area. Diesel Particulate Matter (DPM) accounts for approximately 85 percent of the cancer risk from airborne toxics. Carcinogenic compounds from gasoline powered cars and light duty trucks were also identified as significant contributors: 1,3-butadiene contributed four percent of the cancer risk-weighted emissions, and benzene contributed three percent (BAAQMD 2014a).

Collectively, five compounds—DPM, 1,3-butadiene, benzene, formaldehyde, and acetaldehyde—were found to be responsible for more than 90 percent of the cancer risk attributed to emissions. All of these compounds are associated with emissions from internal combustion engines. The most important sources of cancer risk-weighted emissions were combustion-related sources of DPM, including on-road mobile sources (31 percent), construction equipment (29 percent), and ships and harbor craft (13 percent). A 75 percent reduction in DPM was predicted between 2005 and 2015 when the inventory accounted for CARB's diesel regulations. Overall, cancer risk from TACs dropped by more than 50 percent between 2005 and 2015, when emissions inputs accounted for state diesel regulations and other reductions. Modeled cancer risks from TACs in 2005 were highest near sources of DPM: near core urban areas, along major roadways and freeways, and near maritime shipping terminals. Peak modeled risks were found to be located east of San Francisco, near West Oakland, and the Maritime Port of Oakland. BAAQMD has identified seven impacted communities in the Bay Area, including Vallejo (BAAQMD 2014b):

- Western Contra Costa County and the cities of Richmond and San Pablo
- Western Alameda County along the Interstate 880 corridor and the cities of Berkeley, Alameda, Oakland, San Leandro, and Hayward
- San Jose
- Eastern side of San Francisco
- Concord
- Vallejo

- Pittsburg and Antioch

Other BAAQMD Regulations: In addition to the plans and programs described above, BAAQMD administers a number of specific regulations on various sources of pollutant emissions that may apply:

- Regulation 2, Rule 2, New Source Review
- Regulation 2, Rule 5, New Source Review of Toxic Air Contaminants
- Regulation 6, Rule 1, General Requirements
- Regulation 6, Rule 2, Commercial Cooking Equipment
- Regulation 8, Rule 3, Architectural Coatings
- Regulation 7, Odorous Substances
- Regulation 8, Rule 4, General Solvent and Surface Coatings Operations
- Regulation 8, Rule 7, Gasoline Dispensing Facilities
- Regulation 11, Rule 2, Asbestos, Demolition, Renovation and Manufacturing)

Solano County Transportation Authority: The Solano County Transportation Authority (STA) is the congestion management agency for the County of Solano. STA prepares a Congestion Management Program (CMP) to ensure that the Solano County transportation system operates effectively as part of the larger Bay Area and Northern California transportation systems. The most recent CMP is the 2013 Solano CMP. The CMP conforms with the MTC and the RTP, Plan Bay Area.

Plan Bay Area: Strategy for a Sustainable Region: Plan Bay Area is the Bay Area's Regional Transportation Plan (RTP)/ Sustainable Communities Strategy (SCS). The Plan Bay Area was adopted jointly by the ABAG and MTC July 18, 2013. The SCS lays out a development scenario for the region, which when integrated with the transportation network and other transportation measures and policies, would reduce GHG emissions from transportation (excluding goods movement) beyond the per capita reduction targets identified by CARB.

2.4 Biological Resources

The Project site occurs within the Central Coast Floristic Province, a subregion within the larger California Floristic Province. The Central Coast Floristic Province typically supports only coastal communities, including salt marshes, coastal prairie, and coastal sage-scrub habitats. The site is located within the San Francisco Bay Watershed, located where the Napa River enters north San Pablo Bay adjacent to Highway 37. Immediately upstream of the Project site, north of Highway 37, are large contiguous expanses of native and restored marshland comprising the Napa/Sonoma Marsh Restoration Area, which provides habitat for endangered salt marsh species and essential fisheries (Swaim Biological, Inc. 2016).

Vegetation

The site is primarily developed with asphalt surfaces or compacted fill and most often supports the growth of non-native upland vegetation. However, along the eastern boundary of the site bordering the Napa River, the Project site supports an area of dense native salt march vegetation characteristic of Sarcocornia pacifica/Salicornia depressa Pickleweed Mats Alliance, a CDFW-designated high-priority Natural Community previously designated as Northern Coastal Salt Marsh. While portions of this habitat appear to be at least partially separated from tidal influences, these marshes are healthy and of high-quality, supporting a dense and robust cover

of native salt marsh plants with no known invasive plant species of note within the area (Swaim Biological, Inc. 2016).

Wetlands and Aquatic Resources

The Project site borders an approximately 0.67-mile stretch of the Napa River and separated from Reuse Area 1A by the Public Trust marshes. These Public Trust marshes are comprised of dense native salt marsh vegetation approximately 18.6 acres in size and consisting predominantly of Pacific cordgrass (*Spartina foliosa),* pickleweed (*Sarcocornia pacifica),* and fleshy jaumea (*Jaumea carnosa)*. These marshes are considered "adjacent wetlands" jurisdictional to USACE, CDFW, RWQCB, and BCDC due to their adjacency to the Napa River. In addition, the Project site contains a total of 36 seasonally ponded areas comprising a total of 6.18 acres that vary widely in character from unvegetated ponded pavement to compacted fill supporting the growth of plants that are adapted to hydric conditions. However, these seasonally ponded features do not meet USACE criteria for jurisdictional wetlands. Within the site, an approximately 0.31-acre isolated seasonal wetland exists on Parcel XV-A(1) which exhibits features of a jurisdictional wetland (Swaim Biological, Inc. 2016).

Special-status Species

A number of special-status plants and animals occur or have potential to occur on or near the Project site. Table 2.4-1 provides a quick reference to the most likely species to be encountered, as indicated in Biological Resources Assessment prepared by Swaim Biological, Inc. (2016).

Table 2.4-1. Potential Occurrence for Special-status Species

Common Name	Specific Name	Status				Potential for Occurrence
		FFSA	CESA	CDFW	CNPS	
Plants						
Carquinez goldenbush	*Isocomo argute*	-	-	-	1B.1	No native soils present. Low potential to occur.
Chaparral ragwort	*Senecio aphanactis*	-	-	-	1B.2	Minimal coastal scrub habitat present. Low potential to occur.
Delta tule pea	*Lathyrus jepsonii* var. *jepsonii*	-	-	-	1B.2	Potentially suitable habitat present. Moderate to high potential to occur in Public Trust marshes.
Fragrant fritillary	*Fritilaria liliacea*	-	-	-	1B.2	No native soils present. Low potential to occur.
Mason's liliaeopsis	*Liliaeopsis masonii*				1B.1	Potentially suitable habitat present. Moderate to high potential to occur in Public Trust marshes.
Northern Coastal Salt Marsh	*Pickleweed Mat Alliance*	-	-	*	-	Observed on-site in Public Trust marshes
Soft bird's beak	*Chloropyron molle* ssp. *molle*	E	-	-	1B.1 rare	Potentially suitable habitat present. Moderate to high potential to occur in Public Trust marshes.
Invertebrates						
Monarch butterfly	*Danaus plexippus*	-	-	*	N/A	Overwintering groves present on Mare Island. However, conditions are dissimilar enough that trees on site are not likely to be used as overwintering groves.
Fish						
Central California Coast steelhead	*Oncorhynchus mykiss irideus*	E	T	-	N/A	Present in Mare Island Strait, Napa River, Napa River East Branch, and

						Napa-Sonoma Marsh complex.
Delta smelt	*Hypomesus transpacificus*	T	E	-	N/A	Present in Napa River/Mare Island Strait.
Fall-run Chinook Salmon	*Oncoryhnchus tshawytscha*	-	-	SSC	N/A	Present in Napa River Watershed; likely present in Mare Island Strait.
Hardhead	*Mylopharadon conocephalus*	-	-	SSC	N/A	Present in Napa River Watershed; likely present in Mare Island Strait.
Longfin smelt	*Spirinchus thaleichtys*	C	T	SSC	N/A	Present in Mare Island Strait, Napa River, and North San Pablo Bay.
Pacific lamprey	*Entosphenus tridentatus*	-	-	SSC	N/A	Present in Napa River Watershed; likely present in Mare Island Strait.
Riffle sculpin	*Cottus gulosus*	-	-	SSC	N/A	Present in Napa River Watershed; likely present in Mare Island Strait.
River lamprey	*Lampetra ayresii*	-	-	SSC	N/A	Present in Napa River Watershed; likely present in Mare Island Strait.
Sacramento splittail	*Pogonichthys macrolepidotus*	-	-	SSC	N/A	Present in Napa River Watershed; likely present in Mare Island Strait.
White surgeon	*Acipenser transmontanus*	-	-	SSC	N/A	Present in Napa River Watershed; likely present in Mare Island Strait.
Birds						
California black rail	*Laterallus jamaicensis coturniculus*	-	T	FP	N/A	Present in marshes up- and downstream of site. High potential to occur in Public Trust marshes.
Great blue heron (rookery)	*Ardea herodius*	-	-	CSC	N/A	Rookeries present on Mare Island. Rookeries not observed in site.
Osprey (nesting)	*Pandion haliaetus*	-	-	CSC	N/A	Present.
Ridgeway's rail	*Rallus obsoletus*	E	E	-	N/A	Present in marshes up- and downstream of site. High potential to occur in Public Trust marshes.
Saltmarsh common yellowthroat	*Geothlypis trichas sinuosa*	-	-	CSC	N/A	Present. Observed in upland-wetland boundary.
San Pablo song sparrow	*Melospiza melodia samuelis*	-	-	CSC	N/A	Present. Observed in upland-wetland boundary.
Yellow-headed blackbird	*Xanthocephalus xanthocephalus*	-	-	SSC	N/A	Present. Observed in upland-wetland boundary.
Mammals						
Pallid bat	*Antrozous pallidus*	-	-	SSC	N/A	Potentially present.
Salt-marsh harvest mouse	*Reithrodontomys ravinetris*	E	E	FP	N/A	Potentially present.
Suisun shrew	*Sorex ornatus sinuosus*	-	-	SSC	N/A	Suitable habitat present. Likely present in Public Trust marshes.
Townsend's big-eared bat	*Corynorhinus townsendii*	-	CT	SSC	N/A	Potentially present.

Source: Swaim Biological, Inc. 2016.

2.4.1 Regulatory Setting

Federal Policies and Regulations

Federal Endangered Species Act (FESA): The United States Fish and Wildlife Service (USFWS) and National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NOAA Fisheries) is responsible for implementation of FESA (16 U.S.C. Section 1531 *et seq.*). The Act protects fish and wildlife species that are listed as threatened or endangered, and their habitats. "Endangered" species, subspecies, or distinct population segments are those that

are in danger of extinction through all or a significant portion of their range, and "threatened" species, subspecies, or distinct population segments are likely to become endangered in the near future.

Section 7 of the FESA mandates that all federal agencies consult with USFWS and NOAA Fisheries if they determine that a proposed project may affect a listed species or its habitat. The purpose of consultation with USFWS and NOAA Fisheries is to ensure that the federal agencies' actions do not jeopardize the continued existence of a listed species or destroy or adversely modify critical habitat for listed species.

Section 9 of the FESA prohibits the take of any fish or wildlife species listed as endangered, including the destruction of habitat that prevents the species' recovery. Take is defined as an action or attempt to hunt, harm, harass, pursue, shoot, wound, capture, kill, trap, or collect a species. Section 9 prohibitions also apply to threatened species unless a special rule has been defined with regard to take at the time of listing.

Under Section 9 of the FESA, the take prohibition applies only to wildlife and fish species. However, Section 9 does prohibit the unlawful removal and reduction to possession, or malicious damage or destruction, of any endangered plant from federal land. Section 9 prohibits acts to remove, cut, dig up, damage, or destroy an endangered plant species in nonfederal areas in knowing violation of any state law or in the course of criminal trespass. Candidate species and species that are proposed or under petition for listing, receive no protection under Section 9.

Migratory Bird Treaty Act (MBTA): The MBTA implements various treaties and conventions between the United States and Canada, Japan, Mexico, and the former Soviet Union for the protection of migratory birds. Unless permitted by regulations, this Act provides that it is unlawful to pursue, hunt, take, capture or kill, attempt to take, capture or kill, possess, offer, sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried, or received any migratory bird, part, nest, egg or product, manufactured or not.

In short, under the MBTA it is illegal to remove vegetation containing nests that are in active use, since this could result in death of a bird or destruction of an egg. This would also be a violation of California Department of Fish and Wildlife (CDFW) code (see State Regulations below).

Federal Clean Water Act (CWA): The Federal Clean Water Act (CWA) is the primary federal law regulating water quality. The implementation of the CWA is the responsibility of the U.S. EPA. The U.S. EPA depends on other agencies, such as the individual state government and the United States Army Corps of Engineers (USACE), to assist in implementing the CWA. The objective of the CWA is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters." Section 401 and 404 apply to project activities that would impact "waters of the United States" (creeks, ponds, wetlands, etc.).

The USACE, the federal agency charged with investigating, developing, and maintaining the country's water and related resources, is responsible under Section 404 of the CWA for regulating the discharge of fill material into waters of the United States. Waters of the United States and their lateral limits are defined in Part 328.3(a) of Title 33 of the Code of Federal Regulations and include streams that are tributaries to navigable waters and adjacent wetlands. The lateral limits of jurisdiction for a non-tidal stream are measured at the line of the Ordinary High Water Mark or the limit of adjacent wetlands. Any permanent extension of the limits of an

existing water of the United States, whether natural or human-made, results in a similar extension of USACE's jurisdiction.

In general, a permit must be obtained from USACE before an individual project place fill or grade in wetlands or other waters of the United States, and mitigation for such actions will be required based on the conditions of the USACE's permit. The USACE will be required to consult with the USFWS and/or the NMFS under Section 7 of the FESA (described above) if the action being permitted under the CWA could affect federally listed species.

Pursuant to Section 401 of the Clean Water Act, projects that require a USACE permit for discharge of dredge or fill material must obtain a water quality certification or waiver that confirms the project complies with State water quality standards, or a no-action determination, before the USACE's permit is valid. State water quality is regulated and administered by the State Water Resources Control Board (SWCB). In order for the applicable RWQCB to issue a 401 certification, a project must demonstrate compliance with CEQA.

Section 10 of the Rivers and Harbors Act: Section 10 of the Rivers and Harbors Act (33 U.S.C 401 et seq.), administered by the Corps, requires permits for all structures (e.g., riprap) and activities (e.g., dredging) within navigable waters of the U.S. Navigable waters are defined as those subject to the ebb and flow of the tide and susceptible to use as means of interstate transport or foreign commerce in their natural condition or by reasonable improvements. The Corps grants or denies permits based on the effects of navigation. Many activities covered under this act are also covered under Section 404 of the CWA.

Magnuson-Stevens Fishery and Conservation Act: This Act requires federal agencies to consult with National Marine Fisheries Service (NMFS) on all proposed actions that are authorized, funded, or undertaken by the agency that may adversely affect essential fish habitat (EFH). EFH is designated only for those species managed under a Federal Fisheries Management Plan.

State Policies and Regulations

California Endangered Species Act: The California Endangered Species Act (CESA) (California Fish and Game Code Section 2050 *et seq.*) establishes State policy to conserve, protect, restore, and enhance threatened or endangered species and their habitats. The CESA mandates that State agencies should not approve projects that jeopardize the continued existence of threatened or endangered species if reasonable and prudent alternatives are available that would avoid jeopardy. For projects that would affect a species that is on the federal and State lists, compliance with the FESA satisfies the CESA if the CDFW determines that the federal incidental take authorization is consistent with the CESA under California Fish and Game Code Section 2080.1. For projects that would result in take of a species that is only State listed, the project proponent must apply for a take permit under Section 2081(b).

California Fish and Game Code: Under the California Fish and Game Code, the CDFW provides protection from "take" for a variety of species. The CDFW also protects streams, water bodies, and riparian corridors through the Streambed Alteration Agreement process under Section 1601 to 1606 of the California Fish and Game Code. The California Fish and Game Code stipulates that it is "unlawful to substantially divert or obstruct the natural flow or substantially change the bed, channel or bank of any river, stream or lake" without notifying the Department, incorporating necessary mitigation, and obtaining a Streambed Alteration Agreement. CDFW's jurisdiction extends to the top of banks and often includes the outer edge of riparian vegetation canopy cover. Modification is defined as diverting or obstructing the

natural flow of, or substantially changing or using any material from the bed, channel, or bank of, any river, stream or lake.

California Fish and Game Code Section 3503.5 prohibits “take,” possession, or destruction of any raptor (bird of prey species in the orders *salconiformes* and *strigiformes*), including their nests or eggs. Violations of this law include destruction of active raptor nests as a result of tree removal and disturbance to nesting pairs by nearby human activity that causes nest abandonment and reproductive failure.

California Native Plant Protection Act: The California Native Plant Protection Act of 1977 prohibits importation of rare and endangered plants into California, “take” of rare and endangered plants, and sale of rare and endangered plants. The CESA defers to the California Native Plant Protection Act, which ensures that State-listed plant species are protected when State agencies are involved in projects subject to CEQA. In this case, plants listed as rare under the California Native Plant Protection Act are not protected under the CESA but rather under CEQA.

California Natural Diversity Database (CNDDB): The CNDDB provides an inventory of sensitive natural communities. Sensitive natural communities are natural community types considered to be rare or of a “high inventory priority” by the CDFW. Although sensitive natural communities have no legal protective status under the federal ESA or CESA, they are provided some level of consideration under CEQA. Appendix G of the CEQA Guidelines identifies potential impacts on a sensitive natural community as one of six criteria to consider in determining the significance of a proposed project. While no thresholds are established as part of this criterion, it serves as an acknowledgement that sensitive natural communities are an important resource and, depending on their rarity, should be recognized as part of the environmental review process. The level of significance of a project’s impact on any particular sensitive natural community will depend on that natural community’s relative abundance and rarity.

Porter-Cologne Water Quality Control Act: The Porter-Cologne Water Quality Control Act (Porter-Cologne) seeks to preserve, enhance, and restore the quality of California's water resources. The Porter-Cologne Water Quality Act established the State Water Resources Control Board (SWRCB) and nine Regional Water Quality Control Boards (RWQCBs) as the principal state agencies with the responsibility for controlling water quality in the state. The State of California regulates discharges of dredged and fill material to Waters of the State through its Water Quality Certification Program under the authorities of Porter-Cologne and CWA Section 401, a program that allows the state to ensure that activities requiring a federal permit or license comply with state water quality standards. The Water Quality Certification Program is the state’s de facto wetland protection program. It protects all waters within the state’s regulatory jurisdiction, but has special responsibilities for wetlands, riparian areas, and headwater streams because these water bodies are not systematically protected by other state and regional board programs.

BCDC: In 1969, the McAteer-Petris Act designated BCDC as the agency responsible for the protection of the San Francisco Bay and its natural resources. BCDC fulfills this mission through the implementation of the Bay Plan, an enforceable plan that guides the future protection and use of San Francisco Bay and its shoreline. The Bay Plan includes a range of policies on public access, water quality, fill, and project design, and designates shoreline areas that should be reserved for water-related purposes like ports, industry, and public recreation, airports, and wildlife areas.

As a permitting authority along the San Francisco Bay shoreline, BCDC is responsible for granting or denying permits for any proposed fill, extraction of materials, or change is use of any water, land, or structure within the Commission's jurisdiction. Projects in BCDC jurisdiction that involve Bay fill must be consistent with the Bay Plan policies on the safety of fills and shoreline protection.

San Francisco Bay Basin Water Quality Control Plan (Basin Plan): The San Francisco Bay RWQCB adopted a Water Quality Control Plan for the San Francisco Bay Basin (the Basin Plan) that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the Basin Plan, which includes wetlands in and near the project area.

Local Policies and Regulations

Vallejo Municipal Code: Title 10, Chapter Section 10.12, Trees, of the Vallejo Municipal Code, serves to regulate the removal of trees in public areas or of a certain size. The ordinance defines a "street tree" as any tree of any species or size planted in parkways, sidewalk areas, easements, and rights-of-way granted to the city, and a "significant tree" as any tree or stand of trees on private property having either a height of twenty-five feet measured above ground level, or a diameter of ten inches. A permit is required prior to removal of any street tree or significant tree.

2.5 Cultural Resources

Cultural resources include historic architectural resources, archeological resources, paleontological resources, and human remains. Key definitions are as follows.

- **Historic Architectural Resources** include buildings, structures, objects, sites, and historic districts. Military-related cultural features include earthen batteries, concrete foundations, rock alignments, water-conveyance features, and other artifact concentrations.
- **Archeological Resources** consist of prehistoric or historic-period archaeological resources.
- **Prehistoric Archeological Materials** might include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil ("midden") containing heat-affected rocks, artifacts, or shellfish remains; and stone milling equipment (e.g., mortars, pestles, handstones, or milling slabs). Historic-period materials (not associated with military installations or activities) might include stone, concrete, or adobe footings and walls; filled wells or privies; and deposits of metal, glass, and/or ceramic refuse.
- **Paleontological resources – fossils –** are the fossilized evidence of past life found in the geologic record. Fossils are preserved in sedimentary rocks, which are the most abundant rock type exposed at the surface of the earth. Despite the abundance of these rocks, and the vast numbers of organisms that have lived through time, preservation of plant or animal remains as fossils can be a rare occurrence. In many cases, fossils of animals and plants occur only in limited areas and in small numbers relative to the distribution of the living organisms they represent. In particular, fossils of vertebrates – animals with backbones – are sufficiently rare to be considered nonrenewable resources.

The City of Vallejo has an abundance of cultural resources ranging from prehistoric habitation sites to historic landmarks, which have been preserved and protected to maintain their cultural value.

Pre-historic Setting

There is documented evidence for human occupation of Northern California mainland for at least 10,000 years. However, many ancient sites may have been lost, inundated, or deeply buried as a result of coastal erosion and sea level rise, erosion, aggradations, and other natural forces. Previous to late 17th century, the City served as home to several Native American tribes including the Miwok-Constanoas, the Suisunes and other Patwin tribes (City of Vallejo 2013b). Evidence has been found indicating that Native Californian inhabitation of Mare Island dates back 2,000 years with occupation by the Patwin, descendants of the Miwok-Constanoas (Lennar Mare Island, LLC 2016).

California's Native American Heritage Commission (NAHC) has identified the Cortina Band of Wintun Indians as one of the Most Likely Descendants (MLD) of native people who inhabited the Vallejo area thousands of years ago. The Cortina Band is included in the southern Wintun group and is identified as a Patwin tribe. The Cortina Band of Wintun Indians retains an important interest in Mare Island, including the Project site.

Historic Setting

Ensuing Spanish (1775-1835), Mexican (1835-1854), and American (1854-present) periods of control each left their associated historical and cultural marks on Mare Island.

Mare Island is the oldest shipyard and naval facility on the West Coast of the United States. The shipyard has been listed in national, state, and local historic registers. In 1975, the Mare Island Naval Shipyard was named a National Historic Landmark. After subsequent boundary increases in 1985 and 1997, Mare Island Historic District was listed in the National Register with 515 contributing properties; many of which reflect the shipyard's role during World War II (City of Vallejo 2016a). The Project site lies outside of the boundary of this historic district.

Mare Island is the oldest shipyard and naval facility on the U.S. West Coast. The Mare Island Specific Plan includes requirements and guidelines for preservation and treatment of historic resources to maintain their value while allowing for the reuse of Mare Island.

Cultural Resources within the Project Vicinity

No prehistoric archaeological resources retaining integrity have been found on the Project site. Additionally, there are no known unique paleontological resources or unique geologic features located on the Project site and there are no known human remains that are within the Project site or vicinity. The Project site is not within boundaries of the Mare Island Historic District and there are no historic resources located on the Project site (see Table 2.5-1).

There is one notable cultural resource in Reuse Area 1A that is in close proximity to the Project site. A section of Bridge 23C0258 (Site 48-000968) is located within the Project Area at its southernmost extent. The bridge is located at 491 G Street (adjacent to southern edge of the Project boundary), includes a sentry wall and building that were originally built in 1936. The bridge segment is a portion of the Mare Island Causeway Bridge western approach and is listed as a contributing resource to the Mare Island Historic District, which was listed as an historic district in the NRHP in 1997. The sentry wall and building are identified as a notable resource because they were built during Mare Island's highest productive years within the period between the two World Wars. The sentry wall and building were constructed with Spanish Eclectic architecture and are part of the entry sequence to Mare Island that underscores the area's industrial nature (City of Vallejo 2013a).

The historic Security House and sentry wall have remained in place since its construction in 1936, seeing use for nearly 60 years during the operation of MINSY.

Table 2.5-1.
Previously Recorded Archaeological Resources within the Scope of the Records Search

Site No.	Recorded by/Date	Description	NRHP Eligibility	Location
48-000569	Vicki Beard, 2008	Building 653	Not eligible	Within Project Area
48-000570	Vicki Beard, 2008	Building 755	Not eligible	Within Project Area
48-000783	URS Corporation, 2011	Building 629	Not eligible	Within Project Area
48-000968	Mead and Hunt, Inc., 2012	Bridge 23C0258	Not eligible	Partially Within Project Area

Source: Amec Foster Wheeler 2017a.

2.5.1 Regulatory Setting

Federal Policies and Regulations

National Historic Preservation Act: The National Historic Preservation Act of 1966 established the National Register of Historic Places (National Register) as the official designation of historical resources, including districts, sites, buildings, structures, and objects. For a property to be eligible for listing in the National Register, it must be significant in American

history, architecture, archaeology, engineering, or culture, and must retain integrity in terms of location, design, setting, materials, workmanship, feeling, and association. Resources less than 50 years in age, unless of exceptional importance, are not eligible for the National Register. Though a listing in the National Register does not prohibit demolition or alteration of a property, the CEQA requires the evaluation of project effects on properties that are listed in the National Register.

State Policies and Regulations

California Environmental Quality Act: Section 15064.5 of the CEQA Guidelines states that a project that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant effect on the environment. The CEQA Guidelines define four ways that a property can qualify as a historical resource for purposes of CEQA compliance:

- The resource is listed in or determined eligible for listing in the California Register of Historical Resources, as determined by the State Historical Resources Commission.
- The resource is included in a local register of historical resources, as defined in Section 5020.1(k) of the Public Resources Code, or identified as significant in a historical resource survey meeting the requirements of Section 5024.1(g) of the Public Resources Code, unless the preponderance of evidence demonstrates that it is not historically or culturally significant.
- The lead agency determines the resource to be significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, as supported by substantial evidence in light of the whole record.
- The lead agency determines that the resource may be a historical resource as defined in Public Resources Code Sections 5020.1(j) or 5024.1 (CEQA Guidelines Section 15064.5) which means, in part, that it may be eligible for the California Register.

In addition, Public Resources Code Section 21083.2 and Section 15126.4 of the CEQA Guidelines specify lead agency responsibilities to determine whether a project may have a significant effect on archaeological resources. If it can be demonstrated that a project will damage a unique archaeological resource, the lead agency may require reasonable efforts for the resources to be preserved in place or left in an undisturbed state. Preservation in place is the preferred approach to mitigation. The Public Resources Code also details required mitigation if unique archaeological resources are not preserved in place.

Section 15064.5 of the CEQA Guidelines specified procedures to be used in the event of an unexpected discovery of Native American human remains on non-federal land. These provisions protect such remains from disturbance, vandalism, and inadvertent destruction, establish procedures to be implemented in Native American skeletal remains are discovered during construction of a project, and establish the NAHC as the authority to identify the most likely descendent and mediate any disputes regarding disposition of such remains.

CEQA is codified at Public Resources Code (PRC) Section 21000 *et seq.*, and CEQA Guidelines are codified at Title 14 CCR Section 15000 *et seq*. As amended in September 2014, CEQA requires that lead agencies determine whether projects may have significant effects on archaeological, historical, and tribal cultural resources (TCRs).

This determination applies to those resources which meet significance criteria qualifying them as “unique,” “important,” listed on the California Register of Historical Resources (CRHR), or eligible for listing on the CRHR. The importance of a resource is measured in terms of criteria

for inclusion on the California Register of Historical Resources (Title 14 CCR, §4852(a)) as listed below.

If the agency determines that a project may have a significant effect on a significant resource, the project is determined to have a significant effect on the environment, and these effects must be addressed. If a cultural resource is found not to be significant under the qualifying criteria, it need not be considered further in the planning process.

CEQA Guidelines (PRC §15064.5) specify the procedures to be followed in case of the discovery of human remains on non-federal land. The disposition of Native American burials falls within the jurisdiction of the Native American Heritage Commission.

CEQA also affords protection to paleontological resources. Appendix G of the CEQA Guidelines requires consideration of impacts to paleontological resources, stating that, “a project will normally result in a significant impact on the environment if it will...disrupt or adversely affect a paleontological resource or site or unique geologic feature except as part of a scientific study."

California Register of Historic Resources: California State law provides for the protection of cultural resources by requiring evaluations of the significance of archaeological, historic, and TCRs identified in documents prepared pursuant to CEQA. Under CEQA, a cultural resource is considered an important historical resource if it meets any of the criteria found in Section 15064.5(a) of the CEQA Guidelines. Criteria identified in the CEQA Guidelines are similar to those described under the NHPA. The State Historic Preservation Office (SHPO) maintains the CRHR. Historic properties listed, or formally designated for eligibility to be listed, on The National Register are automatically listed on the CRHR. State Landmarks and Points of Interest are also automatically listed. The CRHR can also include properties designated under local preservation ordinances or identified through local historical resource surveys.

A resource may be important if it meets any one of the criteria below, or if it is already listed on the California Register of Historical Resources or a local register of historical resources.

An important archaeological, historical, or TCR is one which:

- Is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the Unites States.
- Is associated with the lives of persons important to local, California, or national history.
- Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master or possesses high artistic values.
- It has yielded, or may be likely to yield, information important to the pre-history or history of the local area, California, or the nation.

In addition to meeting one or more of the above criteria, eligibility for the California Register requires that a resources retain sufficient integrity to convey a sense of its significance or importance. Seven elements are considered key in considering a property’s integrity: location, design, setting, materials, workmanship, feeling, and association.

California Historical Building Code, California Code of Regulations, Title 24, Part 8: The California Historical Building Code is defined in Sections 18950 to 18961 of Division 13, Part 2.7 of the Health and Safety Code, and is subject to rules and regulations set forth in 24 CCR Part 8. This code provides alternative building regulations for permitting repairs, alterations and additions necessary for the preservation, rehabilitation, relocation, related construction, change of use, or continued use of a building or structure considered a qualified historical building or

structure at any level of government as having importance to the history, architecture, or culture of an area.

AB 52: AB 52, the Native American Historic Resource Protection Act, which went into effect July 1, 2015, sets forth a proactive approach intended to reduce the potential for delay and conflicts between Native American and development interests. AB 52 adds TCRs to the specific cultural resources protected under CEQA, and requires lead agencies to notify relevant tribes about development projects. It also mandates lead agencies to consult with tribes if requested by the tribe, and sets the principles for conducting and concluding consultation.

Projects subject to AB 52 are those that file a notice of preparation for an EIR or notice of intent to adopt a negative or mitigated negative declaration on or after July 1, 2015. The Governor's Office of Planning and Research (OPR) has until July 1, 2016, to develop guidelines, and the NAHC has until then to inform tribes which agencies are in their traditional area. In absence of the adopted guidelines, OPR suggests addressing if the project would cause a substantial adverse change in the significance of a TCR as defined in Public Resources Code 21074.

Under AB 52, a TCR is defined as a site, feature, place, cultural landscape (must be geographically defined in terms of size and scope), sacred place, and object with cultural value to a California Native American tribe that are either included or eligible for inclusion in the California Register of Historic Resources or included in a local register of historical resources. Or the lead agency, supported by substantial evidence, chooses at its discretion to treat the resource as a TCR.

Senate Bill (SB) 18 (Burton, Chapter 905, Statutes 2004): Requires local governments (cities and counties) to consult with Native American tribes to aid in the protection of traditional tribal cultural places through local land use planning. The intent of SB 18 is to provide California Native American tribes an opportunity to participate in local land use decisions at an early stage of planning for the purpose of protecting or mitigating impacts to cultural places. The purpose of involving tribes at these early planning stages is to allow consideration of cultural places in the context of broad local land use policy prior to the making of individual site-specific, project-level land use designations by a local government.

Public Resources Code Section 5097: PRC Section 5097 specifies the procedures to be followed in the event of the unexpected discovery of human remains on non-federal public lands. The disposition of Native American burials fall within the jurisdiction of the NAHC, which prohibits willfully damaging any historical, archaeological, or vertebrate paleontological site or feature on public lands.

Local Policies and Regulations

Certified Local Government: The City of Vallejo is a Certified Local Government (CLG) pursuant to a 1992 agreement among the City, the California Office of Historic Preservation, and the National Park Service. Under this agreement, the City assumes responsibility for protection of historic resources in Vallejo and must take into account the effects of all federal grants or programs on historic properties. As a CLG, the City must:

- Enforce appropriate State and local laws and regulations for the designation and protection of historic properties;
- Establish an historic preservation review commission by local ordinance;
- Maintain a system for the survey and inventory of historic properties;
- Provide for public participation in the local preservation program; and

- Satisfactorily perform responsibility delegated to it by the State.

2.6 Geology and Soils

Mare Island is located along the east side of San Pablo Bay, in the northeastern section of the San Francisco Bay. Seasonal sloughs separate Mare Island from the mainland of the City of Vallejo. The Project site on Mare Island is composed of flat-lying lowland. The City is located in southern Solano County in the Coast Ranges geomorphic province, which consist of a series of northwest trending ridges and valleys caused by tectonic activity. The low-lying regions along the Carquinez Straights, San Pablo Bay, and Suisun Bay are resting on top of unconsolidated alluvial deposits, artificial fill, and estuarine deposits. When Mare Island was originally developed as a Navy base beginning in 1853, many low lying marshy areas were filled to create buildable land. All or most of the Project site was originally mud flats along the Napa River/Mare Island Straight and San Pablo Bay. Fill was derived from local sources and ranges in thickness from three to twelve feet. The fill is largely characterized as clayey gravel or clayey gravel with sand, with very limited zones of the fill susceptible to liquefaction. Some parts of the fill contained abandoned utilities, abandoned foundations, debris material and organic matter. The fill is noted to be rather variable in composition throughout the site and was based on numerous soil borings. The thickness and composition should be observed during construction activities to ensure construction materials meet specifications and design requirements.

The primary geologic materials beneath the surface at the Project site include fill, Young Bay Mud, Old Bay Clay, Older Alluvium and Bedrock. A layer of Young Bay Mud underlies the fill across the entire site, with a range of thickness as shown in the table below.

Table 2.6-1: Geologic Materials Underlying the Project Site

Fill Name	Description	Shallow Depth	Thickest Depth
Young Bay Mud	soft, clay-rich sediments	less than one foot in the south and west	Up to 53 feet, thickest in the north and east,
Old Bay Clay	soft to stiff fat clay, with some sand and silt	Under Young Bay Mud, from 25 shallowest in the west	Bottom later measured at 90-95 feet bgs on south end of site to 120 feet bgs, in the north
Older Alluvium	Very stiff lean clay with some fine sand and silt	Not provided	Not provided
Bedrock	Marine sedimentary rocks	95 feet bgs in the south	Over 240 feet bgs just north of SR 37

Source: Amec Foster Wheeler 2015.

The Project area is located in a seismically active area of Northern California. The nearest known active fault is the West Napa fault, 3.8 miles north of the Project site. Other major active faults near the Project site include the Rodgers Creek and Concord-Green Valley Faults, whose closest approaches lie within 5 miles of Vallejo. Other active faults in the vicinity include the Calaveras and Hayward Faults to the south. The Franklin Fault and Southampton Fault are located in Vallejo but are not considered active. The most recent major earthquake (M 6) occurred on the South Napa fault in August 2014. Ground shaking in the vicinity of Mare Island was reported as very strong. Some damage was reported to historic buildings on Mare Island including toppled chimneys and some damage to brick facades and parapets. Also, ground cracking, slight ground settlement around some foundations and some pavement cracking was observed. Except for the major earthquakes of 1898, 1906 and 2014, none of the other historical earthquakes appear to have resulted in any significant damage to structures or ground failure effects on Mare Island (Amec Foster Wheeler 2015).

The severity of seismic-induced ground shaking depends on several variables, such as earthquake magnitude and proximity, local geology, groundwater conditions, and topographic

setting. In general, ground-shaking hazards are most pronounced in areas that are underlain by loosely consolidated soil/sediment. Based on these factors and the forecasted probability for a magnitude 6.7 or greater earthquake to occur on one of the local faults, most parts of Vallejo are expected to experience “very strong” shaking during a large earthquake event (City of Vallejo 2016a).

The Project site contains limited areas of soil subject to liquefaction potential (Amec Foster Wheeler 2015). Seismic and conventional cone penetration tests (CPTs) were conducted on limited soil areas suspected of liquefaction potential in 2015. Based on the results, there are a few zones of liquefiable soils; however, as a result of the Project site’s flat topography, lateral spreading is unlikely to occur. Similarly, strength loss due to liquefaction was determined to pose little risk to the Project site. Limited evidence for liquefaction and ground settlement was found in the area affected by the 2014 Napa earthquake, even in areas where the liquefaction potential was deemed high (Amec Foster Wheeler 2015).

2.6.1 Regulatory Setting

State Policies and Regulations

Seismic Hazards Mapping Act: The Seismic Hazards Mapping Act was passed in 1990 to address earthquake hazards such as seismic induced liquefaction and landsliding. Under the Act, seismic hazard zones are mapped through the California Geological Survey’s Seismic Hazards Zonation Program in order to identify areas prone to liquefaction, earthquake-induced landslides, and amplified ground shaking. The purpose of the Act is to reduce the threat to public health and safety and to minimize the loss of life and property that may result from earthquake-triggered ground failures.

California Building Code: The CBC is Part 2 of Title 24 of the California Code of Regulations. The CBC incorporates the International Building Code, a model building code adopted across the United States. The CBC is updated every three years, and the current 2013 version took effect January 1, 2014. With the exception of certain additions, deletions, and amendments, the City adopted the CBC by reference pursuant to Title 12, Chapter 12.04 of the Vallejo Municipal Code. Through the CBC, the State provides a minimum standard for building design and construction. Of particular relevance, Chapter 16 of the CBC contains specific requirements for structural (building) design, including seismic loads. Chapter 18 of the CBC includes requirements for soil testing, excavation and grading, and foundation design.

Local Policies and Regulations

City of Vallejo Municipal Code: Title 12, Section 12.40.070, Excavating, Grading, and Filling, of the Vallejo Municipal Code includes a grading ordinance that seeks to mitigate hazards associated with erosion and land stability. The ordinance establishes requirements for grading permits, including submittal and construction requirements. An erosion and sedimentation control plan must be submitted with a grading permit application, along with a drainage plan and pollution control plan. Implementation of these plans will help ensure that the storm water runoff from a construction site will meet applicable water quality standards.

2.7 Greenhouse Gas Emissions

Global climate change is a change in the average weather of the earth which can be measured by wind patterns, storms, precipitation, and temperature. Scientific consensus has identified that the human-related emissions of GHGs above natural levels is a significant contributor to global

climate change. GHGs are any gases that absorb infrared radiation in the atmosphere, including water vapor, carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), fluorocarbons, and ozone (O_3). GHGs lead to the trapping and buildup of heat in the atmosphere near the earth's surface, known as the greenhouse effect. The atmosphere and the oceans are reaching their capacity to absorb CO_2 and other GHGs without significantly changing the earth's climate. The increase in GHGs in the earth's climate is projected to substantially affect a wide range of issues and resources, including sea level rise, flooding, water supply, agricultural and forestry resources, and energy demand. Primary activities associated with GHG emissions include transportation, utilities (e.g., power generation and transport), industry, manufacturing, agriculture, and residential.

GHG Pollutants

GHGs are defined as any gas that absorbs infrared radiation in the atmosphere, including water vapor, CO_2, CH_4, N_2O (but not NO_x nitrogen oxide, see below), and fluorocarbons. The global warming potential (GWP), or potential of a gas or aerosol to trap heat in the atmosphere, of different GHGs varies since GHGs absorb different amounts of heat. A common reference gas, CO_2, is used to relate the amount of heat absorbed to the amount of the gas emissions, referred to as CO_2 equivalent (CO_2e). CO_2e is the amount of GHG emitted multiplied by the GWP. The GWP of CO_2 is therefore defined as 1. Methane has a GWP of 25; therefore, 1 pound of methane equates to 25 pounds of CO_2e. Table 2.7-1 shows a range of gases with their associated GWP, their estimated lifetime in the atmosphere, and the GWP over a 100-year timeframe (per Federal and State reporting requirements).

Table 2.7-1 Global Warming Potential of Various Gases

Gas	Life in the Atmosphere (years)	100-year GWP (average)
Carbon Dioxide	50-200	1
Methane	12	25
Nitrous Oxide	120	298
HFCs	1.5-264	12-14,800
Sulfur Hexafluoride	3,200	22,800

Source: U.S. EPA 2015
Note: GWP = global warming potential; HFC = hydrofluorocarbon.

CO_2 is an odorless, colorless GHG. Natural sources of CO_2 include decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungi; evaporation from oceans; and volcanic outgassing. Anthropogenic (human-caused) sources of CO_2 include burning fuels, such as coal, oil, natural gas, and wood. Atmospheric CO_2 concentrations are currently 405 ppm as a global moving average (NOAA 2017).

Methane gas is the primary component of natural gas used in homes. As shown above, it has a GWP of approximately 25 (U.S. EPA 2015). Natural sources of methane arise from the decay of organic matter and from geological deposits known as natural gas fields, from which methane is extracted for fuel. Sources of decaying organic material include landfills and manure.

N_2O is a colorless gas with a GWP of approximately 310 that is produced by microbial processes in soil and water, including those reactions which occur in fertilizer containing nitrogen. In addition to agricultural sources, some industrial processes (nylon production, nitric

acid production) also emit N_2O. It is used in rocket engines, as an aerosol spray propellant, and in race cars. During combustion, NO_x (NO_x is a generic term for mono-nitrogen oxides, NO and NO_2) is produced as a criteria pollutant (see above) and is not the same as N_2O. Very small quantities of N_2O may be formed during fuel combustion by reaction of nitrogen and oxygen(U.S. EPA 2015).

Chlorofluorocarbons (CFCs) are gases formed synthetically by replacing all hydrogen atoms in methane or ethane with either chlorine and/or fluorine atoms. CFCs are nontoxic, nonflammable, insoluble, and chemically nonreactive in the troposphere (the level of air at the earth's surface). CFCs were first synthesized in 1928 for use as refrigerants, aerosol propellants, and cleaning solvents. CFCs destroy stratospheric O_3; therefore, production of them was largely stopped as required by the Montreal Protocol. Hydrofluorocarbons (HFCs) are synthetic man-made chemicals that are used as a substitute for CFCs in automobile air conditioners and refrigerants. Perfluorocarbons (PFCs) are used in aluminum production and in the semiconductor manufacturing industry. In general, fluorocarbons have a GWP between 12 and 14,800.

Sulfur hexafluoride (SF_6) is an inorganic, odorless, colorless, nontoxic, nonflammable gas. It also has the highest GWP of any gas at 22,800. Sulfur hexafluoride is used for insulation in electric power transmission and distribution equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas for leak detection.

O_3 is a GHG; however, unlike the other GHGs, O_3 in the troposphere is relatively short-lived and therefore is not global in nature. According to CARB, it is difficult to make an accurate determination of the contribution of O_3 precursors (NO_x and reactive organic compounds [ROCs]) to global warming (CARB 2006).

Short-lived climate pollutants (SLCPs) include methane, black carbon, tropospheric O_3, and fluorinated gases (F-gases). They are especially powerful climate forcers and harmful air pollutants that remain in the atmosphere for much less time than CO_2 and are responsible for about 40 percent of current global warming. Reducing SLCPs is part of Governor Brown's 2030 goals; however, methods for the calculation of impacts from black carbon and tropospheric O_3 have not been developed as part of the Federal Code of Regulations or the California Mandatory Reporting Rule regulations and therefore have not been addressed in this document.

Regional GHG Emissions

Fossil fuel combustion is responsible for the vast majority of GHG emissions in California, and CO_2 is the primary GHG. In 2014, California GHG emissions totaled 163.3 million $MTCO_2e$ (metric tons of carbon dioxide equivalent). This 2014 total represents a 5-percent increase of GHG emissions since 1990, but a 10-percent decrease from 2005 levels (GHG emissions peaked at 7,263 million $MTCO_2e$ in 2007). In 2014, approximately 37 percent of GHG emissions were associated with transportation, approximately 24 percent was associated with industrial processes, 20 percent was associated with electricity generation, and 20 percent was associated with a balance of agricultural, residential, and commercial use (U.S. EPA 2015).

The City emitted approximately 588,040 $MTCO_2e$ in the baseline year 2008. The transportation sector was the largest contributor to GHG emissions (47 percent), emitting approximately 277,720 $MTCO_2e$ in 2008. Emissions from the residential sector were the next largest contributor (29 percent), with approximately 172,310 $MTCO_2e$. The commercial and industrial sectors accounted for a combined 19 percent of the total, approximately 110,390 $MTCO_2e$. Emissions from solid waste comprised 2 percent of the total. Emissions from electricity used to

pump and treat water and emissions from off-road fuel use each accounted for 1 percent. The City has set an emissions reduction target of 15 percent below 2008 levels by the year 2020, consistent with the State's GHG reduction target as outlined in AB 32 (City of Vallejo 2012).

2.7.1 Regulatory Setting

Federal Policies and Regulations

United States Mandatory Report Rule for GHG (2009): In response to the endangerment finding, the U.S. EPA issued the Mandatory Reporting of GHG Rule that requires substantial emitters of GHG emissions (e.g., large stationary sources) to report GHG emissions data. Facilities that emit 25,000 $MTCO_2e$ per year are required to submit an annual report.

Update to Corporate Average Fuel Economy Standards (2010/2012): The current Corporate Average Fuel Economy (CAFE) standards (for model years 2011 to 2016) incorporate stricter fuel economy requirements promulgated by the federal government and California into one uniform standard. Additionally, automakers are required to cut GHG emissions in new vehicles by roughly 25 percent by 2016 (resulting in a fleet average of 35.5 miles per gallon [mpg] by 2016). Rulemaking to adopt these new standards was completed in 2010. California agreed to allow auto makers who show compliance with the national program to be considered in compliance with state requirements. The federal government issued new standards in 2012 for model years 2017 to 2025, which will require a fleet average of 54.5 mpg in 2025.

U.S. EPA Regulation of Stationary Sources under the Clean Air Act: Pursuant to its authority under the CAA, the U.S. EPA has been developing regulations for new stationary sources such as power plants, refineries, and other large sources of emissions. Pursuant to the President's 2013 CAP, the U.S. EPA will be directed to develop regulations for new stationary sources.

State Policies and Regulations

Executive Order B-20-15: Executive Order B-30-15, signed April 29, 2015, sets a goal of reducing GHG emissions within the State to 40 percent of 1990 levels by year 2030. Executive Order B-30-15 also directs CARB to update the Scoping Plan to quantify the 2030 GHG reduction goal for the State and requires State agencies to implement measures to meet the interim 2030 goal of Executive Order B-30-15 as well as the long-term goal for 2050 in Executive Order S-03-5. It also requires the Natural Resources Agency to conduct triennial updates of the California adaption strategy, Safeguarding California, in order to ensure climate change is accounted for in State planning and investment decisions.

AB 32, the Global Warming Solutions Act (2006): Current State of California guidance and goals for reductions in GHG emissions are generally embodied in AB 32, the Global Warming Solutions Act. AB 32 was passed by the California State legislature on August 31, 2006, to place the State on a course toward reducing its contribution of GHG emissions. AB 32 follows the 2020 tier of emissions reduction targets established in Executive Order S-3-05.

CARB Scoping Plan

AB 32 mandated CARB develop a plan, updated every five years, to describe the approach the State will take to reduce GHG in order to meet the 2020 reduction goals. The *Scoping Plan* was adopted by CARB in 2008 with the first update approved in 2014.

The 2008 Scoping Plan identified that GHG emissions in California are anticipated to be approximately 596 million metric tons (MMT) of CO_2e in 2020. In December 2007, CARB approved a 2020 emissions limit of 427 $MMTCO_2e$ (471 million tons) for the state. The 2020 target requires a total emissions reduction of 169 MMTCO2e, 28.5 percent from the projected emissions of the business-as-usual (BAU) scenario for the year 2020 (i.e., 28.5 percent of 596 MMTCO2e).

SB 375: In 2008, SB 375, the Sustainable Communities and Climate Protection Act, was adopted to connect the GHG emissions reduction targets established in the 2008 Scoping Plan for the transportation sector to local land use decisions that affect travel behavior. Its intent is to reduce GHG emissions from light-duty trucks and automobiles (excludes emissions associated with movement of goods) by aligning regional long-range transportation plans, investments, and housing allocations to local land use planning to reduce VMT and vehicle trips. Specifically, SB 375 required CARB to establish GHG emissions reduction targets for each of the 18 metropolitan planning organization (MPOs).

AB 1493: California vehicle GHG emission standards were enacted under AB 1493 (Pavley I). Pavley I is a clean-car standard that is anticipated to reduce GHG emissions from new passenger vehicles (light-duty auto to medium-duty vehicles) by 30 percent from 2009 through 2016. California implements the Pavley I standards through a waiver granted to California by the U.S. EPA. In 2012, the U.S. EPA issued a Final Rulemaking that sets even more stringent fuel economy and GHG emissions standards for model years 2017 through 2025 light-duty vehicles (see also the discussion on the update to the CAFE standards under "Federal Laws," above). In January 2012, CARB approved the Advanced Clean Cars program (formerly known as Pavley II) for model years 2017 through 2025. The program combines the control of smog, soot, and global warming gases and requirements for a greater number of zero-emission vehicles into a single package of standards. Under California's Advanced Clean Car program, by 2025, new automobiles will emit 34 percent fewer global warming gases and 75 percent fewer smog-forming emissions.

Executive Order S-01-07: On January 18, 2007, the State set a new low carbon fuel standard (LCFS) for transportation fuels sold in California. Executive Order S-1-07 sets a declining standard for GHG emissions, measured in CO_2e grams per unit of fuel energy sold in the state. The LCFS requires a reduction of 2.5 percent in the carbon intensity of California's transportation fuels by 2015 and a reduction of at least 10 percent by 2020. The standard applies to refiners, blenders, producers, and importers of transportation fuels, and would use market-based mechanisms to allow providers to choose how they reduce emissions during the "fuel cycle" using the most economically feasible methods.

Executive Order B-16-2012: On March 23, 2012, the State directed CARB, the CEC, the Public Utilities Commission, and other relevant agencies to work with the Plug-in Electric Vehicle Collaborative and the California Fuel Cell Partnership to establish benchmarks to accommodate zero-emissions vehicles in major metropolitan areas, including infrastructure to support them (e.g., electric vehicle charging stations). The executive order also directs the number of zero-emission vehicles in California's State vehicle fleet to increase through the normal course of fleet replacement so that at least 10 percent of fleet purchases of light-duty vehicles are zero-emission by 2015 and at least 25 percent by 2020. The executive order also establishes a target for the transportation sector of reducing GHG emissions to 80 percent below 1990 levels by 2050.

California Building Code, Building and Energy Efficiency Standards: Energy conservation standards for new residential and nonresidential buildings were originally adopted by the CEC in June 1977 (CCR, Title 24, Part 6). Title 24 requires the design of building shells and building components to conserve energy. The standards are updated about every three years to allow for consideration of new energy efficiency technologies and methods. In 2012, the CEC adopted the 2013 Building and Energy Efficiency Standards, which went into effect on July 1, 2014. Buildings that are constructed in accordance with the 2013 Building and Energy Efficiency Standards are 25 percent (residential) to 30 percent (nonresidential) more energy efficient than the 2008 standards as a result of changes in requirements for windows, insulation, lighting, ventilation systems, and other features.

Most recently, the CEC adopted the 2016 Building and Energy Efficiency Standards. The 2016 standards will continue to improve upon the current 2013 standards for new construction of, and additions and alterations to, residential and nonresidential buildings. These standards will go into effect on January 1, 2017. Under the 2016 standards, residential buildings are 28 percent more energy efficient than the 2013 standards, and non-residential buildings are 5 percent more energy efficient.

California Green Building Code (CALGreen): On July 17, 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (24 CCR, Part 11, known as "CALGreen") was adopted as part of the California Building Standards Code. CALGreen established planning and design standards for sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and indoor air contaminants. The mandatory provisions of CALGreen became effective January 1, 2011 and were updated most recently in 2013. The building efficiency standards are enforced through the local building permit process.

Regional Policies and Regulations

Bay Area Air Quality Management District: BAAQMD has adopted a resolution to reduce GHG emissions by:

- Setting a goal for the Bay Area region to reduce GHG emissions by 2050 to 80 percent below 1990 levels.
- Developing a Regional Climate Protection Strategy to make progress towards the 2050 goal, using the Air District's Clean Air Plan to initiate the process.
- Developing a 10-point work program to guide the Air District's climate protection activities in the near term.

BAAQMD is working on a Regional Climate Protection Strategy for achieving the 2050 goal for GHG emission reductions that complements existing planning efforts at the State, regional, and local levels, and uses the Air District's 2015 Draft Clean Air Plan to initiate the process. Based on BAAQMD's 10-Point Climate Action Work Program, the Regional Climate Protection Strategy will include an updated GHG emissions inventory and forecast and GHG reduction goals and interim targets for the Bay Area.

Plan Bay Area, Strategy for a Sustainable Region: The ABAG, MTC, BAAQMD, and BCDC share joint responsibility for creating, updating, and overseeing Plan Bay Area, the SCS for the nine-county Bay Area region pursuant to SB 375. Under SB 375, Plan Bay Area's targets are a 7 percent per capita reduction in GHG emissions from 2005 by 2020, and 15 percent per capita

reduction from 2005 levels by 2035. SB 375 requires CARB to periodically update the targets, no later than every 8 years. CARB plans to propose updated targets for consideration in 2016, with the intent to make them effective in 2018; SCSs adopted in 2018 would be subject to the updated targets.

Each of the agencies involved in the SCS has a different role in regional governance. ABAG primarily deals with regional land use, housing, environmental quality, and economic development, while MTC is tasked with regional transportation planning, coordinating, and financing. BAAQMD is responsible for regional air pollution regulation. BCDC's focus is to preserve, enhance, and ensure responsible use of San Francisco Bay.

These agencies jointly created Plan Bay Area, adopted in July 2013 and now a regulating portion of the Bay Area's 25-year RTP, which in part dictates funding for local transportation programs and improvements. By federal law, the RTP must be internally consistent. Therefore, the more than $200 billion dollars of transportation investment typically included in the RTP must align with and support the SCS land use pattern. State law also requires that the updated 8-year regional housing need allocation prepared by ABAG for municipal housing element updates is consistent with the SCS.

Plan Bay Area sets a development pattern for the region, which, when integrated with the transportation network and other transportation measures and policies, would reduce GHG emissions from cars and light trucks beyond the per capita reduction targets identified by CARB pursuant to SB 375.

Local Policies and Regulations

Vallejo CAP: The City adopted its CAP in March 2012. The CAP provide a roadmap for the City to become a more sustainable community by calling for changes in green building practices, energy efficiency, transit-oriented development, mixed-use/higher-density development, recycling and composting, water conservation, and renewable energy. The CAP identifies a target for the City to achieve 15 percent below 2008 levels by year 2020. To achieve the City's GHG reduction target, the CAP outlines energy, transportation, land use, water, solid waste, and off-road equipment GHG reduction measures that would be implemented in the city.

2.8 Hazards and Hazardous Materials

Mare Island is currently being repurposed from a former Navy base and shipyard for development planned under the guidance of the City's Specific Plan. The Navy base was in operation from the mid-1800s until its decommissioning in 1996. Ship building and related activities consisted of: operating machine shops; fueling facilities; metal fabrication and plating shop; battery shops; and storage of fuel tanks. Additionally, fuels, lubricants, paints, solvents and other industrial chemicals were used (U.S. Department of the Navy & City of Vallejo 1998). Past contamination of the sites in the Project area have occurred due to leaking underground storage tanks, disposal of hazardous materials, use of hazardous building materials and various past industrial practices. Table 2.8-1 below summarizes clean-up efforts at the Project site.

Table 2.8-1: Project Site Remediation

Clean-Up Location	Materials	Work Done/ Status	Lead Agency
Base Realignment and Closure (BRAC)	See specific details below	Transfer of parcels XV-A-1 and XV-A-2 to the City of Vallejo. Parcel XV-B-1 expected transfer in 2017.	Department of the Navy

Parcel XV-B-1	500-gallon UST and contaminated soils (VOCs, SVOCs), coal tar distillates, polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs) and metals	Tank removed; remediation largely complete. FOST expected July 2017.	Department of the Navy
Parcel XV-A	Electrical coating, Oil-insoluble resin, insulating compound, petroleum, insulating oil, hydrocarbon fluid, LBP, asbestos, PCBs, USTs, radon	Hazardous waste accumulation areas were sampled; no remediation was required. DON released the two sites with radiological concerns. Parcels XV-A-1 and XV-A-2 are owned by the City of Vallejo.	Department of the Navy
Buildings 571, 627, 759, 791, 993	Corrosive solids, combustible liquids, combustible solids, flammable liquids, mixed waste, toxic waste and corrosives	Closed	Department of the Navy
Buildings 617, 621, 995, 997, 999, 1013, 1015	UST, PCBs, friable and damaged asbestos, LBP, lead in industrial soil	MINS building/ parcel closure process, some remediation or removal of hazardous materials	U.S. EPA with USACE
IR Site 17 and Building 503 Area	Building 503 had paints, varnishes, solvents, heavy metals, VOCs, SVOCs and PCBs; lead and PCBs in subsurface soil and the VOCs 1,2,4-trimethylbenzene, ethylbenzene, m,p-xylene, o-xylene, trichloroethene and vinyl chloride in soil gas	Clean up of chlorinated solvents, underground storage tank sampling. Ongoing clear-up efforts are being performed. Soil vapor monitoring will be ongoing and will be complete before parcel can be transferred to the City of Vallejo.	Department of the Navy

Source: City of Vallejo 2013a; U.S. Department of the Navy & City of Vallejo 1998.

Reuse Area 1A had five buildings which contained hazardous waste, Buildings 571, 627, 759, 791 and 993. The materials stored included: corrosive solids, combustible liquids, combustible solids, flammable liquids, mixed waste, toxic waste and corrosives. All buildings have a status listed as Closed (U.S. Department of the Navy & City of Vallejo 1998). Two buildings were reported to have Installation Restoration Programs: Buildings 629 and 503. Building 503 is within the Project site and contained paints, varnishes, solvents, heavy metals, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) and polychlorinated biphenyl (PCB) in the Old Paint Shop foundation. The Installation Restoration Program (IRP) was created by the Department of Defense (DOD) to restore and remediate sites impacted by past operations. This was done in partnership with the U.S. EPA, state and local regulatory agencies and community members.

Parcel XV-B-1 contained a Military Underground Storage Tank (UST) where a fuel station once stood. The 500-gallon waste oil tank and contaminated soils were removed. The remediation on Parcel XV-B-1 is largely complete (Refer to Figure 2). The highest remaining contaminant concentrations in soil and groundwater are composed of: VOCs and SVOCs, coal tar distillates, PCBs, polycyclic aromatic hydrocarbons (PAHs) and metals. These are found along and near the former product distribution line and former tank farms. In general, areas of elevated contaminant concentrations in soil correlate with high contaminant concentrations in groundwater. A Finding of Suitability to Transfer (FOST) Parcel XV-A was concluded in January

2001 (U.S. Department of the Navy 2001). Hazardous materials or substances were historically stored on six parcels within Parcel XV-2; however only one, Parcel 01-K had reportable quantities. Two sites of potential concerns posed radiological concerns, however the U.S Department of the Navy released these sites for unrestricted use and the Department of Toxic Substances Control (DTSC) approved the radiological release reports in 1997. Soil and groundwater samples were taken at the sanitary wastewater pump stations. Analysis showed there was no threat to human health or the environmental and U.S. Department of the Navy concluded that no further action was needed at these sites.

Part of the clean-up effort included a search for the site on available environmental records, conducted on May 13, 2015. Reuse Area 1A was listed on the DOD database as Mare Island Naval Station. The Project site was not listed in any database searched by Environmental Database Resources, Inc. The Mare Island North Housing Area did show up on two environmental databases, Voluntary Cleanup Program (VCP) and Envirostor. VCP noted the site was cleaned up with DTSC as a lead agency and in 2005, DTSC issued a PEA indicating no further action was necessary. The parcel was deemed fit for transfer to the City for development. Envirostor did not list any other cleanup sites on the Project site.

Alco Iron & Metal Co is located within one-eighth of a mile of the Project site and was listed in two databases: National Pollutant Discharge Elimination System (NPDES) Permits Listing database and the State of California Solid Waste and Recycling Facilities (SWRCY) database. It is listed as an active project site as of 1997 with no further information reported. It is listed as approximately seven feet higher than the Project site and appears to be located in Reuse Area 1B, slated for heavy industrial use. The other sites found were of significant distance away and/ or at a lower elevation than the Project Site (EDR 2015).

A number of remediation action sites are located within Reuse Area 1A, including closed military sites, military UST closed sites and one active site. The open site is for land occupied by the Installation Remediation site 17 (IR17) and Building 503. Contaminated soil was excavated; however, the U.S. Navy created an additional investigation and remedial action plan in 2015 for ongoing soil vapor monitoring (SWRCB 2016).

The closest schools to the site are the Mare Island Health and Fitness Academy, a K-8 school located 0.8 mile south of the site, and Touro University located 1.7 miles south of the site (see Figure 4).

2.8.1 Regulatory Setting

Federal Policies and Regulations

Resources Conservation and Recovery Act of 1976, as amended by the Hazardous and Solid Waste Amendments of 1984: Federal hazardous waste laws are generally promulgated under RCRA. These laws provide for the “cradle to grave” regulation of hazardous wastes. Any business, institution, or other entity that generates hazardous waste is required to identify and track its hazardous waste from the point of generation until it is recycled, reused, or disposed. The DTSC is responsible for implementing the RCRA program as well as California’s own hazardous waste laws, which are collectively known as the Hazardous Waste Control Law. Under the Certified Unified Program Agency (CUPA) program, California Environmental Protection Agency (CalEPA) has in turn delegated enforcement authority to the Solano County Department of Environmental Management for State law regulating hazardous waste producers or generators in Vallejo.

Emergency Planning Community Right-to-Know Act: The Emergency Planning Community Right-to-Know Act (EPCRA), also known as SARA Title III, was enacted in October 1986. This law requires any infrastructure at the State and local levels to plan for chemical emergencies. Reported information is then made publicly available so that interested parties may become informed about potentially dangerous chemicals in their community. EPCRA Sections 301 through 312 are administered by U.S. EPA's Office of Emergency Management. U.S. EPA's Office of Information Analysis and Access implement the EPCRA Section 313 program. In California, SARA Title III is implemented through California Accidental Release Program (CalARP).

Hazardous Materials Transportation Act: The DOT regulates hazardous materials transportation under Title 49 CFR. State agencies that have primary responsibility for enforcing federal and State regulations and responding to hazardous materials transportation emergencies are the California Highway Patrol and Caltrans. These agencies also govern permitting for hazardous materials transportation. Title 49 CFR reflects laws passed by Congress as of January 2, 2006.

Federal Response Plan: The Federal Response Plan of 1999 is a signed agreement among 27 federal departments and agencies, including the American Red Cross, that: 1) provides the mechanism for coordinating delivery of federal assistance and resources to augment efforts of State and local governments overwhelmed by a major disaster or emergency; 2) supports implementation of the Robert T. Stafford Disaster Relief and Emergency Act, as well as individual agency statutory authorities; and 3) supplements other federal emergency operations plans developed to address specific hazards. The Federal Response Plan is implemented in anticipation of a significant event likely to result in a need for federal assistance or in response to an actual event requiring federal assistance under a Presidential declaration of a major disaster or emergency.

State Policies and Regulations

California Health and Safety Code and Code of Regulations: California Health and Safety Code Chapter 6.95 and 19 California Code of Regulations Section 2729 set out the minimum requirements for business emergency plans and chemical inventory reporting. These regulations require businesses to provide emergency response plans and procedures, training program information, and a hazardous material chemical inventory disclosing hazardous materials stored, used, or handled on site. A business which uses hazardous materials or a mixture containing hazardous materials must establish and implement a business plan if the hazardous material is handled in certain quantities.

California Building Code: The State of California provided a minimum standard for building design through the 2010 CBC, which is located in Part 2 of Title 24 of the CCR. The 2010 CBC is based on the 1997 Uniform Building Code, but has been modified for California conditions. It is generally adopted on a jurisdiction-by-jurisdiction basis, subject to further modification based on local conditions. Commercial and residential buildings are plan-checked by local city and county building officials for compliance with the CBC Typical fire safety requirements of the CBC included; the installation of sprinklers in all high-rise buildings; the establishment of fire resistance standards for fire doors, building materials, and particular types of construction; and the clearance of debris and vegetation within a prescribed distance from occupied structures in wildlife hazard areas.

California Fire Code (CFC): Part 9 of Title 24, CCR contains the California Fire Code (CFC). Updated every three years, the CFC includes provisions and standards for emergency planning

and preparedness, fire service features, fire protection systems, hazardous materials, fire flow requirements, and fire hydrant locations and distribution. The Vallejo Fire Department provides fire protection services for the city and as such, implements and enforces the CFC in Vallejo.

Asbestos-Containing Materials Regulations: State-level agencies, in conjunction with the U.S. EPA and Occupational Safety and Health Administration (OSHA), regulate removal, abatement, and transport procedures for asbestos-containing materials (ACMs). Releases of asbestos from industrial, demolition, or construction activities are prohibited by these regulations and medical evaluation and monitoring is required for employees performing activities that could expose them to asbestos. Additionally, the regulations include warnings that must be heeded and practices that must be followed to reduce the risk for asbestos emissions and exposure. Finally, federal, State, and local agencies must be notified prior to the onset of demolition or construction activities with the potential to release asbestos.

Polychlorinated Biphenyls (PCBs): The U.S. EPA prohibited the use of PCBs in the majority of new electrical equipment starting in 1979, and initiated a phase-out for much of the existing PCB-containing equipment. The inclusion of PCBs in electrical equipment and the handling of those PCBs are regulated by the provisions of the Toxic Substances Control Act, 15 U.S.C. § 2601 et seq. (TSCA). Relevant regulations include labeling and periodic inspection requirements for certain types of PCB-containing equipment and outline highly specific safety procedures for their disposal. The State of California likewise regulates PCB-laden electrical equipment and materials contaminated above a certain threshold as hazardous waste; these regulations require that such materials be treated, transported, and disposed accordingly. At lower concentrations for non-liquids, regional water quality control boards may exercise discretion over the classification of such wastes.

Lead-based Paint (LBP): Cal OSHA's Lead in Construction Standard is contained in Title 8, Section 1532.1 of the California Code of Regulations. The regulations address all of the following areas: permissible exposure limits; exposure assessment; compliance methods; respiratory protection; protective clothing and equipment; housekeeping; medical surveillance; medical removal protection; employee information, training, and certification; signage; record keeping; monitoring; and agency notification.

Local Policies and Regulations

City of Vallejo Municipal Code: The City of Vallejo Municipal Code includes requirements that pertain to hazardous materials. Specifically, Chapter 7.66 (Hazardous Materials Disclosure) requires that all businesses disclose the presence of hazardous materials handled, stored, used or disposed at the location of the business to the fire chief of the city so that fire fighters responding to fires or other emergencies in structures that house hazardous material can respond appropriately and take measures to protect their own lives and to protect the community in general.

2.9 Hydrology and Water Quality

Local Hydrology and Site Drainage

Mare Island is located within the San Pablo Bay watershed and within the San Pablo Basin Hydrologic Planning Area of the Basin Plan (RWQCB 2015). Mare Island is located in a region with a Mediterranean climate, receiving an annual average of 20.4 inches of rain which falls between October and April while remaining months of the year typically experience dry conditions (City of Vallejo 2016a). Adjacent to the east of the Project site, the Mare Island Strait

is the southernmost reach of the Napa River, which is confined to the east and west by the City of Vallejo and Mare Island, respectively. The Mare Island Strait and greater Napa River drain directly into the San Pablo Bay.

The Project site is primarily developed with impermeable surfaces, consisting of vacant lots, abandoned buildings, and transportation corridors. Existing onsite surfaces include approximately 3,803,610 sf (56.2 percent) of pervious surfaces in the form of landscape areas, planters, lawns, gravel, and vegetation, and approximately 2,962,832 sf (43.8 percent) of impervious surfaces in the form of buildings, roads, walkways, and concrete slabs. Storm water and surface runoff from existing surfaces discharges either directly into natural drainage areas, such as adjacent wetlands and pervious areas, or the four existing storm drains which capture and convey runoff into the Mare Island Straight.

Groundwater

The Project site lies within the Napa-Sonoma Lowlands Subbasin of the Napa-Sonoma Valley Groundwater Basin. Groundwater is present in unconsolidated Bay Mud underlying the fill material that cover the Project site. The top of the water table is quite shallow, resting just above the top of the silty clay unit. Shallow groundwater generally flows north and northeast towards the Mare Island Strait at depths ranging from 1.5 to 3.5 feet below ground surface (bgs) (U.S. EPA 2014). Groundwater underlying the City and Mare Island is generally salty, with exceptionally high chloride concentrations.

Pursuant to the Sustainable Groundwater Management Act (SGMA), the Department of Water Resources (DWR) California Statewide Groundwater Elevation Monitoring (CASGEM) Program classifies the Napa-Sonoma Lowlands subbasin as a basin of very low priority (DWR 2016)[5]. Due to limited DWR resources and the current conditions of medium- and high priority basins, SGMA encourages management of low- and very low priority basins under sustainable groundwater management plans, but such plans for these basins are not required. As such, no groundwater management plan has been adopted for the Napa-Sonoma Lowlands subbasin (Vallejo Water Division 2014).

Due to current availability of surface water supplies, the City does not utilize groundwater supplies for municipal use, and has no plans to seek groundwater supply (Vallejo Water Division 2014). City water supplies are further discussed in Section 2.17, *Utilities and Service Systems.*

Site Contamination

Following closure of MINSY and transfer of U.S. Navy parcels to the City, the Navy conducted several Remedial Investigations and concluded that the occurrence of contaminants in IR 17 and Building 503 Area had the potential to represent a long-term source of soil and groundwater contamination (Naval Facilities Engineering Command 2016). These locations were formerly a paint and varnish manufacturing facilities for the MINSY and resulted in the use and storage of toxic oils, solvents, and resins. Located within the Project site and adjacent areas, the IR17 and Building 503 Area has undergone substantial remediation actions performed by the Navy to ensure appropriate remediation of soil and groundwater contamination. Upon completion of corrective actions, the Navy will transfer remaining federally owned parcels to the City.

[5] In response to the 2009 Comprehensive Water Package and the 2014 SGMA, the DWR developed a Strategic Plan for its Sustainable Groundwater Management Program, and expanded their responsibilities to include the identification of groundwater basins subject to critical overdraft conditions (DWR 2016). The DWR prioritizes groundwater basins identified as having a CASGEM ranking of high to medium for Sustainable Groundwater Management plans and programs due to limited availability and the critical state of these basins.

Site Flooding and Inundation

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) for Solano County, significant portions the Project site to the east of Railroad Avenue and north of H Street are located within a 100-year flood plain, with the central north areas of the site being located within a 500-year flood plain (FEMA 2016).

The California Department of Conservation Tsunami Inundation map for Solano County notes the potential for inundation of low lying areas adjacent to the Bay shoreline and along the Napa River. No structures on Mare Island, including within the Project site, would be subject to inundation (California Department of Conservation 2009).

Due to low elevations and adjacency to tidal regions of the Bay, portions of Mare Island and much of the northern areas of the Project site have been identified as areas potentially exposed to near-term sea level rise. In a vulnerability assessment of the San Francisco Bay area, an estimated 16-inch rise in sea levels by the mid-century would result in the exposure of approximately 281 square miles of the San Francisco Bay area to flooding, and exposure of 333 square miles of Bay shorelines to flooding in the event of a 55-inch sea level rise (BCDC 2011). To address issues related to rising sea levels and global climate change, BCDC has adopted policies into the Bay Plan to protect vulnerable shoreline areas and ensure safety of development and the public.

2.9.1 Regulatory Setting

Federal Policies and Regulations

Clean Water Act (CWA): The Federal CWA and subsequent amendments, under the enforcement authority of the U.S. EPA, was established "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." The Act established the basic structure for regulating discharges of pollutants into the waters of the U.S. It gave the U.S. EPA the authority to implement pollution control programs such as setting wastewater standards for industry. The CWA also set water quality standards for all contaminants in surface waters and made it unlawful for any person to discharge any pollutant from a point source into navigable waters, unless a permit was obtained under its provisions.

Clean Water Act Section 303(d) List of Impaired Water Bodies and Total Maximum Daily Loads: In accordance with Section 303(d) of the CWA, states must present the U.S. EPA with a list of "impaired water bodies," defined as those water bodies that do not meet water quality standards. The CWA also requires the development of actions to improve water quality of impaired water bodies. The TMDL process includes development of a TMDL report with an implementation plan, and adopting and amending the Basin Plan to legally establish the TMDL and to specify regulatory requirements for compliance. As part of the Basin Plan Amendment, waste load allocations are specified for entities that have permitted discharges.

Clean Water Act Section 402 National Discharge Elimination System (NPDES) Program: The NPDES Stormwater Program regulates stormwater discharges from three potential sources: municipal separate storm sewer systems (MS4), construction activities, and industrial activities. As authorized by the CWA, the NPDES permit program controls water pollution by regulating point sources that discharge pollutants into waters of the U.S. and MS4 facilities. To prevent harmful pollutants from being washed or dumped into an MS4 facility, operators must obtain a NPDES permit and develop a stormwater management program. The program

regulates for TMDL, which is the maximum amount of an impairing substance or stressor (e.g., pollutant) that a water body can receive and assimilate, and still safely meet Water Quality Standards, defined by the Federal CWA. Implementing programs to meet TMDLs defined under the NPDES Stormwater Program is performed at the state level.

FEMA National Flood Insurance Program: The National Flood Insurance Program (NFIP) was created by Congress in 1968. It provided a means for property owners to financially protect themselves from flood damage. The NFIP offers flood insurance to homeowners, renters, and business owners if their community participates in the program. Participating communities agree to adopt and enforce ordinances that meet or exceed FEMA requirements to reduce the risk of flooding. The City of Vallejo is a participating community and must adhere to the NFIP.

State Policies and Regulations

Water Quality Control Plan for the San Pablo Bay Basin: Regional authority for planning, permitting, and enforcement in California is delegated to the nine RWQCBs. The regional boards are required to formulate and adopt water quality control plans for all areas in the region and establish water quality objectives in the plans. As previously stated, the City of Vallejo is within the jurisdiction of the San Francisco Bay RWQCB (Region 2).

The San Francisco Bay RWQCB addresses region-wide water quality issues through the creation of the Basin Plan. The Basin Plan was updated most recently in March 2015. This Basin Plan designates beneficial uses of the State waters within Region 2, describes the water quality that must be maintained to support such uses, and provides programs, projects, and other actions necessary to achieve the standards established in the Basin Plan. The *Water Quality Control Policy for the Enclosed Bays and Estuaries of California*, as adopted by the SWRCB in 1995, also provides water quality principles and guidelines to prevent water quality degradation and protect the beneficial uses of waters of enclosed bays and estuaries.

Municipal stormwater discharges in the City of Vallejo are regulated under the San Francisco Bay RWQCB's recently revised MRP, NPDES permit Order No. R2-2015-0049, adopted November 19, 2015.

Provision C.3 of the MRP addresses post-construction stormwater requirements for new development and redevelopment projects that create and/or replace 10,000 square feet or more of impervious area or special land use categories (i.e., auto service facilities, gasoline stations, restaurants, and uncovered parking lots) that create and/or replace 5,000 square feet of impervious surfaces. Provision C.3 of the MRP also mandates that new development projects implement the following measures:

- Incorporate site design, source control, and stormwater treatment measures into the project design.
- Minimize the discharge of pollutants in stormwater runoff and non-stormwater discharge
- Prevent increases in runoff flows as compared to pre-development conditions.

LID methods are the primary mechanisms for implementing such controls. Additionally, projects within the city that drain to a natural water body must also construct and maintain hydrograph modification measures to ensure that estimated post-project runoff peaks and durations do not exceed estimated pre-project peaks and duration.

The 2015 MRP requires any regulated project to treat 100 percent of the calculated runoff (based on the sizing criteria described in the C.3 provisions of the MRP) with LID treatment

measures that include harvesting and reuse, infiltration, evapotranspiration, or biotreatment/bioretention. Projects that create or replace 2,500 square feet or more, but less than 10,000 square feet, of impervious surface must implement site design measures to reduce stormwater runoff. Project applicants must also prepare an Operation and Maintenance Plan to maintain the stormwater treatment measures and execute agreements that these treatment measures will be maintained in perpetuity.

California Coastal Act of 1979: The California Coastal Act of 1976 established three designated coastal management agencies to plan and regulate the use of land and water in the coastal zone: the California Coastal Commission, BCDC, and the California Coastal Conservancy. Under California's federally approved Coastal Management Program, the California Coastal Commission management development along the California coast except for San Francisco Bay, where the BCDC oversees development. The mission of the California Coastal Commission is to purchase, protect, restore, and enhance coastal resources and provide shoreline access.

California Porter-Cologne Water Quality Control Act: This Act grants the SWRCB ultimate authority over state water rights and water quality policy and establishes nine Regional Water Quality Control Boards to oversee water quality on a day-to-day basis at the local/regional level. This Act is the basic water quality control law for California and works in concert with the Federal CWA. The Porter-Cologne Act states that a RWQCB may include water discharge prohibitions applicable to particular conditions, areas, or types of waste within its regional plan. Section 13170 of the California Water Code also authorizes the SWRCB to adopt water quality control plans on its own initiative.

State Water Resources Control Board: The SWRCB administers water rights, water pollution control, and water quality functions throughout the state, while the RWQCBs conduct planning, permitting, and enforcement activities. The NPDES permit is divided into two parts: construction and post-construction. The construction permitting is administered by the SWRCB, while the post-construction permitting is administered by the RWQCB.

Development projects typically result in the disturbance of soil that requires compliance with the NPDES General Permit, Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Construction Activities (Order No. 2009-0009-DWQ, NPDES Number CAS000002). This Statewide General Construction Permit regulates discharges from construction sites that disturb 1 or more acres of soil. By law, all storm water discharges associated with construction activity where clearing, grading, and excavation results in soil disturbance of at least 1 acre of total land area must comply with the provisions of this NPDES permit, and develop and implement an effective Storm Water Pollution Prevention Plan (SWPPP). The project applicant must submit a Notice of Intent (NOI) to the SWRCB, to be covered by the NPDES General Permit, and prepare the SWPPP before beginning construction. Implementation of the SWPPP starts with the commencement of construction and continues through the completion of the project. Upon completion of the project, the applicant must submit a Notice of Termination (NOT) to the SWRCB to indicate that construction is completed.

Non-Point Source Pollution Control Program: The purpose of the Non-Point Source (NPS) Pollution Control Program is to improve the state's ability to effectively manage NPS pollution and conform to the requirements of the CWA and the Federal Coastal Zone Act Reauthorization Amendments of 1990. These documents were developed by staff of the SWRCB's Division of Water Quality and the California Coastal Commission (CCC), in coordination with the RWQCBs and staff from over 20 other state agencies.

Bay Protection and Toxic Cleanup Program: In 1989, the California legislature established the Bay Protection and Toxic Cleanup Program with the goal of protecting present and future beneficial uses of the Bay and estuarine waters of California. In addition, the program was tasked with identifying toxic hot spots (i.e., localized areas with elevated concentrations of pollutants) and developing prevention and control strategies to remediate the toxic hot spots. As part of this program, in 1993 the San Francisco Bay RWQCB initiated the Regional Monitoring Program (RMP) that includes water quality and sediment monitoring near Vallejo. The RMP is a collaborative effort between the San Francisco Estuary Institute, RWQCB, and the regulated discharger communities. The purpose of the program is to assess regional water quality conditions, characterize patterns and trends of contaminant concentrations and distribution in the water column, and identify general sources of contamination in San Francisco Bay. The program has established a database of water quality and sediment quality in the Bay, particularly with respect to trace elements and organic contaminants.

Local Policies and Regulations

BCDC: The California Coastal Act carries out its mandate locally through BCDC. BCDC's jurisdiction for San Francisco Bay includes all sloughs, marshlands between mean high tide and five feet above mean sea levels, tidelands, submerged lands, and land within 100 feet of the Bay shoreline. The previse boundaries are determined by BCDC upon request. Local government retains its authority over development more than 100 feet inland from the Bay shoreline and the provisions of the Bay Plan do not apply outside BCDC's jurisdiction for purposes of implementing CEQA.

As a permitting authority along the San Francisco Bay shoreline, BCDC is responsible for granting or denying permits for any proposed fill, extraction of materials, or change in the use of any water, land, or structure within BCDC's jurisdiction. Their jurisdiction extends from all tidally influenced portions of the site up to the Mean High Tide and the continuing up to 100-feet inland. A permit from BCDC is required for any Bay filling or dredging, which includes piers, pilings, and floating structures moored in the Bay for extended periods. A permit from BCDC would be required before proceeding with any potential shoreline development. Permits may be granted or denied only after public hearings and after the process for review and comment by the City or County has been completed.

Vallejo Sanitation & Flood Control District (VSFCD): The Vallejo Sanitation & Flood Control District (VSFCD) is an independent special district that was formed in 1952 to collect and treat wastewater and provide stormwater and flood control services to the Vallejo community. In order to meet the demands on the wastewater treatment plant and storm drain system as the City grows, the VSFCD imposes sewer and storm drain user fees. The District Code includes provisions for the storm drainage system under Title 6, which includes storm drain system collection fees (Chapter 6.04), storm drain system user fees (Chapter 6.08), and stormwater management and discharge control (Chapter 6.12).

The VSFCD also has storm drain design standards and policies that apply to new development and redevelopment projects that connect to the existing storm drain system. Hydrologic design must be in accordance with the Solano County Water Agency Hydrology Manual, with a 15-year level of protection for drainage areas less than 640 acres and a 100-year level of protection for areas greater than 640 acres. A higher level of protection may be required at the VSFCD's discretion. A connection permit issued by the VSFCD with hydraulic calculations to verify the capacity of the receiving storm drain system is also required.

Solano County and City of Vallejo Local Hazard Mitigation Plans: As required by FEMA and the California Governor's Office of Emergency Services, Solano County and the City of Vallejo have prepared Local Hazard Mitigation Plans (LHMPs). The purpose of the LHMPs is to assess risk to natural hazards, implement actions to reduce losses, and maintain eligibility for federal mitigation funds in accordance with the Disaster Mitigation Act of 2000. The Solano County LHMP was prepared in 2012 and is currently in the process of being revised. The City of Vallejo's LHMP was prepared in 2010 by VSFCD. In addition to the LHMPs, both Solano County and the City of Vallejo have developed Emergency Operations Plans (EOPs), which describe the emergency response organizational structure and response actions in the event of natural or man-made disasters.

City of Vallejo Urban Water Management Plan: In accordance with the Urban Water Management Planning Act, the City of Vallejo has prepared the 2005 Urban Water Management Plan (UWMP), which evaluates if the City can meet the water demands of its customers over a 25-year planning horizon. The UWMP assists the City in coordinating water supply and demands with other planning efforts, such as land use plans. The analysis of current and projected water supply and demand is provided over a 25-year period and accounts for normal, single-dry, and multiple-dry year conditions. The 2005 UWMP is currently in the process of being updated and revised.

City of Vallejo Municipal Code: The City of Vallejo Municipal Code contains the following directives pertaining to hydrology and water quality issues:

- **Chapter 7.98 - Flood Management Regulations.** This floodplain management ordinance is designed to protect human life and health, minimize expenditures for costly flood control projects, minimize the need for rescue and relief efforts, business interruptions, and damage to public facilities and utilities. The ordinance also requires property owners that construct new or substantially improved buildings within the 100-year floodplain to obtain a development permit and elevate or flood-proof the lowest floor of the structure so that it is above the base flood elevation. This ordinance complies with the National Flood Insurance Program's goals to protect life and property.
- **Chapter 12.40 - Excavation, Grading, and Filling.** This regulation requires permit applications to include erosion control measures and submit erosion control plans, if the project comprises 50 acres or 200 lots, whichever is less. Drainage areas must be identified and estimated runoff amounts must be estimated and sediment basins are required for large developments. Erosion control measures must be implemented during the rainy season (October 15 through April 15).
- **Chapter 15.06.250 - Grading and Erosion Control.** This regulation requires subdividers to provide on-site grading and other improvements necessary to properly control erosion and prevent sedimentation or damage to off-site properties, as specified in the final grading plan.
- **Chapter 12.41 - Stormwater Management and Discharge Control.** This regulation is intended to protect and enhance the water quality within the City of Vallejo's watercourses, water bodies, and wetlands and carry out the conditions specified in the MRP that requires appropriate source control measures, site design measures, and stormwater treatment measures for new development and redevelopment projects within the city.
- **Chapter 16.71 - Water Efficient Landscaping Requirements.** This regulation meets the requirements of the State's WELO and requires submittal of a landscape documentation package for new or rehabilitated landscapes ranging in size from 1,500 to 5,000 square feet (depending on the project). The landscape documentation package

must include a water efficient landscape worksheet, soil management report, landscape design plan, irrigation design plan, and a grading design plan with the goal of minimizing water irrigation rates and maximizing water irrigation efficiency.

2.10 Land Use and Planning

Regional Setting

Mare Island, including the Project site, is located within the incorporated boundaries of the City of Vallejo in the southwestern portion of Solano County. Mare Island comprises 5,250 acres, of which 1,448 acres are areas identified for development, recreational uses, and conservation easements within the Mare Island Specific Plan and 3,787 acres are dredge, wetlands, and submerged lands. Mare Island contains approximately 3.5 million sf of industrial and commercial uses occupied by over 100 businesses as well as approximately 1,400 residential units. Mare Island also includes the Touro University campus with over 1,500 students, a regional park, golf course, and open space lands (Figure 4).

Land uses adjacent to the Project site include a mix of industrial and urban development, vacant lots, and tidal wetlands. The nearby development mainly consists of industrial areas associated with the naval shipyard, commercial uses, and residential development. The surrounding vacant lots are mostly demolished buildings associated with the former U.S. Navy base on the island. Wetlands surround the Project site to the north, east, and west. A 29-acre area of these wetlands to the east of the Project site is a dedicated conservation easement (see Figure 2). Most of the residences on Mare Island are located approximately 3,900 feet to the south of the Project site.

Project Site Setting

The Project site includes approximately 150 acres in the northeastern corner of Mare Island and currently consists of abandoned buildings, vacant lots, and disturbed landscapes. The Project site is within Reuse Area 1A, also known as the North Island Industrial Park, which is intended for a mixed use development program of 1.238 million sf of light industrial, commercial, office research and development, and warehouse uses. For a discussion of site General Plan and zoning designations, see Section 2.10.1, *Regulatory Setting,* below.

amec foster wheeler

Surrounding Land Uses and Features

FIGURE 4

2.10.1 Regulatory Setting

Regional Policies and Regulations

ABAG Projections 2013: The ABAG is the official comprehensive planning agency for the San Francisco Bay region, which is composed of the nine counties of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma, and contains 101 jurisdictions. ABAG is responsible for taking the overall regional housing needs allocation (RHNA) provided by the State and preparing a formula for allocating that housing need by income level across its jurisdiction. ABAG produces growth forecasts on four-year cycles so that other regional agencies, including MTC and the Bay Area Air Quality Management District (BAAQMD), can use the forecast to make project funding and regulatory decisions.

ABAG projections are the basis for the regional Ozone Attainment Plan and RTP. In this way, ABAG projections have practical consequences that shape growth and environmental quality within its jurisdiction. The General Plans, zoning regulations, and growth management programs of local jurisdictions inform the ABAG projections. The ABAG projections are also developed to reflect the impact of smart growth policies and incentives that could be used to shift development patterns from historical trends toward a better jobs-housing balance, increased preservation of open space, and greater development and redevelopment in urban core and transit-accessible areas throughout the ABAG region.

Plan Bay Area, Strategy for a Sustainable Region: MTC and ABAG's Plan Bay Area is the Bay Area's RTP/ SCS. The Final Plan Bay Area was adopted on July 18, 2013. The SCS sets a development pattern for the region, which, when integrated with the transportation network and other transportation measures and policies, would reduce GHG emissions from transportation (excluding goods movement) beyond the per capita reduction targets identified by CARB. Implementation of Plan Bay Area would achieve a 16 percent per capita reduction of GHG emissions by 2035 and a 10 percent per capita reduction by 2020 from 2005 conditions.

In 2008, MTC and ABAG initiated a regional effort to link local planned development with regional land use and transportation planning objectives. Through this initiative, local governments identified Priority Development Areas (PDAs). The PDAs form the implementation framework for Plan Bay Area. The PDAs are areas along transportation corridors which are served by public transit that allow opportunities for development of transit-oriented, infill development within existing communities that are expected to host the majority of future development. Overall, well over two-thirds of all regional growth by 2040 is allocated within PDAs. The PDAs throughout the Bay Area are expected to accommodate 80 percent (or over 525,570 units) of new housing and 66 percent (or 744,230) of new jobs. PDAs are identified by local agencies and approved by ABAG's Executive Board. A PDA designation provides opportunities for the City to receive assistance from ABAG and MTC, including technical assistance, planning grants, and capital funding.

While Plan Bay Area distributes future growth across the Bay Area region in order to meet its GHG emissions reduction, housing, and other performance targets, it is not intended to override local land use control. In fact, the *Frequently Asked Questions* page of the Plan Bay Area website explains that "cities and counties, not MTC or ABAG, are ultimately responsible for the manner in which their local communities continue to be built out in the future. For this reason, cities and counties are not required to revise their 'land use policies and regulations, including [their] general plan, to be consistent with the regional transportation plan or an alternative planning strategy.' [Gov. Code, Section 65080, subd. (b)(2)(J)]. Rather than increase regional land use control, the Plan facilitates implementation by expanding incentives and opportunities

available to local jurisdictions to support growth in PDAs. In addition to funding transportation and planning projects in PDAs, the Plan sets the stage for cities and counties to increase the efficiency of the development process, if they choose, for projects consistent with the Plan and other state legislation."

BCDC: In 1969, the McAteer-Petris Act designated BCDC as the agency responsible for the protection of the San Francisco Bay and its natural resources. BCDC fulfills this mission through implementation of the Bay Plan, an enforceable plan that guides the future protection and use of San Francisco Bay and its shoreline. The Bay Plan includes a range of policies on public access, water quality, fill, and project design. The Bay Plan also designates shoreline areas that should be reserved for water-related purposes like ports, industry, public recreation, airports, and wildlife areas.

Local Policies and Regulations

City of Vallejo General Plan: Land use and development on Mare Island is primarily governed by the City General Plan and Mare Island Specific Plan, as well as zoning ordinances which must be consistent with the General Plan. The General Plan designation for the Project site is "Employment"[6]. Land use policies for Mare Island are largely focused on development that will make the island a major employment center for the City and region.

Mare Island Specific Plan: The *Mare Island Specific Plan* was adopted in 2008 to supersede the 1999 *Mare Island Specific Plan* as the guiding document for a 650-acre portion of Mare Island. The Plan includes a framework for Cultural Resources, Land Use, Urban Design, Transportation, Utility Systems, and Other Public Services. The 2008 Plan maintains the vision for the geographic area of Mare Island as a vibrant civilian employment center and balanced new residential neighborhood established in the 1999 Plan, with an emphasis on both interim and ultimate land uses geared toward job-creation and the integration of new uses into the historic fabric of Mare Island. The vision for the conversion to predominately civilian use of Mare Island continues to be the revitalization of a historic place that will provide interim and long-term regional recreational, employment, and housing opportunities while maintaining the waterfront-related industrial activities associated with its past and present.

The Mare Island Specific Plan land use designation for the Project site is industrial.

City of Vallejo Zoning Ordinance: The City's Zoning Ordinance includes a type of land use process and zoning classification known as "Planned Development". The zoning designation of the Project site is "Mixed Use Planned Development", while the designated conservation easement to the east of the site is zoned as "Resource Conservation". These land use zoning designations serve both as the traditional specific plan land use designation required by state law, and as the "Master Plan" zoning designation to be implemented as is consistent with Chapter 16.116 of the City's Zoning Ordinance. For zoning purposes, the Mare Island Specific Plan also serves as the Master Plan for Mare Island, allowing all Specific Plan development projects to be implemented through the City's Planned Development Unit Plan process, subject to the policies, standards, guidelines, and provisions of the Specific Plan (City of Vallejo 2013a).

The City Zoning Ordinance Section 16.06 permits the following land uses on the Project site: heavy industry, warehouse/distribution, light industrial, construction services, and equipment

[6] The City of Vallejo General Plan characterizes the "Employment" designation as uses that generate significant numbers of jobs, such as: heavy industrial, light industrial, research and development, warehouse, distribution, heavy commercial, and large-scale office (City of Vallejo 1999).

service. The Development Services Director for Mare Island may also approve limited residential activities that involve reuse of existing buildings and live-work type uses, as well as limited mixed use activities that are supplementary to the primary functions of the heavy industrial/warehouse use taking place within the given area (City of Vallejo 2013a).

2.11 Mineral Resources

The Project site does not contain any known important mineral resources and there are no locally-important mineral resource recovery sites at the Project site or in the vicinity (Department of Conservation 2015b).

2.12 Noise

Noise level (or volume) is generally measured in decibels (dB) using the A-weighted sound pressure level (dBA). The A-weighting scale is an adjustment to the actual sound pressure levels to be consistent with that of human hearing response, which is most sensitive to frequencies around 4,000 Hertz (about the highest note on a piano) and less sensitive to low frequencies (below 100 Hertz).

Sound pressure level is measured on a logarithmic scale with the 0 dB level based on the lowest detectable sound pressure level that people can perceive (an audible sound that is not zero sound pressure level). Based on the logarithmic scale, a doubling of sound energy is equivalent to an increase of 3 dB, and a sound that is 10 dB less than the ambient sound level has no effect on ambient noise. Because of the nature of the human ear, a sound must be about 10 dB greater than the reference sound to be judged as twice as loud. In general, a 3 dB change in community noise levels is noticeable, while 1-2 dB changes generally are not perceived. Quiet suburban areas typically have noise levels in the range of 40-50 dBA, while arterial streets are in the 50-60+ dBA range. Normal conversational levels are in the 60-65 dBA range, and ambient noise levels greater than 65 dBA can interrupt conversations.

Noise levels typically attenuate (or drop off) at a rate of 6 dB per doubling of distance from point sources (such as industrial machinery). Noise from lightly traveled roads typically attenuates at a rate of about 4.5 dB per doubling of distance. Noise from heavily traveled roads typically attenuates at about 3 dB per doubling of distance.

In addition to the actual instantaneous measurement of sound levels, the duration of sound is important since sounds that occur over a long period of time are more likely to be an annoyance or cause direct physical damage or environmental stress. One of the most frequently used noise metrics that considers both duration and sound power level is the equivalent noise level (Leq).

The Leq is defined as the single steady A-weighted level that is equivalent to the same amount of energy as that contained in the actual fluctuating levels over a period of time (essentially, the average noise level). Typically, Leq is summed over a one-hour period. Lmax is the highest RMS (root mean squared) sound pressure level within the measuring period, and Lmin is the lowest RMS sound pressure level within the measuring period.

The time period in which noise occurs is also important since noise that occurs at night tends to be more disturbing than that which occurs during the day. Two commonly used noise metrics – the Day-Night average level (Ldn) and the Community Noise Equivalent Level (CNEL) – recognize this fact by weighting hourly Leqs over a 24-hour period. The Ldn is a 24-hour average noise level that adds 10 dB to actual nighttime (10 p.m. to 7 a.m.) noise levels to account for the greater sensitivity to noise during that time period. The CNEL is identical to the Ldn, except it also adds a 5 dB penalty for noise occurring during the evening (7 p.m. to 10 a.m.).

Noise-Sensitive Receptors

Noise-sensitive receptors are described as certain land uses which are particularly sensitive to noise and vibrations. Typical noise sensitive land uses include schools, residential units, and open space/recreational areas. Several noise-sensitive land uses and developments are located on Mare Island, including wetland and open space areas, recreational spaces, the Mare Island Veteran Affairs Outpatient Clinic, the Mare Island Health and Fitness Academy, and residences of Mare Island (see Figure 4). Other on-island sensitive uses would include Touro University and the golf course, as well as future residential area that have been planned for development under the Specific Plan. The Project is not located within the vicinity of a public or private airport land use plan or influence area.

The City of Vallejo Municipal Code Section 16.72.030 *Performance Standard Regulations* dictates the following regulation for noise levels within the zoning districts of the City, as indicated in Table 2.12-1:

Table 2.12-1. Noise Performance Standards by Zoning District

Zoning District	Maximum Sound Pressure Level in Decibels
Resource Conservation, Rural Residential, and Medical Districts	55
Low, Medium, and High Density Residential Districts	60
Professional Offices, Neighborhood, Pedestrian, and Waterfront Shopping and Services Districts	70
Freeway Shopping and Service, Linear Commercial and Intensive Use Districts	75

The City of Vallejo Municipal Code Section 16.72.040, *Noise performance standards – Correction factors,* provides correction factors which shall be applied, when applicable, to the maximum sound pressure levels provided above in Table 2.12-1 (refer to Table 2.12-2). In addition, the City of Vallejo Municipal Code Sections 16.72.050, *Noise performance standards – Exemptions,* and Section 7.90.050, *Exemptions*, establish allowances to exceed maximum sound pressure levels and provide special use exemptions from established City noise limitations.

Table 2.12-2. Noise Performance Standard Correction Factors

Time and Operation of Type of Noise	Correction in Maximum Permitted Decibels
Emission only between 7 a.m. and 10 p.m.	Plus 5
Noise of unusual impulsive character such as hammering or drill pressing	Minus 5
Noise of unusual periodic character such as hammering or screeching	Minus 5

Project Site Setting

The Project site is located in the northeastern most region of Mare Island, adjacent and south of SR-37 and within Reuse Area 1A. On-island noise generally varies from that of a quiet nature near recreational and residential areas, to noise greater than a 60 day-night average noise level (Ldn) near centers for commercial and industrial uses. Traffic is the dominant source of noise within the Project vicinity due to the close proximity to primary Mare Island access features (e.g., SR-37, Mare Island Causeway). Due to the proximity of these major traffic thoroughfares, island arterials which transect the Project site, and adjacent industrial developments, the Project site experiences a substantial degree of noise which has been measured to exceed an ambient noise level of 62.3 CNEL dBA at 50 feet from the roadway centerline. No activities associated with stationary noise generators currently occur on the Project site due to the vacant setting. As such, onsite noise generation is limited to mobile sources along arterial roadways.

Existing Noise Environment

As previously described, measured noise levels within the Project site and vicinity are generally limited to mobile sources from automobile traffic. Short-term noise measurements were taken by Amec Foster Wheeler staff at seven monitoring locations bordering the Project site on October 5th and 6th, 2016 to document the existing noise environment within the Project site (refer to Tables 2.12-3 and 2.12-4 and Figure 5) (Amec Foster Wheeler 2017b). Noise measurements were conducted during the 6:00 – 9:00 AM and 4:00 – 7:00 PM Peak hours. Each monitoring site was located at least 50 feet away from the edge of the nearest roadway. Each site was measured for 10 minutes using a SoundPro SE sound level meter (SLM) I from Quest Technologies. The quantities measured are in Leq, Lmin, and Lmax. The noise measurement results for these seven monitoring locations are summarized in Tables 2.12-3 and 2.12-4. Refer to Figure 5 for noise monitoring locations.

Table 2.12-3. Project Vicinity Ambient Noise Measurements – PM Peak Hours

#	Monitoring Location	Measured Ambient Noise (dBA)			Dominant Noise Source	Atypical Noise Source*
		L_{eq}	L_{max}	L_{min}		
1	Along SR-37 near Railroad Avenue	60.2	70.2	48.6	Traffic on SR-37	Two itinerant women talking/yelling, slamming car trunk throughout the 10 minutes. Backup beeper in distance. Occasional motorcycle or loud truck on SR-37.
2	Along SR-37 near Azuar Drive	62.1	69.8	52.3	Traffic on SR-37	0:00 – Papers ruffing in wind and footsteps. Car honking @ 3:00, 4:00, & 7:00. Motorcycle @ 6:00. Big truck @ 7:00, 8:00. Bus @ 9:00. Truck on rumble strip @ 9:00.
3	Azuar Drive & J Street	49.0	63.0	41.6	Cars on Azuar Dr & in background on SR-37	Car accelerating onto Azuar Drive from J Street @ 1:30, 6:45, & 9:45. Wind gusting @ 4:00, 6:30, 8:45, 9:05. Crane across SR-37 clanking @ 4:00, 7:30, 8:15, 9:00, 9:50. Car honking on SR-37 @ 4:45. Airplane overhead from 5:40 – 6:30. Clang on building @ 6:00.
4	G Street between Azuar Drive and Walnut Street	55.0	65.1	43.9	Cars on G St	School bus @ 0:45. Captured some acceleration at stop signs. Truck @ 9:10.
5	G Street & Nimitz	55.2	66.5	43.7	Cars on G St	Radio from car @ 0:15 and 3:10. Motorcycle in distance @ 0:25. Loud truck @ 2:10. Truck accelerating @ 3:00. Crane in distance on other side of SR-37 @ 3:30,

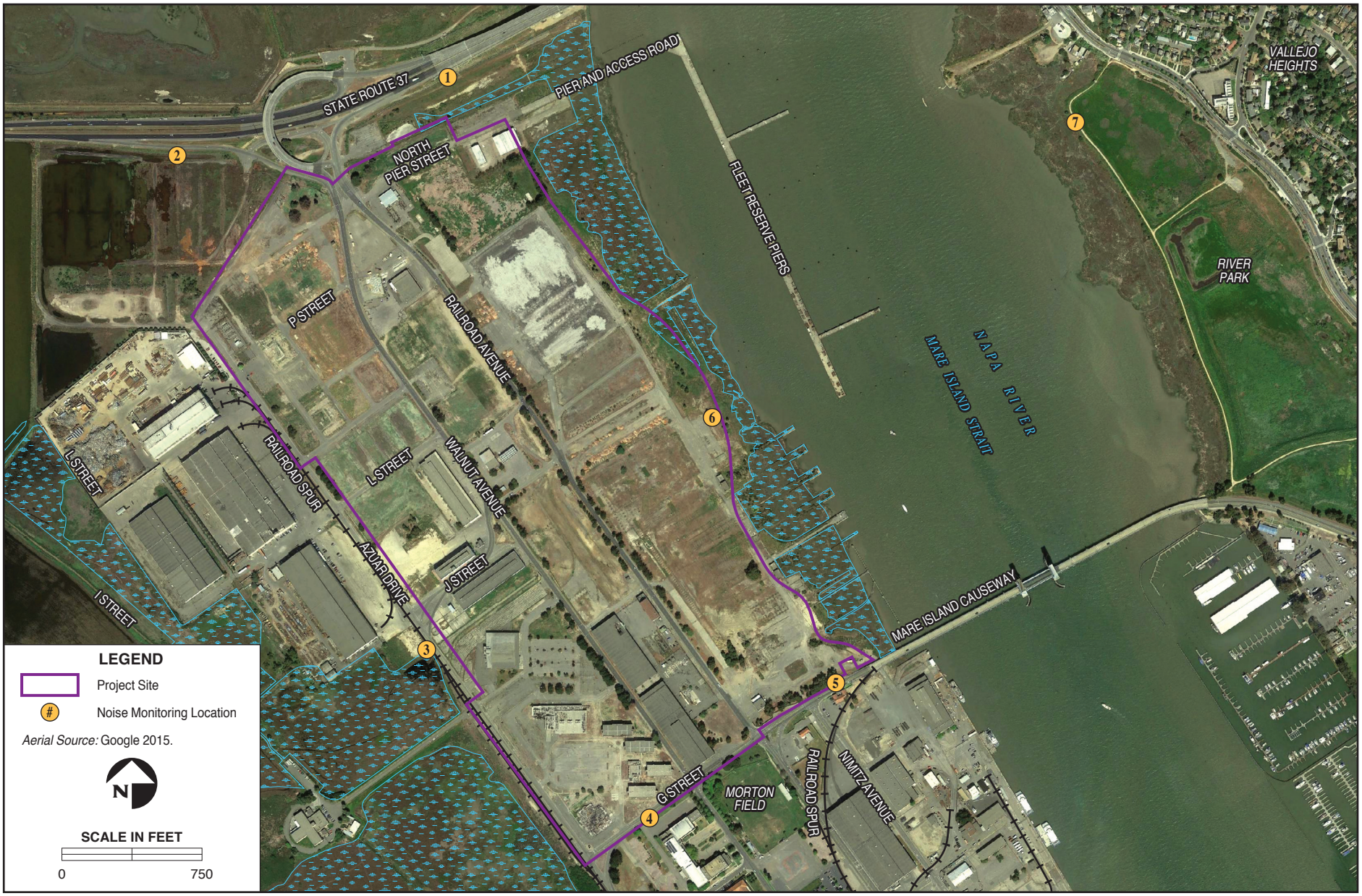
						4:00. Truck on Railroad Avenue @ 5:10, 8:20, 8:40. Truck on SR-37 @ 9:00.
6	Corner of lot near Mare Island Strait	48.0	56.6	43.8	Cars on SR-37, Railroad Ave	Crane across from SR-37 @ 1:40, 2:20, 3:00, 6:40. Crickets close by entire 10 minutes.
7	Path near Vallejo Heights & Mare Island Strait	50.0	59.9	46.6	Cars on SR-37, Wilson Ave	Woman walking away on path 0:00-0:10. Car accelerating on SR-37 @ 4:40.

**Time (0:00 minutes) atypical noise occurred during each 10-minute noise measurement.*

Table 2.12-4. Project Vicinity Ambient Noise Measurements – AM Peak Hours

#	Monitoring Location	Measured Ambient Noise (dBA)			Dominant Noise Source	Atypical Noise Source*
		L_{eq}	L_{max}	L_{min}		
1	Along SR-37 near Railroad Avenue	66.1	76.8	47.8	Traffic on SR-37	Car horn @ 0:55. Noise at 5:15. Truck @ 2:00, 2:30, 2:38, 2:57, & 4:25. Big truck @ 9:15. Man talking @ 8:00 – 8:45. Man walking away @ 8:45 – 9:00. Brakes squeaking from trucks in traffic.
2	Along SR-37 near Azuar Drive	62.1	70.6	48.5	Traffic on SR-37	Music from car radio @ 0:20 – 0:50, 8:50 – 9:05. Footsteps @ 0:05 – 0:15. Honk @ 5:40, 5:45. Rumble strip @ 1:10 & 7:50. Big truck @ 1:50, 2:20, 2:30, 3:40, 3:50, 4:40, 7:37, 10:00. Brakes "whoosh" @ 6:20.
3	Azuar Drive & J Street	54.0	65.3	45.6	Cars on Azuar Dr & in background on SR-37, EPS building	Car accelerating onto Azuar Drive from J Street @ 5:50. Backup beeper @ 1:10 – 1:20. Crane @ 1:30. Metallic noise @ 3:50. EPS building hissing @ 7:45 -10:00. Honk @ 8:30.
4	G Street between Azuar Drive and Walnut Street	59.4	66.8	47.4	Cars on G St	Accelerating truck @ 4:30. Car squeaking @ 8:35.
5	G Street & Nimitz	57.4	66.4	49.8	Cars on G St	Car crossing railroad tracks on Nimitz @ 0:20, 1:45, 3:50, 8:30. UPS truck accelerating @ 1:30. Footsteps @ 2:40, 3:00. Truck on Railroad Ave @ 4:40, 4:50, 6:30, 7:45, 7:50, 9:45, 9:57. Car accelerating on G Street @ 5:50, 8:50. Tow truck @ 7:30. Truck scraping @ 7:30.
6	Corner of lot near Mare Island Strait	48.7	65.9	44.5	Cars on SR-37, Railroad Ave, birds/crickets	Footsteps 0:00 – 0:10 and 3:40 – 3:50. Backup beeper in distance 0:10 – 1:00. Birds and crickets chirping entire time. Crow @ 6:15, 6:20, 6:26 – 6:32. Loud chirp @ 6:45, 6:55, 7:00. Airplane overhead @ 1:15 – 2:00. Truck on Railroad Avenue @ 5:40, 6:00. Horn on Railroad Avenue @ 7:05. Beeping noise @ 8:35 – 8:45.
7	Path near Vallejo Heights & Mare Island Strait	51.6	61.0	47.5	Cars on SR-37, Wilson Ave	Footsteps @ 0:05 – 0:10. Birds chirping. Beeping @ 0:55. Siren @ 1:10 – 1:25, 1:50. Horn from boat on the water @ 2:00, 2:10, 2:22, 2:32, 2:42 (every 10 seconds). Car alarm @ 4:45 – 5:10. Talking to hiker @ 7:15 – 7:30. Hiker walking @ 7:40 – 8:10. Couple hikers talking/walking @ 9:05 – 9:50.

**Time (0:00 minutes) atypical noise occurred during each 10-minute noise measurement.*



amec foster wheeler

North Mare Island Noise Monitoring Locations

FIGURE 5

2.12.1 Regulatory Setting

Federal Policies and Regulations

Occupational Safety and Health Act: Under the Occupational Safety and Health Act of 1970 (29 USC §651 et seq.), the U.S. Department of Labor, OSHA adopted regulations (29 CFR §1910.95) designed to protect workers against the effects of occupational noise exposure. These regulations list limits on noise exposure levels as a function of the amount of time during which the worker is exposed. The regulations further specify requirements for a hearing conservation program (§1910.95(c)), a monitoring program (§1910.95(d)), an audiometric testing program (§1910.95(g)), and hearing protection §1910.95(i)). There are no federal laws governing community noise.

Federal Highway Administration: Proposed federal or federal-aid highway construction projects at a new location, or the physical alteration of an existing highway that significantly changes either the horizontal or vertical alignment, or increases the number of through-traffic lanes, requires an assessment of noise and consideration of noise abatement per Title 23 of the Code of Federal Regulations, Part 772 (23 CFR Part 772), Procedures for Abatement of Highway Traffic Noise and Construction Noise. FHWA has adopted noise abatement criteria (NAC) for sensitive receivers such as picnic areas, recreation areas, playgrounds, active sport areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals when "worst-hour" noise levels approach or exceed 67 dBA Leq. Caltrans has further defined approaching the NAC to be 1 dBA below the NAC for noise-sensitive receivers identified as Category B activity areas (e.g., 66 dBA Leq is considered approaching the NAC).

Federal Transit Administration Criteria: FTA developed methodology and significance criteria to evaluate vibration impacts from surface transportation modes (i.e., passenger cars, trucks, buses, and rail) in the Transit Noise Impact and Vibration Assessment (Harris Miller Miller & Hanson Inc. 2006). For residential buildings (Category 2), the threshold applicable to these projects is 80 vibration decibel (VdB).

Federal Noise Control Act (1972): Public Law 92-574 regulates noise emissions from operation of all construction equipment and facilities; establishes noise emission standards for construction equipment and other categories of equipment; and provides standards for the testing, inspection, and monitoring of such equipment. This Act gives states and municipalities primary responsibility for noise control.

State Policies and Regulations

State Department of Health Services: The California State Office of Noise Control in the State Department of Health Services has established guidelines to provide a community with a noise environment that it deems to be generally acceptable. Specifically, ranges of noise exposure levels have been developed for different land uses to serve as the primary tool a city uses to assess the compatibility between land uses and outdoor noise. To achieve a clearly compatible land use/noise zone, a noise level standard of 60 dBA L_{dn} is used for the exterior living areas of new single-family, duplex, and mobile home residential land uses. A 45 to 65 dBA L_{dn} noise level standard is used for the interior and exterior of all new multi-family residential uses. Where a land use is denoted as "normally acceptable" for the given L_{dn} noise environment, the highest noise level in that range should be considered the maximum desirable for conventional construction which does not incorporate any special acoustic treatment. The acceptability of noise environments classified as "conditionally acceptable" or "normally unacceptable" depends

on the anticipated amount of time that will normally be spent outside the structure and the acoustic treatment to be incorporated in the structure's design.

California Building Standards Code (Title 24): Title 24 of the California Code of Regulations includes Sound Transmission Control requirements that establish uniform minimum noise insulation performance standards for new hotels, motels, dormitories, apartment houses, and dwellings other than detached single-family units. Specifically, Title 24 states that interior noise levels attributable to exterior sources shall not exceed 45 dBA CNEL in any habitable room of new dwellings. Dwellings are to be designed so that interior noise levels would meet this standard for at least 10 years from the time of building permit application.

Local Policies and Regulations

City of Vallejo Municipal Code – Noise: The City's Municipal Code provides for general and specific restrictions and regulations of noise within the City jurisdictional areas. These standards are primarily found in Municipal Code Chapters 2.68, 7.84, 7.90, 12.40, and 16.72. These chapters establish permitted noise standards for addressing stationary/operational, construction, and motor vehicle noises within the City, as well as noise prohibitions. Neither the City nor the County has specific and/or quantitative regulatory standards for construction or operation vibration sources. However, Section 16.72.080 of the City Municipal Code states that no use shall be operated in a manner which produces vibrations discernible without instruments at any point on the property line of the lot on which the use is located.

1999 City of Vallejo General Plan – Noise Element: The City of Vallejo General Plan Noise Element provides goals and policies relating to the regulation and restriction of noise generating activities within the City. Policies relevant to Mare Island include the following:

- **Noise Policy 2**: Avoid adverse effects of noise-producing activities on existing land uses by implementing noise reduction measures, limiting hours of operation, or by limiting increases in noise.
    - *Policy 2a*: Continue to enforce the noise regulations within the Vallejo Municipal Code, including Chapter 7.84 "Regulations of Noise Disturbances" and Chapter 16.72 "Performance Standards Regulations".
    - *Policy 2b*: Where appropriate, limit noise generating activities (for example, construction and maintenance activities and loading and unloading activities) to the hours of 7:00 a.m. and 9:00 p.m.
    - *Policy 2c*: When approving new development limit project-related noise increases to no more than 10 dB in non-residential areas and 5 dB in residential areas where the with-project noise level is less than the maximum "normally acceptable" level in Table 2. Limit project-related increases in all areas to no more than 3 dB where the with-project noise level exceeds the "normally acceptable" level in Table 2.

2.13 Population and Housing

The U.S. Census Bureau and ABAG provide population and housing estimates and projections for the City of Vallejo, Bay Area counties, and California. The U.S. Census Bureau publishes population and housing statistics based on the U.S. Census and the American Community Survey. The most recent decennial Census was published in 2010 and the most recent five-year estimate of the American Community Survey was published for the 2010-2014 years. ABAG projects anticipated population, household, and employment growth for each jurisdiction in their

planning region as part of its long range planning. The most recent projections were released in the agency's 2013-2040 RTP/SCS, of which is based on 2010 Census data. The U.S. Bureau of Labor Statistics provides employment data for the Vallejo-Fairfield Metropolitan Statistical Area, Bay Area, and California. The City of Vallejo Housing Element provides housing data and information on existing and projected housing needs for the City.

Population

The City has a population of 115,940, while Vallejo's Sphere of Influence region (within Solano and Napa Counties) has a total population of 549,874 (U.S. Census Bureau 2010). Solano County comprises 413,344 persons in the total Sphere of Influence; Napa County comprises the remaining 136,530 persons. The City population is projected to increase to 131,800 by 2040 (City of Vallejo 2015). Population in Solano County is projected to increase to 511,600, while population in Napa County is projected to increase to 163,680; estimating a total population of 675,280 in Vallejo's Sphere of Influence by 2040 (ABAG 2013).

Employment

There were 31,660 jobs in the City of Vallejo in 2010 (ABAG 2013). The total employment in the City of Vallejo is projected to increase to 43,070 jobs by 2040 (ABAG 2013). There were 132,350 jobs in Solano County and 70,650 jobs in Napa County in 2010, therefore total employment in the Sphere of Influence was 203,000 in 2010. The total employment projected for Solano and Napa Counties by 2040 are 179,930 and 89,540, respectively; estimating a total employment of 269,470 jobs for Vallejo's Sphere of Influence by 2040 (ABAG 2013).

The unemployment rate in Vallejo is incrementally high, reporting an unemployment rate of 5.6 percent for the Vallejo-Fairfield Metropolitan Statistical Area, compared to 5.1 percent for the Sphere of Influence, 5.5 percent for the State of California, and 5.2 percent nationwide in February 2016 (U.S. Bureau of Labor Statistics 2016). As of July 2016, Vallejo's unemployment rate has increased to 6.0 percent (U.S. Bureau of Labor Statistics 2016).

A jobs-to-housing ratio demonstrates the balance between jobs and housing units within a community. A high number of jobs relative to a low number of housing units indicates that workers must commute into the community. A low number of jobs and high number of housing units means workers must commute out to jobs. In 2015, the City's jobs-to-housing ratio was 0.83 (34,230 jobs/40,879 households) (City of Vallejo 2016a). ABAG estimated that the jobs-to-housing ratio for the Bay Area region as a whole was approximately 1.35 (ABAG 2013). Therefore, Vallejo currently has a smaller proportion of jobs per household than does the region as a whole. This suggests that the current ratio of jobs to households in Vallejo indicates an imbalance in the City, such that a larger proportion of residents work outside of Vallejo (City of Vallejo 2016a). On average Vallejo residents travel 32.8 minutes to get to their place of employment.

The number of employed residents outnumbers the total number of jobs in Vallejo, indicating that the City exports more labor than it imports. The City of Vallejo reports 58,372 total employed residents, while the number of jobs in the City is 31,818 (City of Vallejo 2016b). Five year estimates for the American Community Survey were recorded in 2014, including employment trends for the City of Vallejo, Solano County, and the Sphere of Influence (Table 2.13-1).

Table 2.13-1 Employment Trends, 2014

	City of Vallejo		Solano County		Sphere of Influence (Solano and Napa Counties)	
Industry	**2014**	**Percent**	**2014**	**Percent**	**2014**	**Percent**
Agriculture, forestry, fishing and hunting, and mining	338	0.7%	2,828	1.5%	7,012	2.8%
Construction	3,154	6.2%	12,096	6.6%	16,108	6.4%
Manufacturing	4,735	9.3%	17,169	9.3%	25,299	10.1%
Wholesale Trade	1,546	3.0%	5,145	2.8%	6,847	2.7%
Retail Trade	5,216	10.2%	21,791	11.9%	28,844	11.5%
Transportation and warehousing, and utilities	3,739	7.3%	10,709	5.8%	12,905	5.1%
Information	998	2.0%	3,304	1.8%	4,360	1.7%
Finance, insurance, real estate, and rental and leasing	2,976	5.8%	11,029	6.0%	14,774	5.9%
Professional, scientific, management, administrative, and waste management	5,109	10.0%	17,144	9.3%	23,722	9.5%
Educational, health, and social services	12,781	25.0%	41,925	22.8%	56,329	22.4%
Arts, entertainment, recreation, accommodation, and food services	4,840	9.5%	17,994	9.8%	26,472	10.5%
Other services (except public administration)	2,734	5.4%	7,646	4.2%	10,863	4.3%
Public administration	2,860	5.6%	15,096	8.2%	17,599	7.1%
Total Employed Residents[1]	**51,026**	**100%**	**183,876**	**100%**	**251,134**	**100%**

[1]Employed civilian population 16 years and over.
Source: U.S. Census Bureau 2014..

The American Community Survey provided a summary of the number of employed residents, as well as employment by industry sector and the total number of jobs in each sector. As shown in Table 2.13-1, the number of employed Vallejo residents represented approximately 28 percent of Solano County employment and approximately 20 percent of the Sphere of Influence employment. The distribution of employed residents is categorized into 13 employment sectors. The three sectors with the highest percentage of employed Vallejo residents are educational, health, and social services; professional scientific, management, administrative, and waste management services; and retail trade. These three sectors are also prominent in both Solano County and the Sphere of Influence, but the County and Sphere of Influence region show

varying employment trends. The Manufacturing employment sector is the fourth largest employment sector in Vallejo, Solano County, and the Sphere of Influence.

Housing

The City has a housing stock of 40,559 units as of 2010 (City of Vallejo 2015). Future housing targets estimate total number of housing units in the City to increase to 44,900 by 2040 (City of Vallejo 2015). There are 152,700 housing units in Solano County and 54,760 housing units in Napa County; estimating a total of 207,460 housing units in the Sphere of Influence as of 2010 (ABAG 2013). Total number of housing units in Solano County is projected to increase to 236,480 by 2040, as compared to Napa County which is projected to increase to 60,830 in the same period; estimating a total number of housing units in the Sphere of Influence to increase to 297,310 by 2040 (ABAG 2013).

In 2015, the City adopted the 2015-2023 Housing Element to adequately plan for the existing and projected housing needs of all economic segments of the community. The 2015 Housing Element establishes goals, policies, and programs to facilitate development of more housing within the City of Vallejo. The Project site is designated under the City General Plan as Employment and is planned for light industrial, warehouse, and office park spaces. There are no residential land use designations within the Project site and the Project site does not currently support a residential population. Residential neighborhoods in Mare Island are located approximately 1.5 miles south of the Project site.

2.13.1 Regulatory Setting

State and Local Policies and Regulations

ABAG Projections 2013: The ABAG is the official comprehensive planning agency for the San Francisco Bay region, which is composed of the nine counties of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma, and contains 101 jurisdictions. ABAG is responsible for taking the overall regional housing needs allocation provided by the State, and preparing a formula for allocating that housing need by income level across its jurisdiction. ABAG produces growth forecasts on four-year cycles so that other regional agencies, including the MTC and the BAAQMD, can use the forecast to make project funding and regulatory decisions.

The General Plans, zoning regulations, and growth management programs of local jurisdictions inform ABAG's projections. The projections are also developed to reflect the impact of "smart growth" policies and incentives that could be used to shift development patterns from historical trends towards a better jobs-housing balance, increased preservation of open space, and greater development and redevelopment in urban core and transit-accessible areas throughout their region.

Plan Bay Area, Strategy for a Sustainable Region: MTC and ABAG's Plan Bay Area is the Bay Area's RTP/SCS. The final Plan Bay Area was adopted on July 18, 2013. The SCS sets a development pattern for the region, which, when integrated with the transportation network and other transportation measures and policies, would reduce GHG emissions from transportation (excluding goods movement) beyond the per capita reduction targets identified by CARB. Implementation of Plan Bay Area would achieve a 16 percent per capita reduction of GHG emissions by 2035 and a 10 percent per capita reduction by 2020 from 2005 conditions.

In 2008, MTC and ABAG initiated a regional effort to link local planned development with regional land use and transportation planning objectives. Through this initiative, local governments identified PDAs. The PDAs form the implementing framework for Plan Bay Area. The PDAs are areas along transportation corridors which are served by public transit that allow opportunities for development of transit-oriented, infill development within existing communities that are expected to host the majority of future development. Overall, well over two-thirds of all regional growth by 2040 is allocated within PDAs. The PDAs throughout the San Francisco Bay Area are expected to accommodate 80 percent (or over 525,570 units) of new housing and 66 percent (or 744,230) of new jobs.

2.14 Public Services

The Project site is served by public services that are provided by both City and County agencies, and include fire protection, police protection, emergency and medical response, and public education.

Fire Protection

The City of Vallejo Fire Department (VFD) has six fire stations that provide the community with fire protection and emergency medical services. None of these stations are located on Mare Island, but Fire Station #21 (approximately 1.5 miles from the site), located at 1220 Marin Street, would be the first to respond to calls originating at the Project site; Fire Station #23 (approximately 3 miles from the site), located at 900 Redwood Street, would provide secondary response. The VFD has currently employs 75 firefighting personnel. A total of 14,339 calls for emergency services were received in 2015 (City of Vallejo 2016a). In the 2013-2014 reporting period, the VFD responded to calls for emergency service with an average fire response time of seven minutes over 90 percent of the time, and a medical ambulance response time of 12 minutes 99.9 percent of the time (County of Solano 2014).

Police Protection

The City of Vallejo Police Department (VPD) provides police protection services to the community through eight patrol service areas. The main station is centrally located in the City, at 111 Amador Street (approximately 3.5 miles from the site). The VPD employs 153 personnel, of whom 113 are sworn officers and 40 are civilian employees. Current staffing levels are consistent with budgeted staffing levels. The total number of reported Part 1 crimes that VPD responded to in 2015 was 6,065. Priority 1 calls are defined as involving immediate danger of injury or life threatening situations. Priority 2 calls are not life threatening, but require urgent response to prevent the situation from escalating to a Priority 1 (City of Vallejo 2016a).

Schools

Mare Island and the City of Vallejo are served by Vallejo City Unified School District (VCUSD). The VCUSD provides public school education to approximately 15,500 students within the community. The Vallejo City Unified School District includes 15 elementary schools, three middle schools, two comprehensive high schools, one K-8 charter school, a continuation school, a community day school, and a school that offers an independent study/home study option (Vallejo City Unified School District 2016). The closest K-8 school to the Project site is Mare Island Health and Fitness Academy (formerly Mare Island Elementary School), located at 400 Rickover Street (approximately 1.2 miles south of the Project site). The nearest high school to the Project site is Vallejo High School, located at 840 Nebraska Street (approximately 2.2 miles east of the site). Mare Island Health and Fitness Academy has a total enrollment of 1,688

students and Vallejo High School has a total enrollment of 465 students (CA Dept. of Education 2016). There is also a private university located within proximity to the Project site. Touro University is a health professions graduate school, located at 1310 Club Drive in Mare Island (approximately 2.2 miles southeast of the site), that has a total enrollment of almost 1,400 students (Touro University 2015).

2.14.1 Regulatory Setting

State Policies and Regulations

California Building Code: Typical fire safety requirements of the CBC include the installation of sprinklers in all high-rise buildings; the establishment of fire resistance standards for fire doors, building materials, and particular types of construction; and the clearance of debris and vegetation within a prescribed distance from occupied structures in wildfire hazard areas.

California Fire Code: The CFC incorporates, by adoption, the International Fire Code of the International Code Council, with California amendments. This is the official Fire Code for the State and all political subdivisions. It is located in Part 9 of Title 24 of the California Code of Regulations. The CFC is revised and published every three years by the California Building Standards Commission.

California Health and Safety Code and Uniform Building Code: The California Health and Safety Code provides regulations pertaining to the abatement of fire-related hazards. This Code also requires that local jurisdictions, including Vallejo, enforce the Uniform Building Code, which provides standards for fire-resistant building and roofing materials and other fire related construction methods.

California Government Code (Section 65995(b)) and Education Code (Section 17620): SB 50 amended California Government Code Section 65995, which contains limitations on Education Code Section 17620, the statute that authorizes school districts to assess development fees within school district boundaries. Government Code Section 65995(b)(3) requires the maximum square footage assessment for development to be increased every two years, according to inflation adjustments. On January 22, 2014 the State Allocation Board (SAB) approved increasing the allowable amount of statutory school facilities fees (Level I School Fees) from $3.20 to $3.36 per square foot of assessable space for residential development of 500 square feet or more, and from $0.51 to $0.54 per square foot of chargeable covered and enclosed space for commercial/industrial development. According to California Government Code Section 65995(3)(h), the payment of statutory fees is “deemed to be full and complete mitigation of the impacts of any legislative or adjudicative act, or both, involving, but not limited to, the planning, use, or development of real property, or any change in governmental organization or reorganization...on the provision of adequate school facilities.” The school district is responsible for implementing the specific methods for mitigating school impacts under the Government Code.

Mitigation Fee Act (California Government Code [Section 66000 through 66008]): Enacted as AB 1600, the Mitigation Fee Act requires a local agency establishing, increasing, or imposing an impact fee as a condition of development to identify the purpose of the fee and the use to which the fee is to be put. The agency must also demonstrate a reasonable relationship between the fee and the purpose for which it is charged, and between the fee and the type of development project on which it is to be levied. This Act became enforceable on January 1, 1989.

California State AB 97: Approved in July 2013, AB 97 revises existing regulations related to financing for public schools, by requiring State funding for county superintendents and charter schools that previously received a general-purpose entitlement. The bill authorizes local educational agencies to spend, for any local educational purpose, the funds previously required to be spent for specified categorical education programs, including among others, programs for teacher training and class size reduction.

Local Policies and Regulations

Vallejo Municipal Code: The City of Vallejo Municipal Code includes various regulations and requirements pertaining to fire protection and emergency response, police protection, and schools. Applicable chapters in the Municipal Code pertaining to these services include:

- *Chapter 3.06 – Public Facilities Impact Mitigation Fee:* The city council may establish, by resolution adopted in conformance with this chapter, fess to provide funding for required public facilities for the city. Fees will be paid for any new structure, as well as for modifications or alternations to existing structures that increase the number of units or gross floor area, as applicable.
- *Chapter 12.28 – Fire Code:* Adopts, refers to, and incorporates the California Fire Code, 2013 Edition.
- *Chapter 14.45 – City of Vallejo – Mare Island Services Financing Code:* This code provides an alternative method financing the services. The provisions of this code shall not affect or limit any other provisions of law authorizing or providing for the furnishing of facilities or services, or the raising of revenue for these purposes.
- *Chapter 16.52 – Fire Hazard District:* The purpose of this chapter is to create and establish a fire hazard district to regulate development in areas subject to fire hazards. It is the intent of the fire hazard district to implement the goals and policies of the safety element of the Vallejo general plan which relate to fire hazards abatement.
- *Chapter 16.74 – Energy and Water Conservation Regulations*: Section 16.74.030 – Water conservation guidelines, specifies all vegetation and landscaping required by the zoning regulations shall employ drought resistant species.

2.15 Recreation

Regional Setting

The City of Vallejo contains 7 mini parks, 25 neighborhood parks, 8 community parks, 1 linear park, 3 natural open space areas, and 3 special use parks, totaling 1138.28 acres. The City owns and manages five park facilities on Mare Island (City of Vallejo 2016a).

The Mare Island Strait is a channel between Mare Island and the mainland of the City that reaches approximately from the mouth of the Napa River north to the Napa River Bridge. The Mare Island Strait lies adjacent to the Project site to the east, and is used for both commercial and recreational boating. The Vallejo Ferry Terminal and its ferry service to San Francisco also operates within the Mare Island Strait. A large pier extends from the eastern boundary of the Project site into Mare Island Strait, and could be used for recreational fishing, although it is currently not easily accessible to the public.

Morton Field Park is an actively used sports field located adjacent to the southern border of the Project site between Walnut Avenue and Railroad Avenue. The Mare Island Sports Complex is a full service sports facility that lies approximately 1,700 feet to the south of the Project site. The Mare Island Golf Club lies approximately 2 miles south of the Project site (see Figure 4).

A 29-acre area of wetlands lies adjacent to the Project site to the east (see Figure 2). The City has dedicated this wetland area as a conservation easement for wildlife refuge under the Mare Island Specific Plan, which includes plans for a pedestrian and bicycle pathway on the upland part of this wetland area that would run adjacent to the eastern edge of the Project site. The 4-mile long San Pablo Bay hiking trail lies approximately 1 mile to the west of the Project site, and the Mare Island Shoreline Heritage Preserve lies approximately 2.3 miles to the south.

Project Site Setting

The Project site currently contains no parks or recreational facilities.

2.15.1 Regulatory Setting

Federal Policies and Regulations

Refuge Recreation Act (1962) and System Improvement Act (1997): The Refuge Recreation Act (1962) authorizes the Secretary of the Interior, through the United States Fish and Wildlife Service, to administer refuges, hatcheries, and other conservation areas for recreational use, when such uses do not interfere with the area's primary purposes. The System Improvement Act (1997) includes a process for determining compatible uses in wildlife refuges, recognizes that wildlife-dependent recreational uses, when compatible, are legitimate and appropriate public uses of the Refuge System, and requires preparation of a comprehensive conservation plan for each refuge. Refuges are also governed by a variety of other federal laws, executive orders, treaties, interstate compacts, regulations, and policies pertaining to the conservation and protection of natural and cultural resources (see Service Manual 602 FW 1 (1.3)). Policies include appropriate use; compatibility; biological integrity, diversity, and environmental health; and wilderness review.

The Refuge Recreation Act governs activities within the San Pablo Bay National Wildlife Refuge, which is part of the San Francisco Estuary that includes the San Francisco Bay, Suisun Bay, and Delta regions. The Refuge abuts the northern edge of the North Bay, also known as San Pablo Bay, and extends into Solano County. Highway 37 bisects the Refuge and provides the primary access road. Portions of the Refuge are located within Vallejo's Sphere of Influence (SOI) on Mare Island. Any improvements within the San Pablo Bay National Wildlife Refuge must abide by the Act and selected portions of the Code of Federal Regulations and U.S. Fish and Wildlife Service Manual.

State Policies and Regulations

Mitigation Fee Act: The 1987 Mitigation Act (California Government Code Section 66000) authorizes development impact fees to provide new park and recreation facilities to mitigate for new residential development projects. The City has applied this Act to establish a development impact fee under Section 3.18 of the Municipal Code.

Quimby Act: The 1975 Quimby Act (California Government Code Section 66477) authorizes cities and counties to adopt ordinances requiring that developers set aside land, donate conservation easements or pay fees for park improvements. Revenues generated through the Quimby Act cannot be used for operation and maintenance of park facilities. A 1982 amendment (AB 1600) requires agencies to clearly show a reasonable relationship between the public need for the recreation facility or parkland and the type of development project upon which the fee is imposed. Cities with a high ratio of park space to inhabitants can set a standard of up to 5 acres per thousand persons for new development. Cities with a lower ratio can only

require the provision of up to 3 acres of park space per thousand people. The calculation of a city's park space to population ratio is based on a comparison of the population count of the last federal census to the amount of City-owned parkland. Under Section 3.18 of the City of Vallejo's Municipal Code, the City has adopted a standard of 4.25 acres per 1,000 people.

Improvement Act of 1911: The Improvement Act of 1911 may be used by cities, counties, and other municipal organizations to assess improvements, including parks, parkways, recreation areas (including necessary structures), and other necessary improvements to the local agency's streets, property and easements. In accordance with the Act, the City of Vallejo has established 14 Landscape Maintenance Districts (LMDs). Within these Districts, property owners are assessed at a rate per one hundred dollars of assessed value of each parcel.

Lighting and Landscaping Act: The 1972 Lighting and Landscaping Act (California Streets and Highways Code Section 22500 *et seq*.) has been employed by the City of Vallejo to provide maintenance funding of parks that serve new neighborhoods. In accordance with the Act, the City has established 12 LMDs. Within these Districts, property owners are assessed a fee based on the size of the parcel of land they occupy.

Local Policies and Regulations

Vallejo Municipal Code: The City of Vallejo Municipal Code Section 3.18 requires that developers of residential land either dedicate land at a rate of 4.25 acres per 1,000 persons, or pay a Park Impact Fee per residential unit, which is established in the Code Section 3.18.170(c). According to Section 3.18.170 (d) the Park Impact Fee is increased each January 1 by the Engineering News Record Construction Cost Index for San Francisco Bay Area. Secondary residential units, conversion of existing hotels, or residential projects within the Downtown Off-street Parking Assessment District are exempt from fees or dedication. According to the 2006 Greater Vallejo Recreation District (GVRD) Park and Recreation Master Plan, 50 percent of in-lieu funds are generally spent to serve the park needs of the residents of the subdivision that generates the funds, and 50 percent are generally spent citywide on capital improvements.

2.16 Transportation/Traffic

The Mare Island transportation system consists of a mixture of arterial roadways, collector streets, and access roads. Primary access to Mare Island and the Project site is provided by SR-37, a four-lane freeway with center concrete divider, and Mare Island Causeway, a two-lane City arterial divided by a rail spur. The Project site is bounded by Azuar Drive to the west, G Street to the south, and SR-37 to the north. The Project site is bisected by Walnut Avenue, a two-lane southbound-only arterial, and Railroad Avenue, a two-lane northbound-only arterial. Walnut Avenue and Railroad Avenue merge at the SR-37/North Mare Island Interchange and become two-way roadways south of G Street. The west-most areas of the Project site are accessible via Azuar Drive, a two-lane north-south oriented collector road providing primary access to the residential neighborhoods on Mare Island.

Existing Roadway Operations

The on-island circulation network consists of north- and southbound collector streets connecting residential and commercial districts, and east- and westbound local streets. Existing land uses on Mare Island currently generate approximately 7,900 average daily trips (ADT) (City of Vallejo 2016a). The Project site does not currently contribute measurably to on- and off-island traffic levels due to the vacant and abandoned nature of the site.

Alternative Transportation Systems

Pedestrian and bicycle access to Mare Island is currently provided via a narrow paved sidewalk along the southern side of the Mare Island Causeway. Pedestrian sidewalks are generally provided on at least one side of arterial and residential collector streets. No bike paths, bicycle routes, or transit routes have been established on Mare Island. However, the Specific Plan contains plans, policies, and guidelines for the establishment of these facilities and services. Additionally, a network of railroad lines and spurs exists on Mare Island. The existing railroad network connects the commercial and industrial areas of Mare Island with the City and greater regional railroad system. Land uses on Mare Island do not actively utilize the existing rail network, and use of this system on Mare Island is infrequent.

2.16.1 Regulatory Setting

Federal Policies and Regulations

No federal regulations establishing guiding policies or requirements have been established which apply to this Project.

State Policies and Regulations

Global Warming Solutions Act of 2006: With the passage of the Global Warming Solutions Act (AB 32), the State of California committed itself to reducing statewide GHG emissions to 1990 levels by 2020. CARB is coordinating the response to comply with AB 32. The City LUCE proactively incorporates strategies for integrated land use and transportation planning that achieve GHG reduction, vehicle miles traveled (VMT) reduction, and trip reduction that would further the City's efforts to meet the state-wide policy intent of this legislation.

SB 375: The adoption of SB 375 on September 30, 2008 recognizes the connection between poor city planning and reliance on automobiles as the primary mode of transportation, with the result being emissions from vehicles accounting for 30% of GHG emissions in California. SB 375 aligns the goals of regional transportation planning efforts, regional GHG reduction targets, and land use and housing allocations, and requires MPOs such as ABAG to adopt a SCS or Alternative Planning Strategy (APS) within their regional transportation plan to demonstrate the achievement of greenhouse gas reduction targets (refer to Section 3.4, *Greenhouse Gas Emissions*). As discussed below, in compliance with SB 375, ABAG has adopted the Plan Bay Area 2040, which addresses land use and transportation for the region inclusive of the City of Vallejo.

SB 743: To further the state's commitment to the goals of SB 375, AB 32 and AB 1358, Governor Brown signed SB 743 on September 27, 2013. SB 743 adds Chapter 2.7, *Modernization of Transportation Analysis for Transit-Oriented Infill Projects*, to Division 13 (Section 21099) of the PRC. Key provisions of SB 743 include reforming aesthetics and parking CEQA analysis for urban infill projects and eliminating the measurement of automobile delay, or LOS, as a metric that can be used for measuring traffic impacts in transit priority areas. Under SB 743, the focus of transportation analysis will shift from driver delay to reduction of greenhouse gas emissions, creation of multimodal networks, and promotion of a mix of land uses. Specifically, SB 743 requires the Governor's Office of Planning and Research (OPR) to amend the CEQA Guidelines (Title 14 of the California Code of Regulations sections and following) to provide an alternative to LOS for evaluating transportation impacts. Particularly for areas served by transit, those alternative criteria must "promote the reduction of greenhouse

gas emissions, the development of multimodal transportation networks, and a diversity of land uses." (New Public Resources Code Section 21099[b][1]). Measurements of transportation impacts may include "vehicle miles traveled, vehicle miles traveled per capita, automobile trip generation rates, or automobile trips generated." The Office of Public Research (OPR) also has discretion to develop alternative criteria for areas that are not served by transit, if appropriate.

Pursuant to SB 743, OPR released a *Draft of Updates to the CEQA Guidelines* in August 2014. OPR's *Draft of Updates* proposes VMT as the replacement metric for LOS in the context of CEQA. While OPR emphasizes that a lead agency has the discretionary authority to establish thresholds of significance, the *Draft of Updates* suggest criteria which indicate when a project may have a significant, or less than significant, transportation impact on the environment. For instance, a project that results in VMTs greater than the regional average for the land use type (e.g. residential, employment, commercial) may indicate a significant impact. Alternatively, a project may have a less than significant impact if it is located within one-half mile of an existing major transit stop, or results in a net decrease in VMTs compared to existing conditions.

Additionally, the *Draft of Updates* also suggests that "transportation projects" which increase roadway capacity in congested areas or add a new roadway should undergo additional analysis to determine if the project will induce additional vehicle travel compared to existing conditions. The proposed amendments also provide that transportation projects designed to improve safety or operations, or pedestrian, bicycle and transit projects – including those that require reallocation or removal of motor vehicle lanes – would not be expected to generate additional VMTs and "generally" would not result in a significant transportation impact. In addition to a project's effect on VMT, a lead agency may also consider whether a project will cause unsafe conditions for various roadway users.

The public comment period on OPR's *Draft of Updates* ended in November 2014, and it is anticipated that further revisions to the *Draft of Updates* will be forthcoming prior to its adoption. However, this section continues to evaluate the Project in the context of existing adopted CEQA criteria using LOS.

California Department of Transportation (Caltrans): Caltrans owns and operates the State highway system, which includes the freeways and SRs within California. In Vallejo, Caltrans maintains the freeways (Interstate 80 and Interstate 780) and SR 29 (Sonoma Boulevard) and SR 37. Caltrans' *Guide for the Preparation of Traffic Impact Studies* (December 2002) provides guidance on the evaluation of traffic impacts to State highway facilities. The document outlines when a traffic impact study is needed and what should be included in the scope of the study.

Regional Policies and Regulations

Metropolitan Transportation Commission: MTC is the Bay Area's regional transportation planning agency and federally designated MPO. MTC is responsible for preparing the RTP, a comprehensive blueprint for the development of mass transit, highway, airport, seaport, railroad, bicycle, and pedestrian facilities. The RTP is a 20-year plan that is updated every three years to reflect new planning priorities and changing projections of future growth and travel demand. The long-range plan must be based on a realistic forecast of future revenues, and the transportation projects taken as a whole must help improve regional air quality. The Commission also screens requests from local agencies for State and federal grants for transportation projects to determine compatibility with the RTP.

In recent years, State and federal laws have given MTC an increasingly important role in financing Bay Area transportation improvements. Most significant was the 1991 Intermodal

Surface Transportation Efficiency Act, which increased the powers of MPOs, such as MTC, to determine the mix of transportation projects best suited to meet their region's needs. MTC also administers State monies, including the Local Transportation Fund and State Transit Assistance, derived from the Transportation Development Act (TDA). TDA is a quarter-cent sales tax that primarily funds transit operations and other non-transit related projects and programs that comply with regional transportation plans in the State. Legislation passed in 1997 gives MTC increased decision-making authority over the selection of projects and allocation of funds for the State Transportation Improvement Program (STIP).

The most recent federal surface transportation funding program, Moving Ahead for Progress in the 21st Century Act (MAP-21), was signed into law in July 2012. Funding surface transportation programs at over $105 billion for fiscal years (FY) 2013 and 2014, MAP-21 is the first long-term highway authorization enacted since 2005. MAP-21 creates a streamlined, performance-based, and multimodal program to address challenges such as improving safety, maintaining infrastructure condition, reducing traffic congestion, improving efficiency of the system and freight movement, protecting the environment, and reducing delays in project delivery. MAP-21 builds on and refines many of the highway, transit, bike, and pedestrian programs and policies established in 1991.

Solano Transportation Authority (STA): The STA has jurisdiction for Solano County to manage the County's federal, state, and regional transportation funds. In its role as Solano County's CMA, STA partners with MTC and Caltrans District 4 (with jurisdiction over the nine Bay Area counties) to provide countywide planning and program prioritization, funding, operating, and maintaining transportation programs and services.

The first CMP for Solano County was adopted in October 1991 and has been updated generally every two years since then. The most recently published update is the 2013 CMP. The standards and latest monitoring results for the facilities monitored by the STA in its role as the CMA is included later in this section.

Plan Bay Area, Strategy for a Sustainable Region: The ABAG is the Metropolitan Planning Organization for the nine-county Bay Area region that includes Solano County. ABAG adopted the Plan Bay Area on July 2013.

Solano County Congestion Management Program (CMP): The Solano County CMP is a state-mandated program. The CMP is intended to address the impacts to local growth on the regional transportation system. The CMP designates the roadway system for use in annual monitoring of LOS standards, identifies regionally significant roadways and intersections to be evaluated in land use impacts analyses, and identifies the potential candidates for inclusion in the Regional Transportation Plan capital improvement program. The LOS at each CMP monitoring station is supervised by local jurisdictions in order to implement the statutory requirements of the CMP. If LOS standards deteriorate, then local jurisdictions must prepare a deficiency plan to meet conformance standards outlined by the countywide plan. The CMP principal arterial system generally includes state highways, six-lane roads and/or non-residential arterials with average daily traffic (ADT) of 30,000 vehicles per day or more. In the City, the CMP roadway system includes I-80, I-780, SR 29, SR 37, Mare Island Way, Curtola Parkway, and Tennessee Street.

Solano County Transit (SolTrans): Bus service in the area of the Project and throughout Solano County is provided by SolTrans. SolTrans has jurisdiction over public transit in Solano County, and is responsible for developing public transit projects to meet the growing transportation needs of the County.

Local Policies and Regulations

1999 City of Vallejo General Plan – Circulation Element: The updated City of Vallejo General Plan Circulation Element provides goals and policies relating to maintaining and expanding the roadway network, providing adequate parking, and promoting the use of alternative modes of transportation. Policies relevant to Mare Island and this Project include the following:

- **Mobility Policy 6**: Prior to approval of a particular land use, it should be analyzed to determine its impacts one the existing circulation system.
- **Transit Policy 1**: Local and regional transit systems should be given a priority equal to that of the private automobile when developing the future street system and when reviewing specific development proposals.
- **Transit Policy 2**: Policies for the location of new bus stops should be adopted by the City; developers should be required to put in bus stops as part of large-scale developments.
- **Non-Motorized Transportation Policy 1-1**: As evidence of the communities' desire to encourage healthy and safe alternative modes of travel replacing the auto, the City shall give high priority to implementing the Vallejo Bicycle Route Plan.
- **Non-Motorized Transportation Policy 1-2**: Provide off-street parking and locking facilities for bicycles in conjunction with automobile parking as well as near entrances to public facilities and in areas of high people use.
- **Non-Motorized Transportation Policy 2-2**: Provide safe pedestrian crossings, e.g., signalized crosswalks and pedestrian overpasses, on major streets where day-to-day activities warrant them. Pedestrian walkways should be provided between residential neighborhoods and high use areas such as schools, parks and commercial centers. The walkways should be safe for adjoining property owners and users.

Mare Island Specific Plan: The Transportation element of the Specific Plan, in combination with the Mare Island Land Use Plan and Development Program, compose the three major elements of the Mare Island Specific Plan Transportation System. This Transportation System has been designed to accommodate anticipated travel demands created by redevelopment of Mare Island under the Specific Plan.

City of Vallejo Zoning Ordinance – Parking Requirements: Chapter 16.62 of the Vallejo Zoning Ordinance addresses off-street parking and loading requirements and provides design standards for off-street parking. Section 16.62.120 establishes the number of off-street parking spaces required for various land uses.

Industrial and manufacturing uses typically require four spaces for the first 5,000 sq. ft. of floor area and one space for each additional 2,000 sq. ft. of floor area, or one space for each one and one-half employees, whichever is greater. Office uses typically require one space per 250 sq. ft. of first floor area, plus one space per 350 sq. ft. of other floors.

Propel Vallejo General Plan 2040: The City is currently in the process of updating their General Plan. This update with focus on the expansion of existing goals and policies, while establishing new policies to guide development and growth of the City over the next 25 years. This update builds upon the goals and policies provided in the 1999 General Plan and provides additional policies and guidelines relating to the City's transportation and circulation network. Completion and adoption of the Propel Vallejo General Plan 2040 is anticipated for early 2017.

Vallejo Complete Street Ordinance: The City of Vallejo Complete Streets Ordinance establishes a vision for creating a city-wide transportation network that provides safe,

comfortable, and convenient travel for all users such as people walking or riding bicycles, public transportation, the elderly, goods movement and people driving. The ordinance establishes that the city shall require that complete street principals be upheld by not only any city department that works in the public right of way, but also shall be incorporated into all "planning, funding, design, approval, and implementation processes for any construction, reconstruction, retrofit, maintenance, or repair of the transportation network." The ordinance also directs the City to evaluate any proposed development plans for consistency with the ordinance, as well as to maintain an inventory of bicycle and pedestrian facilities and counts. Finally, the ordinance calls for the City to submit any information of future transportation projects to the Solano Transportation Authority Countywide Bicycle Plan.

2.17 Utilities and Service Systems

Mare Island is currently served by a network of wet and dry utility infrastructure managed by the City and other various utility service providers. The existing infrastructure system present onsite and within Reuse Area 1A consists primarily of the unaltered water, sewer, storm drain, natural gas, and electrical infrastructure systems utilized by MINSY at the time of base closure in 1996. An infrastructure study assessing the condition and capacity of existing water, sewer, and storm drainage systems was prepared in 1997, and is title the "Mare Island Utilities, Operations, Maintenance and Capital Improvement Plan" or the Mare Island Reuse Infrastructure Study (MIRIS). This study identified much of the infrastructure system within the Project site as being in critical condition and requiring substantial upgrades and improvements in order to support reuse and redevelopment under the Specific Plan.

Water Supply and Service

Water service to the Project site is provided by the City of Vallejo Water Division of the Department of Public Works and delivered to its service area through the City of Vallejo Water System. From all water sources, the City has an annual entitlement to a total of 47,560 acre feet (af) (Vallejo Water Division 2014). Within the City service area, the Vallejo Water System supplies water from two primary surface water sources, accounting for 20,200 af of the City's permitted annual entitlement. No sources of groundwater are utilized for City water supply. These water supply sources include surface water from Lake Berryessa, located approximately 27 miles north of the City, which is provided by the Solano Project and transported to City facilities via the Putah South Canal. The second source of water supply is provided to the City by the State Water Project from Lake Oroville, located approximately 100 miles northeast of the City and transported through the Sacramento River to the State's North Bay Aqueduct pumping facilities where it is then conveyed to City water facilities. The City service area water supply is then conveyed to the Fleming Hill Water Treatment Plant (WTP), where it is treated to ensure compliance with State and Federal drinking water regulations and standards before water is conveyed to the Vallejo Water Department service area recipients. The Fleming Hill WTP has a treatment capacity of 42 million gallons per day (mgd). Water supplied to Mare Island is conveyed through two transmission pipelines crossing the Mare Island Strait from the City to a 5.7-million-gallon water tank located adjacent to the Mare Island Golf Club approximately 1.9 miles south of the Project site. Water demand from the Fleming Hill WTP at buildout of the Mare Island Specific Plan in 2025 is estimated at 34,610 acre-feet per year (afy) (City of Vallejo 2007).

Water is supplied to Mare Island through two transmission mains crossing Mare Island Strait; one transmission line crosses at the southern end of the island and one crosses via the Mare Island Causeway. The water distribution system on Mare Island is comprised of existing and

new water mains and lines ranging from 8 inches to 20 inches in diameter, as well as a 5.7-million-gallon water storage tank (City of Vallejo, 2013).

Sanitary Sewer System

VSFCD is responsible for the operation and maintenance of the sanitary sewer system on Mare Island. Wastewater generated on Mare Island is collected by a series of gravity sewers and pump stations, and conveyed to the DOM-4 pump station located along G Street where it is forced through an 18-inch diameter force main. This force main transports wastewater across the Mare Island causeway to the VSFCD Wastewater Treatment Plant located approximately 1.9 miles southeast of the Project site. This plant treats an average of 10 mgd (VSFCD 2016) and has an average dry weather capacity of 15.5 mgd (City of Vallejo 2016a). VSFCD is currently in the process of replacing the existing Mare Island Causeway force main, relocating the new pipe to an area adjacent to and north of the Mare Island Causeway. This new force main would provide adequate conveyance of wastewaters generated on Mare Island. This force main replacement project is expected to be completed in the first half of 2017.

Sanitary sewer and wastewater collection systems within the Project site are functional; however, systems are currently in very poor condition with significant inflow and infiltration problems (LFR Reimer 2002). Substantial replacement of the system would be required to support site redevelopment.

Storm Water

In addition to wastewater services, the VSFCD provides storm water and flood control protection services to the incorporated areas of the City. Over 250 miles of storm drains, 10,000 catch basins, and nine pump stations within the City are operated and maintained by VSFCD (City of Vallejo 2016a). On-island storm drain systems collect surface water from most of the developed areas of Mare Island through a series of catch basins, collection laterals, gravity mains, and lift stations. A total of 13 storm drainage basins were proposed and implemented as part of Mare Island Master Utilities Plan. However, no storm drainage basins have been established north of G Street and for the Project site due to the limited information on this area at the time of development of the MUP. Due to site abandonment and a prolonged period of vacancy, the existing storm drain system serving the Project site has remained in a similar or worse condition than as described under the MIRIS in 1997. Storm water from the site is currently handled in three ways, all of which ultimately discharge to the tidally influenced Mare Island Strait. There are two storm water pump stations on the site: SDPS 14 and SDPS 15, which outfall into Mare Island Strait, as well as three additional gravity lines that outfall into Mare Island Strait and an underground conveyance system of culverts that deliver storm water from drainage inlets at the surface to the pump stations or directly to Mare Island Strait. The majority of the Project site drains to the east to surface inlets that deliver storm water either to SDPS 14 and a 36-inch force main to Mare Island Strait or by gravity directly to Mare Island Strait. The northwest portion of the site drains to SDPS 15 and into a 36-inch force main that also discharges into Mare Island Strait. Much of this storm drain system is in critical condition due to the flat topography, low elevation, frequent tidal backup, and seepage of groundwater. In order to sufficiently service redevelopment of the North Mare Island site, much of the system would require substantial upgrades or improvements in order to meet VSFCD requirements (City of Vallejo 2013a; Reimer Associates 1997).

Solid Waste

Solid waste collection is provided by Recology Vallejo, which offers garbage, recycling, and yard waste collection services to the residents and commercial businesses throughout the City. In

2014, a total of 80,420 tons of solid waste from the City was disposed of, with approximately 99 percent of all City waste being disposed of at the Potrero Hills Landfill and the Recology Hay Road (California Department of Resources Recycling and Recovery [CalRecycle] 2016a). Potrero Hills Landfill is located in Suisun City, approximately 17.6 miles northeast of the Project site. Recology Hay Road is located in the city of Vacaville, approximately 27.8 miles northeast of the Project site. The Potrero Hills Landfill and Recology Hay Road each have a permitted throughput capacity of 4,330 tons per day (tpd) and 2,400 tpd, respectively (CalRecycle 2016b, 2016c). Potrero Hills Landfill receives approximately 3,400 tpd and has a remaining capacity of 13,872,000 cubic yards (cy), with a cease operations date set for early 2048 (CalRecycle 2016b). Recology Hay Road has a remaining capacity of 30,433,000 cy, with a cease operations date estimated for 2050 (CalRecycle 2016c).

2.17.1 Regulatory Setting

Federal Policies and Regulations

Federal Water Pollution Control Act (Clean Water Act): The Water Pollution Control Act, or Clean Water Act, is a comprehensive statute aimed at restoring and maintaining the chemical, physical, and biological integrity of the nation's waters, including discharge waters of wastewater treatment processes. In combination with the Clean Water Act, other federal environmental laws also regulate the location, type, planning, and funding of wastewater treatment facilities.

National Pollutant Discharge Elimination System (NPDES): As authorized by the Clean Water Act, the NPDES permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. Point sources are discrete conveyances such as pipes or man-made ditches. Individual homes that are connected to a municipal system, use a septic system, or do not have a surface discharge do not need an NPDES permit; however, industrial, municipal, and other facilities must obtain permits if their discharges go directly to surface waters. The NPDES permit system is authorized and implemented by states and local water boards.

Safe Drinking Water Act: The Safe Drinking Water Act, the principal federal law intended to ensure safe drinking water to the public, was enacted in 1974 and has been amended several times since it came into law. The Act authorizes U.S. EPA to set national standards for drinking water, called the National Primary Drinking Water Regulations, to protect against both naturally-occurring and man-made contaminants. These standards set enforceable maximum contaminant levels in drinking water and require all water providers in the United States to treat water to remove contaminants, except for private wells serving fewer than 25 people. In California, the State Department of Health Services conducts most enforcement activities. If a water system does not meet standards, it is the water supplier's responsibility to notify its customers.

State Policies and Regulations

California Porter-Cologne Water Quality Control Act: Under the Porter-Cologne Water Quality Control Act, which was passed in California in 1969 and amended in 2013, the SWRCB has authority over State water rights and water quality policy. This Act divided the state into nine regional basins, each under the jurisdiction of a RWQCB to oversee water quality on a day-to-day basis at the local and regional level. RWQCBs engage in a number of water quality functions in their respective regions. RWQCBs regulate all pollutant or nuisance discharges that

may affect either surface water or groundwater. Vallejo is overseen by the San Francisco Bay Area RWQCB.

***California Water Plan: Update 2013*:** The California Water Plan provides a framework for water managers, legislators, and the public to consider options and make decisions regarding California's water future. The plan outlines actions that together bring reliability, restoration, and resilience to California water resources, reinforcing the value of integrated water management, and examining policies that allow water managers to combine flood management, environmental stewardship, and surface water and groundwater supply.

California Governor's Drought Declarations: California Governor Brown on January 17, 2014 proclaimed a State of Emergency and directed state officials to take all necessary actions to make water immediately available. On April 25, 2014, the Governor issued an executive order to speed up actions necessary to reduce harmful effects of the drought, and he called on all Californians to redouble their efforts to conserve water. On December 22, 2014 Governor Brown issued Executive Order B-28-14 extending directives to the Department of Water Resources and the Water Board to take actions necessary to make water immediately available through May 31, 2016 and to extend CEQA suspensions for certain water supply projects. On April 1, 2015, the governor issued Executive Order B-29-15. Key provisions include ordering the SWRCB to impose restrictions to achieve a 25 percent reduction in potable urban water usage through February 28, 2016. On May 9, 2016, the governor issued Executive Order B-37-16, establishing longer-term water conservation measures through the end of January 2017, which include monthly water use reporting, strengthened urban drought contingency plans, elimination of wasteful water use practices, and mandated adjustments to emergency water conservation regulations and restrictions during extended drought conditions. These extended water conservation measures recognize differing water supply conditions for many communities, and require that communities develop water efficiency measures and conservations plans specific to the conditions of their respective sources of water supply.

The SWRCB adopted new emergency conservation regulations on May 18, 2016, that repeal and replace prior drought regulations that used a percentage-based water reduction standard. The new regulations, effective from June 2016 through January 2017, require local agencies to ensure a three-year water supply assuming a continuous shortage such as that experienced 2012 through 2015. Water agencies will be required to meet a conservation standard equal to the projected shortage in their supplies and report to the SWRCB. The Governor's drought declaration also calls upon local urban water suppliers and municipalities to implement their local water shortage contingency plans immediately in order to avoid or forestall outright restrictions that could become necessary later in the drought season.

CALGreen: On July 17, 2008, the California Building Standards Commission adopted the nation's first green building standards. CALGreen (Part 11, Title 24) was adopted as part of the California Building Standards Code (Title 24, CCR) to apply to the planning, design, operation, construction, use, and occupancy of every newly constructed building or structure, unless otherwise indicated in the code, throughout California. CALGreen established planning and design standards for sustainable site development, including water conservation measures and requirements that new buildings reduce water consumption by 20 percent. The mandatory provisions of CAGreen became effective January 1, 2011. The building efficiency standards are enforced through the local building permit process.

The purpose of CALGreen is to improve public health, safety, and general welfare by enhancing the design and construction of buildings through the use of building concepts having a reduced

negative impact or positive environmental impact and encouraging sustainable construction practices in the following categories:

- Planning and design
- Energy efficiency
- Water efficiency and conservation
- Material conservation and resource efficiency
- Environmental quality

California Senate Bills 610 and 221: SB 610 and SB 221 amended State law to (1) ensure better coordination between local water supply and land use decisions and (2) confirm that there is an adequate water supply for new development. Both statutes require City and County decision-makers to receive detailed information regarding water availability prior to approval of large development projects. SB 610 requires the preparation of a Water Supply Assessment (WSA) for certain types of projects subject to the CEQA. Projects required to prepare a WSA are:

- Residential development of more than 500 dwelling units.
- Shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor area.
- Hotel or motel, or both, having more than 500 rooms.
- Industrial, manufacturing or processing plant, or industrial park planned to employ more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area.
- Mixed-use project that includes one or more of the projects specified above.
- Project that would demand an amount of water equivalent to, or greater than, the amount of water required for 500 dwelling units.

SB 221 establishes consultation and analysis requirements related to water supply planning for residential subdivisions including more than 500 dwelling units. The water supplier must provide written verification that sufficient water is available for the project before construction begins. Compliance with both SB 610 and SB 221 involves review of the UWMP.

2009 Water Conservation Act (SB X7-7): SB X7-7 was enacted in November 2009, requiring all water suppliers to increase water use efficiency. The legislation sets an overall goal of reducing per capita urban water use by December 31, 2020 through water use targets for urban water suppliers, water management plans, and best management practices. Urban retailers can achieve the SB X7-7 goal using one of four specified methods:

- Option 1: 80 percent of baseline use (reduction of 20 percent)
- Option 2: Sum of specified performance standards
- Option 3: 95 percent of DWR Hydrologic Region target
- Option 4: A flexible alternative designed to adjust to local circumstances.

Urban retail water suppliers must monitor and report compliance on an individual or regional basis. Individual urban retail water suppliers are not required to achieve a reduction in urban per capita water use greater than 20 percent. Compliance with the water reduction target is required for continued state water grants and loan eligibility. After 2021, failure of urban retail water suppliers to meet their targets establishes a violation of law for administrative or judicial proceedings.

Water Conservation in Landscaping Act of 2006 (AB 1331): The Water Conservation in Landscaping Act of 2006 (AB 1881) required the State Department of Water Resources to update the State Model Water Efficient Landscape Ordinance by 2009. The State's model ordinance was issued on October 8, 2009. Under AB 1881, Cities and Counties are required to adopt a State updated model landscape water conservation ordinance by January 31, 2010, or to adopt a different ordinance that is at least as effective in conserving water as the updated Model Ordinance. In accordance with AB 1881, Vallejo adopted its Landscape Ordinance in Chapter 16.71 of the Municipal Code, Water Efficient Landscape Requirements.

California Integrated Waste Management Act (AB 939): The California Integrated Waste Management Act (IWMA) of 1989 established an integrated waste management hierarchy to guide the California Integrated Waste Management Board and local agencies in implementation, in order of priority: (1) source reduction, (2) recycling and composting, and (3) environmentally safe transformation and land disposal. The Act required each county to establish a task force to coordinate the development of city Source Reduction and Recycling Elements and a countywide siting element. The Act also required each county to prepare, adopt, and submit to the Board an Integrated Waste Management Plan (IWMP).

Additionally, waste diversion mandates were set in AB 939. The law required each city or county plan to include an implementation schedule which shows: diversion of 25 percent of all solid waste from landfill or transformation facilities by January 1, 1995 through source reduction, recycling, and composting activities; and, diversion of 50 percent of all solid waste by January 1, 2000 through source reduction, recycling, and composting activities. A city or county may be deemed exempt from these goals or to reduce the requirements if the city or county demonstrates that attainment of the goals is not feasible due to the small geographic size of the jurisdiction and the small quantity of waste generated. After 1/1/95, the Act authorized the Board to establish an alternative goal to the 50 percent requirement, if the Board finds that the local agency is effectively implementing all source reduction, recycling, and composting measures to the maximum extent feasible.

SB 1016: SB 1016 built on AB 939 compliance requirements by implementing a simplified measure of jurisdictions' performance. SB 1016 accomplished this by changing the measurement of waste reduction from a diversion rate to a disposal-based indicator, the per capita disposal rate. The purpose of the per capita disposal measurement system was to make the process of goal measurement as established by AB 939 simpler, more timely, and more accurate. Beginning with reporting year 2007 jurisdiction annual reports, diversion rates were no longer measured. With the passage of SB 1016, only per capita disposal rates were measured. For 2007 and subsequent years, CalRecycle compared reported disposal tons to population to calculate per capita disposal expressed in pounds/person/day.

2011 AB 341: AB341 established a state policy goal that no less than 75 percent of solid waste generated be source reduced, recycled, or composted by 2020, and requiring CalRecycle to provide a report to the Legislature that recommends strategies to achieve the policy goal by January 1, 2014. AB341 builds on the existing AB 939 requirement that every jurisdiction divert at least 50 percent of its waste. The bill also mandates local jurisdictions to implement commercial recycling by July 1, 2012. AB341 requires any business (including schools and government facilities) that generates 4 cubic yards or more of waste per week, and multifamily buildings with 5 or more units to arrange for recycling services. A recycling service may include mixed waste processing that yields diversion results comparable to source separation.

2014 AB 1826: The City is now working to comply with AB 1826 (Chaptered on 9/28/2014), which requires that businesses separate and arrange for composting the food waste and compostable organics that they generate. The City operates a pilot food waste collection route that is transitioning into a regular collection service for this material. In brief, AB 1826 requires that businesses generating organic waste arrange for recycling services for that waste. A business must take this action if it generates: 8 cubic yards or more per week of organic waste on April 1, 2016; 4 cubic yards or more of organic waste on January 1, 2017; and 4 cubic yards or more of commercial solid waste per week on January 1, 2019. The bill also requires jurisdictions to implement an organic waste recycling program for businesses.

Local Policies and Regulations

2005 Urban Water Management Plan: In compliance with the Urban Water Management Planning Act, the City of Vallejo Utilities Department, Water Division – the water service retailer for Vallejo - adopted its 2005 UWMP in February 2006. The UWMP evaluates if the City can meet the water demands of its customers over a 25-year planning horizon. The analysis of projected water supply and demand addresses normal, single-dry, and multiple dry year conditions. The 2005 UWMP is currently in the process of being updated and revised.

2012 City of Vallejo Water Management Plan: As a participating member of the Solano Project, the City is required by the United States Bureau of Reclamation to utilize best management practices (BMPs) for water savings, and file annual program updates for the United States Bureau of Reclamation (USBR).The City of Vallejo Water Management Division prepared a 2012 City of Vallejo Water Management Plan, for submittal to the USBR, that provides a comprehensive description of the City's water system including supplies, demands, conservation BMPs, and shortage contingency plan. The City brings water from the five different sources to three treatment plants in order to serve customers in two counties, an active military base and a former military base. The three WTPs consist of Fleming Hill WTP, Green Valley WTP and Travis WTP. One of the water sources is Solano Project Water, which is delivered from Lake Berryessa via the Putah South Canal to either Cordelia where it is pumped into Vallejo or the Travis WTP, or via Solano Irrigation District's distribution system to an intertie in Green Valley. The Majority of Vallejo's Solano Project water entitlement is delivered to Fleming Hill WTP form the USBR terminal reservoir via the Cordelia reservoir.

1999 City of Vallejo General Plan – Open Space & Resource Conservation Element: The City of Vallejo General Plan Open Space & Resource Conservation Element provides goals and policies relating to the protection and preservation of valuable natural resources critical to the health and safety of the human and biological environments within Vallejo and its surrounding regions. Policies relevant to Mare Island and this Project include the following:

- **OS&RC Policy 3a**: Enhance water quality by enforcement of water quality standards, upgrading of sewage treatment plant and complete separation of sewer and sanitary system at earliest possible time.

City of Vallejo Municipal Code: The City of Vallejo Municipal Code is a primary tool that shapes the form and character of physical development in Vallejo. The Municipal Code includes various directives pertaining to water supply and conservation issues. Most such directives are found in Title 11 – Water – which includes Subtitle I – Municipal Water System, and Subtitle II – Miscellaneous Water Regulations. Other directives are found in Title 12 – Buildings and Construction and Title 16 – Zoning.

Selected Chapters in the Municipal Code pertaining to water supply and conservation issues are listed below:

- *Chapter 11.08 – Municipal Water System General Rules*: The rules and regulations herein contained are adopted to govern the general operation of the Vallejo municipal water system to provide an efficient and economical water supply.
- *Chapter 11.54 – Wasteful Water Use Prohibition Ordinance*: This regulation mandates that it is unlawful for any customer to intentionally waste water and prohibits 1) runoff from properties for more than fifteen minutes, 2) use of potable water to wash sidewalks, driveways, parking lots, cars, boats, or trailers without a hose with a shutoff nozzle, and 3) use of potable water for dust control where non-potable or recycled water is available.
- *Chapter 12.41 – Stormwater Management and Discharge Control*: This regulation is intended to protect and enhance the water quality within Vallejo's watercourses, water bodies, and wetlands and carry out the conditions specified in the MRP that requires appropriate source control measures, site design measures, and stormwater treatment measures for new development and redevelopment projects within the city.
- *Chapter 16.71 – Water Efficient Landscaping Requirements*: This regulation meets the requirements of the State's WELO and requires submittal of a landscape documentation package for new or rehabilitated landscapes ranging in size from 1,500 to 5,000 square feet (depending on the project). The landscape documentation package must include a water efficient landscape worksheet, soil management report, landscape design plan, irrigation design plan, and a grading design plan with the goal of minimizing water irrigation rates and maximizing water irrigation efficiency.
- *Chapter 16.74 – Energy and Water Conservation Regulations*: Section 16.74.030 – Water conservation guidelines, specifies all vegetation and landscaping required by the zoning regulations shall employ drought resistant species.

2.18 Energy Conservation

Electricity and natural gas services are provided to Mare Island by Island Energy, a municipal utility company owned by the Pittsburg Power Company. The Pittsburg Power Company was awarded a franchise service agreement by the U.S. Navy in 1997 to provide electric and natural gas retail services on Mare Island. As part of a special arrangement, the Pittsburg Power Company decided to establish and do business as Island Energy to service Mare Island (City of Vallejo 2016a).

Electricity Services

Electricity on Mare Island is provided by Island Energy, which purchases electricity through the Western Area Power Administration, one of four of the U.S. Department of Energy power marketing administrations. In 2013, Island Energy purchased a total of 9,788.7 gigawatt hours (GWh). Approximately 81 percent of the electrical purchases made by Island Energy was generated by large hydroelectric sources, while the remaining 19 percent of the power mix was generated by eligible renewable sources (e.g., geothermal, small hydro, solar, wind) (CEC 2014). Island Energy maintains and operates a substation located approximately 2 miles from the Project site and which has a 20 megawatt (MW) redundancy capacity with the ability to provide 175 million kilowatt hours (kWh) per year. Current load on this system is almost 5 MW, leaving approximately 15 MW or available capacity to service Mare Island. In addition, Island Energy maintains approximately electrical transmission lines on Mare Island, providing electrical services to approximately 480 customers and expects to add an additional 1,400 residential customers over the next 4 to 5 years (Island Energy 2014).

The Project site is currently vacant or abandoned. Existing Project site electrical demands are primarily limited to the operation of utility systems, including storm water and wastewater pump stations. The existing site electrical infrastructure system consists primarily of underground transmission lines located along the eastern half of the site and Railroad Avenue, with overhead transmission lines located along Walnut Avenue.

Natural Gas Services

Natural gas is purchased by Island Energy from the California Department of General Services. Natural gas is delivered to Mare Island through a 10-inch steel pipe with a pressure of 50 pounds per square inch gauge (psig). Natural gas is then distributed throughout Mare Island through a system of transmission supply lines ranging in diameter from ½ inch to 4 inches. Through this system, Island Energy is capable of delivering 3.4 million therms of natural gas per year. Transmission lines located within the Project site are constructed underground and consist of 4-inch plastic 50 psig pipes.

2.18.1 Regulatory Setting

Federal Policies and Regulations

Energy Policy Act of 2005: The Energy Policy Act of 2005 seeks to reduce reliance on non-renewable energy resources and provide incentives to reduce current demand on these resources. For example, under the Act, consumers and businesses can obtain federal tax credits for purchasing fuel efficient appliances and products, including buying hybrid vehicles, building energy-efficient buildings, and improving the energy efficiency of commercial buildings. Additionally, tax credits are available for the installation of qualified fuel cells, stationary microturbine power plants, and solar power equipment.

State Policies and Regulations

State of California Integrated Energy Policy: In 2002, the Legislature passed SB 1389, which required the CEC to develop an integrated energy plan every two years for electricity, natural gas, and transportation fuels, for the California Energy Policy Report. The plan calls for the state to assist in the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the least environmental and energy costs. To further this policy, the plan identifies a number of strategies, including assistance to public agencies and fleet operators in implementing incentive programs for Zero Emission Vehicles and their infrastructure needs, and encouragement of urban designs that reduce vehicles miles traveled and accommodate pedestrian and bicycle access.

The CEC adopted the 2013 Integrated Energy Policy Report on February 20, 2014. The 2013 Integrated Energy Policy Report provides the results of the CEC's assessment of a variety of issues, including:

- Ensuring that the state has sufficient, reliable, and sage energy infrastructure to meet current and future energy demands;
- Monitoring publicly-owned utilities' progress towards achieving 10-year energy efficiency targets; defining and including zero-net-energy goals in state building standards;
- Overcoming challenges to increased use of geothermal heat pump/ground loop technologies and procurement of biomethane;

- Using demand response to meet California's energy needs and integrate renewable technologies;
- Removing barriers to bioenergy development; planning for California's electricity infrastructure needs given potential retirement of power plants and the closure of the San Onofre Nuclear Generating Station;
- Estimating new generation costs for utility-scale renewable and fossil-fueled generation;
- Planning for new or upgraded transmission infrastructure;
- Monitoring utilities' progress in implementing past recommendations related to nuclear power plants;
- Tracking natural gas market trends;
- Implementing the Alternative and Renewable Fuel and Vehicle Technology Program; and,
- Addressing the vulnerability of California's energy supply and demand infrastructure to the effects of climate change; and planning for potential electricity system needs in 2030 (CEC 2014a).

Title 24, Building Energy Efficiency Standards: California Code of Regulations Title 24, Part 6 comprises the California Energy Code, which was first established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to increase the baseline energy efficiency requirements. Although it was not originally intended to reduce GHG emissions, electricity production by fossil fuels results in GHG emissions and energy efficient buildings require less electricity. Therefore, increased energy efficiency results in decreased GHG emissions.

CALGreen: The California Building Standards Commission adopted CALGreen (Part 11 of the Title 24 Building Standards Code) for all new construction statewide on July 17, 2008. Originally a volunteer measure, the code became mandatory in 2010. The code sets targets for energy efficiency, water consumption, dual plumbing systems for potable and recyclable water, diversion of construction waste from landfills, and use of environmentally sensitive materials in construction and design, including eco-friendly flooring, carpeting, paint, coatings, thermal insulation, and acoustical wall and ceiling panels.

Local Policies and Regulations

Vallejo CAP: The City's CAP was adopted in 2012 to encourage and promote development of the City as a more sustainable community. The Cap serves as a policy document encouraging citywide implementation of sustainable practices related to: green building practices; energy efficiency; transit-oriented development; mixed-use, higher density development; recycling and composting; water conservation; and, renewable energy. The policies and measures applicable to the Project and provided in this CAP designed to achieve improvements to sustainability and energy efficiency include:

- **Energy Policy E-2**: Require all new development to meet the minimum California Title 24 and California Green Buildings Standards Code requirements, as amended, and encourage new development to exceed the minimum requirements.
    - *Implementation Action E-2.2*: Require newly constructed buildings and recommend that remodels over 50% and tenant improvements demonstrate compliance with the mandatory CALGreen Code Requirements by completing a green building checklist when submitting a request for building permits.
    - *Implementation Action E-2.3*: Consider requiring new development to comply with the Tier 1 requirements of CALGreen, part 11 of the California Building

Standards Code. This operational measure may be necessary to address any shortfalls in attaining reduction objectives.

- **Energy Policy E-3**: Increase the community's awareness and utilization of real-time energy consumption data available through PG&E's SmartMeter program.
    - *Implementation Action E-3.2*: Require newly constructed buildings and recommend that major remodels, over 50% install indoor real-time monitors.
- **Energy Policy E-4**: Increase tree planting and the use of cool roofs and cool pavement materials to reduce the urban heat island effect and corresponding energy consumption. Implement tree replacement policy for projects where tree removal is necessary.
    - *Implementation Action E-4.1*: Actively inspect and enforce state requirements for cool roofs on residential and nonresidential roofing projects. Require new buildings to meet Title 24 and recommend that new buildings meet CALGreen Tier 1 requirements for cool roofs, which require a minimum solar reflectance index (SRI) of 10 for steep slope roofs and 64 for low slope roofs.
    - *Implementation Action E-4.2*: Establish standards for new development and major remodels (to be defined) to reduce exterior heat gan for 50% of non-roof impervious site surfaces (roads, sidewalks courtyards, parking lots, driveways) through one or more of the following mechanisms:
        - Achieve 50% paved surface shading within five to ten years by planting trees and other vegetation and/or installing solar panels or shading structures above parking.
        - Use paving materials with an SRI of at least 29 for all surfaces.
    - *Implementation Action E-4.3*: Maintain and expand Vallejo's urban forest, including street trees and trees on private property.
    - *Implementation Action E-4.4*: For public improvements and public projects, require the use of high albedo paving material for sidewalks, roads, crosswalks, parking lots, and driveways.

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