Draft Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

SCH# 2015032006

Prepared for

City of San Mateo

October 2015

CH2MHILL®

1737 N. 1st Street
Suite 300
San José, CA 95112

Contents

Section **Page**

Acronyms and Abbreviations ..... **xi**

Executive Summary **ES-1**

Chapter 1. Introduction **1-1**
1.1 Background 1-1
1.2 Clean Water Program Objectives 1-2
1.3 California Environmental Quality Act Environmental Review Process 1-3
1.4 Organization and Scope of Document 1-4
1.5 Uses of this Document 1-5
1.6 Public Review and Comment 1-6
1.7 References 1-7

Chapter 2. Program Description **2-1**
2.1 Program Alternatives 2-1
2.1.1 In-System Storage Program 2-1
2.1.2 Full Conveyance Program 2-2
2.2 Project Descriptions 2-2
2.2.1 Collection System Projects 2-2
2.2.2 Wastewater Treatment Plant Projects 2-8
2.3 Overall Program Construction and Operation 2-14
2.3.1 Program Construction 2-14
2.3.2 Program Operation 2-15
2.4 References 2-16

Chapter 3. Aesthetics **3-1**
3.1 Concepts and Terminology Used in this Chapter 3-1
3.1.1 Visual Character 3-1
3.1.2 Visual Quality 3-2
3.1.3 Visual Exposure and Sensitivity 3-2
3.2 Existing Setting 3-3
3.2.1 Regional Setting 3-3
3.2.2 Existing Visual Character, Visual Quality, and Visual Sensitivity 3-3
3.3 Regulatory Framework 3-7
3.3.1 General Plan – Policies and Guidance 3-8
3.3.2 The Shoreline Park Specific Plan 3-10
3.3.3 City of San Mateo Zoning Ordinance 3-10
3.3.4 City of San Mateo Development Permit 3-11
3.4 Assessment Methods and Thresholds of Significance 3-11
3.5 Environmental Impacts 3-11
3.6 Mitigation Measures 3-20
3.7 References 3-21

Chapter 4. Air Quality **4-1**
4.1 Existing Setting 4-1
4.1.1 Climate and Topography 4-1
4.1.2 Attainment Status 4-1
4.1.3 Current Air Permits and Emissions 4-1

Section **Page**

4.2 Regulatory Framework 4-2
4.2.1 Federal Regulations 4-2
4.2.2 State Regulations 4-4
4.2.3 Local Regulations 4-4
4.3 Assessment Methods and Thresholds of Significance 4-5
4.3.1 CEQA Criteria and Thresholds 4-5
4.3.2 General Conformity de Minimis Threshold 4-6
4.4 Environmental Impacts 4-8
4.4.1 California Environmental Quality Act Impacts 4-8
4.4.2 General Conformity Applicability 4-16
4.5 Mitigation Measures 4-18
4.6 References 4-19

Chapter 5. Biological Resources 5-1
5.1 Existing Setting 5-1
5.1.1 Program Area 5-1
5.1.2 Wastewater Treatment Plant Site 5-2
5.2 Regulatory Framework 5-3
5.2.1 Federal Regulations 5-3
5.2.2 State Regulations 5-5
5.2.3 Local Regulations 5-7
5.3 Assessment Methods and Thresholds of Significance 5-9
5.4 Environmental Impacts 5-10
5.5 Mitigation Measures 5-19
5.6 References 5-22

Chapter 6. Cultural Resources 6-1
6.1 Existing Setting 6-1
6.1.1 Prehistory 6-1
6.1.2 Ethnography 6-1
6.1.3 Historic Context 6-2
6.1.4 Known Cultural Resources in San Mateo 6-3
6.1.5 Paleontological Setting 6-3
6.1.6 Literature Review and Site Survey for WWTP Site 6-3
6.2 Regulatory Framework 6-4
6.2.1 State Regulations 6-4
6.2.2 Local Regulations 6-6
6.3 Assessment Methods and Thresholds of Significance 6-6
6.4 Environmental Impacts 6-6
6.5 Mitigation Measures 6-9
6.6 References 6-10

Chapter 7. Geology and Soils 7-1
7.1 Existing Setting 7-1
7.1.1 Geology and Topography 7-1
7.1.2 Earthquake Faults and Seismicity 7-1
7.1.3 Soils 7-2
7.2 Regulatory Framework 7-3
7.2.1 Federal Regulations 7-3
7.2.2 State Regulations 7-4

Section **Page**

7.2.3 Local Regulations 7-5
7.3 Assessment Methods and Thresholds of Significance 7-5
7.4 Environmental Impacts 7-6
7.5 Mitigation Measures 7-11
7.6 References 7-12

Chapter 8. Greenhouse Gases 8-1
8.1 Existing Setting 8-1
8.2 Regulatory Framework 8-2
8.2.1 Federal Regulations 8-2
8.2.2 State Regulations 8-3
8.2.3 Local Climate Actions 8-4
8.3 Assessment Methods and Thresholds of Significance 8-4
8.4 Environmental Impacts 8-5
8.5 Mitigation Measures 8-10
8.6 References 8-10

Chapter 9. Hazards and Hazardous Materials 9-1
9.1 Existing Setting 9-1
9.2 Regulatory Framework 9-2
9.2.1 Federal Regulations 9-2
9.2.2 State Regulations 9-3
9.2.3 Local Regulations, Policies, and Programs 9-4
9.3 Assessment Methods and Thresholds of Significance 9-4
9.4 Environmental Impacts 9-5
9.5 Mitigation Measures 9-10
9.6 References 9-10

Chapter 10. Hydrology and Water Quality 10-1
10.1 Existing Setting 10-1
10.1.1 Precipitation 10-1
10.1.2 Watersheds 10-1
10.1.3 City Drainage System 10-1
10.1.4 Wastewater Treatment Plant Stormwater System 10-2
10.1.5 Groundwater 10-2
10.1.6 Flooding 10-2
10.2 Regulatory Framework 10-3
10.2.1 Federal Regulations 10-3
10.2.2 State Regulations 10-4
10.2.3 Local Regulations 10-4
10.3 Assessment Methods and Thresholds of Significance 10-5
10.4 Environmental Impacts 10-5
10.5 Mitigation Measures 10-9
10.6 References 10-10

Chapter 11. Land Use 11-13
11.1 Existing Setting 11-13
11.2 Regulatory Framework 11-13
11.2.1 General Plan – Land Use 11-13
11.2.2 General Plan Goals and Policies 11-15

Section **Page**

11.2.3 Zoning 11-17
11.2.4 Shoreline Park Specific Plan 11-19
11.2.5 City of San Mateo Development Permit 11-19
11.3 Assessment Methods and Thresholds of Significance 11-19
11.4 Environmental Impacts 11-20
11.5 Mitigation Measures 11-22
11.6 References 11-23

Chapter 12. Noise 12-1
12.1 Fundamentals of Acoustics 12-1
12.2 Existing Setting 12-3
12.2.1 Existing Noise Levels and Sensitive Receptors 12-3
12.3 Regulatory Framework 12-4
12.3.1 Federal Regulations 12-4
12.3.2 State Regulations 12-5
12.3.3 Local Regulations 12-5
12.4 Assessment Methods and Thresholds of Significance 12-8
12.4.1 Thresholds of Significance 12-11
12.5 Environmental Impacts 12-12
12.6 Mitigation Measures 12-16
12.7 References 12-17

Chapter 13. Population and Housing 13-1
13.1 Existing Setting 13-1
13.1.1 City of San Mateo 13-1
13.1.2 City of Foster City and Estero Municipal Improvement District 13-1
13.1.3 Town of Hillsborough 13-1
13.1.4 San Mateo County and Crystal Springs County Sanitation District 13-1
13.2 Regulatory Framework 13-2
13.2.1 State Regulations 13-2
13.2.2 Local Regulations 13-2
13.3 Assessment Methods and Thresholds of Significance 13-3
13.4 Environmental Impacts 13-4
13.5 Mitigation Measures 13-5
13.6 References 13-5

Chapter 14. Public Services 14-1
14.1 Existing Setting 14-1
14.1.1 San Mateo Police Department 14-1
14.1.2 San Mateo Fire Department 14-1
14.1.3 Schools and Libraries 14-1
14.2 Regulatory Framework 14-2
14.2.1 State Regulations 14-2
14.2.2 Local Regulations 14-2
14.3 Assessment Methods and Thresholds of Significance 14-3
14.4 Environmental Impacts 14-3
14.5 Mitigation Measures 14-5
14.6 References 14-5

Section		Page
Chapter 15.	**Recreation**	**15-1**
15.1	Existing Setting	15-1
15.2	Regulatory Framework	15-2
	15.2.1 City of San Mateo General Plan	15-2
	15.2.2 Shoreline Park Specific Plan	15-3
	15.2.3 City of San Mateo Zoning Ordinance	15-3
15.3	Assessment Methods and Thresholds of Significance	15-3
15.4	Environmental Impacts	15-4
15.5	Mitigation Measures	15-8
15.6	References	15-8
Chapter 16.	**Transportation and Traffic**	**16-1**
16.1	Existing Setting	16-1
	16.1.1 Regional and Local Roadways	16-1
	16.1.2 Bicycle Facilities	16-2
	16.1.3 Pedestrian Facilities	16-2
	16.1.4 Transit Service	16-2
16.2	Regulatory Framework	16-3
	16.2.1 State Regulations	16-3
	16.2.2 Local Regulations	16-4
16.3	Assessment Methods and Thresholds of Significance	16-4
	16.3.1 Intersection Level of Service	16-5
	16.3.2 Existing Traffic Conditions	16-6
	16.3.3 Key Assumptions Used in Analysis	16-6
16.4	Environmental Impacts	16-8
16.5	Mitigation Measures	16-13
16.6	References	16-15
Chapter 17.	**Utilities**	**17-1**
17.1	Existing Setting	17-1
	17.1.1 Water	17-1
	17.1.2 Solid Waste	17-1
	17.1.3 Wastewater	17-2
	17.1.4 Energy – Electricity and Natural Gas	17-2
17.2	Regulatory Framework	17-2
	17.2.1 Federal Regulations	17-2
	17.2.2 State Regulations	17-2
	17.2.3 Local Regulations	17-3
17.3	Assessment Methods and Thresholds of Significance	17-4
17.4	Environmental Impacts	17-4
17.5	Mitigation Measures	17-9
17.6	References	17-9
Chapter 18.	**Other Required California Environmental Quality Act Considerations**	**18-1**
18.1	Cumulative Impacts	18-1
	18.1.1 Introduction	18-1
	18.1.2 Cumulative Setting	18-1
	18.1.3 Cumulative Analysis	18-2
	18.1.4 Aesthetics	18-2
	18.1.5 Air Quality	18-3

Section **Page**

18.1.6 Biological Resources 18-3
18.1.7 Cultural Resources 18-3
18.1.8 Geology and Soils 18-3
18.1.9 Greenhouse Gases 18-3
18.1.10 Hazards and Hazardous Materials 18-4
18.1.11 Hydrology and Water Quality 18-4
18.1.12 Land Use 18-4
18.1.13 Noise 18-4
18.1.14 Population and Housing 18-5
18.1.15 Public Services 18-5
18.1.16 Recreation 18-5
18.1.17 Transportation and Traffic 18-5
18.1.18 Utilities 18-6
18.2 Growth Inducing Impacts 18-6
18.3 Significant Irreversible Environmental Changes 18-6
18.4 Significant and Unavoidable Impacts 18-7
18.5 References 18-7

Chapter 19. Alternatives 19-1
19.1 Introduction 19-1
19.2 No Project Alternative 19-1
19.3 Partial Conveyance of Wet Weather Flows 19-2
19.4 Conveyance System Replacement Program 19-2
19.5 Natural Treatment System 19-2
19.6 Comparison of Alternatives and Environmentally Superior Alternative 19-3
19.7 References 19-4

Chapter 20. Report Preparation 20-1
20.1 Lead Agency 20-1
20.2 Draft PEIR Authors 20-1
20.3 Contributors 20-1

Appendixes

A Evaluation of In-system Storage Location Alternatives for the San Mateo Clean Water Program
B Air Emissions Calculations
C Special-status Species Tables
D Wetlands Delineation Report
E Geologic Units

Tables

ES-1 Summary of Impacts and Mitigation Measures ES-4
ES-2 Comparison of Alternatives ES-2
2-1 Summary of Program Alternatives Evaluated in the Draft PEIR 2-1
3-1 Summary of Aesthetics Impacts 3-12
4-1 Ambient Air Quality Standards and Attainment Status 4-2
4-2 Bay Area Air Quality Management District Thresholds of Significance for Criteria Pollutants of Concern 4-6
4-3 General Conformity de Minimis Thresholds in Nonattainment Areas 4-7

Section **Page**

4-4 General Conformity de Minimis Thresholds in Maintenance Areas 4-7
4-5 Summary of Air Quality Impacts 4-8
4-6 Estimated Worst-Case Daily Construction Emissions, In-System Storage Program 4-9
4-7 Estimated Worst-Case Daily Construction Emissions, Full Conveyance Program 4-10
4-8 Estimated Worst-Case Daily Construction Emissions, New Headworks Project and Primary Clarifier Project 4-11
4-9 Estimated Operation Emissions, New Headworks Project and Primary Clarifier Project 4-13
4-10 General Conformity Applicability Analysis for In-System Storage Program 4-17
4-11 General Conformity Applicability Analysis for Full Conveyance Program 4-17
4-12 General Conformity Applicability Analysis for the New Headworks Project and Primary Clarifier Project 4-18
5-1 Summary of Biological Impacts 5-10
5-2 Seasonal Avoidance Windows 5-19
6-1 Summary of Cultural Resources Impacts 6-7
7-1 Summary of Geology and Soils Impacts 7-6
8-1 San Mateo 2005 Community-Wide GHG Emissions 8-1
8-2 Summary of Air Quality Impacts 8-5
8-3 Construction GHG Emissions for In-System Storage Program 8-6
8-4 Indirect GHG Emissions from Operations for In-System Storage Program 8-7
8-5 Construction GHG Emissions for Full Conveyance Program 8-8
8-6 Construction GHG Emissions for New Headworks Project and Primary Clarifier Project 8-8
9-1 Summary of Federal Regulations for Hazardous Waste 9-2
9-2 Summary of California Regulations for Hazardous Waste 9-3
9-3 Summary of Hazards and Hazardous Materials Impacts 9-5
10-1 Summary of Hydrology and Water Quality Impacts 10-6
11-1 Land Use Designations 11-14
11-2 Current Zoning 11-17
11-3 Summary of Land Use Impacts 11-20
12-1 Definitions of Acoustical Terms 12-1
12-2 Typical Sound Levels Measures in the Environment and Industry 12-3
12-3 City of San Mateo Noise Sensitive Land Use Compatibility Guidelines for Community Noise Environments 12-5
12-4 San Mateo Municipal Code Maximum Permissible Noise Levels 12-6
12-5 Construction Equipment Noise Levels from the RCNM User Guide 12-8
12-6 Construction Equipment Noise Levels versus Distance 12-11
12-7 Summary of Noise Impacts 12-12
12-8 Average Construction Noise Levels at Various Distances 12-13
13-1 Summary of Population and Housing Impacts 13-4
14-1 Summary of Public Services Impacts 14-3
15-1 Summary of Recreation Impacts 15-4
16-1 LOS Criteria for Signalized Intersection Operations 16-5
16-2 Existing Intersection LOS Summary 16-6
16-3 Peak Construction Daily Trips 16-7
16-4 Peak Construction Daily and Peak Hour Trips 16-7
16-5 Summary of Transportation and Traffic Impacts 16-8
17-1 Summary of Utilities Impacts 17-5
19-1 Comparison of Alternatives 19-3

Section **Page**

Figures
(Figures provided at the end of each section)

1-1 Regional Map
1-2 Service Area
2-1 Service Area
2-2 Collection System Projects
2-3 Recycling Centers for Construction Materials and Soils
2-4 Example: In-System Equalization Basin
2-5 WWTP Site Parcels
2-6 WWTP Potential Layout 1 Baseline
2-7 WWTP Potential Layout 2 CAS
2-8 WWTP Potential Layout 3 MBR
2-9 Comparison of Potential Treatment Processes
2-10 Example of Headworks Facility
2-11 Existing Primary Clarifiers
3-1 Key Observation Points
3-2 KOP 01
3-3 KOP 02
3-4 KOP 03
3-5 KOP 04
3-6 KOP 05
3-7 KOP 06
3-8 KOP 07
3-9 KOP 08
3-10 KOP 09
5-1 Creeks and Wetlands in the Program Area
5-2 Known Occurrences of Special-Status Species with Potential to Occur in the Program Area
5-3 WWTP Site Biological Study Area
5-4 WWTP Site Wetland Survey Area
7-1 Program Area Geology
7-2 Program Area Shaking Intensity
7-3 Slope Stability and Liquefaction Potential
7-4 Program Area Soils
10-1 Program Area Hydrology
11-1 WWTP Site Parcels
11-2 WWTP Site Use
11-3 WWTP Site Zoning
14-1 Public Services – Police and Fire
14-2 Public Services – Schools, Libraries, Hospitals
15-1 San Mateo Parks and Recreation Facilities
16-1 Bicycle Network
16-2 Transportation and Highway Network

Acronyms and Abbreviations

µg/m^3	micrograms per cubic meter
AB	Assembly Bill
ABAG	Association of Bay Area Governments
ADT	average daily trips
ADWF	average dry weather flow
Alquist-Priolo	Alquist-Priolo Earthquake Fault Zoning Act
ARB	California Air Resources Board
BAAQMD	Bay Area Air Quality Management District
BART	Bay Area Rapid Transit
Bay	San Francisco Bay
Bay Area	San Francisco Bay Area
Bay Plan	San Francisco Bay Plan
BCDC	Bay Conservation Development Commission
BMP	best management practices
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CalEPA	California Environmental Protection Agency
CalWater	California Water Service Company
Caltrans	California Department of Transportation
CAP	*Climate Action Plan*
CAS	conventional activated sludge
CBC	California Building Code
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CGP	Construction General Permit
CIP	capital improvement program
City or San Mateo	City of San Mateo
CNPS	California Native Plant Society
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent

C/OS	Conservation, Open Space, and Parks and Recreation
CRHR	California Register of Historical Resources
CSCSD	Crystal Springs County Sanitation District
CWA	Clean Water Act
CWP	San Mateo Clean Water Program
CZMA	Coastal Zone Management Act
dB	decibel
dBA	A-weighted sound pressure (noise) level
DNL	day-night noise level
DPM	diesel particulate matter
DPR	Department of Parks and Recreation
DTSC	Department of Toxic Substances Control
EIR	environmental impact report
EMID	Estero Municipal Improvement District
EO	Executive Order
EPA	U.S. Environmental Protection Agency
FAR	floor area ratio
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
First Update	The first update to the Climate Change Scoping Plan
General Plan	*City of San Mateo General Plan – Vision 2030*
General Plan EIR	*General Plan Update Draft Environmental Impact Report*
GHG	greenhouse gas
HAP	hazardous air pollutants
Hillsborough	Town of Hillsborough
I/I	infiltration and inflow
ITP	Incidental Take Permit
KOP	key observation point
lb/day	pounds per day
L_{dn}	day-night noise level
L_{eq}	equivalent noise level
L_n	percentile noise level
LOS	level of service
MBR	membrane bioreactor

MBTA	Migratory Bird Treaty Act
MCC	motor control center
mgd	million gallons per day
MLR	mixed liquor return
$MTCO_2e$	metric tons of carbon dioxide equivalent
Municipal Code	*San Mateo City Charter and Municipal Code*
NAAQS	National Ambient Air Quality Standards
NHTSA	National Highway Traffic Safety Administration
NOAA Fisheries	National Marine Fisheries Service
NOI	Notice of Intent
NOP	Notice of Preparation
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NWIC	Northwest Information Center
OHP	Office of Historic Preservation
OSHA	Occupational Safety and Health Administration
PCE	passenger car equivalent
PEIR	Programmatic environmental impact report
PG&E	Pacific Gas and Electric
PM	particulate matter
$PM_{2.5}$	particulate matter with an aerodynamic diameter of 2.5 micrometers
PM_{10}	particulate matter with an aerodynamic diameter of 10 micrometers
ppm	parts per million
PRC	Public Resources Code
PWWF	peak wet weather flows
RCNM User Guide	*Roadway Construction Noise Model User's Guide*
RPS	Renewables Portfolio Standard
RWQCB	San Francisco Bay Regional Water Quality Control Board
SDC	Seismic Design Category
SFHA	Special Flood Hazard Area
SIP	State Implementation Plan
SMFCSD	San Mateo–Foster City School District
SMFD	San Mateo Fire Department
SMPD	San Mateo Police Department
SO_2	sulfur dioxide

SPAR	site plan and architectural review
SPCC	spill prevention, control, and countermeasures
SR-92	State Route 92
SSO	sanitary sewer overflow
SWRCB	State Water Resources Control Board
TAC	toxic air contaminant
TMP	traffic management plan
TP	total phosphorus
tpy	tons per year
US-101	U.S. Highway 101
USACE	U.S. Army Corps of Engineers
USC	United States Code
USFWS	U.S. Fish and Wildlife Service
VFD	variable-frequency drive
WDR	waste discharge requirements
WRA	Wetland Research Associates
WWTP	wastewater treatment plant

Executive Summary

This Program-level draft environmental impact report (Draft PEIR) is being prepared by the City of Mateo (City) pursuant to Title 14 of California Code of Regulations Section 15168 to identify and analyze the anticipated environmental impacts of two potential Clean Water Program (CWP) alternatives. Each of the two CWP alternatives consists of a series of projects to upgrade and increase the capacity of the City's wastewater treatment plant (WWTP) and collection system. A key Program objective is to address the recurring problem of wet-weather sanitary sewer overflows (SSOs), which have caused violations of federal and state clean water standards.

Each CWP alternative is evaluated at a program-wide level to comprehensively review potential environmental impacts and to provide information to support the selection of a preferred CWP alternative. Individual projects would be further analyzed at a project level of detail prior to implementation. This document also analyzes the first two projects proposed for construction in both CWP alternatives – the New Headworks Project and the Primary Clarifier Project – at a project level of detail, which would allow those projects to proceed immediately into final design and construction. Overall CWP objectives and the intended uses of this Draft PEIR are described in Chapter 1. CWP alternatives and projects, including the two projects analyzed at a project level, are briefly summarized below and described in more detail in Chapter 2.

Program Description

For this Draft PEIR, the Program description includes the two CWP alternatives: the In-System Storage Program and the Full Conveyance Program. Both alternatives are evaluated at an equal level of detail.

- The In-System Storage Program includes construction of one or more underground storage basins upstream of the Dale Avenue Pump Station. Detention of influent flows in the in-system storage basins would reduce the needed capacity and size of downstream pipeline and pump station improvements.
- The Full Conveyance Program includes conveyance of peak wet weather flows to the WWTP. As a result, the WWTP would be sized to handle larger anticipated influent flows. This alternative would require a new Dale Avenue Pump Station as well as larger-capacity pipeline and pump station upgrades compared to the In-System Storage Program.

Under both alternatives, WWTP facilities would be upgraded to handle the peak wet weather influent flows and meet current and future regulatory requirements. The two CWP alternatives are described in Section 2.1, and individual projects are described in detail in Section 2.2.

The two projects analyzed at a project level of detail in this Draft PEIR – the New Headworks Project and the Primary Clarifier Project – are discussed in Section 2.2.2.2. These projects would be the first WWTP projects planned for construction in 2017 as part of either CWP alternative.

Summary of Impacts and Mitigation Measures

Potential environmental impacts are evaluated throughout Chapters 3 through 17 of this document, and are summarized in Table ES-1 at the end of this Executive Summary. Several types of impacts have the potential to occur during the construction and operation of the CWP projects, but all of these potential impacts can be mitigated to a less-than-significant level by following the detailed mitigation prescriptions presented in this document. The exception is noise and vibration impacts due to construction; mitigation measures, including implementing construction noise minimization measures, operating a construction noise hot line, and resolving construction noise complaints, are proposed to reduce these impacts but they are anticipated to be significant after mitigation. Based on the analysis in Chapters 3 through 17, there are no other environmental effects of either CWP alternative, the New Headworks Project, or the Primary Clarifier Project that cannot be mitigated to a less than significant level.

Cumulative and growth-inducing impacts are discussed in Chapter 18. All potential cumulative impacts would be reduced to a less than cumulatively considerable level, except for construction noise and vibration. The CWP would result in significant and unavoidable construction noise and vibration impacts, which would be cumulatively considerable. The CWP would not be expected to induce population growth or result in growth-inducing impacts.

Alternatives

This Draft PEIR evaluates two CWP alternatives, the In-System Storage Program and the Full Conveyance Program, at a programmatic and equal level of detail. In addition, a No Project Alternative and three other program alternatives – partial conveyance of wet weather flows, a conveyance system replacement program, and a natural treatment system – were considered but not carried forward. Table ES-2 provides a summary of the alternatives.

TABLE ES-2
Comparison of Alternatives
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Alternative	Major Characteristics	Significant Impacts	Meets CWP Objectives?
In-System Storage Program	One or more underground storage basins upstream of the Dale Avenue Pump Station to detain wastewater flows during peak wet weather events	• Significant and unavoidable construction noise and vibration impacts • All other impacts less than significant with mitigation	Yes
Full Conveyance Program	New pump station next to the existing Dale Avenue Pump Station and larger pipelines to deliver peak wet weather flows to WWTP.	• Significant and unavoidable construction noise and vibration impacts. • All other impacts less than significant with mitigation.	Yes
No Project Alternative	Operation of the existing WWTP and collection system continue, similar to current operations.	• CWP impacts, including construction noise and vibration impacts, avoided. • SSOs would continue to occur. • Violation of Cease and Desist Order related to the SSOs. • Stormwater quality and Bay water quality negatively affected.	No
Partial conveyance of wet weather flows	Includes both in-system storage for wet weather detention and new Dale Avenue Pump Station for wet weather conveyance. May cost more than either In-System Storage Program or Full Conveyance Program.	• Significant and unavoidable construction noise and vibration impacts.	Yes
Conveyance system replacement program	Replacement of all pipelines in City's conveyance system.	• Significant and unavoidable construction noise and vibration impacts. • Would not address all SSOs or aging infrastructure at WWTP. • Would not meet current or future regulatory requirements. • Would not support creation of opportunities for recycled water use.	No

TABLE ES-2
Comparison of Alternatives
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Alternative	Major Characteristics	Significant Impacts	Meets CWP Objectives?
Natural treatment system	Constructed treatment wetland used for polishing water from WWTP in lieu of advanced treatment.	• Significant and unavoidable loss of wetlands and impacts to special-status wildlife and fish. • Treated wastewater not available for recycled water use. • Significant and unavoidable construction noise and vibration impacts may occur.	No

Areas of Controversy

The City's primary objective is to select and implement a CWP alternative that results in fully meeting federal and state clean water standards. Both the In-System Storage Program and the Full Conveyance Program are expected to be equally effective in meeting all Program objectives. With the determination that water quality standards will be met with either alternative, the areas of controversy can be summarized as follows.

- The ability of an alternative to allow other City and community objectives to be achieved, such as enabling the City to generate recycled water at the WWTP, increasing WWTP energy efficiency, and "future proofing" new wastewater infrastructure in anticipation of regulatory changes.
- The community's acceptance of concentrating construction activities and project facilities at the WWTP Site.
- The community's acceptance of new large collection projects, including one or more in-system storage basins for the In-System Storage Program and a new pump station for the Full Conveyance Program.

For additional discussion, see the summary of scoping comments in Section 1.3 of this document.

Environmentally Superior Alternative

The No Project alternative is the only alternative to the In-System Storage Program or the Full Conveyance Program that would avoid or substantially lessen the significant and unavoidable construction noise and vibration impacts of the CWP. Therefore, the No Project alternative would be considered the environmentally superior alternative. However, it would not meet any CWP objectives, and would result in significant water quality impacts and conflict with regulatory requirements.

Of the remaining alternatives considered, only the In-System Storage Program or the Full Conveyance Program would meet all CWP objectives. In addition, other alternatives could result in the same or greater impacts. As described above, the In-System Storage Program and the Full Conveyance Program would have very similar impacts in type, scale, and location, and neither is environmentally superior to the other. Therefore, both the In-System Storage Program and the Full Conveyance Program are considered the environmentally superior alternatives.

TABLE ES-1
Summary of Impacts and Mitigation Measures
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Impacts	Mitigation Measures	Level of Significance	
Chapter 3. Aesthetics			
Impact 3-1 The CWP would have a potentially substantial adverse effect on a scenic vista	Mitigation Measure 3-1. Obtain design review approval.	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation
Impact 3-2. The CWP would not damage scenic resources within a state scenic highway.	None required	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	No impact No impact No impact No impact
Impact 3-3. The CWP would have the potential to substantially degrade the existing visual character or quality of the site and its surroundings.	Mitigation Measure 3-1. Obtain design review approval. Mitigation Measure 3-3a. Design lighting to minimize impacts on adjacent areas. Mitigation Measure 3-3b. Provide glare-reducing structure surface painting and treatment.	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation
Impact 3-4. The CWP would have the potential to create a new source of substantial light or glare.	Mitigation Measure 3-3a. Design lighting to minimize impacts on adjacent areas. Mitigation Measure 3-3b. Provide glare-reducing structure surface painting and treatment.	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation
Chapter 4. Air Quality			
Impact 4-1. Construction of the CWP would generate short-term emissions of criteria air pollutants of ROG, NO_x, CO, PM_{10}, and $PM_{2.5}$.	Mitigation Measure 4-1. Implement BAAQMD construction emission control measures.	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation
Impact 4-2. Operation of the CWP may have the potential to cause emissions of criteria air pollutants.	None required	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant Less than significant Less than significant Less than significant

TABLE ES-1
Summary of Impacts and Mitigation Measures
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Impacts	Mitigation Measures	Level of Significance	
Impact 4-3. The CWP may expose sensitive receptors to substantial pollutant concentrations.	Mitigation Measure 4-1. Implement BAAQMD construction emission control measures.	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation
Impact 4-4. Operation of the CWP may create objectionable odors affecting a substantial number of people.	Mitigation Measure 4-4. Incorporate odor control systems for facilities with odor potential.	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation
Chapter 5. Biological Resources			
Impact 5-1. Implementation of the CWP could have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species.	Mitigation Measure 5-1a. Perform work during seasonal avoidance windows where feasible. Mitigation Measure 5-1b. Perform pre-construction surveys for special-status wildlife species. Mitigation Measure 5-1c. Protect special-status wildlife species found during construction.	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation
Impact 5-2. Implementation of the CWP could have an adverse effect on riparian habitats.	None required	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant Less than significant No impact No Impact
Impact 5-3. Implementation of the CWP could result in a substantial adverse effect on federally protected wetlands.	Mitigation Measure 5-3a. Provide appropriate offset for fill of jurisdictional wetlands. Mitigation Measure 5-3b. Prepare and implement contingency plan for frac-out.	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation
Impact 5-4. Implementation of the CWP may interfere with the movement of fish or wildlife species.	Mitigation Measure 5-1a. Perform work during seasonal avoidance windows where feasible.	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant with mitigation Less than significant with mitigation No impact No Impact

TABLE ES-1
Summary of Impacts and Mitigation Measures
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Impacts	Mitigation Measures	Level of Significance	
Impact 5-5. Implementation of the CWP could require the removal of heritage trees and potentially conflict with the City of San Mateo Heritage Tree Ordinance.	Mitigation Measure 5-5. Prepare and implement a tree protection plan for heritage trees.	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation
Impact 5-6. Implementation of the CWP would not conflict with provisions of an adopted habitat conservation plan, natural community conservation plan, or other plan.	None required	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	No impact No Impact No impact No Impact
Chapter 6. Cultural Resources			
Impact 6-1. Construction of the CWP could cause a substantial adverse change in the significance of an archeological resource pursuant to CEQA §15064.5.	Mitigation Measure 6-1a. Perform subsurface investigations prior to construction in high- and medium-archaeological sensitivity zones. Mitigation Measure 6-1b. Halt construction if archaeological resources are discovered.	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation
Impact 6.2. Construction of the CWP could cause a substantial adverse change in the significance of paleontological resources.	Mitigation Measure 6-2. Halt construction if paleontological resources are discovered.	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation
Impact 6.3. The CWP would not cause a substantial adverse change in the significance of an historic structure or building pursuant to CEQA §15064.5.	None required	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	No impact No Impact No impact No Impact
Chapter 7. Geology and Soils			
Impact 7-1. Implementation of the CWP could expose people or structures to potential substantial adverse effects involving rupture of a known earthquake fault, strong seismic shaking, and/or seismic-related ground failure, including liquefaction and landslides.	Mitigation Measure 7-1. Perform site-specific geotechnical and engineering studies and implement recommendations.	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation

TABLE ES-1
Summary of Impacts and Mitigation Measures
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Impacts	Mitigation Measures	Level of Significance	
Impact 7-2. Implementation of the CWP could result in substantial soil erosion or loss of topsoil.	Mitigation Measure 7-2. Comply with regulations and policies for erosion control.	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation
Impact 7-3. Projects constructed under the CWP may be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project, potentially resulting in onsite or offsite landslides, lateral spreading, subsidence, liquefaction, or collapse.	Mitigation Measure 7-1. Perform site-specific geotechnical and engineering studies and implement recommendations.	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation
Impact 7-4. Projects constructed under the CWP may be located on expansive soils, creating substantial risks to property.	None required	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant Less than significant Less than significant Less than significant
Chapter 8. Greenhouse Gases			
Impact 8-1 The implementation of the CWP would generate GHG emissions that could affect the environment.	Measure 4-1. Implement BAAQMD construction emission control measures.	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation
Impact 8-2 The CWP may conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.	Measure 4-1. Implement BAAQMD construction emission control measures.	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation
Chapter 9. Hazards and Hazardous Materials			
Impact 9-1. Construction of the CWP could expose the public or the environment to hazardous materials through routine use, transport, or disposal of hazardous materials or reasonably foreseeable upset and accident conditions involving the release of hazardous materials.	Mitigation Measure 9-1. Complete testing for asbestos and lead in existing structures.	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation
Impact 9-2. Operation of the CWP could expose the public or the environment to hazardous materials through routine use, storage, transport, and disposal of hazardous materials.	None required	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant Less than significant Less than significant Less than significant

TABLE ES-1
Summary of Impacts and Mitigation Measures
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Impacts	Mitigation Measures	Level of Significance	
Impact 9-3. CWP projects may be constructed in areas containing hazardous materials and could result in a hazard to the public or the environment.	Mitigation Measure 9-3. Perform a Phase I investigation as needed prior to construction and remediate, control, or dispose of contaminated materials as appropriate.	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation
Impact 9-4. Construction and operation of CWP could emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or wastes within 0.25 mile of an existing school.	Mitigation Measure 9-3. Perform a Phase I investigation as needed prior to construction and remediate, control, or dispose of contaminated materials as appropriate.	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation
Impact 9-5. Implementation of the CWP may interfere with an adopted emergency response plan or emergency evacuation plan.	Mitigation Measure 9-4. Coordinate emergency services during construction.	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation
Chapter 10. Hydrology and Water Quality			
Impact 10-1. Implementation of the CWP could reduce groundwater supplies.	None required	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant Less than significant Less than significant Less than significant
Impact 10-2. Construction of the CWP could degrade water quality.	Mitigation Measures 10-2. Install and apply erosion control and stormwater best management practices during construction.	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation
Impact 10-3. Implementation of the CWP could alter drainage patterns or increase the amount of surface runoff.	Mitigation Measures 10-2. Install and apply erosion control and stormwater best management practices during construction. Mitigation Measure 10-3. Develop a stormwater drainage plan.	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation
Impact 10-4. The CWP would place structures within a 100-year flood hazard area that could impede or redirect flood flows.	None required	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant Less than significant Less than significant Less than significant

TABLE ES-1

Summary of Impacts and Mitigation Measures

Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Impacts	Mitigation Measures	Level of Significance	
Chapter 11. Land Use			
Impact 11-1. The CWP would include development that could divide an established community.	Mitigation Measure 11-1. Provide pedestrian and bicycle access around the WWTP Site.	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation
Impact 11-2. Implementation of the CWP could conflict with City of San Mateo land use and zoning regulations.	Mitigation Measure 3-1. Obtain design review approval. Mitigation Measure 11-2. Obtain approval for a special use permit for each applicable parcel.	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation
Impact 11-3. Implementation of the CWP would not conflict with habitat or natural conservation plans.	None required	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	No Impact No Impact No Impact No Impact
Chapter 12. Noise			
Impact 12-1. Construction of the CWP could result in generation of noise levels in excess of standards.	Mitigation Measure 12-1a. Develop and implement construction noise minimization measures. Mitigation Measure 12.1b. Operate a construction noise hot line. Mitigation Measure 12.1c. Resolve construction noise complaints.	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Significant and unavoidable impact Significant and unavoidable impact Significant and unavoidable impact Significant and unavoidable impact
Impact 12-2. Operation of the CWP could result in a substantial temporary or permanent increase in ambient noise levels in the project vicinity above levels existing without the CWP.	Mitigation Measure 12-2. Incorporate noise minimization in WWTP facility design.	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation
Impact 12-3. Implementation of the CWP could generate perceptible offsite vibration.	Mitigation Measure 12-3. Incorporate vibration issues into project design.	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Significant and unavoidable impact Significant and unavoidable impact Significant and unavoidable impact Significant and unavoidable impact

TABLE ES-1

Summary of Impacts and Mitigation Measures

Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Impacts	Mitigation Measures	Level of Significance	
Chapter 13. Population and Housing			
Impact 13-1. Implementation of the CWP could induce population growth.	None required	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant Less than significant Less than significant Less than significant
Impact 13-2. Implementation of the CWP would not displace housing or people.	None required	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	No Impact No Impact No Impact No Impact
Chapter 14. Public Services			
Impact 14-1. Implementation of the CWP could affect police or fire services.	Mitigation Measure 9-4. Coordinate emergency services during construction.	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation
Impact 14-2. Implementation of the CWP could affect hospital, schools, or libraries.	Mitigation Measure 9-4. Coordinate emergency services during construction.	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation
Chapter 15. Recreation			
Impact 15-1. The CWP could increase use of existing parks and recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.	None required	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant Less than significant No impact No impact
Impact 15-2. The CWP may include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.	None required	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant No Impact No Impact No Impact

TABLE ES-1
Summary of Impacts and Mitigation Measures
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Impacts	Mitigation Measures	Level of Significance	
Impact 15-3. The CWP could affect use of existing parks or recreation facilities, inconsistent with applicable policies.	Mitigation Measure 11-1. Provide pedestrian and bicycle access around the WWTP Site. Mitigation Measure 15-3. Provide park improvements to offset lost uses.	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation
Chapter 16. Transportation and Traffic			
Impact 16-1. Construction of the CWP could conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways, freeways, pedestrian and bicycle paths, and mass transit.	Mitigation Measure 16.1. Prepare and implement a Traffic Management Plan.	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation
Impact 16-2. Construction of the CWP could conflict with an applicable congestion management program including but not limited to LOS standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways.	Mitigation Measure 16.1. Prepare and implement a Traffic Management Plan.	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation
Impact 16-3. Implementation of the CWP could substantially increase hazards due to a design feature (e.g., sharp curve or dangerous intersection) or incompatible uses.	Mitigation Measure 16.1. Prepare and implement a Traffic Management Plan.	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation
Impact 16-4. Implementation of the CWP could result in inadequate emergency access.	Mitigation Measure 16.1. Prepare and implement a Traffic Management Plan.	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation
Impact 16-5. Implementation of the CWP could conflict with adopted policies, plans, or programs regarding public transit, bicycle, and pedestrian facilities or otherwise decrease the performance or safety of such facilities.	Mitigation Measure 16.1. Prepare and implement a Traffic Management Plan.	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation

TABLE ES-1
Summary of Impacts and Mitigation Measures
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Impacts	Mitigation Measures	Level of Significance	
Impact 16-6. Operation of the CWP would not result in a significant traffic increase in conflicts with local plans, policies, and ordinances.	None required	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant Less than significant Less than significant Less than significant
Chapter 17. Utilities			
Impact 17-1. Implementation of the CWP would not exceed wastewater treatment requirements of the Regional Water Quality Control Board.	None required	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant Less than significant Less than significant Less than significant
Impact 17-2. Implementation of the CWP includes the construction of additional wastewater treatment facilities and the expansion of existing facilities.	None required	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant Less than significant Less than significant Less than significant
Impact 17-3. Implementation of the CWP may require or result in the construction of new storm water drainage facilities or expansion of existing facilities.	None required	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant Less than significant Less than significant Less than significant
Impact 17-4. Implementation of the CWP could affect water supplies.	None required	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant Less than significant Less than significant Less than significant
Impact 17-5. Implementation of the CWP could affect wastewater treatment capacity.	None required	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant Less than significant Less than significant Less than significant
Impact 17-6. Implementation of the CWP could affect solid waste disposal.	None required	In-System Storage Program Full Conveyance Program New Headworks Project Primary Clarifier Project	Less than significant Less than significant Less than significant Less than significant

TABLE ES-1

Summary of Impacts and Mitigation Measures

Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Impacts	Mitigation Measures	Level of Significance	
Impact 17-7. Implementation of the CWP would increase energy use.	Mitigation Measure 4-1. Implement BAAQMD construction emission control measures.	In-System Storage Program	Less than significant with mitigation
		Full Conveyance Program	Less than significant with mitigation
		New Headworks Project	Less than significant with mitigation
		Primary Clarifier Project	Less than significant with mitigation

Notes:

BAAQMD = Bay Area Air Quality Management District

CEQA = California Environmental Quality Act

CWP = San Mateo Clean Water Program

GHG = greenhouse gas

LOS = level of service

Chapter 1. Introduction

The City of San Mateo (City or San Mateo) is evaluating two potential Clean Water Program (CWP) alternatives, each consisting of a series of projects to upgrade and increase the capacity of its wastewater treatment plant (WWTP) and collection system. This chapter discusses the background and existing setting for the WWTP, its service area, and the objectives of the CWP. This chapter also describes the California Environmental Quality Act (CEQA) environmental review processes relevant to the CWP.

1.1 Background

San Mateo collects, conveys, and treats wastewater for the citizens of San Mateo. The City's collection system includes approximately 234 miles of sanitary sewer pipeline, 5,555 sewer manholes and 26 pump stations. The City's WWTP also treats wastewater from the following surrounding communities: Foster City and Estero Municipal Improvement District (EMID), Town of Hillsborough, City of Belmont, Crystal Springs County Sanitation District (CSCSD), and other portions of unincorporated San Mateo County. All of these communities are responsible for collecting and conveying their wastewater to the WWTP. Figure 1-1 shows the regional location of the City of San Mateo. Figure 1-2 shows the entire service area for the WWTP.

The San Mateo WWTP operates under a Joint Powers Agreement (JPA) between the City of San Mateo and the EMID. Foster City acquired an interest in the San Mateo WWTP to ensure adequate future treatment capacity. San Mateo currently owns approximately 75 percent of the San Mateo WWTP, and EMID owns approximately 25 percent. The original JPA (dated 1974) has been subsequently amended to address expansions and use by each party.

The City's collection system consists primarily of sewer pipes that have an average lifespan of 50 to 60 years; most of the sewer pipes were constructed between 1900 and 1960. Although the City's current minimum sewer diameter standard is 8 inches, approximately 60 percent of the existing collection system comprises pipes with diameters of 6 inches or smaller. The small diameter pipes likely contribute to a high number of dry weather blockages, because sewer mains less than 8 inches in diameter are typically susceptible to frequent blockages. San Mateo's 26 pump stations are located mostly in the eastern (flatter) half of the City to assist in the conveyance of wastewater to the WWTP. Some of the pump stations are also undersized.

There are other challenges to existing sewer pipe infrastructure. Prior to 1940, pipelines were often constructed in short pipe segments, requiring a higher number of pipe joints through which tree roots and water can infiltrate. Improvements in pipe joints occurred around 1960, reducing infiltration. Approximately 78 percent (944,200 linear feet) of the City's collection system was installed before 1960, with 26 percent (319,330 linear feet) installed before 1940.

The WWTP has a permitted capacity of 15.7 million gallons per day (mgd) for average dry weather flow (ADWF). The current ADWF is approximately 11 mgd. Future dry weather flows to the WWTP were projected using a per capita method. This method assumes that flows and loads will increase proportionally to the increase in population anticipated with future growth. With a 2010 census-based service area population of approximately 143,100, and assuming a 16 percent increase in population over the planning period, the 2035 service area population was estimated to be 166,400. Using this method, the 2035 ADWF was estimated to be 13.9 mgd (Carollo Engineers, Inc., 2014). The influent loadings are expected to increase similarly. Therefore, expansion of permitted capacity for dry conditions is not anticipated to be needed over the 20-year planning period.

The permitted peak wet weather flow (PWWF) for the WWTP is 40 mgd, based on secondary treatment capacity. However, flows often exceed 40 mgd during peak wet weather events. When flows exceed 40 mgd, primary and secondary effluent are blended for discharge of up to 60 mgd, which is the outfall capacity limitation. This 60 mgd limitation and the insufficient capacity of portions of the City's collection system have historically caused backups in the system, resulting in sanitary sewer overflows (SSO).

San Mateo has recently updated the collection system model to better estimate peak flows and to project flows through 2035. According to the 2014 model, the PWWF that would be conveyed to the plant in 2035 (assuming there is adequate conveyance), is projected to be 98 mgd (Carollo Engineers, Inc., 2014). To manage the PWWF, projects are needed that increase pump station capacity, upsize pipelines and relief lines in the collection system, and increase capacity at the WWTP.

As previously discussed, San Mateo provides wastewater treatment services to surrounding communities. These communities own and manage their own collection system infrastructure. EMID maintains the sanitary sewer collection and pumping system within Foster City. The CSCSD sanitary sewer collection system serves an unincorporated area of San Mateo County. The CSCSD uses the San Mateo County Department of Public Works personnel to maintain its collection system. Sewage from the CSCSD collection system flows through the Town of Hillsborough's collection system via the Crystal Springs/El Cerrito Trunk Sewer, and subsequently to the San Mateo WWTP. The majority of the sewage from the Hillsborough collection system also flows through Crystal Springs/El Cerrito Trunk Sewer before it is treated at the San Mateo WWTP. The remaining sanitary sewage from Hillsborough flows to the City of Burlingame WWTP.

The operation of the sanitary sewer collection system and WWTP is regulated by the San Francisco Bay Regional Water Quality Control Board (RWQCB). In March 2009, the RWQCB issued a Cease and Desist Order (CDO) jointly to the City of San Mateo, the Town of Hillsborough, and the CSCSD mandating elimination of sanitary sewer overflows (SSO) in the collection system and requiring specific corrective actions. In response, the City developed a sewer system management plan that focuses on operation and maintenance of the treatment facilities and a capital improvement program (CIP) that primarily focuses on the collection system.

The WWTP was largely constructed from 1940 to 1980 and has many assets that are over 30 years old. Similar to most other Bay Area WWTPs, these aging assets are reaching the end of their useful service life, and rehabilitation or replacement is necessary. In November 2011, the City initiated the development of a WWTP plan to evaluate the facility needs for future growth, existing and future regulations, and replacement or repair of aging infrastructure. The results of the evaluation were documented in *The City of San Mateo Integrated Wastewater Master Plan* (Carollo Engineers, Inc., 2014), which identified projects and improvements needed to address current plant reliability issues, projected increases in wet weather flows reaching the plant, and increasingly restrictive regulatory requirements over the next 20 years.

The 2013 National Pollutant Discharge Elimination System (NPDES) waste discharge permit for the WWTP requires the elimination of "blending" (i.e., bypassing primary effluent around the secondary treatment process during wet weather flow events) by the year 2020. Eliminating blending requires increasing the capacity of the secondary treatment process. The NPDES permit also requires a reduction of infiltration and inflow (I/I) issues. In addition, the City anticipates future regulatory limits on total nitrogen and phosphorus that the existing WWTP cannot meet.

The 2013 WWTP operation permit issued by the RWQCB requires that CIPs for the collection system and the WWTP be coordinated. Carollo Engineers, Inc., prepared an integrated CIP that addresses flow projections through year 2035 (Carollo Engineers, Inc., 2014).

1.2 Clean Water Program Objectives

The CWP is a series of capital projects to upgrade and increase the capacity of the San Mateo WWTP and collection system to eliminate SSOs and meet current and future regulatory requirements. The following are specific objectives of the CWP:

- Provide adequate system capacity to efficiently convey and treat the PWWF.
- Meet current regulatory requirements regarding blending, SSOs, and I/I reduction.

- Meet anticipated future regulatory requirements, including total nitrogen and total phosphorous concentrations, pathogens, and recycled water use.
- Meet San Mateo's sustainability objectives, including more efficient use of energy and recycled water.
- Provide space planning to support implementation of projects addressing the objectives above within the limitations of the sites available for WWTP facilities.

1.3 California Environmental Quality Act Environmental Review Process

This Draft Programmatic Environmental Impact Report (Draft PEIR) serves as the primary environmental compliance document for implementation of the CWP. Additional environmental review may be required for specific projects proposed within the CWP.

This document is both a PEIR and a project EIR because it studies both the CWP to be implemented over multiple years as a set of related projects and two individual projects currently defined in the CWP.

Pursuant to CEQA, a public agency should prepare a PEIR when it proposes a program or series of actions that are linked geographically; are logical parts of a chain of contemplated events, rules, regulations, or plans that govern the conduct of a continuing program; or are individual activities carried out under the same authorizing statutory or regulatory authority and having generally similar environmental effects that could be mitigated in similar ways. PEIRs generally analyze broad environmental effects of the program, acknowledging that site-specific environmental review may be required for portions of the program. Pursuant to CEQA, a project environmental impact report (EIR) examines the environmental effects of an individual activity or specific project and focuses on the changes in the physical environment that would result from its development.

As provided for in CEQA, the focus of this Draft PEIR is limited to specific issues and concerns identified by the City of San Mateo as potentially significant. A Notice of Preparation (NOP) of this Draft PEIR was circulated to the California State Clearinghouse, Estero Municipal Improvement District, Foster City, Town of Hillsborough, City of Belmont, City of Burlingame, Crystal Springs County Sanitation District, California Department of Public Health, Bay Area Air Quality Management District (BAAQMD), U.S. Army Corps of Engineers (USACE) Sacramento District, U.S. Fish and Wildlife Service, and NOAA Fisheries. The NOP was released to the public on March 2, 2015, for a 30-day review period. In addition, the NOP was provided in the Peninsula Examiner and the San Mateo Journal.

The NOP listed each issue identified as significant or potentially significant and would, therefore, require analysis in the PEIR. The purpose of the NOP was to solicit comments from the public and from public agencies on issues germane to that agency that should be considered in the PEIR. The NOP included a project description, project location, and the following list of resource areas proposed to be addressed in the PEIR: Land Use Plans, Transportation, Air Quality, Noise, Utilities, Public Services, Hydrology and Water Quality, Hazardous Materials, Geology and Soils, Biological Resources, Cultural Resources, Aesthetics, Public Services, Recreation, and Population and Housing. Members of the public were given an additional opportunity to comment on the scope of the PEIR at a Public Works Commission meeting on March 11, 2015, at San Mateo City Hall. Comments were submitted by the following agencies and individuals:

- The State Water Resources Control Board (SWRCB) sent a comment letter describing additional environmental review requirements if the City chooses to apply for Clean Water State Revolving Fund (SRF) grants. These requirements are discussed in several sections throughout this Draft PEIR.
- California Department of Transportation (Caltrans) sent a comment letter describing its criteria for traffic impact studies and related processes and permit for encroachments across the state highway system. Potential traffic and transportation impacts are discussed in Chapter 16, Transportation and Traffic.

- San Mateo County sent a comment letter requesting a copy of the public Draft PEIR.
- One individual, Mr. John Ebneter, sent a comment letter requesting that the City's design criteria and feasibility study consider a holistic approach to the wastewater system, including integrating the related issue of water supply (e.g., consideration of potable reuse). The wastewater system is addressed throughout this Draft PEIR in various ways; water supply is discussed in Chapter 17, Utilities and Service Systems.
- Three individuals provided oral comments at the meeting. The comments focused on the collection system improvements to optimize effectiveness and minimize costs, and how in-system storage could negatively affect neighborhoods and property values. Potential impacts on resources in neighborhoods are discussed throughout the Draft PEIR.
- Public Works Commissioners provided oral comments at the meeting. The comments included the extent of improvements to the in-system storage facilities, how in-system facilities would be maintained (e.g., for odor control), and the potential need to consider local sewer laterals in addition to larger sewer mains. The extent of improvements is described in Chapter 2, Program Description; odor control is discussed in Chapter 4, Air Quality. Alternatives to the CWP are discussed in Chapter 19, Alternatives.

1.4 Organization and Scope of Document

This Draft PEIR is organized to allow the reader to quickly and logically review a summary of the analysis, review the recommended mitigation measures, and identify the residual environmental impacts after mitigation, if any. The environmental setting and impact discussions are provided at the following scales, as appropriate and identified in the text:

- Service area: The geographic area for which the City of San Mateo provides wastewater treatment services; it includes the City of San Mateo, Foster City and EMID, Town of Hillsborough, City of Belmont, CSCSD, and other portions of unincorporated San Mateo County (see Figure 1-1).
- Program Area or CWP Area: The area where CWP projects would be constructed and operated, generally within the City of San Mateo.
- WWTP Site: The area in which wastewater treatment projects would be located, on or near the existing WWTP (see Section 2.2.2).

This Draft PEIR is organized into the following sections:

Executive Summary: Summarizes the Draft PEIR by providing an overview of the CWP. The environmental impacts that could result, mitigation measures that would reduce or eliminate those impacts, and alternatives considered.

Chapter 1, Introduction: Provides an overview that describes the intended use and organization of this Draft PEIR and some of the assumptions critical to the environmental analysis.

Chapter 2, Program Description: Describes the two CWP alternatives under evaluation and their individual projects to the degree currently defined.

Chapter 3, Aesthetics: Discusses the potential visual impacts the WWTP projects may have on the surrounding environment.

Chapter 4, Air Quality: Discusses the potential impacts of the Program alternatives on air quality, including odors due to the construction and operation of the CWP.

Chapter 5, Biological Resources: Discusses biological resources potentially present in the Program Area, applicable state and federal regulations, results of surveys, and potential impacts on biological resources.

Chapter 6, Cultural Resources: Discusses applicable regulations and the potential for cultural resources to occur in the Program Area.

Chapter 7, Geology and Soils: Describes the geology and soils in the Program Area and related impacts.

Chapter 8, Greenhouse Gases: Discusses state and local plans and policies, including the City's Climate Action Plan (CAP) (Pacific Municipal Consultants, 2015), related to greenhouse gases (GHG) and estimates GHG emissions resulting from the CWP.

Chapter 9, Hazards and Hazardous Materials: Discusses the locations of known hazardous materials sites that may be in the Program Area, including hazardous materials sites compiled pursuant to government codes, and hazardous materials that will be used in CWP operations.

Chapter 10, Hydrology and Water Quality: Discusses regulations and standards for water quality and hydrology in the Program Area and potential impacts on those resources.

Chapter 11, Land Use: Discusses the potential issues related to zoning and *City of San Mateo General Plan – Vision 2030* (General Plan) land use designations.

Chapter 12, Noise: Describes General Plan policies and zoning codes related to noise and potential noise impacts from construction and operation of the CWP.

Chapter 13, Population and Housing: Discusses the expected increase in population and housing in the service area and potential impacts on population and housing as a result of the CWP.

Chapter 14, Public Services: Discusses the location of and potential impacts on San Mateo's public services (e.g., fire, police, schools, and hospitals) as a result of the CWP.

Chapter 15, Recreation: Discusses the locations of and potential impacts on parks and recreation facilities in the Program Area as a result of the CWP.

Chapter 16, Transportation and Traffic: Discusses potential impacts on roadways, traffic, and alternative transportation in the Program Area as a result of the CWP.

Chapter 17, Utilities: Discusses potential impacts of the CWP on utilities (e.g., water, wastewater, solid waste, and energy) in San Mateo.

Chapter 18, Other Required California Environmental Quality Act Considerations: Discusses potential cumulative and growth-inducing impacts as a result of the CWP.

Chapter 19, Alternatives: Presents a reasonable range of alternatives to the CWP, an explanation of how those alternatives were selected, and compares the relative impacts of each alternative to those of the CWP.

Chapter 20, Report Preparation: Presents a list of contributors to this Draft PEIR.

Appendices: Includes documents relevant to preparation of this Draft PEIR.

1.5 Uses of this Document

Consistent with CEQA requirements, the purpose of this document is to:

- At a programmatic level, identify potential direct and indirect environmental impacts associated with two potential CWP alternatives.
- Describe mitigation measures that avoid potentially significant impacts or reduce them to a less-than-significant level.
- Identify and evaluate the potential for growth inducement due to the two potential CWP alternatives.
- Discuss potential alternatives that would avoid or reduce one or more of the identified significant impacts of the In-System Storage Program or the Full Conveyance Program.

- Provide project-level CEQA review for two CWP projects: New Headworks Project and Primary Clarifier Project.

After review, the City will consider this Draft PEIR in selecting one of the two CWP alternatives for implementation. When a CWP is selected and approved, individual projects would move forward for detailed design and construction. At the time the selected CWP is considered for approval, the New Headworks and Primary Clarifier Projects would also be considered for approval. No additional CEQA review for these two projects is anticipated after certification of the Draft PEIR. Prior to implementation of additional individual projects, each project would be evaluated for consistency with this Draft PEIR and, depending on the nature and extent of the project, additional CEQA evaluation may be needed. Project-level CEQA reviews, when needed, are expected to take the form of Negative Declarations, Mitigated Negative Declarations, or Categorical Exemptions. Additional EIR-level reviews are not expected, but could be necessary, depending on the potential for significant impacts from individual projects.

In addition, the City would use this document to provide required CEQA review for other discretionary decisions to support the CWP or for individual projects as they are proposed for implementation. Other agencies with regulatory authority over these projects would use this document when considering their independent regulatory actions. Specific approvals would depend on the project and location and may include, but are not limited to, the following:

- City of San Mateo (special use permit, site plan and design review [SPAR], grading or building permits)
- Foster City, Town of Hillsborough, San Mateo County (temporary or permanent easements or encroachment permits as needed)
- The RWQCB (Clean Water Act [CWA] Section 401 Water Quality Certification, CWA Section 401 NPDES, Construction General Permit)
- Bay Conservation and Development Commission (BCDC) Permit
- BAAQMD
- California Department of Fish and Wildlife (Fish and Game Code Section 1602 Lake or Streambed Alteration Agreement, Section 2081 Incidental Take Permit)
- California Department of Transportation (encroachment permit)
- U.S. Army Corps of Engineers (USACE) (CWA Section 404 Authorization for Fill of Waters or Wetlands of the U.S.)
- U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NOAA Fisheries) (Endangered Species Act consultation)
- Federal Emergency Management Agency (FEMA) (Conditional Letter of Map Revision, Floodplain Development Permit)

The City of San Mateo intends to apply to the Clean Water and Drinking Water State Revolving Fund Program for funding of some CWP projects. Environmental review that meets certain federal requirements must be completed to apply for funding. This Draft PEIR addressed the required environmental review elements for the New Headworks Project and Primary Clarifier Project.

1.6 Public Review and Comment

California Code of Regulations Section 15087 requires that a lead agency provide public notice of the availability of a Draft EIR at the same time it sends notice to the Office of Planning and Research. Notice was provided to the Office of Planning and Research and mailed directly to property owners within 500 feet of any proposed project location on October 20, as well as individuals and agencies that requested notice in

writing and submitted written comments during the scoping period. Agencies and interested members of the public will have 60 days to review and provide comment on this Draft PEIR.

Written comments on the Draft PEIR will be accepted from October 20, 2015 to December 18, 2015, by fax to (510) 622-9203, email to andrea.gardner@ch2m.com, or U.S. Mail to the following address:

Andrea Gardner
San Mateo City Hall
Public Works Engineering PMO
330 W. 20th Avenue
San Mateo, CA 94403

A digital copy of the Draft PEIR is available for download on the Clean Water Program website at http://www.cleanwaterprogramsanmateo.org/. Hard copies are available for viewing at the following locations:

- City Hall, 330 West 20th Avenue
- San Mateo Main Library, 55 West 3rd Avenue (Reference Desk)
- San Mateo Marina Branch Library, 1530 Susan Court (Reference Desk)
- San Mateo Waste Water Treatment Plant, 2050 Detroit Drive.

Referenced materials used in the preparation of the Draft PEIR may be reviewed upon request to the City. CDs and hard copies are available for purchase.

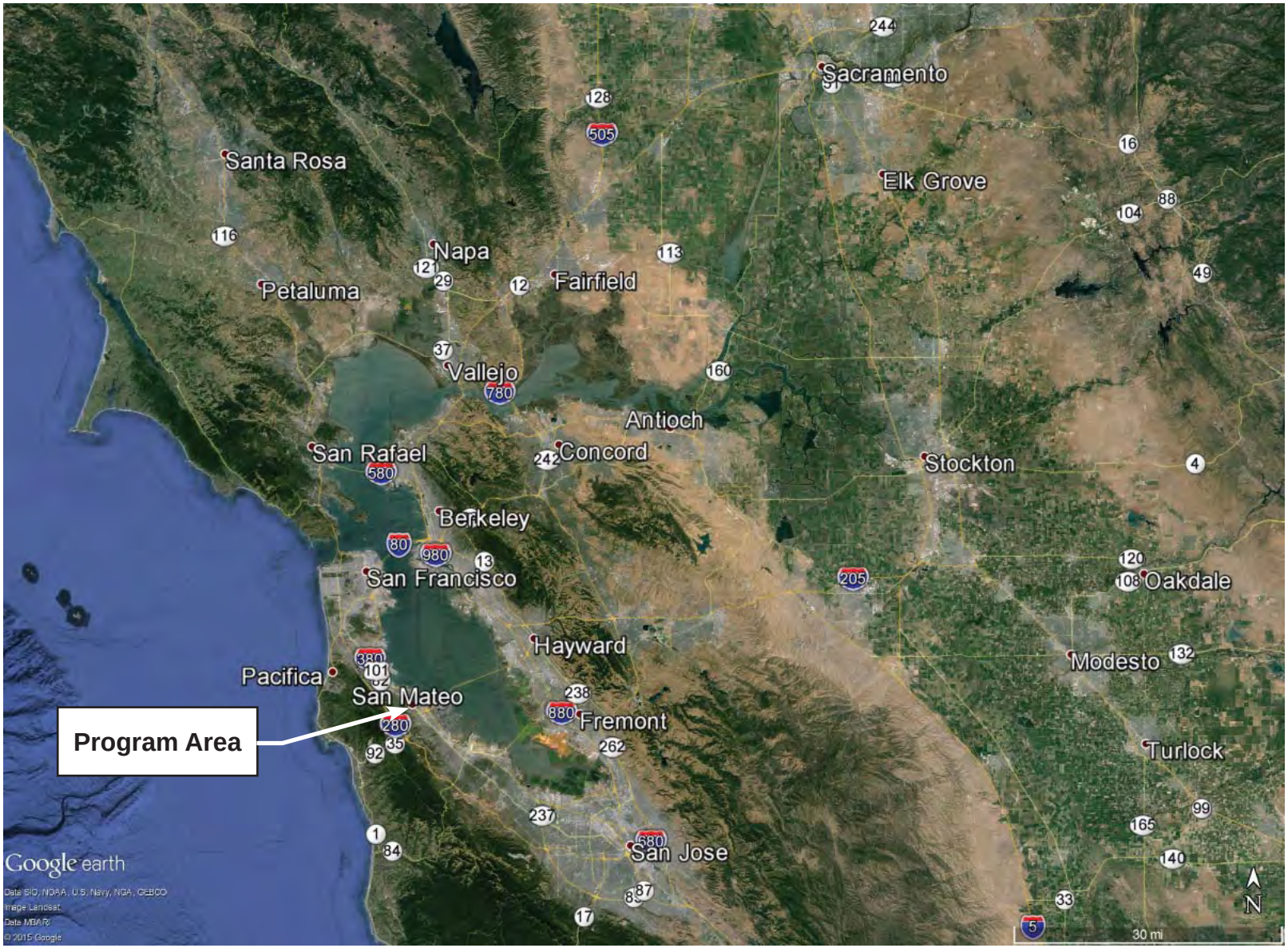
A public hearing on the Draft PEIR will be held before the Public Works Commission on Thursday, November 12, 2015 at 7:30 p.m.

1.7 References

Carollo Engineers, Inc. 2014. *City of San Mateo Integrated Wastewater Master Plan*. Prepared for City of San Mateo. October.

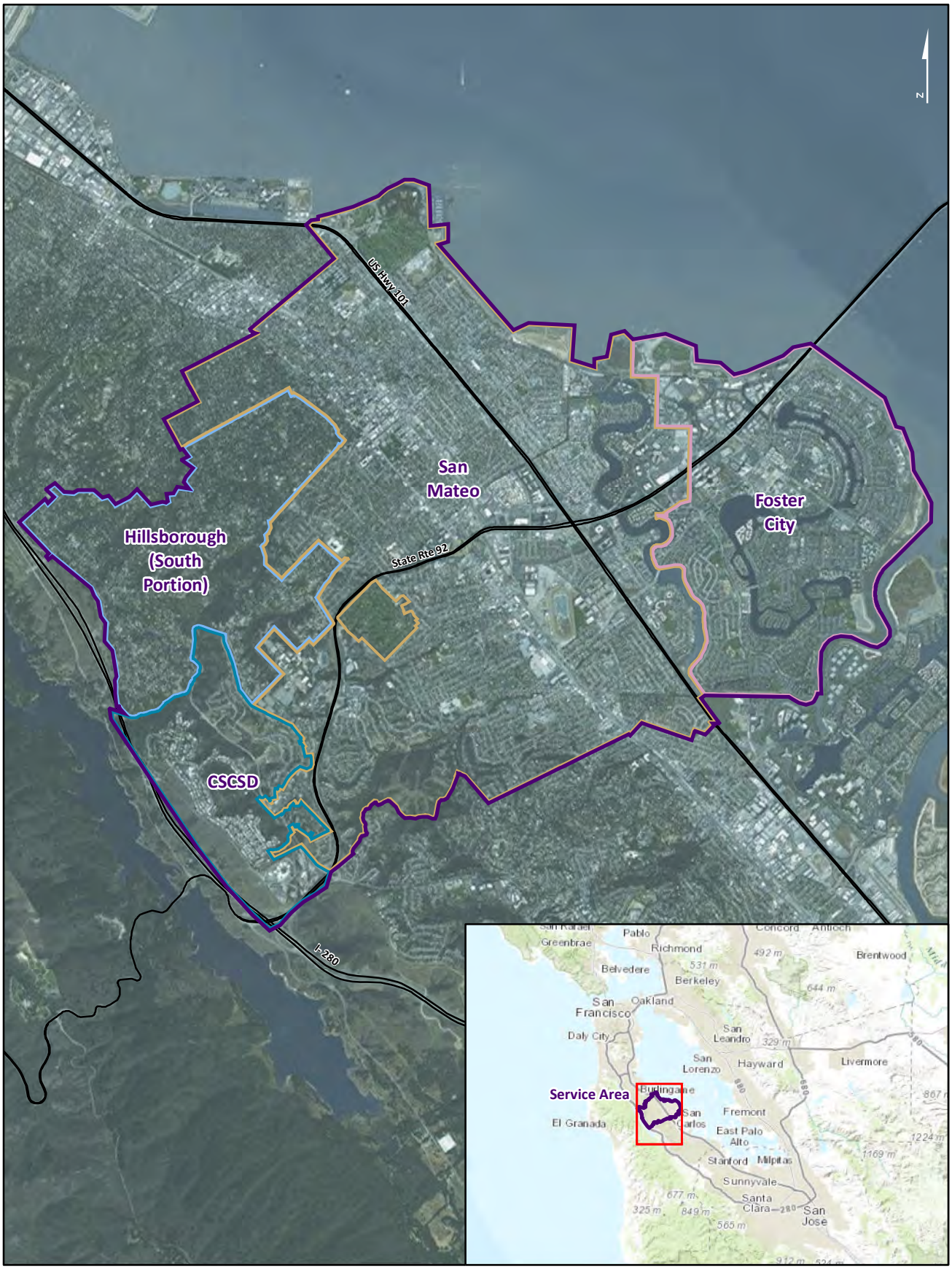
City of San Mateo. 2010. *City of San Mateo General Plan – Vision 2030*. Resolution No. 134-2010. Adopted by the City Council on October 18.

Pacific Municipal Consultants. 2015. *City of San Mateo Climate Action Plan*. Prepared for City of San Mateo. February.



Aerial from Google Earth Pro © 2015. Additional information added by CH2M.

FIGURE 1-1
Regional Map
Programmatic Environmental Impact Report
San Mateo Clean Water Program



Source: Esri Map Services, County of San Mateo

Figure 1-2
Service Area
Programmatic Environmental Impact Report
City of San Mateo Clean Water Program

CH2MHILL

Chapter 2. Program Description

The City of San Mateo proposes to complete the CWP, a major capital program, to meet the objectives described in Chapter 1. Two alternatives are evaluated in this Draft PEIR at a programmatic level, pursuant to Title 14 of California Code of Regulations Section 15168: the In-System Storage Program and the Full Conveyance Program (collectively called the "Program alternatives"). Each of the two CWP alternatives addresses the collection system and the WWTP and includes multiple capital projects as described in this chapter. An overall discussion of CWP construction and operation is provided at the end of this chapter.

2.1 Program Alternatives

Each of the two CWP alternatives would provide wastewater treatment for the WWTP service area shown on Figure 2-1. Table 2-1 summarizes the two CWP alternatives.

TABLE 2-1
Summary of Program Alternatives Evaluated in the Draft PEIR
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

	Full Conveyance Program	In-System Storage Program
Collection system upgrades	Included, would require larger-capacity pipelines and pump station upgrades, especially for Dale Avenue Pump Station, compared to the In-system Storage Program.	Included; may require smaller-capacity pipelines and pump station upgrades, especially for Dale Avenue Pump Station, compared to Full Conveyance Program.
Equalization storage basin upstream from Dale Avenue Pump Station	Not included.	One or more underground storage basins included, with total capacity of approximately 4 million gallons (for a flow reduction of approximately 20 mgd, based on the design storm).
Equalization storage within WWTP	Up to two basins with capacity of approximately 8 million gallons included (for flow of approximately 38 mgd); storage provided before or after primary clarifiers.	One basin with capacity of approximately 4 million gallons included (for a flow reduction of approximately 18 mgd, based on the design storm), located after the headworks or the primary clarifier.
Addition of headworks to treatment train	Included, with treatment capacity of 78 to 98 mgd, depending on treatment configuration.	Included, with treatment capacity of 78 mgd.
Upgrade and replacement of other WWTP facilities	Included, to create 60 mgd of effluent meeting discharge requirements.	Included, to create 60 mgd of effluent meeting discharge requirements.

2.1.1 In-System Storage Program

As discussed in Chapter 1, the PWWF in 2035 is projected to be 98 mgd (Carollo Engineers, Inc., 2014). The existing collection system and treatment facility capacity are insufficient to address these flows. The In-System Storage Program would address the expected PWWF of 98 mgd. This CWP alternative would include construction of one or more underground, in-system storage basins upstream from the Dale Avenue Pump Station. These basins would store up to approximately 20 mgd of the wet weather flows. One or more new pipelines may be required to connect the storage basin(s) to the collection system. The in-system storage would reduce the needed capacity and size of pipelines and pump stations downstream from the storage basin.

The WWTP facilities would be sized to handle up to 78 mgd of influent. Approximately 4 million gallons of storage would be provided within the WWTP for flow equalization, because the WWTP outfall hydraulic capacity is 60 mgd. Wastewater exceeding 60 mgd would be stored until flows through the WWTP are low enough to treat and discharge the stored water. The equalization basin is expected to be located directly

downstream from either the headworks or the primary clarifier. The location of the equalization basin within the WWTP would affect the size of the preliminary treatment processes.

The In-System Storage Program would include all projects listed in Section 2.2.1, except for the new Dale Avenue Pump Station. This CWP alternative also could include the projects described in Section 2.2.2.

2.1.2 Full Conveyance Program

The Full Conveyance Program would address the expected peak wet weather flows of 98 mgd. Preliminary WWTP facilities would be sized to handle up to the full 98-mgd influent. As a result, this CWP alternative would require larger-capacity pipelines and pump station upgrades, especially for Dale Avenue Pump Station, compared to the In-System Storage Program. Approximately 8 million gallons of storage, likely in two separate equalization basins, would be provided within the WWTP for flow equalization, because the WWTP outfall hydraulic capacity is 60 mgd. Wastewater over 60 mgd would be stored until flows through the WWTP are low enough to treat and discharge the stored water. The equalization basins could be located directly upstream or downstream from either the headworks or directly downstream from the primary clarifier. The location of the equalization basins would affect the size of the preliminary treatment processes.

The Full Conveyance Program alternative would include all projects listed in Section 2.2.1, except for the in-system storage basin(s). As previously discussed, the size and capacity of many of the pipelines and pump stations would be greater for the Full Conveyance Program than the In-System Storage Program. Under the Full Conveyance Program, pipelines would have larger diameters in some cases, and pump stations could require larger pumps or larger wet wells where water is held before pumping.

The Full Conveyance Program alternative could include any of the projects described in Section 2.2.2.

2.2 Project Descriptions

This section describes primarily at a programmatic level the individual projects included in the two CWP alternatives. It also describes typical construction and operation approaches.

2.2.1 Collection System Projects

San Mateo plans to upgrade numerous components of its collection system. The City is performing ongoing studies, including an I/I study and a pump station and flow monitoring condition assessment, to provide additional information about the capacity and condition of the collection system. As this information is developed, some currently proposed collection system projects may be modified or determined to be unnecessary. The final collection system upgrades to be performed and their specific locations would be known after these studies are completed and after the CWP alternative is selected.

2.2.1.1 Proposed New, Extended, and Upsized Sanitary Sewer Relief Pipeline Projects

The City prepared an initial assessment of potentially needed collection system improvements (Carollo Engineers, Inc., 2014) that was further evaluated and refined. The following collection system projects are currently proposed and are shown on Figure 2-2; the descriptions are approximate and may change based on the CWP alternative chosen and additional design effort:

- **17th Avenue Relief:** Install 4,250 feet of new 18-inch diversion pipe.
- **28th Avenue Relief:** Upsize 840 feet of 10-inch pipe to 15-inch pipe and 420 feet of 6-inch pipe to 12-inch pipe.
- **41st Avenue/Pacific Pump Station New Force Main:** Install 3,600 feet of new 12-inch force main to redirect discharge from El Camino Real Trunk Sewer to Delaware Street Trunk Sewer.
- **5th Avenue Relief Extension El Camino Real to Railroad:** Upsize 1,730 feet of 12-inch pipe to 15-inch pipe and connect to existing 18-inch pipe.

- **Barroilhet/El Camino Real Relief:** Upsize 1,900 feet of 12-inch pipe to 15-inch pipe.
- **Casanova Drive Relief:** Install 1,000 feet of parallel 15-inch pipe and 1,650 feet of parallel 18-inch pipe.
- **Colegrove Relief Extension from 39th Avenue to 36th Avenue:** Upsize 740 feet of 8-inch pipe to 10-inch, 12-inch, and 15-inch pipe. Upsize 350 feet of 10-inch pipe to 15-inch pipe.
- **Cypress Avenue Relief:** Upsize 820 feet of 10-inch pipe to 15-inch pipe.
- **Dale Avenue Pump Station Force Main Replacement:** Rehabilitate the force main from Dale Avenue Pump Station to the WWTP.
- **Dale Avenue Relief:** Install 730 feet of new 12-inch diversion pipe and upsize 900 feet of 10-inch pipe to 12-inch pipe.
- **Edinburgh/Sonora Relief Extension:** Install 122 feet of new 8-inch pipe. Upsize 795 feet of 6-inch pipe to 8-inch pipe and 120 feet of 8-inch pipe to 12-inch pipe.
- **El Camino Real/Poplar Relief:** Install 2,650 feet of new 15-inch diversion pipe.
- **El Camino Real Relief:** Upsize 310 feet of 8-inch pipe and 1,030 feet of 10-inch pipe to 15-inch pipe.
- **El Camino Real Relief Extension from 38th Avenue to 36th Avenue:** Upsize 310 feet of 8-inch pipe and 1,030 feet of 10-inch pipe to 15-inch pipe.
- **Franklin Relief Fairfax to Virginia:** Upsize 600 feet of 8-inch pipe to 10-inch pipe.
- **Glendora/Shasta Relief:** Install 600 feet of parallel 10-inch pipe and upsize 1,670 feet of 8-inch pipe to 10-inch pipe. Extend project downstream to end of Shasta and connect to sewer.
- **Hacienda/Flores Relief:** Install 3,150 feet of new 21-inch and 1,250 feet of new 24-inch diversion pipe. Intercept flows at 27th and 28th Avenues.
- **Hillsdale Relief Extension Alameda de las Pulgas to Hacienda:** Upsize 1,200 feet of 18-inch pipe to 12-inch pipe. Upsize 350 feet of 8-inch pipe to 12-inch pipe.
- **Idaho Relief Extension from 3rd Avenue to 5th Avenue:** Upsize 1,120 feet of 24-inch pipe to 27-inch pipe.
- **Idaho Relief Extension Mt. Diablo to Tilton:** Upsize 660 feet of 15-inch pipe to 24-inch pipe.
- **Kehoe-Norton Relief:** Upsize 1,420 feet of 8-inch, 10-inch, and 12-inch pipe to 15-inch pipe and upsize 270 feet of 12-inch pipe to 18-inch pipe.
- **Kehoe-Van Buren Relief:** Install 1,500 feet of new 15-inch diversion pipe. Install 2,950 feet of new parallel 18-inch pipe to connect to Los Prados Trunk. Install 140-foot connection from MH 371-46X to new sewer.
- **Laurie Meadows/Suzie Street Relief:** Upsize 380 feet of 10-inch pipe to 12-inch pipe.
- **Los Prados #3 to Bahia:** Upsize 1,040 feet of 8-inch pipe to 10-inch pipe.
- **Los Prados Replacement:** Upsize 2,100 feet of 21-inch pipe to 24-inch pipe.
- **Maple Street Relief:** Upsize 2,000 feet of 12-inch pipe to 18-inch pipe.
- **Mt. Diablo Avenue Relief Extension El Dorado to Humboldt:** Upsize 1,150 feet of 12-inch pipe to 15-inch pipe.
- **Santa Clara Relief:** Upsize 110 feet of 10-inch pipe to 12-inch pipe and 270 feet of 8-inch pipe on Pasadena Drive to 12-inch pipe.

- **South Delaware/Bay Meadows Parallel:** Install 3,250 feet of new 36-inch sanitary sewer parallel to existing line.
- **South Trunk Phase I:** Install 54-inch-diameter sanitary sewer relief line from the intersection of Idaho and Sunnybrae, micro-tunneling under US-101, to the Dale Avenue Pump Station easement immediately west of Patricia Avenue. Includes 66-inch steel casing under US-101.
- **South Trunk Phase II:** Potential upsize of 7,000 feet of 30-inch pipe to 36-inch, 42-inch, or 48-inch pipe.
- **Yew Street Relief Barneson to State Route 92 (SR-92):** Upsize 910 feet of 8-inch pipe to 10-inch pipe. Upsize 79 feet of 10-inch pipe to 12-inch pipe.

In addition, two subbasin collection system rehabilitation projects are proposed:

- **Subbasin Collection System Rehabilitation Phase I:** Focused rehabilitation of subbasins in San Mateo Village South and/or Los Prados to reduce I/I into the wastewater collection system, with the goal of reducing the PWWF to Dale Avenue Pump Station and the WWTP. This project may include replacing lower and/or upper laterals, rehabilitating manholes, and rehabilitating or replacing pipe using open cut, pipe bursting, and cured-in-place pipe (CIPP) lining in portions of the Los Prados C-4 subbasin, south of SR-92 and/or San Mateo Village South.
- **Subbasin Collection System Rehabilitation Phase II:** Focused rehabilitation of subbasins in San Mateo Village North and/or Shoreview to reduce I/I into the wastewater collection system, with the goal of reducing the PWWF to Dale Avenue Pump Station and the WWTP. The project also may help reduce salinity in the WWTP influent. This project may include replacing lower and/or upper laterals, rehabilitating manholes, and rehabilitating or replacing pipe using open cut, pipe bursting, and CIPP lining in portions of the Los Prados C-4 subbasin north of SR-92 and/or San Mateo Village North.

2.2.1.2 Pipeline Project Construction

The City may construct new sanitary sewer relief pipelines and extend or upsize existing relief pipelines as part of the CWP. These new pipelines would provide relief capacity to the existing sanitary sewer lines to minimize the potential of sanitary sewer overflows. The large majority of existing and proposed pipelines are located in City rights-of-way, primarily in roadways.

Several technologies are available for installation of the sewer relief pipelines. The appropriate technology would be determined on a case-by-case basis as determined by location, right-of-way restrictions, soil conditions, depth, and other site-specific factors. The following sections describe the technologies.

Open Trench

Prior to construction, the contractor would complete potholing to identify utility conflicts, survey the alignment, and mark the work limits. Construction of a pipeline using open trenches is typically done in segments of approximately 200 to 500 feet, with each segment taking approximately 2 to 5 workdays to complete. Construction typically begins at the downhill end and proceeds to the uphill end. Depending on local conditions, the site, and the project, one or two lanes of a roadway would be closed during construction; traffic would be detoured using appropriate traffic controls.

The contractor would cut the pavement and demolish the asphalt before beginning soil excavation. Contractors would remove pavement materials from the site for reuse or recycling at other locations, in accordance with a construction waste diversion plan that would be prepared prior to the start of construction of each project. The trench typically would be a minimum of 5 feet deep, and its width would be restricted to 2.5 times the pipe diameter. Most pipes would be 10 to 12 inches in diameter, with trenches up to 30 inches wide. The largest pipes would be up to approximately 54 inches in diameter, with a trench less than 8 feet wide. All soils would be hauled to a staging area if they would be used for backfill or to an area recycling center (see Figure 2-3) for use by others. Stockpiling of soils would not typically occur at the project site. Trenches would be shored, as required, for safety and protection of existing improvements. If

an existing pipeline is to be removed, which is typically done if the new pipeline is in the same location or same right-of-way, a temporary sewer bypass would be installed so that the existing pipeline is not in use during construction. Old pipeline would be disposed of at an appropriate location. If the new pipeline would be placed in a new right-of-way, the existing pipeline would be abandoned in place.

To install a new pipeline, the contractor would place a layer of permeable gravel to provide a firm bedding to support the pipe. This also allows the contractor to manage water that gets into the trench; the water would be pumped out and discharged to the sanitary sewer system. The new pipeline would then be placed in the trench and connected to the system, usually at manholes. Service laterals would also be reconnected as needed. Granular material and soil appropriate for structural backfill would then be placed in the trench. The soils used would either be the soils stockpiled at the designated staging areas, if suitable for structural backfill, or soils obtained from an offsite location. A cement-based, low-strength concrete fill could also be used. The contractor would backfill the trench and in some cases install a concrete trench cap. The contractor would then pave the disturbed area with asphalt or concrete to match the existing area. Roadways would be re-striped as needed.

Construction equipment that could be used includes an excavator, backhoe with a jackhammer, skid steer loader, dump trucks (street size would dictate truck size), street sweeper, compactors (typically small enough to fit in back of a pickup truck), paving machine, roller, pickup trucks, and pumps and pipes for dewatering and sewer bypassing. Up to approximately 10 construction workers would be required to construct each open-trench pipeline project.

Trenchless Installation

Trenchless installation would be used where site constraints, such as utility and traffic-related conflicts and highway, railroad, and creek crossings, prevent open-trench excavations. In general, trenchless installation would entail cutting a plug of soil and pushing or pulling the new pipeline through the hole vacated by the soil plug. A pit would be excavated at both ends of the new pipeline alignment. The pits would typically be 12 feet wide by 12 to 25 feet long, depending on site-specific conditions and equipment used, and 5 to 30 feet deep, depending on depth of collection system at that location. Shoring would be installed to secure the sides of the pits, as needed, for worker safety and to protect existing improvements. Specialized trenchless installation machinery would be placed in the pit at one end of the alignment; the other pit would serve as the receiving pit.

Trenchless technologies include micro-tunneling, jack-and-bore, and pipe bursting in which a machine would travel through the existing pipeline, destroy it, push pipe fragments into adjacent soils, and pull the new pipeline in. Some trenchless technologies use water for lubrication or cooling in a closed-loop system that separates slurry. Excess water at construction completion, typically several thousand gallons, would be discharged into the sanitary sewer system in accordance with the City's NPDES permit requirement. In addition, groundwater may be encountered in excavations during installation of the pipelines and would be tested and disposed of in the sanitary sewer system or at another location, as appropriate.

Site preparation activities, such as potholing and asphalt removal, and site closure activities, such as backfilling and repaving, would be similar to those described for open-trench construction. Up to approximately 10 construction workers would be required to construct each trenchless pipeline project.

In-place Rehabilitation

Some pipelines may be rehabilitated in place through techniques including cure in place and slip lining, which would place a new pipe inside the old pipe. A temporary sewer bypass would be installed prior to installation. In some cases, hot water or steam would be used to cure the resin in the liner and would be treated prior to discharge to the sanitary sewer. Installation is typically done through manholes, so minimal ground disturbance would be required. Temporary lane closures for several days may be needed for manhole access.

2.2.1.3 Rehabilitation or Upgrade of Pump Stations

Existing pump stations in the collection system may require repair or upgrades to increase capacity to convey peak flow to Dale Avenue Pump Station and the WWTP or to improve operability or condition. Specific pump station projects may include the following:

- **38th Avenue/El Camino Pump Station Upgrade:** Expand the pump station's firm capacity to meet PWWFs by replacing two 1.15-mgd pumps with two 1.8-mgd pumps; adding VFDs and a grinder; rehabilitating the wet well; and upgrading the discharge piping, electrical supply, telemetry and controls, and odor control equipment.
- **41st Avenue/Pacific Pump Station Upgrade:** Expand the pump station's firm capacity to meet PWWFs by replacing two 1.3-mgd pumps with two 1.8-mgd pumps; adding VFDs and a grinder; rehabilitating the wet well; and upgrading the discharge piping, electrical supply, telemetry and controls, and odor control equipment.
- **Dale Avenue Pump Station Rehabilitation:** Rehabilitate the existing pump station, which pumps directly to the WWTP.
- **Dale Avenue New Pump Station and Force Main:** Construct a new pump station and force main on the existing Dale Avenue Pump Station parcel between S. Norfolk Street and Patricia Avenue. The new pump station would supplement the capacity of the rehabilitated existing Dale Avenue Pump Station. This project would be implemented only for the Full Conveyance Program.
- **Kehoe-Kelly Pump Station Upgrades:** Expand the pump station's firm capacity by installing two duty pumps and one standby pump to meet the new design flow.
- **Los Prados No. 1 Pump Station Upgrades:** Expand the pump station's firm capacity by installing two duty pumps and one standby pump to meet the new design flow.
- **Los Prados No. 2 Pump Station Upgrades:** Replace the pumps; rehabilitate the wet well; and upgrade the discharge piping, electrical supply, telemetry and controls, and odor control equipment.
- **Los Prados No. 3 Pump Station Upgrades:** Expand the pump station's firm capacity and replace two duty pumps and one standby pump to meet new design flow.
- **Mongini Pump Station Upgrades:** Expand the pump station's firm capacity. Install a bypass pumping connection and install backup pump controls.
- **Santa Clara Pump Station Upgrade:** Expand the pump station's firm capacity to meet PWWFs by replacing three 1.44-mgd pumps with three 2.7-mgd pumps; adding variable-frequency drives (VFD) and a grinder; rehabilitating the wet well; and upgrade the discharge piping, electrical supply, telemetry, and controls.

Other pump stations may require upgrades, depending on the results of a future condition assessment to be performed on all pump stations. The majority of the rehabilitation projects would include the replacement of pumps and minor upgrades of other existing equipment and would require minimal ground disturbance or activities outside the pump station footprint.

Some pump stations would require rehabilitation of the concrete wet wells, which are underground vaults for sewage storage until it is pumped into the system. Prior to the start of rehabilitation, sewage flows would be diverted around the pump station through a bypass, either the existing sewer system or a temporary small pump and bypass pipe installed aboveground or belowground. Construction staging would be done on City off-street rights-of-way, as available, and along adjacent streets; lane closures may be required. Wet well access, including transport of equipment, materials, and workers, would be through existing pump station entrances.

Some pump station projects would require that wet wells be demolished and reconfigured or enlarged. These projects would require excavation of several feet of soil to reach the existing wet well, which would be demolished. The concrete would be transported to a recycling facility. The wet well area would then be enlarged or reconfigured to the size of the new wet well, which typically ranges from approximately 5 to 50 feet square and up to 35 feet deep. A new Dale Avenue Pump Station could be up to 76 feet long by 50 feet wide by 36 feet deep. Shoring would be installed as needed for safety and to protect existing improvements. Excavations would generally be within City off-street rights-of-way, although construction staging may use adjacent streets. As described for the pipeline projects, soil would be stored in stockpile areas that typically are not on site. Concrete would be poured to create the new wet well, followed by backfilling with appropriate stockpiled or imported soil that would be revegetated or paved at the surface. Construction would take approximately 1 to 4 months, depending on the size of the wet well. Construction equipment could include, but is not limited to, excavators, backhoes, dump trucks, and cement mixers. Up to approximately five construction workers would be required to construct each new wet well. Prior to start of rehabilitation, the sewage flow would be diverted around the pump station through a temporary pump and bypass pipe installed above or below the ground.

2.2.1.4 In-system Storage Basin

San Mateo may construct up to approximately 4 million gallons of belowground, in-system flow equalization storage in one or more locations. The goal of in-system storage would be to equalize flows upstream from Dale Avenue Pump Station. Several sites have been identified as potential in-system storage basin locations. Further hydraulic analysis would be performed to evaluate the potential site(s) and identify those that adequately address system storage and overflow issues. Other factors that would be considered include site size, land ownership, cost, and other site constraints. Suitable existing site uses may include, but are not limited to, recreation fields, parks, and parking lots. The following locations (listed in alphabetical order) were selected from a longer list of alternatives, based on potential system benefits (see Appendix A). Additional sites may be identified.

- Abbott Middle School at 600 36th Avenue
- Bay Meadows Phase II Park at 28th Avenue, between Saratoga Avenue and South Delaware Street
- California Water Services Company (parking lot) at 341 North Delaware Street
- Caltrain Station – Park Green Development at South Delaware Street and Concar Drive
- Central Park at 50 East 5th Avenue
- Fiesta Meadows Park at 1141 Bermuda Drive
- Hillsdale High School at 3115 Del Monte Street
- Hillsdale Shopping Center (parking lot) at 60 31st Avenue
- Martin Luther King Jr. Park at 725 Monte Diablo Avenue
- San Mateo County Expo Center at 2495 South Delaware Street
- San Mateo County Hospital (parking lot) at 222 West 39th Avenue
- Trinta Park at 150 19th Avenue

Prior to excavation of an in-system equalization basin, potholing to locate utilities and surveying would be performed. Vegetation or pavement would be removed and recycled, as feasible. The specific dimensions of the basin would be determined during design; typical dimensions may be an 8-foot depth of usable storage, 2 feet of freeboard, and 5 feet of cover. To provide 4 million gallons of storage in one basin with these typical dimensions, an area approximately 230 by 230 feet and 15 feet deep would be excavated. Concrete would be poured to create the basin. Pumps, maintenance and cleaning equipment, and odor control

equipment would be installed and are typically placed underground. The basin would be covered with 5 feet of compacted, structurally appropriate backfill that would then be vegetated or repaved. Access hatches and vents for treated air would be on the ground surface. Minor appurtenances would be located on the ground surface, typically hatches set into the ground to access ventilation and odor control equipment and a small building containing an elevator for people and equipment to enter the basin belowground. Hatches could cover approximately 200 square feet, and an elevator building approximately 100 square feet, for a total of approximately 300 square feet of aboveground appurtenances. A typical cross-section of an equalization basin and a photograph of the exterior of the Windemere Combined Sewer Overflow Storage Facility in Seattle are shown in Figure 2-4.

2.2.2 Wastewater Treatment Plant Projects

The City plans to upgrade or replace much of its wastewater treatment facilities to meet current and anticipated future regulatory requirements and to better manage wet weather flows. Proposed improvements for the WWTP are expected to include replacement of the failing influent junction box and primary clarifiers, construction of a headworks with grit and screening, improvements to or replacement of the secondary treatment facilities to meet the CDO requirements, construction of an equalization storage basin, and rehabilitation of other aging infrastructure.

In this report, the WWTP Site includes the following (see Figure 2-5):

- The existing WWTP property
- The City-owned Detroit Drive site across from the existing WWTP
- Three privately owned parcels (referred to as the Bayfront parcels) northeast of the existing WWTP (currently used by a trucking business)
- A City-owned Dale Avenue parcel west of the existing WWTP (currently unused)
- Roadways around the existing WWTP that the City may incorporate into the WWTP

2.2.2.1 Wastewater Treatment Plant Configuration

San Mateo is evaluating different types of treatment processes and locations within the WWTP Site for WWTP facilities. The following three main treatment processes under consideration could be used with either the Full Conveyance alternative or In-System Storage Program:

1. Baseline treatment
2. Conventional activated sludge (CAS) system
3. Membrane bioreactor (MBR) system

All three processes would provide treatment to meet current and future regulatory requirements. In addition, all three processes would produce effluent that meets Title 22 regulations and could be available for reuse.

Potential layouts for the three processes are shown on Figures 2-6 through 2-8. Figure 2-9 compares the individual treatment facilities that would be included for the three treatment processes. As the evaluation continues, these layouts may change; however, all facilities would be located within the site boundaries shown on Figure 2-5. The final facilities and layout would meet all wet weather flow and regulatory requirements. The three treatment processes under consideration are described in more detail below.

Baseline Treatment Process

The baseline treatment process would include a combination of upgrades at existing WWTP facilities and construction of new facilities. The process would consist of headworks, primary treatment, flow equalization/storage, secondary treatment, tertiary treatment, disinfection, solids handling, and various in-plant support facilities and utilities. The baseline treatment process is similar to the treatment described in

the *City of San Mateo Integrated Wastewater Master Plan* (Carollo Engineers, Inc., 2014), with some modifications including advanced treatment:

- The new headworks structure to house screening, grit removal, flow measurement, screenings compaction and handling, and flow splitter structure to divert flows to the next step of treatment. The new headworks project is described in Section 2.2.2.2.
- Primary treatment would take place in primary clarifiers, which could have a rectangular or circular footprint. The primary clarifiers are described in Section 2.2.2.2. Primary treated water would then gravity flow (or potentially pumped) to the secondary treatment facilities under normal operations.
- Under high-flow conditions typically experienced under wet weather events, flows would be diverted to new flow equalization storage basins at the WWTP Site, which could be aboveground or underground, for storage of the flows that exceed the WWTP outfall capacity. The sizing of the basins would depend on the Program alternative implemented; the Full Conveyance Program would have greater equalization storage at the WWTP than the In-System Storage Program. Each basin would include associated facilities, such as pumping, odor control, and cleaning features. If built underground, the equalization basin would have aboveground structures, such as parking and mechanical equipment, constructed over it. The stored flows would be diverted to the secondary treatment system as the incoming flows subside below the outfall capacity.
- Secondary treatment would consist of biological treatment after primary treatment. Secondary treatment would be sized to provide treatment under all flow conditions that are at or below the outfall flow capacity of the WWTP (60 mgd). Biological treatment would take place in concrete tanks called aeration basins that are separated into parallel tanks with inlets and outlets to divert flow through the tanks. Microorganisms are naturally present in wastewater and require food and oxygen to survive. Mechanical equipment in the aeration basins (e.g., air diffusers, submersible mixers, and recycle flow pumps) would support biological treatment by providing a supply of dissolved oxygen so the microorganisms metabolize soluble organic matter in the influent. The mechanical equipment may be automated. The secondary treatment system would use existing tanks and equipment, which may need structural and mechanical upgrades. In addition, new secondary treatment tanks would be needed to pass the highest expected flows during wet weather conditions.

  After treatment in the aeration basins, the wastewater would flow into concrete clarifiers (both existing and new) to remove settleable solids. Each clarifier tank would contain an inlet and an outlet for the treated wastewater flow. Captured solids, referred to as “waste activated sludge,” that settle to the bottom of the clarifiers would be collected and pumped from each clarifier and diverted to the existing solids handling facility for further treatment. The treated flow passing through the clarifier outlet would be diverted to tertiary treatment, the next step in the treatment process.
- Tertiary treatment would use a filter system to remove additional solids. The existing tertiary filtration facilities would be upgraded or replaced by using a different filtration technology than currently used. The filter system could contain sand, cloth, stainless steel, or similar filtration media and may require the use of coagulants such as ferric chloride or alum and/or polymers. Coagulants and polymers would cause the remaining solids to clump together, making them easier to filter. Filtered water would then flow through concrete disinfection tanks where it would be disinfected with sodium hypochlorite and dechlorinated with sodium bisulfite prior to final discharge or reuse. Disinfection facilities would include existing or new chlorine contact basins, chemical metering pumps, and chemical storage tanks. Dechlorination facilities would include existing or new bisulfite feed pumps and bulk storage tanks.
- Existing solids handling facilities would be used for treatment of primary solids, waste activated sludge, and solids from the tertiary treatment process.

Conventional Activated Sludge System

The CAS system would include a combination of upgrades to existing WWTP facilities and construction of new facilities. The system would consist of headworks, flow equalization/storage, primary treatment, secondary treatment with conventional activated sludge system, tertiary treatment, disinfection, solids handling, and various in-plant support facilities and utilities. The CAS system would be similar to the baseline treatment process, but it would use a new, different secondary treatment technology and the existing aeration basins would still be used for equalization storage instead of new storage facilities.

- The new headworks would consist of a structure to house screening, grit removal, flow measurement, screenings compaction and handling, and flow splitter structure to divert flows to the next step of treatment. The new headworks project is described in Section 2.2.2.2.
- During wet weather events, flows that exceed the outfall flow capacity would be stored after passing through the headworks in a flow equalization storage basin. The existing secondary treatment aeration basins would be converted and upgraded to be flow equalization tanks. If needed, additional equalization storage would be constructed belowground, potentially on the Dale Avenue parcel. The stored flows would be diverted to the primary treatment as the incoming flows subside below the outfall capacity.
- Primary treatment would take place in primary clarifiers that have a circular footprint. The primary clarifiers are described in Section 2.2.2.2. Primary treated water would then be pumped or gravity flow to the secondary treatment facilities.
- Secondary treatment would consist of biological treatment of the primary treated wastewater. Biological treatment would take place in concrete tanks that are separated into parallel tanks with inlets and outlets to divert flow through the tanks. Microorganisms are naturally present in wastewater and require food and oxygen to survive. Mechanical equipment in the aeration basins (e.g., air diffusers, submersible mixers, and recycle flow pumps) would support biological treatment by providing a supply of dissolved oxygen so the microorganisms metabolize soluble organic matter in the influent. The mechanical equipment may be automated. Secondary treatment for the CAS system would use new tanks with sufficient capacity to treat design wastewater flows; the existing aeration basins would not be used for treatment. The new secondary treatment system would be sized for a 42 mgd peak flow and a 21 mgd maximum month. During peak wet weather events, when the capacity of the secondary system is exceeded, a wet weather treatment scheme would be implemented using a biological treatment tank and two of the primary clarifiers as secondary clarifiers. The biological treatment tank, also referred to as a contact stabilization tank, would only be used during peak flows that exceed the secondary capacity.

  After biological treatment, the water would flow into existing and new concrete clarifiers for removal of settleable solids. Each clarifier tank would contain an inlet and an outlet for the treated wastewater flow. Captured solids, referred to as “waste activated sludge,” that settle to the bottom of the clarifiers would be collected and diverted to the existing solids handling facility for further treatment. The treated flow would be diverted to tertiary treatment, the next step in the treatment process.
- Tertiary treatment would use a filter system to remove additional solids. The existing tertiary filtration facilities would be upgraded or replaced by using a different filtration technology than currently used. The filter system could contain sand, cloth, stainless steel, or similar filtration media and may require the use of coagulants such as ferric chloride or alum and/or polymers. Coagulants and polymers would cause the remaining solids to clump together, making them easier to filter. Filtered water would then flow through concrete disinfection tanks where it would be disinfected with sodium hypochlorite and dechlorinated with sodium bisulfite prior to final discharge or reuse. Disinfection facilities would include existing or new chlorine contact basins, chemical metering pumps, and chemical storage tanks. Dechlorination facilities would include existing or new bisulfite feed pumps and bulk storage tanks.

- Existing solids handling facilities would be used for treatment of primary solids, waste activated sludge, and solids from the tertiary treatment process.

Membrane Bioreactor System

The MBR system would include a combination of upgrades to existing WWTP facilities and construction of new facilities. The MBR system would consist of headworks, flow equalization/storage, primary treatment, secondary treatment with membrane bioreactors, disinfection, solids handling, and various in-plant support facilities/utilities.

- The new headworks would consist of a structure to house screening, grit removal, flow measurement, screenings compaction and handling, and flow splitter to divert flows to the next step of treatment. The new headworks project is described below in Section 2.2.2.2.
- During wet weather events, flows that exceed the outfall flow capacity would be stored after passing through the headworks in a flow equalization storage basin. The existing secondary treatment aeration basins would be converted and upgraded to flow equalization tanks. If needed, additional equalization storage would be constructed below ground, potentially on the Dale Avenue parcel. The stored flows would be diverted to the primary treatment as the incoming flows subside below the outfall capacity.
- Primary treatment would take place in primary clarifiers that would have a circular footprint. The primary clarifiers are described below in Section 2.2.2.2. Primary treated water would then be pumped or gravity flow to the secondary treatment facilities.
- Secondary treatment would consist of biological treatment of the primary treated wastewater. The biological treatment would take place in new concrete tanks that are separated into parallel tanks with inlets and outlets to divert flow through the tanks, as well as mechanical equipment that would support biological treatment such as air diffusers and recycle flow pumping. After passing through biological tanks, the wastewater would flow into concrete membrane tanks housing the MBR membranes that would filter the biological treatment sludge and pollutants. Each membrane tank would contain an inlet for the treated wastewater flow and pumps that would pull treated water through the membranes. Captured solids, referred to as “waste activated sludge,” would be pumped from the membrane tanks/sludge piping and diverted to the solids handling facility for further treatment. The MBR system would be equipped with automated membrane maintenance system components such as pumps, water treatment chemicals such as citric acid for scaling or sodium hypochlorite for biofilm (fouling), chemical storage and feed facilities, air blowers, system monitoring devices, and sludge recycle pumps. Treated flows passing through membranes would be diverted to the next step in treatment, disinfection, consisting of concrete disinfection tanks and/or ultraviolet light disinfection system. Following disinfection, the treated wastewater would be discharged or reused. The new secondary treatment system would be sized for a 42 mgd peak flow. During peak wet weather events, when the capacity of the secondary system is exceeded, a wet weather treatment scheme would be implemented using a biological treatment tank and two of the primary clarifiers as secondary clarifiers. The biological treatment tank, also referred to as a contact stabilization tank, would only be used during peak flows that exceed the secondary capacity.
- Existing solids handling facilities would be used for treatment of primary and waste activated sludge (secondary treatment solids).

2.2.2.2 New Headworks and Primary Clarifier Projects

All three treatment processes under consideration would include new headworks and new primary clarifier projects. These projects would be the first WWTP projects to be constructed and are planned for construction in 2017.

New Headworks Project

The existing WWTP does not have a headworks, which is required for reliability and to increase the capacity of the preliminary treatment facilities. A new headworks with capacity of 78 to 98 mgd would be constructed as a preliminary treatment facility. The new headworks would consist of a structure to house screening, grit removal, flow measurement, screenings compaction and handling, and flow splitter structure to divert flows to the next step of treatment. Mechanical screening of the wastewater would remove coarse solid materials for disposal. Grit removal would consist of a system to capture and remove grit from the wastewater flow. The removed coarse solid materials, grit, debris, and trash would be washed, compacted, and transported to an appropriate landfill facility for disposal. The flow measurement and flow splitter would then divert the wastewater to the primary treatment or to equalization storage during wet weather events. The new headworks would replace the existing influent junction box, which would be demolished after flows are re-routed to the new headworks.

The new headworks could be partially or completely enclosed. It may be a two-story facility, with the treatment and flow splitting functions located on the top level, and the screening and grit management units on the lower level. The structure may allow truck or forklift access to remove or empty waste bins. Foul air in enclosed areas of the headworks, including the headspace of the influent channels, splitter boxes, and water conveying structures, would be captured through a ductwork and fan system and transferred to an odor control treatment system. For proper control of odors, the covered and enclosed areas would be under negative air pressure. The interior of enclosures that require worker access would be ventilated in accordance with National Fire Protection Association regulations. Figure 2-10 shows an example headworks.

Primary Clarifier Project

The Primary Clarifier Replacement Project would include construction of new primary sedimentation tanks and associated equipment. Primary clarifiers would receive screened and de-gritted wastewater from the headworks facility. The primary clarifiers may be similar in construction to the existing primary clarifiers (see Figure 2-11) and could have a rectangular or circular footprint. The primary clarifiers would be covered to allow capture and treatment of foul air from the wastewater as it goes through primary treatment. Solids in the water would settle to the bottom of concrete tanks, which would be constructed side-by-side or at a distance from each other; the settled solids are referred to as “primary sludge.”

The clarifiers would be capable of receiving chemicals that promote settling of solids during treatment under high flow conditions and could receive recycles from downstream treatment facilities. The design of the primary clarifiers may include an option to add chemicals such as ferric chloride, alum, and a polymer to the primary influent. These chemicals bond with suspended solids in the water, causing them to settle to the bottom of the sedimentation tanks. The chemicals would typically be used for short periods during peak flow conditions. This option could allow the facility to better handle the wet weather flow conditions. If used, the chemicals would be stored in a chemical facility with proper containment, enclosures, safety features, access for deliveries, and pumps to deliver the chemicals to the feed points. The chemical facility could be under a canopy or enclosed in a building. Each clarifier tank would have an inlet and an outlet for the treated wastewater flow, as well as collection and removal systems for the captured solids, referred to as “primary sludge.” The primary sludge would be pumped from each primary clarifier and diverted to the solids handling facility for further treatment. Primary treated flow would gravity flow or be pumped through the outlet to the next step in treatment, which could be a flow equalization basin or secondary treatment system. The primary clarifiers would be completely covered to prevent the emission of odors, and air in the headspace would be treated to remove the odors. Once the new facilities become operable, existing Primary Clarifiers 1 through 4 would be demolished.

2.2.2.3 Other Wastewater Treatment Plant Capital Projects

Onsite Stormwater Improvements Project

The Onsite Stormwater Improvements Project includes construction of new stormwater collection piping and a new stormwater pump station for pumping to the new headworks facility or new flow equalization basins.

New Administration Building and Laboratory

The existing administration and laboratory buildings at the WWTP are inadequately sized for the plant staff and laboratory functions, and they are located in the center of the WWTP, which limits how new treatment facilities could be designed. New administration and laboratory buildings would likely be constructed on the City property, as previously defined, or they would be collocated with the City's Corporation Yard facilities. These facilities may be in a single building and could be multistory.

Ancillary Facilities

The CWP may also include construction of a Fund 72 Corporation Yard (the wastewater system portion of the City's Corporation Yard), with maintenance shops, employee and visitor parking, and other City or public facilities. These facilities would be located on the existing WWTP property, the Detroit Drive parcel, or the Bayfront parcels (see Section 2.2.2 and Figure 2-5) and could be split into multiple locations within the WWTP property to accommodate space requirements. The facilities could be multistory. Recreational facilities, such as bicycle and pedestrian improvements, could be installed at the Dale Avenue parcel.

2.2.2.4 Repair and Rehabilitation Projects

San Mateo plans to implement several major repair and rehabilitation projects to maintain operations until new facilities come online and to upgrade treatment facilities that are not planned for replacement. It is anticipated that the new equipment would result in similar or lower energy use because of the improved efficiency while providing the same capacity of service. The repair and rehabilitation projects ultimately implemented would depend on the treatment process selected and the construction timeframe. Repair and rehabilitation projects may include the following:

- **Tank Drain Pump Replacement Project:** Replace eight tank drain pumps with two new tank drain pumps.
- **Aeration Blower Replacement Project:** Annually replace one aeration blower for several years.
- **New Standby Generator Project:** Replace existing standby generators.
- **Sodium Hypochlorite Replacement Project:** Replace sodium hypochlorite tanks, transfer pumps, day tanks, and bisulfite feed pumps.
- **Effluent Pump Station 2 Replacement Project:** Annually replace one pump for several years.
- **Electrical Equipment Replacement Projects:** One project would replace the main 21-kilovolt switchgear, motor control center (MCC) F, and MCC 1P3; the other project would replace the main outdoor switchgear; power distribution panels; Transformers 1 and 2; MCCs P1, P2, P3, P4; and the blower.
- **Digester Equipment Replacement Project:** Replace equipment in the digester complex, such as mechanical mixers, four digested sludge pumps, foam suppression pumps, and digested sludge storage recirculation pumps.
- **New Site Waste Pump Station Project:** Demolish and relocate the site waste pump station.
- **Digester Heating Equipment Replacement Project:** Replace some digester heating equipment, including hot water loop pumps, spiral heat exchangers, sludge heating hot water circulation pumps, and sludge heating recirculation pumps.

- **Dissolved Air Flotation Thickener Replacement Project:** Replace some equipment, including the drive unit, pressurization pumps, air compressor, pressurization tank, and digester feed pumps.
- **Secondary Clarifier 5 Drive Unit Replacement Project:** Replace the drive unit.
- **Digester Feed Pump and Blower Replacement Project:** Replace digester Feed Pumps 1 through 3 and the digester booster blowers.
- **Recycled Water Pump Replacement Project:** Replace recycled water pumps that supply water to the WWTP.
- **Thickening Equipment Replacement Project:** Replace thickened primary sludge pumps and VFDs, mixed sludge recirculation pumps, and mixed sludge transfer pump.
- **Dewatering Equipment Replacement Project:** Replace all centrifuge feed pumps and polymer system equipment.
- **Waste-activated Sludge Pump Replacement Project:** Replace pumps and related equipment.
- **Surge Tank Replacement Project:** Replace the surge tank that protects the outfall line from surges.

2.3 Overall Program Construction and Operation

2.3.1 Program Construction

The CWP would be constructed over a 10- to 20-year period starting in 2016. Project scheduling would be based on technical requirements, financing, and other implementation considerations.

Construction approaches for individual collection system projects are discussed in Section 2.2.1.

Construction work for WWTP projects is expected to be continuous over long periods. Up to approximately 50 construction workers may be at the WWTP vicinity for as long as 10 years. The City would identify one or more dedicated parking areas for construction workers. If space is not available on the Detroit Drive parcel or existing WWTP parcel, the City would develop a temporary agreement for use of another site, such as the Anchor Road parking lot owned by City of San Mateo Parks and Recreation, or it may widen the shoulder of JoinVille Park Street north of the Detroit Drive parcel and re-stripe it to accommodate street parking (see Figure 2-5).

Several activities would be completed to prepare the WWTP Site for project construction. These activities may be completed as a single preconstruction project, completed separately, or completed as parts of other WWTP projects. These activities may include, but are not limited to, the following.

- Performing geotechnical surveys to collect data on soils
- Removing or remediating soils containing hazardous materials (if any)
- Removing existing concrete and asphalt
- Grading
- Demolishing existing WWTP facilities that are not in use
- Preparing staging areas, including locations for trailers, equipment laydown, and construction worker parking
- Installing construction trailers and temporary utilities
- Constructing new electrical substation, including transformer and new transmission or distribution lines
- Installing a new utility corridor (trench box)
- Installing a perimeter wall or security fencing

- Constructing temporary and permanent roads and site drainage facilities
- Installing pipe and conduit between the Detroit Drive site and the existing WWTP Site
- Constructing new temporary and permanent site entrances, including paving, gates, and signage

Construction contractors would generally be responsible for establishing staging and stockpiling locations for individual projects. To support this, the City would identify areas that could be used for temporary stockpiling of excavated soil and for equipment staging for CWP projects. These areas may include the existing WWTP parcel, the Detroit Drive parcel, or the Dale Avenue parcel (see Figure 2-5), or other City property in San Mateo such as the Dale Avenue approach corridor between S. Norfolk Street and US-101.

Multiple CWP projects are expected to be under construction concurrently. On any given day, the following projects would be the maximum construction activity to be expected:

- Construction of two new large wastewater treatment capital projects, such as the New Headworks Project, Primary Clarifier Project, or the new administration building.
- Construction of two large replacement or new pipeline projects (large diameter and/or over approximately 1,500 feet in length).
- Construction of three small to medium pipelines projects (under approximately 1,500 feet in length).
- Construction of two pump station projects with a new or expanded wet well; this would be considered equivalent to construction of an in-system equalization basin in terms of the type and scale of construction activities.

At a maximum, it is estimated that the concurrent construction described above would generate up to 409 daily trips and 110 peak hour trips. Additional details are provided in Chapter 16. Construction worker vehicles would typically be gasoline powered, but may also include diesel, electric, or other types of cars. Construction equipment would use diesel fuel or gasoline.

2.3.2 Program Operation

The general operation of the new wastewater treatment processes under consideration is described in Sections 2.1.1, 2.1.2, and 2.2.2. The new WWTP would be more highly automated than the existing WWTP, so an increase in operations staff is not expected. Automation would increase reliability. Because the WWTP facilities would be new or rehabilitated, they would require less frequent maintenance and repair than the current facilities.

Similarly, because many collection system facilities would be new or rehabilitated, less frequent maintenance and repair would occur compared to current conditions.

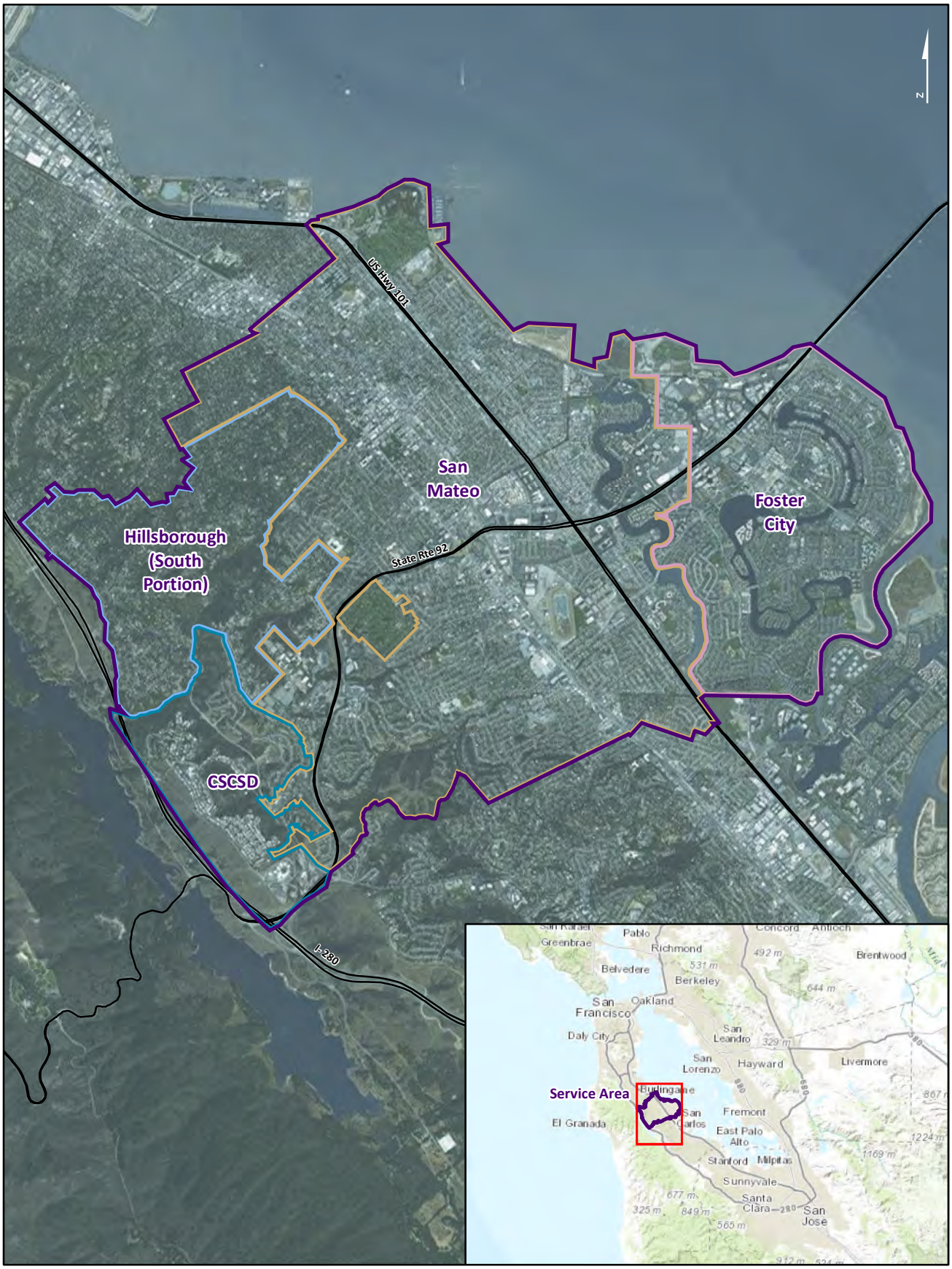
Equalization basins, both in-system and at the WWTP, would be cleaned after each wet-weather event use, typically several times each year. Cleaning would automated or done manually. If automated, the system would be activated after the wastewater has been drained. If done manually, workers would enter the basin through a secure, aboveground entrance after wastewater has drained and wash the surfaces of the basin with water. The wash water would be pumped into the sewage system. Air from the basins would be treated by an odor control system before being vented from the basin.

The CWP would include new equipment such as pumps and interior facility lighting that would be more energy efficient than existing equipment. However, the WWTP would treat wastewater to a higher level for recycled water use; as a result, electricity use would increase approximately 12 percent compared to current use. Electricity would be provided by Pacific Gas & Electric (PG&E). In 2012, PG&E's power mix consisted of non-emitting nuclear generation (21 percent), renewable resources including solar, wind, geothermal, biomass, and small hydroelectric (19 percent), large hydroelectric facilities (11 percent), natural gas/other (27 percent), and unspecified/untraceable (21 percent) (PG&E, 2015). No new vehicle trips for CWP operations would be expected, because of reduced maintenance requirements and increased automation.

2.4 References

Carollo Engineers, Inc. 2014. *City of San Mateo Integrated Wastewater Master Plan*. Prepared for City of San Mateo. October.

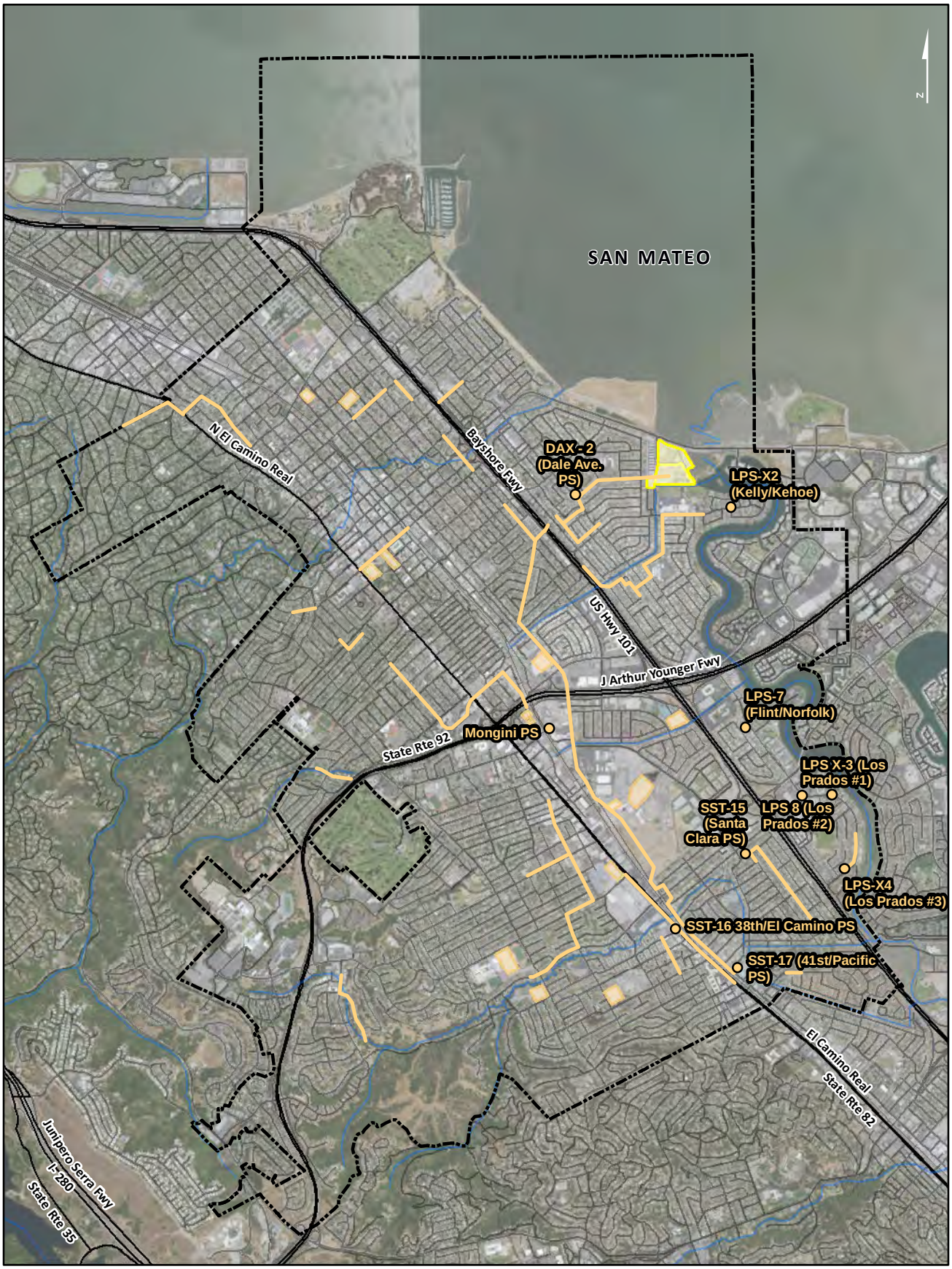
Pacific Gas & Electric (PG&E). 2015. *Clean Energy Solutions*. http://www.pge.com/en/about/environment/pge/cleanenergy/index.page. Accessed October 11.



Source: Esri Map Services, County of San Mateo

Figure 2-1
Service Area
Programmatic Environmental Impact Report
City of San Mateo Clean Water Program

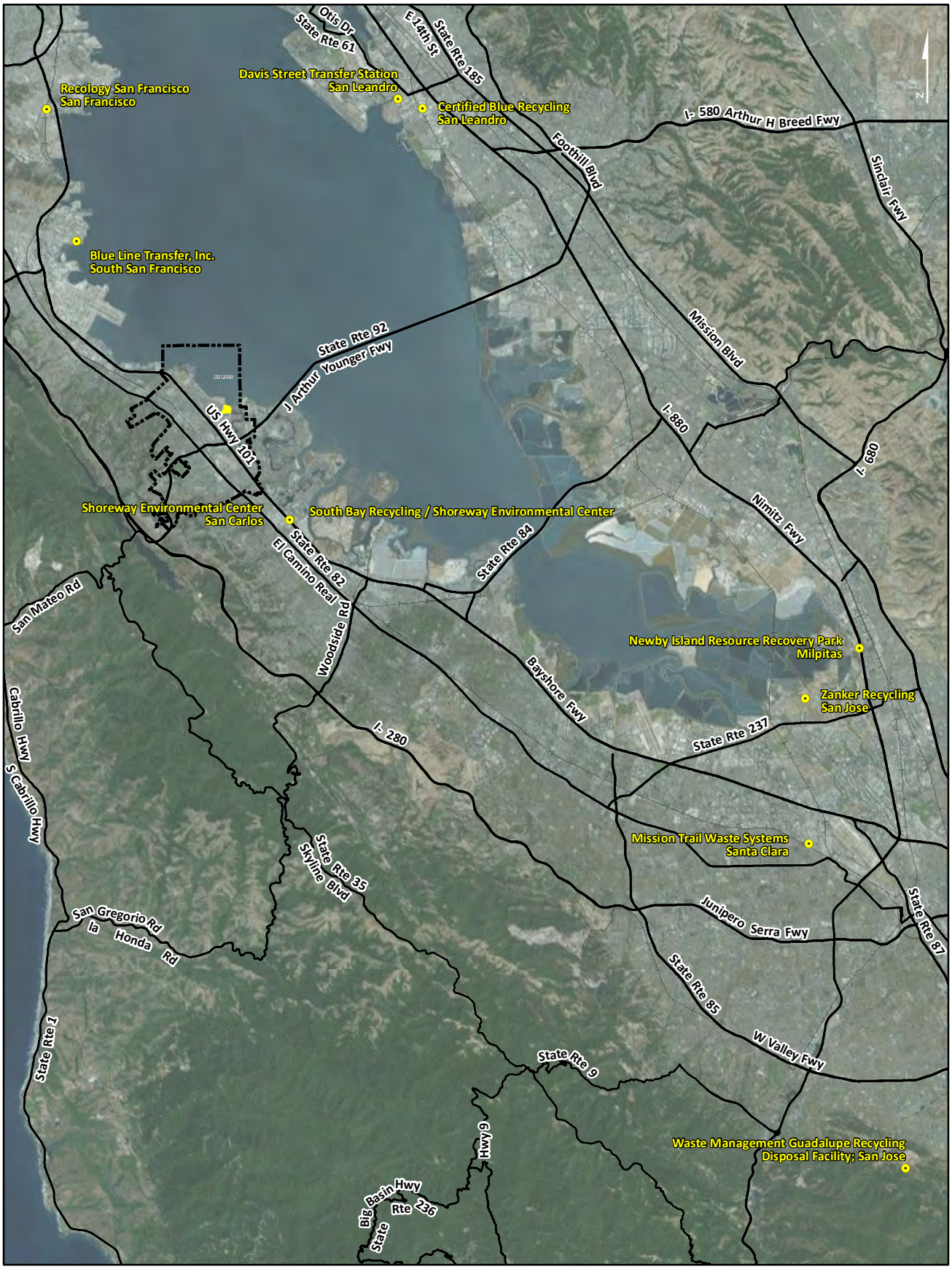
CH2MHILL



Coordinate System: NAD 1983 UTM Zone 10N. Source: Esri Map Services, County of San Mateo

Figure 2-2
Collection System Projects
Programmatic Environmental Impact Report
City of San Mateo Clean Water Program

CH2MHILL



Recycling Center
WWTP Site
Major Road
Railroad
San Mateo City Limits

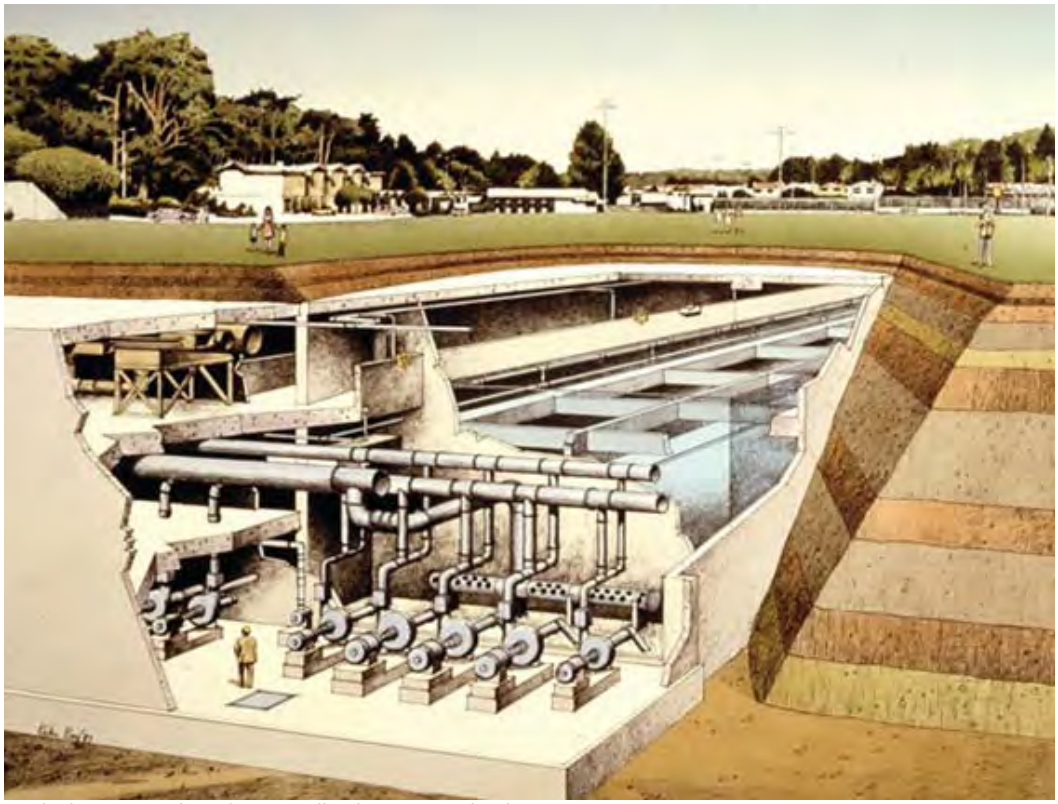
0 1.5 3
Miles

Figure 2-3
Recycling Centers for Construction Material and Soils
Programmatic Environmental Impact Report
City of San Mateo Clean Water Program

Coordinate System: NAD 1983 UTM Zone 10N. Source: Esri Map Services, County of San Mateo

CH2MHILL

Windemere Combined Sewer Overflow Underground Storage Facility, Seattle Public Utilities



Typical cross section of an equalization storage basin

FIGURE 2-4
Examples: In-System Equalization Basin
Programmatic Environmental Impact Report
San Mateo Clean Water Program

P Potential Construction Parking
Existing WWTP Facility
Bayfront Parcels
Dale Avenue Parcel
Detroit Drive Parcel

0 250 500
Feet

Figure 2-5
WWTP Site Parcels
Programmatic Environmental Impact Report
City of San Mateo Clean Water Program

Coordinate System: NAD 1983 UTM Zone 10N. Source: Esri Map Services, County of San Mateo

CH2MHILL

Aerial from Google Earth Pro © 2015. Additional information added by CH2M HILL.

Legend

- CCC=Chlorine Contact Basin
- CNG=Compressed Natural Gas filing station
- DPR= Direct Potable Reuse
- EQ=Equalization Storage
- Mech=Mechanical Building
- PC = Primary Clarifier
- SC = Secondary Clarifier

FIGURE 2-6
WWTP Potential Layout 1 Baseline
Programmatic Environmental Impact Report
City of San Mateo Clean Water Program

Aerial from Google Earth Pro © 2015. Additional information added by CH2M HILL.

Legend

- Bio=Biological contact tank
- CCC=Chlorine Contact Basin
- Chem= Chemical building
- CNG=Compressed Natural Gas filing station
- DPR= Direct Potable Reuse
- EQ=Equalization Storage
- Mech=Mechanical Building
- PC = Primary Clarifier
- SC = Secondary Clarifier

FIGURE 2-7
WWTP Potential Layout 2 CAS
Programmatic Environmental Impact Report
City of San Mateo Clean Water Program

Aerial from Google Earth Pro © 2015. Additional information added by CH2M HILL.

Legend

- Bio=Biological contact tank
- CCC=Chlorine Contact Basin
- Chem= Chemical building
- CNG=Compressed Natural Gas filing station
- DPR= Direct Potable Reuse
- EQ=Equalization Storage
- Mech=Mechanical Building
- PC = Primary Clarifier
- SC = Secondary Clarifier

FIGURE 2-8
WWTP Potential Layout 3 MBR
Programmatic Environmental Impact Report
City of San Mateo Clean Water Program

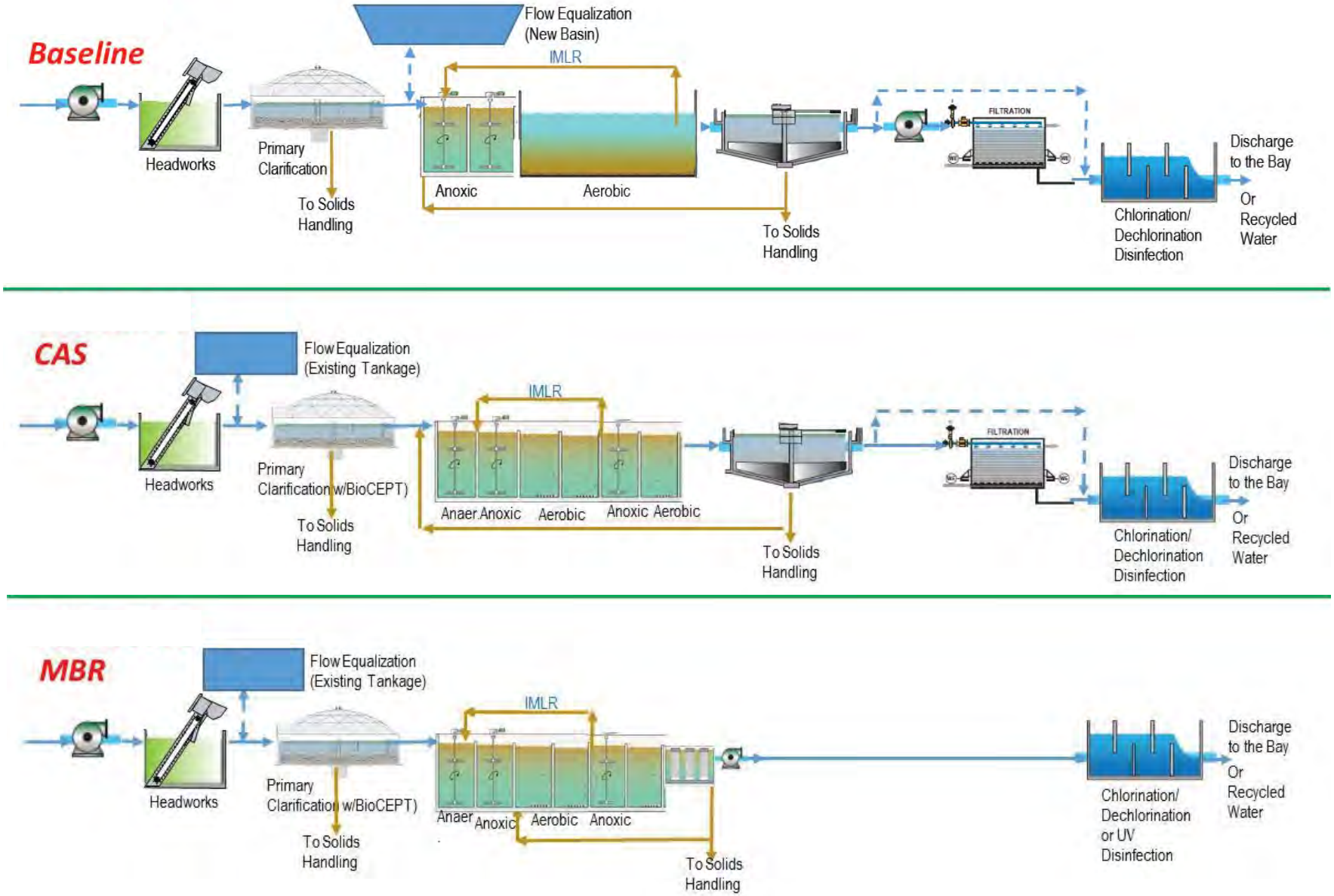


FIGURE 2-9
Comparison of Potential Treatment Processes
Programmatic Environmental Impact Report
City of San Mateo Clean Water Program

FIGURE 2-10
Example of Headworks Facility
Programmatic Environmental Impact Report
San Mateo Clean Water Program

FIGURE 2-11
Existing Primary Clarifiers
Programmatic Environmental Impact Report
City of San Mateo Clean Water Program

Chapter 3. Aesthetics

Aesthetic resources, or visual resources, are the natural and cultural features that could be seen and that contribute to the public's enjoyment of the environment. Visual resource impacts or impacts on the aesthetics of the natural and cultural environment are generally defined in terms of a project's physical characteristics and potential visibility, and the extent that the project would change the visual character and quality of the environment where it is located. This chapter discusses the existing visual character of the Program Area and analyzes the potential for the two CWP alternatives to affect the existing visual character and visual quality as seen from the surrounding area.

Concepts and terminology used in this analysis are summarized in Section 3.1. As defined primarily by the Federal Highway Administration (FHWA) (1988) and the Bureau of Land Management (BLM) (1980), these concepts are used throughout this chapter to describe existing conditions in representative views toward the WWTP Site and relevant portions of the Program Area and, in concert with CEQA significance criteria, identify potential effects on aesthetic resources.

This chapter also describes the regulatory environment relevant to protection of aesthetic resources, identifying policies and regulations taken into consideration in the evaluation of potential visual effects. Finally, mitigation measures that would reduce potential effects on visual resources are described.

3.1 Concepts and Terminology Used in this Chapter

Identifying visual resources and conditions involves three steps:

1. Objective identification of the visual features (visual resources) of the landscape
2. Assessment of the character and quality of those resources relative to overall regional visual character
3. Determination of the importance to people, or sensitivity, of views of visual resources in the landscape

The aesthetic value of an area is a measure of its visual character and quality, combined with the viewer response to the area (FHWA, 1988). Scenic quality could best be described as the overall impression that an individual viewer retains after driving through, walking through, or flying over an area (BLM, 1980). Viewer response is a combination of viewer exposure and viewer sensitivity. Viewer exposure is a function of the number of viewers, number of views seen, distance of the viewers, and viewing duration. Viewer sensitivity relates to the extent of the public's concern for a particular viewshed. These concepts and terms are described in detail in the following sections and are incorporated into this chapter's discussions of existing conditions and potential effects on aesthetic resources.

3.1.1 Visual Character

Natural and artificial landscape features contribute to the visual character of an area or view. Visual character is influenced by geologic, hydrologic, botanical, wildlife, recreational, and urban features. Urban features include those associated with landscape settlements and development, including roads, utilities, structures, earthworks, and the results of other human activities. The perception of visual character could vary significantly seasonally, even hourly, as weather, light, shadow, and elements that compose the viewshed change. The basic components used to describe visual character for most visual assessments are the elements of form, line, color, and texture of the landscape features (U.S. Forest Service, 1995; FHWA, 1988). The appearance of the landscape is described in terms of the dominance of each of these components.

3.1.2 Visual Quality

Visual quality is evaluated using the well-established approach to visual analysis adopted by FHWA, which employs the following concepts (FHWA, 1988; Jones et al., 1975):

- Vividness is the visual power or memorability of landscape components as they combine in striking and distinctive visual patterns.
- Intactness is the visual integrity of the natural and human-built landscape and its freedom from encroaching elements; this factor can be present in well-kept urban and rural landscapes and in natural settings.
- Unity is the visual coherence and compositional harmony of the landscape considered as a whole; it frequently attests to the careful design of individual components in the landscape.

Visual quality is evaluated based on the relative degree of vividness, intactness, and unity, as modified by its visual sensitivity. High-quality views are highly vivid, relatively intact, and exhibit a high degree of visual unity. Low-quality views lack vividness, are not visually intact, and possess a low degree of visual unity.

3.1.3 Visual Exposure and Sensitivity

The measure of the quality of a view must be tempered by the overall sensitivity of the viewer. Viewer sensitivity or concern is based on the visibility of resources in the landscape, proximity of viewers to the visual resource, elevation of viewers relative to the visual resource, frequency and duration of views, number of viewers, and type and expectations of individuals and viewer groups.

The importance of a view is related in part to the position of the viewer to the resource; therefore, visibility and visual dominance of landscape elements depend on their placement within the viewshed. A viewshed is defined as all of the surface area visible from a particular location (e.g., an overlook) or sequence of locations (e.g., a roadway or trail) (FHWA, 1988).

To identify the importance of views of a resource, a viewshed must be broken into distance zones of foreground, middleground, and background. Generally, the closer a resource is to the viewer, the more dominant it is and the greater its importance to the viewer. Although distance zones in a viewshed may vary between different geographic regions or types of terrain, the standard foreground zone is 0.25 to 0.5 mile from the viewer, the middleground zone from the foreground zone to 3 to 5 miles from the viewer, and the background zone from the middleground to infinity (Jones et al., 1975).

Visual sensitivity depends on the number and type of viewers and the frequency and duration of views. Visual sensitivity is also modified by viewer activity, awareness, and visual expectations in relation to the number of viewers and viewing duration. For example, visual sensitivity is generally higher for views seen by people who are driving for pleasure; people engaging in recreational activities such as hiking, biking or camping; and homeowners. Sensitivity tends to be lower for views seen by people driving to and from work or as part of their work (U.S. Forest Service, 1995; FHWA, 1988; U.S. Soil Conservation Service, 1978). Commuters and non-recreational travelers generally have fleeting views and tend to focus on commute traffic, not on surrounding scenery; therefore, they are generally considered to have low visual sensitivity.

Residential viewers typically have extended viewing periods and are concerned about changes in the views from their homes; therefore, they are generally considered to have high visual sensitivity. Viewers using recreation trails and areas, scenic highways, and scenic overlooks are also typically assumed to have high visual sensitivity.

Judgments of visual quality and viewer response must be made based in a regional frame of reference (U.S. Soil Conservation Service, 1978). The same landform or visual resource appearing in different geographic areas could have a different degree of visual quality or sensitivity in each setting. For example, a small hill may be a significant visual element within a relatively flat landscape but have very little significance in mountainous terrain.

3.2 Existing Setting

The Program Area (see Figure 2-2) is located generally within the boundary of the City of San Mateo; the majority of aboveground Program facilities are proposed to occur within the WWTP Site. Figure 3-1 shows the aesthetic resources in the vicinity of the WWTP Site and Dale Avenue Pump Station. It also shows the location of Key Observation Points (KOP) used in this analysis. Figures 3-2 through 3-10 show existing views from those KOPs, which are referenced throughout this section. KOPs associated with views throughout the remainder of the Program Area were not identified because CWP facilities in these areas are expected to be located within existing pump station structures or underground.

3.2.1 Regional Setting

The City of San Mateo extends from San Francisco Bay to the foothills of the mountains that extend up and down the San Francisco Peninsula (see Figure 1-1). Although predominantly urbanized, with a balance of commercial and residential uses, public parklands, and undeveloped private lands dispersed throughout the City provide open space, wildlife habitat, recreational opportunities and, in some locations, relatively expansive views toward both the Bay and portions of the City. The low-elevation areas along the Bay shoreline are characterized visually by a variety of developments and uses adjacent to, and in some locations extending into, parklands and relatively undeveloped areas, some of which are public, others of which are privately owned. Commercial, industrial, office park, and multifamily uses in the east, near the western end of the San Mateo Bridge, yield to more single-family homes and neighborhood-scale commercial centers. The San Francisco Bay Trail (Bay Trail) extends along the entirety of the City's shoreline, as do large electrical transmission towers and roadways of varying service levels.

3.2.2 Existing Visual Character, Visual Quality, and Visual Sensitivity

The WWTP Site is located near the shoreline, east of the mouth of Marina Lagoon (see Figure 2-5). The WWTP Site consists of four primary properties, along with the immediately surrounding roadways (Detroit Drive and Joinville Park Road). The properties and their existing visual character are described as follows:

- The existing WWTP property. This parcel contains the existing WWTP facilities and is primarily industrial in appearance with numerous concrete and metal structures. The existing egg-shaped digesters, approximately 62 feet high, are the most visible structures. The property is surrounded by a concrete wall and vegetation consisting primarily of eucalyptus trees.
- The City-owned Detroit Drive site across from the existing WWTP. This undeveloped parcel consists primarily of non-native vegetation, a 0.14-acre emergent wetland in a low-lying area, and a former parking lot in the northwest section. The parcel contains deposits of excavated soils from City projects and various discarded items such as a sofa and pipeline sections.
- Three privately owned parcels (referred to as the Bayfront parcels) northeast of the existing WWTP. These parcels are paved and are currently being used by a trucking business, with multiple trucks and associated equipment present. A commercial-style building is located on the south end of the parcels.
- A City-owned Dale Avenue parcel west of the existing WWTP. This parcel is currently unused and consists primarily of non-native vegetation and deposits of excavated soils, bricks and rock from City projects.

J. Hart Clinton Drive and the Bay Trail separate the WWTP Site from the shoreline, which is on the northern side of the City in this particular portion of the Bay. Along the shoreline northwest of the WWTP Site is the City's Seal Point Park, which includes a dog park and an elevated viewpoint overlooking the Bay. Northeast of the WWTP Site is the Bay Marsh, Mariner's Point Golf Center, and the 3rd Avenue Kiteboarding Upper Launch Site. East of the WWTP Site are multifamily residential buildings along Marina Lagoon and Bayside/Joinville Park, which includes the John Lee Memorial Dog Park and Tidelands Park. The area south of the WWTP Site, beyond the Bayside STEM Academy and Bayside Performing Arts Center, is almost entirely

residential. Directly west of the WWTP Site is a storage facility, with primarily single-family residences to the west and south of the storage facility.

Dale Avenue Pump Station is located between the WWTP and US-101, in an area that consists primarily of single-family residences.

3.2.2.1 Views toward the WWTP Site and Dale Avenue Pump Station

The WWTP Site is visible from a number of locations. Views from KOPs (see Figure 3-1) described here demonstrate the existing visual character and quality associated with the WWTP Site and are representative of the range of viewer exposure and sensitivity. With the exception of KOP 8, all viewpoints are within 0.5 mile of the WWTP Site and are, therefore, considered foreground views. At just over 0.5 mile from the WWTP Site, KOP 8 provides a middleground view of the site. KOP 9 provides a view of the Dale Avenue Pump Station.

KOP 1—View from San Francisco Bay Trail adjacent to J. Hart Clinton Drive

KOP 1 is located along the Bay Trail just north of J. Hart Clinton Drive, and approximately 0.1 mile northeast of the existing WWTP. This location is approximately halfway across the slough and is intended to represent views of people using the Bay Trail and approximate views of westbound drivers along J. Hart Clinton Drive, an acknowledged gateway to San Mateo from Foster City and the western end of the San Mateo Bridge (see General Plan Urban Design policies described in Section 3.3.1). Figure 3-1 shows the location of KOP 1, and Figure 3-2 shows the existing view from this location.

The view from KOP 1 is a close-in view of the northern portion of the WWTP Site. The existing, approximately 62-foot-tall digesters are visible in the left portion of the view beyond J. Hart Clinton Drive, and the Detroit Drive parcel, proposed for development under all potential WWTP layouts, occupies the center and right portion of the view. The view of what lies beyond the roadway is characterized visually by the co-dominant presence of the digesters and the vegetation within the Detroit Drive property that partially obscure them. The vegetation, most of which is located along the southern side of J. Hart Clinton Drive, has a naturalistic presence in the view; it does not appear as part of any formal approach to landscaping. This results in the appearance of the existing WWTP being set amid a somewhat natural setting. The general outline of the larger trees and digesters, which are similar in scale, places a form in the foreground that relates to the distant mountain skyline visible from this location.

The visual quality of this view is moderate. Although the co-dominant vegetation contributes a moderately high degree of vividness, the view's integrity and visual coherence are moderately low; natural-appearing vegetation infringes visually on the industrial-appearing treatment tanks and both of these features infringe on the distant skyline. Overall visual sensitivity would be moderate, reflecting the relatively high sensitivity and view duration of viewers along the Bay Trail (who would have unobstructed views of both the WWTP Site and the Bay and would be more likely to favor the bay view) and the relatively low sensitivity and view duration of drivers along J. Hart Clinton Drive.

KOP 2—View from Bayside/Joinville Park

KOP 2 is located within a seating area approximately 0.2 mile east of the existing WWTP, along the public pedestrian and bicycle bridge in Bayside/Joinvile Park that links the eastern and western portions of the park. This location is intended to represent views of park users, which include pedestrians, cyclists, and those fishing the waters (a fish cleaning station is located at the western end of the bridge). This viewpoint also approximates the views of the residences accessed via Anchor Road just east of KOP 2. Figure 3-1 shows the location of KOP 2, and Figure 3-3 shows the existing view from this location.

The view from KOP 2 includes the northern portion of the existing WWTP, including the approximately 62-foot-tall digesters, the Bayfront parcels, and the Detroit Drive parcel. Marina Lagoon is the dominant feature of this view, which is characterized by the horizontal band of industrial and infrastructural development apparent in the mid-section of the view; the existing WWTP, trucks and structures on the Bayfront parcels and the Detroit Drive parcel, the J. Hart Clinton Drive bridge, and electrical transmission

towers appear in sequence across the entirety of the view, above the water in the immediate foreground and below the distant mountain skyline. Vegetation obscures or partially blocks some of these features but does not obfuscate the general nature of development.

The visual quality of this view is moderate. The delineation between the water/shoreline, the developed area, and the distant skyline provide a moderate degree of intactness; the view's natural features are particularly vivid. Because this view represents that of park users and approximates that of nearby residents, with both groups having high duration views of the WWTP Site, visual sensitivity is high.

KOP 3—View from Bayside/Joinville Park near Clipper Street

KOP 3 is located near a bench along a footpath in Bayside/Joinville Park, adjacent to the Marina Lagoon shoreline and a residential development approximately 0.1 mile southeast of the existing WWTP. This location is intended to represent and approximate views of recreational and residential viewers southeast of the WWTP Site. Figure 3-1 shows the location of KOP 3, and Figure 3-4 shows the existing view from this location.

The view from KOP 3 demonstrates the limited visibility of the existing WWTP from this general area. Mature trees obscure facilities in the left portion of the view, and the low, white building in the center of the view indicates the southern edge of the trucking facilities on the Bayfront parcels. This view is characterized visually by the number of the park's components that are identifiable and at times disparate in terms of form, line, color, and texture: the footpath, vegetation, benches and fence along the field's edge; the light poles; the vegetated grounds on the opposite side of the lagoon; and the fenced dog park visible to the east of the existing WWTP and in front of the trucking facility. Existing vegetation buffers these features from the development beyond: the barely discernible WWTP facilities in the left portion of the view beyond a chain-link fence, the trucking business facilities in the center of the view, and the electrical transmission towers in the right portion of the view.

The visual quality of this view is moderate, which reflects the duration of exposure and visual sensitivity of park users and nearby residents. Visible features indicate a formal park setting, but the individual components, in concert with the industrial and infrastructural uses apparent just beyond the park's boundaries, comprise an overall view with a moderately low degree of visual coherence and compositional harmony. This reflects the contrast evident in the view's visual character.

KOP 4 – View from Bayside/Joinville Park Picnic Area

KOP 4 is located at the edge of the picnic area northwest of the Bayside/Joinville Park ballfield (and north and east of the Bayside STEM Academy campus), approximately 0.05 mile south of the existing WWTP. This location is intended to represent views of recreational viewers southeast of the WWTP Site, particularly those with relatively static views toward the WWTP from the park's picnic area. Figure 3-1 shows the location of KOP 4, and Figure 3-5 shows the existing view from this location.

The view from KOP 4 demonstrates the limited visibility of the existing WWTP from the picnic area. Mature trees of varying sizes, in concert with the property fence above which they appear to extend, mostly screen the nearby WWTP facilities in this view; only portions of WWTP structures are visible. This view is characterized by the visual enclosure that the vegetation and topography afford the picnic site, which likely orients views in the opposite direction, shown in Figure 3-5, and toward the center of Bayside/Joinville Park. The trees contribute strong vertical elements to the view, along with a source of varying color and texture. They mostly obscure the WWTP tanks in the right side of the view, which are bright blue and are the view's other source of vivid color. The mound along the northern portion of the picnic area contributes a slight curvilinear component.

The visual quality of this view is moderate, which takes into account duration of exposure and visual sensitivity of park users. The trees along the picnic site's northern border screen enough of the WWTP so that, while structures are visible, their presence does not dominate the view. Furthermore, the vegetation appears as a distinct portion of the view, functioning as a discrete buffer between a recreational area and an

industrial facility. Because of this, there is a moderate degree of visual coherence and compositional harmony in this view from an area where visual sensitivity is high.

KOP 5—View from Residential Neighborhood West of Existing WWTP

KOP 5 is located along Dale Avenue, east of Shoreview Avenue, approximately 0.1 mile west of the existing WWTP. This location is intended to represent views from the residential neighborhood immediately west of the WWTP Site. Figure 3-1 shows the location of KOP 5, and Figure 3-6 shows the existing view from this location.

The existing WWTP is visible from within this residential neighborhood. The digesters are visible along the left portion of the view, beyond a house and the storage facility just west of the WWTP Site. Slight portions of the existing WWTP are visible beyond the Dale Avenue parcel in the right half of the view. Aside from a fence and gate indicating its northwest corner, the majority of the Dale Avenue parcel is blocked from view in this area by vegetation and houses along the east side of Shoreview Avenue. The view is characterized visually by the single-family residential scale of development in the immediate foreground and its noticeable, industrial-appearing backdrop.

The visual quality of this view is moderate. The vegetation contributes a somewhat natural-appearing vividness, and there is a clear delineation between the view's dominant visual feature, the single-family residences, and the existing uses visible beyond, further demarcated by the distribution tower and line extending across the view. This provides the view with a moderate degree of visual integrity, which is only slightly offset by the somewhat disharmony brought about by the visual proximity of the existing WWTP and adjacent parcel to a residential neighborhood, where visual sensitivity is high.

KOP 6—View from San Francisco Bay Trail within Seal Point Park

KOP 6 is located along the segment of the Bay Trail that passes through Seal Point Park, approximately 0.25 mile north of the existing WWTP. This viewpoint is located at a Bay overlook with a bench, adjacent to the Seal Point Dog Park. This location is intended to represent views toward the WWTP Site by people using the Bay Trail and approximate views from the eastern edge of the dog park. Figure 3-1 shows the location of KOP 6, and Figure 3-7 shows the existing view from this location.

Given its proximity to the WWTP Site, the view from KOP 6 maximizes the presence of the areas proposed for development to the north (Detroit Drive site) and east (Bayfront parcels) of the existing WWTP, which is visible in the right side of the view. The Bay and shoreline characterize this view in that they clearly mark the presence of relatively undeveloped land in the vicinity of the WWTP Site. However, the clear presence of the WWTP, only partially obscured by vegetation in this view, as well as the Bay Trail bridge adjacent to J. Hart Clinton Drive and the overhead transmission lines, reinforce the presence of industrial-appearing buildings and other infrastructure in the area. The view is characterized by the co-dominance of natural and built features.

The visual quality of this view is moderate. There is a moderately high degree of vividness provided by the Bay, shoreline vegetation and mature trees visible within or just north of the WWTP Site, and visual sensitivity is assumed to be high given the interest of park users and potentially high-duration views. However, the visual integrity of the view is compromised by the visible transmission lines and the overall view lacks compositional harmony because of the proximity of the existing WWTP.

KOP 7—View from Seal Point Park Overlook

KOP 7 affords an elevated, more expansive view from Seal Point Park. It is located at an overlook above the Bay Trail and dog park, approximately 0.3 mile north of the existing WWTP. The overlook is oriented toward the north, in an opposite direction from the WWTP Site. Visitors at the overlook would nonetheless have views toward the WWTP Site and vicinity. The inclusion of this view in this analysis allows for consideration of broader views toward the WWTP Site from within Seal Point Park. Figure 3-1 shows the location of KOP 7, and Figure 3-8 shows the existing view from this location.

This view is characterized by a confluence of uses. The park, including a trail leading downhill toward the dog park, is the lone feature visible in the immediate foreground. This area appears in front of the electrical transmission lines exiting the Bay and J. Hart Clinton Drive, which together comprise a strong linear element. Beyond this line, a variety of uses and forms is evident, from the storage facility just west of the WWTP Site to the WWTP itself, the more distant office buildings, and the distant mountain skyline.

Despite the relative expansiveness of this view, its quality is moderately low. The Bay and distant skyline are the view's most vivid natural features, and both appear encroached upon by the transmission towers and electrical conductors from this vantage point. There is little intactness to the view due to the varying lines and forms described above. Subsequently, there is a low degree of visual coherence.

KOP 8—View from San Francisco Bay Trail at Mariner's Point

KOP 8 is located along the Bay Trail at Mariner's Point, adjacent to Mariner's Point Golf Center, approximately 0.6 mile from the WWTP. This location is intended to represent or approximate middle-ground views of recreationists, including users of the Bay Trail, golfers, and people at the Bay (kiteboarding is active in this area) toward the WWTP Site. Figure 3-1 shows the location of KOP 8, and Figure 3-9 shows the existing view from this location.

The view from KOP 8 is characterized visually by the separation of developed area and mostly undeveloped area. A band of linear features (roads, associated infrastructure, and transmission facilities) extends across the view, separating the Bay Marsh visible in the foreground from the development that is evident, but difficult to discern, beyond the WWTP Site. The dominant presence of the wetlands in the foreground underscores the fact that the project area is within a larger shoreline area. The existing WWTP is visible in the left-center of the view, beyond and to the left of the eastern-most transmission towers.

The visual quality of this view is moderate. Despite the natural setting of the immediate foreground, the Bay Marsh presents a moderate degree of vividness, and the entire mountain skyline is encroached upon by the transmission corridor that runs along the shore. Despite that, the concentration of visible development within the view's middle-ground provides a moderately high degree of visual integrity. Visual sensitivity at this location is high because of presumed viewers' recreational activities.

KOP 9—Views toward the Dale Avenue Pump Station

KOP 9 is located at the Dale Avenue Pump Station gate off of South Norfolk Street and shows current conditions at the pump station, which exists within a residential neighborhood. The site is not publicly accessible but is visible from sidewalks and streets on both ends of the site. Structures appear at a scale consistent with surrounding residences. Setbacks and landscaping screen the majority of the facility in views from surrounding streets. This viewpoint is included to serve as a baseline for the portions of this chapter's programmatic impact analysis that evaluates a new or expanded Dale Avenue Pump Station and potential other expanded or new pump stations in the Program Area. Figure 3-1 shows the location of KOP 9, and Figure 3-10 shows the existing view from this location.

3.3 Regulatory Framework

This section lists laws, ordinances, and regulations regarding aesthetics and visual resources that are directly applicable to the CWP and project(s). All such regulations are based on local guidelines; there are no applicable federal regulations regarding aesthetics or visual resources, and there are no officially designated state scenic highways or county-designated scenic routes in the vicinity of the project area.

Applicable local regulations include relevant sections of the General Plan (City of San Mateo, 2010), the *Shoreline Park Specific Plan* (City of San Mateo, 1971; revised in 1970 and 1990), and the *San Mateo City Charter and Municipal Code*, including the Zoning Ordinance (City of San Mateo, 2015).

3.3.1 General Plan – Policies and Guidance

Policies and guidance related to aesthetics and visual resources are found in the following sections of the General Plan:

- Section II, Land Use
- Section V, Urban Design
- Section VI, Conservation, Open Space, Parks and Recreation

These policies and guidance are discussed in the following sections.

3.3.1.1 General Plan – Section II, Land Use

Applicable land use (LU) and Shoreview Area-specific (PA) policies are cited below as they appear in the General Plan (City of San Mateo, 2010).

> **Policy LU 1.5: Building Height.** Maintain maximum building height limits contained in Appendix C [of the General Plan], and as specified in Policy LU 6A.2, closely matched with the Land Use categories and Building Intensity standards.
>
> Requests for height changes consistent with the height ranges for specific land uses as designated in Appendix C [of the General Plan], entitled "Building Height", may be considered by the City Council only when accompanied by a request for change in land use designation. Such requests may be approved only if the following findings are made:
>
> - The building has high design quality, which is enhanced by additional building height.
> - Increased building heights are visually related to surrounding building heights and promote the creation of a coherent City image.
> - Increased building heights will still provide for a variety of building heights in the vicinity of the project and the surrounding areas.
> - Increased building heights are compatible with surrounding land uses, and will not create adverse shadow or visual impacts on surrounding residential uses.
> - The City's infrastructure is adequate to accommodate the proposed development.
>
> Maximum height limits are intended to permit development which will not overburden the City's infrastructure or circulation system, which is consistent with the plan's intensity/density standards and is compatible with surrounding land uses, and which will preserve, to the extent feasible, the City's existing character. Height limits range from 25 feet to 90 feet and are contained in Appendices B and C.
>
> **Policy LU 4.5: Wastewater Treatment Plant Expansion.** Provide adequate wastewater treatment for the projected 2030 service area population, employment and development. Require that any future expansion of the Waste Water Treatment Plant (WWTP) be designed to be compatible with the adjacent parks, school, and low-density residential areas by screening views of the WWTP with extensive and tall landscaping and reducing the height of all new structures to the maximum practicably feasible. Any future expansion of the WWTP shall take into account the possible rise in sea level.
>
> **PA 4.6: J. Hart Clinton Drive/Detroit Drive Vicinity.**
>
> 1. Development of private parcels having frontage on Marina Lagoon should retain public access, providing a connection between Shoreline Park and Bayside/Joinville Park.
> 2. Properties bounded by Detroit Drive should be developed with low-scale, low occupancy commercial uses as delineated on the Building Height and Intensity Plans. The *Shoreline Park Specific Plan* allows mini-warehouse or light industry with ancillary offices and precludes hotel

and restaurant uses. Building design should be of high quality, reflective of the prominence of the site from J. Hart Clinton Drive and the future development of Shoreline Park.

Land adjacent to Detroit Drive is highly visible from J. Hart Clinton Drive, Shoreline Park and Marina Lagoon. To be compatible with the surrounding areas, development will be required to be sensitively designed with ample landscaping to enhance the project appearance from J. Hart Clinton Drive, and limited to low occupancy uses due to the adjacent sewage treatment plant.

PA 4.7: Wastewater Treatment Plant. Maintain the WWTP as designated in Policy LU 4.5.

In addition, Building Height Plan Figure LU-4 identifies current height limits for parcels within the WWTP Site. Height limits are 65 feet for the existing WWTP parcel, 45 feet for the Bayfront and Detroit Drive parcels, 32 feet for the Dale Avenue parcel, and 24 feet at the Dale Avenue Pump Station.

3.3.1.2 General Plan – Section V, Urban Design

Urban design refers to the physical form and development of a city from the individual neighborhood to the overall cityscape. The Urban Design Element includes goals and policies related to the physical elements that make up the City and its natural setting and that make up the City's visual qualities. This element also provides a link to the *Shoreline Park Specific Plan* (City of San Mateo, 1979) and identifies a segment of J. Hart Clinton Drive near the WWTP Site as a City "gateway." Applicable policies are cited below as they appear in the General Plan:

UD 1.2: Preservation of Natural Focal Points. Preserve and enhance views of and access to the foothills and the Bay through the design of new development consistent with the *Shoreline Park Specific Plan*.

By featuring the natural amenities of the foothills and Bay, San Mateo's identity can be strengthened. Where possible development should orient views and access to take advantage of these natural features.

UD 1.3: Gateways. Develop gateways by creating strong architectural or landscape features exhibiting the character of San Mateo at the following locations: entrances to the Downtown, the north and south ends of El Camino Real (State Route 92), US-101 and 3rd Avenue, US-101 and Hillsdale Boulevard, and Mariner's Island Boulevard and J. Hart Clinton Drive at the border of Foster City.

By developing gateway features, the entries to the City will be identified. Gateways may be constructed in a variety of ways: a prominent landscape or architectural feature, a notable open area or possibly an arch to pass through. All gateways should have some common element or feature to give San Mateo a unique and consistent image.

3.3.1.3 General Plan – Section VI, Conservation, Open Space, Parks and Recreation

The Conservation, Open Space, and Parks and Recreation (C/OS) Element sets forth the City's goals and policies regarding the development, management, and preservation of natural, cultural, and recreational resources within the City. The C/OS Element identifies Marina Lagoon, the Bay shoreline, and the City's creeks and channels as areas of scenic and cultural value. The segment of the Bay Trail that passes along San Mateo's shoreline is identified as a scenic pedestrian trail. Although there are no state- or county-designated scenic highways or roads within the WWTP Site, J. Hart Clinton Drive is identified in the C/OS Element as similar to other county-designated scenic roads in the City, because it offers "views of creeks, hillsides, the Bay, and San Francisco and East Bay skylines among other sights. Visual liabilities include inconsistent vegetation and poorly screened development" (City of San Mateo, 2010). Within the Program Area, Alameda de las Pulgas, Crystal Springs Road, Polhemus Road, and SR- 92 are county-designated scenic roadways. No officially designated s scenic highways are located within San Mateo.

Applicable C/OS policies are cited below as they appear in the General Plan.

> **C/OS 2.1: Aesthetic and Habitat Values: Public Creeks.** Preserve and enhance the aesthetic and habitat values of San Mateo, Laurel, and Beresford creeks and other City-owned channels in all activities affecting these creeks.
>
> **C/OS 2.2: Aesthetic and Habitat Values: Private Creeks.** Preserve and enhance the aesthetic and habitat values of privately-owned sections of all other creeks and channels, as shown in Figure C/OS-2, whenever cost-effective or whenever these values outweigh economic considerations.
>
> San Mateo, Laurel, and Beresford creeks have been identified as having significant natural values. Policy 2.1 directs that aesthetic and habitat considerations be a part of all activities affecting these creeks; revegetation, erosion control, and adequate setbacks are among the possible actions. Further, while other City-owned channels have not been considered as providing much scenic or wildlife opportunities, significant potential exists; Policy 2.1 directs that these values be a part of channel management. Other creeks that cross through private property are worthy of protection and enhancement; implementation of such measures is promoted by Policy 2.2 with consideration of cost in the development process.
>
> **C/OS 9.1: Development Requirements.** Require new developments to protect and enhance the character of scenic roadways and trails designated on Figure C/OS-4, including but not limited to treatment of signs and screening, land uses, and preservation of view corridors.
>
> New development or redevelopment on parcels adjacent to scenic roadways or trails is an opportunity for design which protects the existing scenic qualities of the roadway or improves on those qualities. Policy 9.1 directs that developments avoid or mitigate adverse visual impacts which might be created particularly by grading, signage, and heights above the ridgeline.

3.3.2 The Shoreline Park Specific Plan

The *Shoreline Park Specific Plan* (City of San Mateo, 1979) provides a conceptual guide for the future of the City's shoreline. The WWTP Site is located within the plan's Area 3: Seal Cove. Allowed land uses in the *Shoreline Park Specific Plan* are discussed in Chapter 11.

3.3.3 City of San Mateo Zoning Ordinance

The Zoning Ordinance (Title 27 in the *City of San Mateo City Charter and Municipal Code* [Municipal Code] [City of San Mateo, 2015]), provides standards for the physical development of the City. Section 27.08.030 of the Zoning Ordinance establishes the City's SPAR process. The SPAR process is required for, among other development, any building; new parking lot; fence greater than 6 feet high; or an extension, alteration, or addition of or to an existing building or parking lot. In making its review, the Zoning Administrator, Development Review Board, and Planning Commission are guided by the standards adopted by the Planning Commission and City Council.

As specified in the Zoning Ordinance, the application shall be approved if the Zoning Administrator or Commission finds all of the following to exist:

1. The structures, site plan, and landscaping are in scale and harmonious with the character of the neighborhood;
2. The development will not be detrimental to the harmonious and orderly growth of the City;
3. The development will not impair the desirability of investment or occupation in the vicinity, and otherwise is in the best interests of the public health, safety, or welfare;

4. The development meets all applicable standards as adopted by the Planning Commission and City Council, conforms with the General Plan, and will correct any violations of the Zoning Ordinance, building code, or other municipal codes that exist on the site;
5. The development will not adversely affect matters regarding police protection, crime prevention, and security.

All buildings, structures, landscaping, and other establishments shall be constructed in accordance with the approved drawings. The City Council shall review and make the final determination on all buildings exceeding 55 feet in height or where required by express General Plan provisions.

Chapter 27.59 of the Zoning Ordinance describes requirements for and restrictions on land use and development in the Shoreline District, which encompasses the Shoreline Park Specific Plan area. The Shoreline Zoning District is further described in Chapter 11.

Chapter 27.74 of the Zoning Ordinance describes the requirements for special use permits. The zoning code identifies permitted uses for each land use type in the City. In addition, the Zoning Ordinance recognizes that other uses may be necessary or desirable in a given district and may influence neighboring uses or public facilities. For the protection of the community, these uses need to be carefully regulated with respect to location or operation. Such uses are classified as "special uses." Chapter 11 includes additional information about permitted uses and uses allowed under special use permits.

Chapter 27.06 of the Zoning Ordinance notes that "[e]very project which is fully or partially funded by the City and which is subject to Planning Commission review under 27.06.040" requires final approval by the City Council (city of San Mateo, 2015). These approvals include special use permits, SPAR, and Site Development Permits.

3.3.4 City of San Mateo Development Permit

Chapter 23.40 of the Municipal Code was adopted in part to preserve the natural scenic character of the City and maximize visually pleasant relationships with adjacent sites during development activities, including grading and removal of major vegetation. Based on the quantity of gradint, a site development permit is required for site development on private property and may also be used for review of public projects that require a planning application and public review. A permit would include requirements such as slope setback.

3.4 Assessment Methods and Thresholds of Significance

Based on existing conditions within the Program Area and WWTP Site, and on proposed activities summarized in this chapter and detailed in Chapter 2, potential impacts on aesthetic and visual resources were identified and compared to CEQA criteria for thresholds of significance. These criteria state that impacts on aesthetic resources may occur if the CWP would result in the following:

- A substantial adverse effect on a scenic vista
- Substantially damage scenic resources, including but not limited to trees, rock outcroppings, and historical buildings within a state scenic highway
- Substantially degrade the existing visual character or quality of the site and its surroundings
- Create a new source of substantial light or glare

Potential impacts and corresponding mitigation measures developed to reduce any identified impacts are identified in the following sections.

3.5 Environmental Impacts

Potential impacts are evaluated for each of the two Program alternatives (In-System Storage Program and Full Conveyance Program) and two projects evaluated at a project level of detail (New Headworks Project

and Primary Clarifier Project). As previously discussed, the analysis of environmental impacts is primarily concerned with the introduction of permanent, potentially visible features into the existing environment.

The analysis is based on the assumptions that none of the proposed WWTP projects would be taller than the tallest structures within the existing WWTP (the digesters are 62 feet tall) and that all new development would adhere to height limits that apply to various locations. Similarly, no new or expanded aboveground pump station structures would be taller than structures at the existing Dale Avenue Pump Station (see Figure 3-10).

Table 3-1 summarizes the impacts identified and their impact after mitigation, where applicable.

TABLE 3-1
Summary of Aesthetics Impacts
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Impact	In-System Storage Program	Full Conveyance Program	New Headworks Project	Primary Clarifier Project
Impact 3-1 The CWP would have a potentially substantial adverse effect on a scenic vista	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation
Impact 3-2. The CWP would not damage scenic resources within a state scenic highway.	No impact	No impact	No impact	No impact
Impact 3-3. The CWP would have the potential to substantially degrade the existing visual character or quality of the site and its surroundings.	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation
Impact 3-4. The CWP would have the potential to create a new source of substantial light or glare.	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation

Impact 3-1. The CWP would have a potentially substantial adverse effect on a scenic vista.

In-System Storage Program

The In-System Storage Program would include modification of existing and construction of new WWTP facilities at the WWTP Site, as described in Chapter 2. New aboveground facilities described in Sections 2.2.2.1 through 2.2.2.3 may include a headworks, primary clarifier, secondary treatment tanks, tertiary filtration facilities, pump and mechanical buildings, chemical storage buildings, odor control equipment, and administrative offices. These facilities would be constructed within the WWTP Site, likely on the Detroit Drive parcel. Modification of existing facilities includes repair and rehabilitation of equipment such as pumps and blowers, as described in Section 2.2.2.4. Most of these projects would be completed inside existing structures. In addition, existing facilities such as primary and secondary clarifiers no longer required following construction of new facilities may be demolished and removed to provide room for other new structures. Some existing facilities may be re-purposed for other uses, such as converting the existing aeration basins to equalization storage.

There are no officially designated scenic vistas toward the WWTP Site. However, there are viewpoint locations that provide expansive, relatively long-distance (vista) views, within which the WWTP Site is visible. The views from KOP 2, KOP 7 and KOP 8 represent such views, and the WWTP Site is visible to varying degrees in each. These KOPs are discussed individually below.

KOP 2

KOP 2 provides a vista from Bayside/Joinville Park within which the WWTP Site is visible. In-System Storage Program alterations and additions at or adjacent to the existing WWTP would be apparent in this vista. Because the In-System Storage Program could include any number of industrial-appearing structures similar to existing WWTP structures, none of which would be taller than the tallest existing WWTP structure, the change in view from KOP 2 would not be substantially adverse. New structures could partially encroach on views toward segments of the distant skyline. This would reduce the integrity of the existing view but not substantially so; views of Marina Lagoon would remain unobstructed.

KOP 7

KOP 7 provides a vista from the Seal Point Park overlook, within which the WWTP Site is visible. In-system storage alterations and additions at or adjacent to the existing WWTP would be apparent in this vista. In addition, General Plan Policy UD 1.2 directs the preservation and enhancement of views of and access to the foothills and the Bay through the design of new development consistent with the *Shoreline Park Specific Plan* (City of San Mateo, 1979). However, because of the elevated viewing location, any construction of new or modified WWTP facilities would be visually absorbed into the surrounding built environment. In addition, new or modified facilities constructed as part of the In-System Storage Program would be industrial-appearing structures similar to existing WWTP structures, none of which would be taller than the tallest existing WWTP structure. The change in view from KOP 7 would not be substantially adverse.

KOP 8

KOP 8 provides a vista from the Bay Trail along Mariner's Point within which the WWTP Site is visible. In-System Storage Program alterations and additions at or adjacent to the existing WWTP would be apparent in this vista. In addition, General Plan Policy UD 1.2 directs the preservation and enhancement of views of and access to the foothills and the Bay through the design of new development consistent with the *Shoreline Park Specific Plan* (City of San Mateo, 1979). The Conservation, Open Space, and Parks and Recreation chapter of the General Plan identifies the Bay Trail as a scenic pedestrian trail. However, because of the distance, any construction of new or modified WWTP facilities would be visually absorbed into the surrounding built environment. In addition, new or modified facilities constructed as part of the Full Conveyance Program would be industrial-appearing structures similar to existing WWTP structures, none of which would be taller than the tallest existing WWTP structure. The change in view from KOP 8 would not be substantially adverse. Although effects of the In-System Storage Program on scenic vistas would be expected to be less than significant, implementation of **Mitigation Measure 3-1 Obtain design review approval** would further reduce impacts on scenic vistas in the proximity of the WWTP Site. **Mitigation Measure 3-1** includes landscaping that partially screens the new facilities and design of new facilities that is consistent with City policies and objectives for this type of use within the shoreline area.

With implementation of **Mitigation Measure 3-1**, impacts on scenic vistas resulting from the In-System Storage Program would be less than significant.

Full Conveyance Program

The Full Conveyance Program would include modification of existing and construction of new WWTP facilities at the WWTP Site, as described for the In-System Storage Program. The Full Conveyance Program alternative would include the same or similar WWTP facilities as the In-System Storage Program alternative, with potential minor differences in the size or location within the WWTP Site. The views from KOP 2, KOP 7, and KOP 8 represent expansive, relatively long-distance (vista) views of the WWTP Site for the Full Conveyance Program. The effect of the Full Conveyance Program on scenic vistas would, therefore, appear very similar to the effects described for KOP 2, KOP 7, and KOP 8 under the In-System Storage Program alternative.

Although effects of the Full Conveyance Program on scenic vistas would be expected to be less than significant, implementation of **Mitigation Measure 3-1 Obtain design review approval** would further reduce

impacts on scenic vistas in the proximity of the WWTP Site. **Mitigation Measure 3.1** includes landscaping that partially screens the new facilities and design of new facilities that is consistent with City policies and objectives for this type of use within the shoreline area.

With implementation of **Mitigation Measure 3-1**, impacts on scenic vistas resulting from the Full Conveyance Program would be less than significant.

New Headworks Project and Primary Clarifier Project

The New Headworks Project and Primary Clarifier Project would be located on the WWTP Site. These projects are described in Section 2.2.2.2. The new headworks would consist of a structure to house screening, grit removal, flow measurement, screenings compaction and handling, and flow splitter structure to divert flows to the next step of treatment. The new headworks could be partially or completely enclosed. It may be a two-story facility, with the treatment and flow splitting functions located on the top level, and the screening and grit management units on the lower level. The primary clarifier would include construction of new primary sedimentation tanks and associated equipment. The primary clarifiers may be similar in construction to the existing primary clarifiers (see Figure 2-11) and could have a rectangular or circular footprint. The primary clarifiers would be covered.

Both projects would be included in the Full Conveyance Program and the In-System Storage Program. The views from KOP 2, KOP 7, and KOP 8 represent expansive, relatively long-distance (vista) views of the New Headworks Project and Primary Clarifier Project. The effects of these projects on scenic vistas would, therefore, appear very similar to the effects previously described for KOP 2, KOP 7, and KOP 8 under the In-System Storage Program alternative, but would represent only a portion of the effects on scenic vistas that would be associated with either Program alternative. Structures associated with the New Headworks Project and Primary Clarifier Project would similarly appear absorbed into their industrial-appearing surroundings in vista views from the surrounding area.

Although effects of the New Headworks Project and Primary Clarifier Project on scenic vistas would be expected to be less than significant, implementation of **Mitigation Measure 3-1 Obtain design review approval** would further reduce any impacts on scenic vistas in the proximity of the WWTP Site.

With implementation of **Mitigation Measure 3-1**, impacts on scenic vistas resulting from the New Headworks Project and Primary Clarifier Project would be less than significant.

Impact 3-2. The CWP would potentially damage scenic resources within a state scenic highway.

The impact analysis below considers effects on scenic resources within state scenic highways as well as county-designated scenic roadways. While not officially designated as a scenic roadway, J. Hart Clinton Drive is identified in the Conservation, Open Space and Parks and Recreation chapter of the General Plan as being similar to other county-designated scenic roads in the City, because it offers views of creeks, hillsides, the Bay, and San Francisco and East Bay skylines. Furthermore, both General Plan Policy PA 4.6 and the *Shoreline Park Specific Plan* (City of San Mateo, 1979) identify J. Hart Clinton Drive as a scenic, if undesignated, route within the City, and a segment of the road near the project area functions as a gateway to the City. Effects on views from J. Hart Clinton Drive are addressed in the analysis related to Impact 3-3, which assesses potential impacts on existing visual character and quality.

In-System Storage Program

There are no officially designated state scenic highways in the City of San Mateo. In addition, although county-designated roads have been identified within the Program Area, these roadways are generally located in the western half of the Program Area; the WWTP Site and the aboveground structures would not be visible from these roadways. The only projects to be implemented within the vicinity of county-designated scenic roadways as part of the In-System Storage Program are new or replacement pipeline projects. No new permanent aboveground structures would be constructed within view of county-designated scenic roadways.

Therefore, no impacts on state scenic highways or county-designated scenic roadways would occur from implementation of the In-System Storage Program. No mitigation is required.

Full Conveyance Program

There are no officially designated state scenic highways in San Mateo. In addition, although county-designated roads have been identified within the Program Area, they are generally located in the western half of the Program Area; the WWTP Site and the aboveground structures would not be visible from these roadways. The only projects to be implemented within the vicinity of county-designated scenic roadways as part of the Full Conveyance Program are new or replacement pipeline projects. No new permanent aboveground structures would be constructed within view of county-designated scenic roadways.

Therefore, no impacts on state scenic highways or county-designated scenic roadways would occur from implementation of the Full Conveyance Program. No mitigation is required.

New Headworks Project and Primary Clarifier Project

There are no officially designated state scenic highways in San Mateo. In addition, although county-designated roads have been identified within the Program Area, they are generally located in the western half of the Program Area; the WWTP Site, where the New Headworks Project and Primary Clarifier Project would be located, would not be visible from these roadways.

Therefore, no impacts on state scenic highways or county-designated scenic roadways would occur from implementation of the New Headworks Project and Primary Clarifier Project. No mitigation is required.

Impact 3-3. The CWP would have the potential to substantially degrade the existing visual character or quality of the site and its surroundings.

In-System Storage Program

Nearly all aboveground permanent structures that would be constructed as part of the In-System Storage Program would be located at the WWTP Site. The only permanent aboveground structures that would be expected to be constructed outside the WWTP Site are minor appurtenances such as access hatches and vents associated with in-system equalization basins and pump station modifications. As discussed previously, views toward the WWTP Site are characterized by the industrial appearance of the existing WWTP, which is partially to completely obscured by vegetation on adjacent properties. General Plan Policy LU 4.5, General Plan Policy LU 4.5, the *Shoreline Park Specific Plan* (City of San Mateo, 1979), and the Zoning Ordinance collectively require screening of views of the WWTP Site with extensive and tall landscaping, minimum feasible heights of new structures, sensitively designed and landscaped new buildings if visible from J. Hart Clinton Drive, and architectural review through the City's SPAR process.

In broader and more distant views toward the WWTP Site, the WWTP appears to be mostly in an area of development that is visible alongside several other uses including linear infrastructure (roads and a substantial transmission line corridor), residential development, parks, and natural-appearing shoreline features. Views toward the WWTP Site are generally of moderate visual quality. The construction of WWTP facilities as part of the In-System Storage Program would increase the presence of the WWTP in these views, intensifying the industrial character of views and potentially somewhat degrading the visual quality of the site.

This effect would be more pronounced from the closer KOPs where views toward the WWTP Site and potential expansion sites are at least partially unobstructed. Effects on visual character in specific KOPs are described below.

KOP 1

In the view from KOP 1, up to the entire area visible in front of and to the right of the existing WWTP could be occupied by new facilities that could firmly establish the visual character in the view as industrial in appearance. Visibility of a substantial portion of the distant mountain skyline could be partially to

completely obstructed by the new structures, which would expand the WWTP footprint into the Detroit Drive Parcel, which is more proximate to KOP 1 than the existing facilities. Visual quality would be somewhat reduced as a result of this expansion and increased visibility of WWTP facilities, primarily because the proportion of natural features in the close-in views would decrease compared with the presence of built facilities.

KOP 2

In the view from KOP 2, some or all of the area between the existing WWTP in the left edge of the view and the J. Hart Clinton Drive bridge over Marina Lagoon in the right edge of the view would be occupied by new structures. The visual character in the view could be firmly established as industrial in appearance. The distant mountain skyline, already partially blocked by existing vegetation, would likely be completely obscured when the complete In-System Storage Program is constructed.

KOP 3 and KOP 4

The views from KOP 3 and KOP 4 demonstrate the degree to which views of proposed changes to the WWTP Site would be limited from points south of the existing WWTP, including Bayside/Joinville Park, Bayside STEM Academy, and Bayside Performing Arts Center. Mature trees and existing structures block most views toward the WWTP Site. In the view from KOP 3, the southern edge of the Bayfront parcels is visible, and structures placed in this area as part of the In-System Storage Program would be visible but would be similar to the existing visual character and quality of the view. In the view from KOP 4, WWTP buildings within its southern edge are mostly screened by mature trees of varying size and color. With the In-System Storage Program, most new structures would be constructed on Detroit Drive parcel north of the existing WWTP and may not be visible from KOP 3 or KOP 4.

KOP 5

No permanent aboveground structures, other than minor appurtenances such as trails or access to underground storage basins, would be constructed on the Dale Avenue parcel. New facilities constructed on the existing WWTP parcel could be visible above the tree line. However, most facilities would be lower in height than the existing digesters (62 feet) and visible to the left of this KOP. New facilities on the Detroit Drive or Bayfront parcels are unlikely to be visible from KOP 5.

KOP 6

In the view from KOP 6, the area visible in front of and to the left of the existing WWTP, extending to the area near the west end of the J. Hart Clinton Drive bridge over Marina Lagoon, would appear partially or completely occupied by new structures. The In-System Storage Program could firmly establish the visual character in the view as industrial in appearance. Visual quality would be somewhat reduced, primarily because the proportion of natural features in the close-in views would decrease compared with the presence of built facilities.

KOP 7

In this more distant view from Seal Point Park, the visual character is defined more by the foreground presence of natural open space or park lands, beyond which the WWTP Site is visible. The WWTP Site would be visible from this location, assuming existing vegetation would not impede views. Given the broader context, the transmission corridor and mountain backdrop, and the development of varying scales visible throughout San Mateo and Foster City, the construction or modification of new WWTP facilities would be noticeable but would only reiterate the existing visual character within the WWTP Site. The existing visual quality from KOP 7 ranges from moderately low to moderate. New WWTP facilities would be limited to the area immediately in front of the currently visible WWTP structure and would not substantially affect the quality of the view beyond increasing the presence of the WWTP among the relatively wide range of structures visible.

KOP 8

In this more distant view from Mariner's Point, the visual character is defined more by the foreground presence of natural open space or park lands, beyond which the WWTP Site is visible. The WWTP Site would be visible from this location, assuming existing vegetation would not impede views. Given the broader context, the transmission corridor and mountain backdrop, and the Bay marsh and prominent linear presence of J. Hart Clinton Drive, the construction or modification of new WWTP facilities would be noticeable but would only reiterate the existing visual character within the WWTP Site. The existing visual quality from KOP 8 ranges from moderately low to moderate, and the degree to which the WWTP facilities would expand would not substantially affect the quality of the view beyond increasing the presence of the WWTP among the relatively wide range of structures visible.

KOP 9

New aboveground structures, if any, that could be constructed as part of pump station projects for the In-System Storage Program would be similar in appearance to and no larger than the existing structures at the Dale Avenue Pump Station and would not be expected to affect local visual character.

Implementation of **Mitigation Measure 3-1 Obtain design review approval, Mitigation Measure 3-3a Design lighting to minimize impacts on adjacent areas,** and **Mitigation Measure 3-3b Provide glare-reducing structure surface painting and treatment** would reduce the potential impact of the In-System Storage Program on visual character and quality at the WWTP Site to less-than-significant levels. The mitigation measure would provide at least partial screening by landscaping, consistent with current screening of the WWTP, and context-appropriate design of any new facilities.

With implementation of **Mitigation Measure 3-1**, **Mitigation Measure 3-3a**, and **Mitigation Measure 3-3b**, impacts on visual character or quality resulting from the In-System Storage Program would be less than significant.

Full Conveyance Program

KOP 1 through KOP 8

The Full Conveyance Program would include modification of existing and construction of new WWTP facilities at the WWTP Site as described in Chapter 2. The Full Conveyance Program alternative would include the same or similar WWTP facilities as the In-System Storage Program alternative, with potential minor differences in the size or location within the WWTP Site. For example, the new headworks for the Full Conveyance Program may require up to approximately 25 percent more capacity, resulting in a structure with up to an approximately 10 percent larger footprint compared to the In-System Storage Program. A similar difference could occur with the new primary clarifier. Depending on the size of the facilities for the Full Conveyance Program and the location of its additional equalization storage within the WWTP Site, the WWTP with the Full Conveyance Program could have a different layout than the In-System Storage Program.

The effect of the Full Conveyance Program on visual character and quality would, therefore, appear very similar to the effects previously described for KOP 1 through KOP 8 for the In-System Storage Program alternative. In particular, for KOP 1, KOP 2, and KOP 6, the Full Conveyance Program could firmly establish the visual character in the views as industrial in appearance. Visual quality would be somewhat reduced, primarily because the proportion of natural features in the close-in views would decrease compared with the presence of built facilities.

KOP 9

The Full Conveyance Program would include a new pump station at the Dale Avenue Pump Station site, visible in KOP 9. The new pump station would include aboveground structures similar in sized an appearance to those currently visible on the pump station site. Development at the Dale Avenue Pump Station of this scope and scale would have a less-than-significant effect on existing visual character and quality of the site. Likewise, new aboveground structures, if any, that could be constructed as part of other pump station

projects in the Program Area would be similar in appearance to and no larger than the existing structures at the Dale Avenue Pump Station and would not be expected to affect local visual character.

Implementation of **Mitigation Measure 3-1 Obtain design review approval, Mitigation Measure 3-3a Design lighting to minimize impacts on adjacent areas,** and **Mitigation Measure 3-3b Provide glare-reducing structure surface painting and treatment** would reduce the potential impact of the Full Conveyance Program on visual character and quality at the WWTP Site to less-than-significant levels. The mitigation measure would provide at least partial screening by landscaping, consistent with current screening of the WWTP, and context-appropriate design of any new facilities.

With implementation of **Mitigation Measure 3-1, Mitigation Measure 3-3a**, and **Mitigation Measure 3-3b**, impacts on visual character or quality resulting from the Full Conveyance Program would be less than significant.

New Headworks Project and Primary Clarifier Project

KOP 1 through KOP 8

The New Headworks Project and Primary Clarifier Project would be constructed in the WWTP Site, likely on the Detroit Drive parcel. These facilities would be expected to be lower in height than the highest structures currently on the WWTP Site (62 feet). Because these projects would be constructed as part of either the In-System Storage Program or the Full Conveyance Program, they would contribute to the change in visual character previously described for both Program alternatives but to a lesser degree than full CWP buildout. Construction of the New Headworks Project and the Primary Clarifier Project would further establish the visual character in views as industrial in appearance. Visual quality would be somewhat reduced, primarily because the proportion of natural features in the close-in views would decrease compared with the presence of built facilities. These changes would be most noticeable in KOP 1 and KOP 6, where the projects would likely be constructed between the viewer and the existing digesters visible in both views. The New Headworks Project and Primary Clarifier Project would not be expected to be visible from KOP 3 or KOP 4.

KOP 9

The New Headworks Project and Primary Clarifier Project do not include any construction or alteration at the Dale Avenue Pump Station site. Neither project would change the visual character at this location.

The New Headworks Project and Primary Clarifier Project would be subject to the design standards applied to either Program alternative. Therefore, **Mitigation Measure 3-1 Obtain design review approval, Mitigation Measure 3-3a Design lighting to minimize impacts on adjacent areas,** and **Mitigation Measure 3-3b Provide glare-reducing structure surface painting and treatment** would be implemented for the New Headworks Project and Primary Clarifier Project and would reduce the potential impact of these projects on visual character and quality at the WWTP Site to less-than-significant levels. The mitigation measure would provide at least partial screening by landscaping, consistent with current screening of the WWTP, and context-appropriate design of any new facilities.

With implementation of **Mitigation Measure 3-1, Mitigation Measure 3-3a**, and **Mitigation Measure 3-3b**, impacts on visual character or quality resulting from the New Headworks Project and Primary Clarifier Project would be less than significant.

Impact 3-4. The CWP would have the potential to create a new source of substantial light or glare.

In-System Storage Program

Construction of the In-System Storage Program may on occasion require nighttime work at the WWTP Site to accommodate necessary partial shutdowns of the existing WWTP. Although nighttime work would be short term, it would require lighting that creates negative effects in nearby residential areas.

Implementation of the In-System Storage Program would place new structures on the Detroit Drive parcel where none currently exist. Operational and safety requirements would likely require that night lighting be

installed on new buildings and facilities. This could result in increased ambient night light at the WWTP Site. In addition, the industrial-appearing structures to be constructed as part of the In-System Storage Program could create new sources of daytime glare in views from nearby residences or recreational areas, as well as from nearby roads.

Implementation of **Mitigation Measure 3-3a Design lighting to minimize impacts on adjacent areas** would require that any new source of light associated with the In-System Storage Program—during both the construction and operational phases—is oriented so that it is contained to the facility and that "spillover" into adjacent parcels is minimized. Implementation of **Mitigation Measure 3-3b Provide glare-reducing structure surface painting and treatment** would require that materials used for construction of all In-system Program facilities would not, to the extent feasible, provide new sources of substantial glare.

With implementation of **Mitigation Measure 3-3a** and **Mitigation Measure 3-3b**, impacts caused by new sources of light or glare resulting from implementation of the In-System Storage Program would be less than significant.

Full Conveyance Program

Construction of the Full Conveyance Program may on occasion require nighttime work at the WWTP Site to accommodate necessary partial shutdowns of the existing WWTP. Although nighttime work would be short-term, it would require lighting that create negative effects in nearby residential areas.

Implementation of the Full Conveyance Program would place new structures on the Detroit Drive parcel where none currently exist. Operational and safety requirements would likely require that night lighting be installed on new buildings and facilities. This could result in increased ambient night light at the WWTP Site. In addition, construction of the new pump station at the Dale Avenue Pump Station site would include permanent aboveground structures that may include night lighting for operational and safety requirements.

The industrial-appearing structures to be constructed as part of the Full Conveyance Program could create new sources of daytime glare in views from nearby residences or recreational areas, as well as from nearby roads.

Implementation of **Mitigation Measure 3-3a Design lighting to minimize impacts on adjacent areas** would require that any new source of light associated with the Full Conveyance Program during the construction and operational phases is oriented so that it is contained by the facility and that "spillover" into adjacent parcels is minimized. Implementation of **Mitigation Measure 3-3b Provide glare-reducing structure surface painting and treatment** would require that materials used for construction of all Full Conveyance Program facilities would not, to the extent feasible, provide new sources of substantial glare.

With implementation of **Mitigation Measure 3-3a** and **Mitigation Measure 3-3b**, impacts caused by new sources of light or glare resulting from implementation of the Full Conveyance Program would be less than significant.

New Headworks Project and Primary Clarifier Project

Construction of the New Headworks Project and Primary Clarifier Project may on occasion require nighttime work at the WWTP Site to accommodate necessary partial shutdowns of the existing WWTP. Although nighttime work would be short term, it would require lighting that create negative effects in nearby residential areas.

Operational and safety requirements would likely require that night lighting be installed on the New Headworks and Primary Clarifier. This could result in increased ambient night light at the WWTP Site.

The New Headworks Project and Primary Clarifier Project could include light-colored and reflective surfaces such as concrete and metal that could create new sources of daytime glare in views from nearby residences or recreational areas, as well as from nearby roads.

Implementation of **Mitigation Measure 3-3a Design lighting to minimize impacts on adjacent areas** would require that any new source of light associated with the New Headworks Project and Primary Clarifier Project during the construction and operational phases is oriented so that it is contained by the facility and that "spillover" into adjacent parcels is minimized. Implementation of **Mitigation Measure 3-3b Provide glare-reducing structure surface painting and treatment** would require that materials used for construction of the New Headworks Project and Primary Clarifier Project would not, to the extent feasible, provide new sources of substantial glare.

With implementation of **Mitigation Measure 3-3a** and **Mitigation Measure 3-3b**, impacts caused by new sources of light or glare resulting from implementation of the New Headworks Project and Primary Clarifier Project would be less than significant.

3.6 Mitigation Measures

The following mitigation measures, identified in the previous section, would, if fully implemented, reduce any identified potential impacts on aesthetic and visual resources to a less-than-significant level.

Mitigation Measure 3-1. Obtain design review approval.

Projects at the WWTP, the new Dale Avenue Pump Station, and the in-system storage basin, and other projects that meet the requirements of Title 27.08.030 of the Zoning Ordinance, shall undergo the City's SPAR process. It is expected that the design review would be done on a project-by-project basis. All projects reviewed through the SPAR process shall be constructed in accordance with approved drawings and, as applicable, special use permit conditions. Design and landscaping for projects at the WWTP Site shall be done consistent with an architectural basis of design to provide coherent materials use and finishes, design features, and landscaping that support an overall design theme and identity. The City Council would review and make the final determination on all buildings exceeding 55 feet in height or as required by the General Plan.

SPAR approval shall be provided by the Planning Commission and City Council. Findings by the Planning Commission and City Council shall include, among others, the following:

- The structures, site plan, and landscaping are in scale and harmonious with the character of the neighborhood.
- The development will not be detrimental to the harmonious and orderly growth of the City.
- The development will not impair the desirability of investment or occupation in the vicinity, and otherwise is in the best interests of the public health, safety, or welfare.
- The development meets all applicable standards as adopted by the Planning Commission and City Council, conforms to the General Plan, and will correct any violations of the Zoning Ordinance, building code, or other municipal codes that exist on the site.
- The development will not adversely affect matters regarding police protection, crime prevention, and security.

Mitigation Measure 3-3a. Design lighting to minimize impacts on adjacent areas.

Construction Lighting. Prior to site mobilization, the construction manager shall confirm that lighting for construction of WWTP facilities is used in a manner that minimizes potential night lighting impacts, as follows:

a) All lighting shall be of minimum necessary brightness consistent with worker safety.

b) All fixed position lighting shall be shielded, hooded, and directed downward to minimize backscatter to the night sky and prevent light trespass (direct lighting extending outside the boundaries of the construction area).

c) Where feasible and safe, lighting shall be turned off when not in use, and motion detectors shall be used.

d) A lighting complaint resolution form shall be maintained by construction management to record all lighting complaints received and to document the resolution of that complaint.

e) All construction related lighting shall be completely shielded or screened so it is not visible to residents east and south of the WWTP with direct views of the site.

Project Operation Lighting. Prior to the start of operation of each new facility, the construction contractor shall design and install new permanent lighting for the facility such that: light bulbs and reflectors are not visible from public viewing areas; lighting does not cause reflected glare; and illumination of the project, the vicinity, and the nighttime sky is minimized. To meet these requirements, the City or its design contractor shall confirm the following:

a) Lighting shall be designed so exterior light fixtures are hooded, with lights directed downward or toward the area to be illuminated and so that backscatter to the nighttime sky is minimized. The design of the lighting shall be such that the luminescence or light source is shielded to prevent light trespass outside the facility boundary.

b) All lighting shall be of minimum necessary brightness consistent with worker safety.

c) Where feasible and safe, lighting shall be kept off when not in use.

d) A lighting complaint resolution form shall be used by WWTP operations to record all lighting complaints received and document the resolution of those complaints. All records of lighting complaints shall be kept in the onsite compliance file.

Mitigation Measure 3-3b. Provide glare-reducing structure surface painting and treatment.

New or altered structures visible to the public shall be painted or treated such that their colors minimize visual intrusion and contrast by blending with the landscape; their surfaces do not create glare; and they are consistent with local laws, ordinances, regulations, and standards.

Prior to the start of construction that would be visible to the public, the construction contractor shall submit a structure surface painting and treatment plan into the City's SPAR process, as specified in Title 27.08.030 of the City's Zoning Ordinance (City of San Mateo, 2015), and to specifications established during the SPAR process. The treatment plan shall include all information required by the SPAR process, including the following:

a) Specification of the treatment proposed for use on individual project structures, including structures treated during manufacture.

b) A list of each major project structure specifying the color(s) and finish proposed for each (colors must be identified by name and by vendor brand or a universal designation).

c) A procedure to maintain proper painting and treatment for the life of the project.

3.7 References

Bureau of Land Management (BLM). 1980. *Visual Resource Management Program*. Stock No. 024-001-00116-6. Washington, DC: U.S. Government Printing Office.

City of San Mateo. 1971. *Shoreline Park Specific Plan*. Revised 1979 and 1990.

_____. 2010. *City of San Mateo General Plan – Vision 2030*. Resolution No. 134-2010. Adopted by the City Council on October 18.

_____. 2015. *San Mateo City Charter and Municipal Code*. Available at http://qcode.us/codes/sanmateo/. Effective as of September 17.

Federal Highway Administration (FHWA). 1988. *Visual Impact Assessment for Highway Projects*. FHWA-HI-88-054. U.S. Department of Transportation.

Jones, G.R., J. Jones, B.A. Gray, B. Parker, J.C. Coe, J.B. Burnham, and N.M. Geitner. 1975. "A Method for the Quantification of Aesthetic Values for Environmental Decision Making." *Nuclear Technology* 25(4):682–713.

U.S. Forest Service. 1995. *Landscape Aesthetics: A Handbook for Scenery Management.* Agriculture Handbook Number 701.

U.S. Soil Conservation Service. 1978. *Procedure to Establish Priorities in Landscape Architecture*. Technical Release No. 65. Washington, DC.

Coordinate System: NAD 1983 StatePlane California III FIPS 0403 Feet. Source: Esri Map Services, County of San Mateo

Figure 3-1
Key Observation Points
Programmatic Environmental Impact Report
City of San Mateo Clean Water Program

CH2MHILL

KOP 1 – View to the southwest from the Bay Trail alongside J. Hart Clinton Drive. The existing WWTP is visible in the left of the view.

FIGURE 3-2
KOP 01
Programmatic Environmental Impact Report
City of San Mateo Clean Water Program

CH2MHILL

KOP 2 – View to the northwest from the pedestrian and bicycle bridge in Bayside/Joinville Park. The existing WWTP is visible in the left of the view.

FIGURE 3-3
KOP 02
Programmatic Environmental Impact Report
City of San Mateo Clean Water Program

CH2MHILL

KOP 3 – View to the northwest from within Joinville Park, near a residential neighborhood.

FIGURE 3-4
KOP 03
Programmatic Environmental Impact Report
City of San Mateo Clean Water Program

CH2MHILL

KOP 4 - View to the northwest from KOP 4, located alongside the picnic area within Joinville Park. WWTP structures are mostly screened in views from this location.

FIGURE 3-5
KOP 04
Programmatic Environmental Impact Report
City of San Mateo Clean Water Program

CH2MHILL

KOP 5 – View to the east from Dale Avenue, just west of the Dale Avenue parcel. An existing WWTP digester is visible along the left edge of the view.

FIGURE 3-6
KOP 05
Programmatic Environmental Impact Report
City of San Mateo Clean Water Program

KOP 6 – View to the southeast from the Bay Trail within Seal Point Park, near Seal Point Dog Park. The existing WWTP is visible in the right of the view.

FIGURE 3-7
KOP 06
Programmatic Environmental Impact Report
City of San Mateo Clean Water Program

CH2MHILL

KOP 7 – View to the southeast from the elevated bay overlook within Seal Point Park. The existing WWTP is visible in the right of the view

FIGURE 3-8
KOP 07
Programmatic Environmental Impact Report
City of San Mateo Clean Water Program

CH2MHILL

KOP 8 – View to the southwest from the Bay Trail along Mariners Point. The existing WWTP is in the center of the view.

FIGURE 3-9
KOP 08
Programmatic Environmental Impact Report
City of San Mateo Clean Water Program

CH2MHILL

KOP 9- View of Dale Avenue Pump Station from its eastern boundary.

FIGURE 3-10
KOP 09
Programmatic Environmental Impact Report
City of San Mateo Clean Water Program

CH2MHILL

Chapter 4. Air Quality

This chapter describes the setting and potential air quality impacts of the construction and operation of the CWP. It discusses applicable federal and state air quality standards and current attainment status, identifies potential air quality impacts of the CWP, and proposed mitigation measures to reduce any significant impacts to a less than significant level.

4.1 Existing Setting

4.1.1 Climate and Topography

Air quality is affected by both the pollutant emissions rate and locations, and by meteorological conditions that influent movement and dispersal of pollutants in the atmosphere. San Mateo has a Mediterranean climate with warm, dry summers and mild, damp winters. Westerly through northwesterly winds are most common in the area, reflecting the orientation of the Bay and the San Francisco Peninsula. Winds are lightest, on the average, in fall and winter. Every year in fall and winter there are periods of several days when winds are light and local pollutants can build up. During summer, inversions could be present over 90 percent of the time in both morning and afternoon. In winter, inversions dominate during the morning but frequently dissipate by afternoon (City of San Mateo, 2009).

Topography can restrict horizontal dilution and mixing of pollutants by creating a barrier to air movement. The South Bay has significant terrain features that affect air quality. The Santa Cruz Mountains and Hayward Hills on opposite sides of the South Bay restrict horizontal dilution; these features also channel winds from the north to south, carrying pollution from the northern peninsula toward the City (City of San Mateo, 2009).

4.1.2 Attainment Status

The Program Area is in the City of San Mateo, San Mateo County (see Figure 2-2), which is part of the BAAQMD. The area is currently designated as marginal nonattainment for ozone, moderate nonattainment for particulate matter with aerodynamic diameter equal to or less than 2.5 micrometers ($PM_{2.5}$), and maintenance for carbon monoxide (CO) under the National Ambient Air Quality Standards (NAAQS) (EPA. The area is in nonattainment for ozone, particulate matter with aerodynamic diameter equal to or less than 10 micrometers (PM_{10}) and $PM_{2.5}$ under the California Ambient Air Quality Standards (CAAQS). The Program Area is designated as attainment/unclassified for all other pollutants.

4.1.3 Current Air Permits and Emissions

The WWTP currently operates under a BAAQMD permit that covers emissions from the various treatment facilities and the standby diesel engines (BAAQMD, 2015). The permit to operate includes various conditions such as emissions limits for pollutants such as CO, nitrogen oxides (NO_x), sulfur dioxide (SO_2), and precursor organic compounds; source testing requirements; and limits on hours for reliability testing. For odors, the permit states that "[i]n the event that a public nuisance odor source is identified at this facility, the owner/operator shall employ all measures, practices, and/or modifications necessary to abate such nuisance." The permit is typically issued annually; the current permit expires December 1, 2015. The City has not had any violations of its permit to operate (Scheidt, 2015).

The City has received odor complaint calls to the WWTP. The City handles odor complaints through an internal process, where complaints are received and replied to by the WWTP manager. The WWTP received 9 complaints in 2012, 26 complaints in 2013, and 10 complaints in 2014. The greater number of complaints in 2013 was associated with the replacement of the biofilters and the downtimes required during construction. Several of the complaints about odors over the past 3 years have been related to the drainage channel adjacent to the facility, stagnant water, and booms that trap debris. These complaints are passed on to other City departments for action. The WWTP has not been subject to the BAAQMD Odorous Substances

Regulation 7 (see Section 4.2.3) and has not subject to any confirmed complaints through the BAAQMD (Scheidt, 2015).

A new biofilter system was installed at the WWTP in 2013 and 2014, replacing the exiting wood-based biofilters. The new biofilter system comprises three biofilters at the WWTP and one biofilter at the Dale Avenue Pump Station that use lava rock as the filter media. The lava rock filter media last approximately 10 years. In addition to the existing biofilters, a deodorizing spray is misted within the facility to further reduce the impacts of odors that result from the wastewater treatment process.

4.2 Regulatory Framework

4.2.1 Federal Regulations

4.2.1.1 Federal Clean Air Act and NAAQS

Federal air quality policies are regulated through the federal Clean Air Act (CAA). The U.S. Environmental Protection Agency (EPA) adopted the CAA in 1970 and its amendments in 1977 and 1990. Pursuant to the CAA, EPA has established nationwide air quality standards to protect public health and welfare with an adequate margin of safety. These federal standards, known as the NAAQS, represent the maximum allowable atmospheric concentrations and were developed for seven criteria pollutants: ozone, nitrogen dioxide (NO_2), CO, PM_{10} and $PM_{2.5}$, sulfur dioxide (SO_2), and lead. The NAAQS represent safe levels of each pollutant to avoid specific adverse effects on human health and the environment. Table 4-1 summarizes the NAAQS.

The 1977 CAA amendment required each state to develop and maintain a state implementation plan (SIP) for each criteria pollutant that violates the applicable NAAQS. The SIP serves as a tool to avoid and minimize emissions of pollutants that exceed ambient threshold criteria and to achieve compliance with the NAAQS. In 1990, the CAA was amended to strengthen regulation of both stationary and mobile emission sources for criteria pollutants. Conformity to the SIP is defined under the 1990 CAA amendments as conformity with the plan's purpose in eliminating or reducing the severity and number of violations of the NAAQS and achieving expeditious attainment of these standards.

TABLE 4-1
Ambient Air Quality Standards and Attainment Status
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Pollutant	Averaging Time	CAAQS[a]		NAAQS[b]		
		Standard	Status	Primary[c]	Secondary[d]	Status
Ozone	8 hours	0.070 ppm	Nonattainment	0.075 ppm	0.075 ppm	Marginal nonattainment
	1 hour	0.09 ppm		—	—	—
PM_{10}	Annual Arithmetic Mean	20 µg/m^3	Nonattainment	—	—	—
	24 hours	50 µg/m^3		150 µg/m^3	150 µg/m^3	Attainment
$PM_{2.5}$	Annual Arithmetic Mean	12 µg/m^3	Nonattainment	12 µg/m^3	15 µg/m^3	Moderate nonattainment
	24 hours	—		35 µg/m^3	35 µg/m^3	
CO	8 hours	9.0 ppm	Attainment	9 ppm	—	Maintenance
	1 hour	20 ppm		35 ppm	—	
NO_2	Annual Arithmetic Mean	0.03 ppm	Attainment	0.053 ppm	0.053 ppm	Attainment/ Unclassified
	1 hour	0.18 ppm		0.100 ppm	—	
SO_2	24 hours	0.04 ppm	Attainment	—	—	Attainment/ Unclassified
	3 hours	—		—	0.5 ppm	
	1 hour	0.25 ppm		0.075 ppm[g]	—	

TABLE 4-1
Ambient Air Quality Standards and Attainment Status
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Pollutant	Averaging Time	CAAQS[a]		NAAQS[b]		
		Standard	Status	Primary[c]	Secondary[d]	Status
Lead[e]	Calendar Quarter	—	Attainment	1.5 µg/m^3	1.5 µg/m^3	Attainment/ Unclassified
	Rolling 3-month Average	—		0.15 µg/m^3	—	
	30-day Average	1.5 µg/m^3		—	—	
Visibility-reducing Particles	8 hours	f	Unclassified	—	—	—
Sulfates	24 hours	25 µg/m^3	Unclassified	—	—	—
Hydrogen Sulfide	1 hour	0.03 ppm	Unclassified	—	—	—
Vinyl Chloride[e]	24 hours	0.01 ppm	Unclassified	—	—	—

[a]California standards for ozone, CO (except Lake Tahoe), SO_2 (1-hour and 24-hour), NO_2, and suspended particulate matter (PM_{10}, $PM_{2.5}$, and visibility-reducing particles) are values that are not to be exceeded. All others are not to be equaled or exceeded.

[b]National standards other than ozone, PM, and those based on annual averages or annual arithmetic means are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m^3 is equal to or less than 1. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, is equal to or less than the standard.

[c]National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.

[d]National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

[e]The California Air Resources Board (ARB) has identified lead and vinyl chloride as toxic air contaminants with no threshold level of exposure for adverse health effects determined. ARB made this determination following the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

[f]Insufficient amount to produce an extinction coefficient of 0.23 per kilometer because of particles when the relative humidity is less than 70 percent.

[g]Final rule signed June 2, 2010. To attain this standard, the 3-year average of the 99th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 75 parts per billion (ppb).

µg/m^3 = micrograms per cubic meter.

Source: ARB, 2013.

4.2.1.2 General Conformity

Under the conformity provisions of the CAA, no federal agency can approve or undertake a federal action, or project, unless the project has been demonstrated to conform to the applicable SIP. These conformity provisions were enacted so that federal agencies would not interfere with efforts to attain the NAAQS. EPA has issued two conformity regulations: (1) transportation conformity rules that apply to transportation plans and projects, and (2) general conformity rules that apply to all other federal actions. A conformity determination is only required for the alternative that is ultimately selected and approved.

Applicable only in areas designated as nonattainment or maintenance for NAAQS, the general conformity rule prohibits any federal action that does not conform to the applicable air quality attainment plan or SIP. General conformity applicability analysis requires quantification of direct and indirect construction and operation emissions for the project, and comparison of those emission levels to baseline emission levels. If the differences in emissions (the net emissions associated with the project) exceed the general conformity de Minimis levels for the peak year or any milestone year for attainment of NAAQS, additional general conformity determination is required.

An action is exempt from the conformity rule (i.e., the action is presumed to conform) if the total net project related emissions (construction and operation) are less than the de Minimis thresholds established in the

conformity rule. An action that produces emissions that exceed conformity thresholds is required to demonstrate conformity with the SIP through mitigation or other accepted practices.

4.2.1.3 Hazardous Air Pollutants

Controlling air toxic emissions became a national priority with the passage of the CAA Amendments of 1990, whereby Congress mandated that the EPA regulates 188 air toxics, also known as hazardous air pollutants (HAP). Prior to the 1990 CAA Amendments, EPA created a program to establish national emission standards for HAPs. National emission standards were established for benzene, vinyl chloride, radionuclides, mercury, asbestos, beryllium, inorganic arsenic, radon 222, and coke oven emissions. In 1994, EPA began issuing the new standards, while national emission standards set before 1991 remain applicable. In addition, in February 2007, EPA finalized the rule Control of Hazardous Air Pollutants from Mobile Sources, to reduce hazardous air pollutants from mobile sources.

4.2.2 State Regulations

4.2.2.1 California State Ambient Air Quality Standards

The California Air Resources Board (ARB) oversees California air quality policies. CAAQS were first established in 1969 pursuant to the Mulford-Carrell Act. These standards are generally more stringent than the NAAQS and include four additional pollutants: sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particulates. Relevant CAAQS are listed in Table 4-1.

The California CAA, which was approved in 1988, requires each local air district in the state to prepare an air quality management plan (part of the SIP) that complies with the CAAQS. The ARB has ultimate responsibility for the SIP for nonattainment pollutants but relies on each local air districts to adopt mandatory statewide programs and provide tailored additional strategies for sources under their local jurisdiction.

4.2.2.2 Toxic Air Contaminants

ARB regulates the toxic air contaminant sources and emissions in California. The Air Toxics “Hot Spots” Information and Assessment Act (Assembly Bill [AB] 2588) was enacted in September 1987. AB 2588 requires that toxic air emissions from stationary sources (facilities) be quantified and compiled into an inventory, that risk assessments be conducted according to methods developed by the Office of Environmental Health Hazard Assessment, and that the public be notified of significant risks posed by nearby facilities. Since the amendment of the statute in 1992 by enactment of Senate Bill (SB) 1731, facilities that pose a potentially significant health risks to the public are required to reduce those risks. ARB has also developed regulations and air toxic control measures for mobile and stationary sources to reduce toxic air contaminant emissions.

4.2.3 Local Regulations

The Program Area is located in San Mateo County, which is under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). BAAQMD is the local agency responsible for ensuring that federal and state ambient air quality standards are attained in the project area; responsibilities include rulemaking, permitting, and enforcement activities affecting stationary sources in the Bay Area. Specific rules and regulations adopted by the BAAQMD limit the emissions that can be generated by various activities and identify specific pollution reduction measures that must be implemented in association with various activities. These rules regulate not only emissions of the six criteria air pollutants but also toxic emissions and acutely hazardous non-radioactive materials emissions. Any sources of stationary emissions constructed as part of a project would be subject to the BAAQMD rules and regulations. Federal and state ozone plans rely on stationary source control measures in BAAQMD rules and regulations.

The *San Francisco Bay Area 2001 Ozone Attainment Plan for the 1-hour National Ozone Standard* (BAAQMD, 2001) was prepared in response to federal planning requirements. BAAQMD also adopted the *Bay Area 2010 Clean Air Plan* (BAAQMD, 2010a), which provides an integrated, multi-pollutant control strategy to reduce emissions of ozone, particulates, air toxics, and greenhouse gases (GHG). BAAQMD is currently

designated as nonattainment for the federal 24-hour and annual $PM_{2.5}$ standards; recent monitoring data indicate that $PM_{2.5}$ levels have decreased in the Bay Area air basin since 2008. On January 9, 2013, EPA issued a final rule to determine that the Bay Area has attained the federal 24-hour $PM_{2.5}$ standard. The Bay Area will continue to be non-attainment for the federal 24-hour $PM_{2.5}$ standard until a "redesignation request" and a "maintenance plan" are submitted to EPA and EPA approves the proposed redesignation (BAAQMD, 2014).

BAAQMD is designated nonattainment for state PM_{10} standards and has implemented a particulate matter (PM) control program (BAAQMD, 2014). The program includes emission limits for primary PM and PM precursors from stationary sources, wood smoke regulations, and PM control measures outlined in the *Bay Area 2010 Clean Air Plan* (BAAQMD, 2010a).

Although odors generally do not pose a health risk, they can be unpleasant and lead to complaints from the community (BAAQMD, 1999). Regulation 7, Odorous Substances (BAAQMD, 1982) applies to operating facilities and places general limitations on odorous substances and specific limitations on emissions of certain odorous compounds. Limitations are only applicable when BAAQMD receives 10 or more "confirmed" odor complaints within a 90-day period. A confirmed odor complaint is confirmed by a BAAQMD trained inspector. To be a confirmed odor complaint, a BAAQMD inspector must visit the complainant within 30 minutes and verify and confirm the source of the odor. Typically, a confirmed odor complaint is followed up with a BAAQMD Violation Notice. Once triggered, Regulation 7 limitations are enforced until no citizen complaints are received by the BAAQMD for 1 full year.

BAAQMD's Regulation 9, Rule 2, Inorganic Gaseous Pollutants – Hydrogen Sulfide limits ground-level concentrations of hydrogen sulfide to below 0.06 parts per million averaged over three consecutive minutes or 0.03 parts per million averaged over any 60 consecutive minutes in any 24-hour period (BAAQMD, 1979).

4.3 Assessment Methods and Thresholds of Significance

4.3.1 CEQA Criteria and Thresholds

Under CEQA, project proponents are required to identify any significant environmental effects that would occur as a result of their actions. CEQA also requires that project proponents avoid or mitigate any impacts to the extent feasible. Impacts on air quality may occur if the CWP would result in the following:

- Conflict with or obstruct implementation of the applicable air quality plan
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)
- Expose sensitive receptors to substantial pollutant concentrations
- Create objectionable odors affecting a substantial number of people

Evaluation of impacts based on the first three criteria uses BAAQMD emissions limits of criteria pollutants of concern. BAAQMD has published guidelines for evaluating, measuring, and mitigating projects' air quality impacts, including impacts from criteria air pollutants and toxic air contaminants for CEQA purposes (BAAQMD, 1999 and 2012). BAAQMD adopted thresholds of significance in June 2010 to assist in the review of projects under CEQA (BAAQMD, 2012). These CEQA thresholds are currently subject to judicial action; as a result, the BAAQMD is no longer recommending that the 2010 thresholds be used as a generally applicable measure of a project's significant air quality impacts. BAAQMD allows a project to continue to rely on the 1999 Thresholds of Significance (BAAQMD, 1999) to determine the significance of an individual project's air quality impacts. The 1999 Thresholds of Significance are shown in Table 4-2 and are used for the impact analysis.

TABLE 4-2
Bay Area Air Quality Management District Thresholds of Significance for Criteria Pollutants of Concern
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Pollutant	1999 Threshold of Significance Construction	1999 Threshold of Significance Operation	
VOC	None	80 lb/day	15 tpy
NO_x	None	80 lb/day	15 tpy
PM_{10} (exhaust)	None	80 lb/day	15 tpy
$PM_{2.5}$ (exhaust)	None	None	
PM_{10} (fugitive dust)	Dust control measures	None	
$PM_{2.5}$ (fugitive dust)	Dust control measures	None	
CO	None	9.0 ppm (8-hour average); 20.0 ppm (1-hour average)	

Source: BAAQMD (1999)
Notes:
lb/day = pounds per day
NO_x = nitrogen oxide
tpy = tons per year
VOC = volatile organic compounds

To determine if the CWP would create objectionable odors affecting a substantial number of people, the BAAQMD 1999 CEQA Guidelines were used. The 1999 CEQA Guidelines address the significance of potential odor impacts, in this case for a wastewater system, using a multi-step process as summarized below.

1) Determine whether the project would result in an odor source.
2) Determine if sensitive receptors are located within one mile of the wastewater treatment plant or other potential odor sources.
3) If both conditions are met, review BAAQMD enforcement records for the last three years for projects near an existing odor source.
4) Complete a determination of significance. For potential odor sources locating near existing receptors, the determination of significance is based on the distance and frequency at which confirmed odor complaints from the public have occurred in the vicinity of of a similar facility.

4.3.2 General Conformity de Minimis Threshold

The CWP would be located in an area that is designated as nonattainment (marginal) for the 8-hour ozone NAAQS and nonattainment for the $PM_{2.5}$ NAAQS. Because portion of the project would be federal funded, the project is subject to general conformity rule requirements.

The EPA Final Conformity Rule requires that total direct and indirect emissions of nonattainment and maintenance criteria pollutants, including O_3 precursors (VOCs and nitrogen oxide (NO_x), be considered in determining conformity. The rule does not apply to actions where total direct and indirect emissions of non-attainment and maintenance criteria pollutants do not exceed the thresholds established in 40 CFR 93.153(b). Tables 4-3 and 4-4 present the de minimis thresholds for nonattainment and maintenance areas, respectively. If a federal action meets de minimis requirements, detailed conformity analyses are not required, pursuant to 40 CFR 93.153(c). The applicable de minimis thresholds for the Proposed Action are 100 tons per year (tpy) for emissions of the O_3 precursor pollutants (VOCs and NO_x), $PM_{2.5}$, sulfur dioxide (SO_2) (as a precursor to $PM_{2.5}$), and CO.

TABLE 4-3

General Conformity de Minimis Thresholds in Nonattainment Areas

Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Pollutant	Degree of Nonattainment	De Minimis Threshold[a] (tpy)
O_3 (VOCs and NOX)	Serious	50
	Severe	25
	Extreme	10
	Other ozone – outside an O_3 transport region	**100**
O_3 (VOCs)	Marginal and moderate – inside an O_3 transport region	50
O_3 (NOX)	Marginal and moderate – inside an O_3 transport region	100
CO	All	100
PM_{10}	Moderate	100
	Serious	70
$PM_{2.5}$	Direct emissions	**100**
	NOx	100
	SO_2	**100**
	VOCs or ammonia	100
SO_2 or NO_2	All	100
Lead	All	25

[a] Bold values reflect de minimis thresholds used in this analysis.

Source: 40 CFR 93.153(b)

TABLE 4-4

General Conformity de Minimis Thresholds in Maintenance Areas

Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Pollutant	Maintenance Area	De Minimis Threshold[a]
O_3 (NOx)	All	100
O_3 (VOC)	Inside an O_3 transport region	50
	Outside an O_3 transport region	100
CO	All	**100**
PM_{10}	All	100
$PM_{2.5}$	Direct emissions	100
	NOx	100
	SO_2	100
	VOC or ammonia	100
SO_2 or NO_2	All	100
Lead	All	25

[a] De minimis thresholds are listed in tons per year. The bold number reflects the de minimis threshold used in this analysis.

Source: 40 CFR 93.153(b)

4.4 Environmental Impacts

4.4.1 California Environmental Quality Act Impacts

Potential impacts of the CWP air quality are summarized in Table 4-5 and described in subsequent sections.

TABLE 4-5
Summary of Air Quality Impacts
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Impact	In-System Storage Program	Full Conveyance Program	New Headworks Project	Primary Clarifier Project
Impact 4-1. Construction of the CWP would generate short-term emissions of criteria air pollutants of ROG, NO_x, CO, PM_{10}, and $PM_{2.5}$.	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation
Impact 4-2. Operation of the CWP may have the potential to cause emissions of criteria air pollutants.	Less than significant impact	Less than significant impact	Less than significant impact	Less than significant impact
Impact 4-3. The CWP may expose sensitive receptors to substantial pollutant concentrations.	Less than significant impact with mitigtion	Less than significant impact with mitigtion	Less than significant impact with mitigtion	Less than significant impact with mitigation
Impact 4-4. Operation of the CWP may create objectionable odors affecting a substantial number of people.	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation

Notes:
NO_x = nitrogen oxide
ROG = reactive organic gases
CO = carbon monoxide

Impact 4-1. Construction of the CWP would generate short-term emissions of criteria air pollutants of ROG, NOx, CO, PM_{10}, and $PM_{2.5}$.

The CWP involves multiple construction projects that have the potential to generate temporary air pollutants, including exhaust emissions from the construction equipment and vehicles and fugitive dust emissions from earth-moving activities or vehicle travel on paved and unpaved roads.

The CWP would be constructed over a 10- to 20-year period starting in 2016, and would involve multiple projects for the pipelines, pump stations, and WWTP. Because the detailed schedule and construction information of each individual project is not available at this stage, construction emissions associated with the proposed CWP were estimated for a worst-case scenario. It was assumed on a worst-case day that multiple projects would be under construction simultaneously, including three pipeline trenching projects, two WWTP construction or modification projects, and one pump station wet well; for the In-System Storage Program, an in-system equalization basin project was also assumed to be part of the worst-case scenario. Maximum daily construction emissions of ROG, NO_x, CO, SO_2, PM_{10}, and $PM_{2.5}$ were estimated using CALEEMOD (California Air Pollution Control Officers Association, 2013). To be conservative, emissions were estimated using the 2016 emission factors.

In-System Storage Program

The worst-case daily construction emissions for the In-System Storage Program are summarized in Table 4-6. Appendix B contains the complete construction calculations and assumptions used to assess air quality impacts.

TABLE 4-6
Estimated Worst-Case Daily Construction Emissions, In-System Storage Program
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

	VOC	CO	NO_x	SO_x	PM_{10} Fugitive	PM_{10} Exhaust	$PM_{2.5}$ Fugitive Dust	$PM_{2.5}$ Exhaust
	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day
New WWTP Project-1	3.650	36.330	37.166	0.062	2.210	1.858	0.502	1.711
New WWTP Project-2	3.650	36.330	37.166	0.062	2.210	1.858	0.502	1.711
Large Pipeline Project-1	2.432	21.628	24.903	0.034	1.201	1.376	0.234	1.266
Large Pipeline Project-2	2.432	21.628	24.903	0.034	1.201	1.376	0.234	1.266
Average Pipeline Project-1	2.443	21.842	24.870	0.034	1.189	1.375	0.232	1.265
Average Pipeline Project-2	2.443	21.842	24.870	0.034	1.728	1.375	0.364	1.265
Average Pipeline Project-3	2.443	21.842	24.870	0.034	1.189	1.375	0.232	1.265
Pump Station Wet Well Excavation	1.771	15.863	17.710	0.025	0.947	1.023	0.167	0.942
In-system Storage Basin	1.364	16.212	13.791	0.027	1.355	0.542	0.274	0.499
Total for In-System Storage Program	22.628	213.517	230.249	0.346	13.230	12.158	2.740	11.189

Currently, there are no quantitative construction emission thresholds under the BAAQMD CEQA Guidelines. The BAAQMD 1999 thresholds of significance for construction impacts emphasize implementation of effective and comprehensive control measures rather than detailed quantification of emissions. If the applicable control measures listed in the CEQA Guidelines (BAAQMD, 2012) are implemented during construction, then air pollutant emissions from construction activities would be considered a less than significant impact.

The applicable criteria pollutant control measures proposed by BAAQMD in its latest CEQA Guidelines (BAAQMD, 2012) would be implemented as part of **Mitigation Measure 4-1 Implement BAAQMD construction emission control measures** for the In-System Storage Program. The In-System Storage Program would also comply with all other applicable state and local regulations.

Although the entire In-System Storage Program would take 10 to 20 years to build, construction activities at a particular site would be of shorter duration. Air quality impacts from construction activities of the In-System Storage Program would be short-term. Because the In-System Storage Program would include implementation of **Mitigation Measure 4-1**, with construction emission reduction measures as included in the 2012 proposed BAAQMD CEQA Guidelines and according to the adopted 1999 BAAQMD CEQA significance thresholds for construction, the In-System Storage Program construction emissions would cause temporary and less-than-significant air quality impacts.

Full Conveyance Program

The worst-case daily construction emissions for the Full Conveyance Program are summarized in Table 4-7. Appendix B contains the complete construction calculations and assumptions used to assess air quality impacts.

TABLE 4-7
Estimated Worst-Case Daily Construction Emissions, Full Conveyance Program
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

	VOC	CO	NO_x	SO_x	PM_{10} Fugitive	PM_{10} Exhaust	$PM_{2.5}$ Fugitive Dust	$PM_{2.5}$ Exhaust
	Lb/day	Lb/day	Lb/day	Lb/day	Lb/day	Lb/day	Lb/day	Lb/day
New WWTP Project-1	3.650	36.330	37.166	0.062	2.210	1.858	0.502	1.711
New WWTP Project-2	3.650	36.330	37.166	0.062	2.210	1.858	0.502	1.711
Large Pipeline Project-1	2.432	21.628	24.903	0.034	1.201	1.376	0.234	1.266
Large Pipeline Project-2	2.432	21.628	24.903	0.034	1.201	1.376	0.234	1.266
Average Pipeline Project-1	2.443	21.842	24.870	0.034	1.189	1.375	0.232	1.265
Average Pipeline Project-2	2.443	21.842	24.870	0.034	1.728	1.375	0.364	1.265
Average Pipeline Project-3	2.443	21.842	24.870	0.034	1.189	1.375	0.232	1.265
Pump Station Wet Well Excavation-1	1.771	15.863	17.710	0.025	0.947	1.023	0.167	0.942
Pump Station Wet Well Excavation-2	1.771	15.863	17.710	0.025	0.947	1.023	0.167	0.942
Total for Full Conveyance Program	23.036	213.168	234.167	0.344	12.821	12.639	2.633	11.633

As discussed for the In-System Storage Program, if the applicable control measures listed in the CEQA Guidelines (BAAQMD, 2012) are implemented during construction, then air pollutant emissions from construction activities would be considered a less than significant impact.

The applicable criteria pollutant control measures required by proposed CEQA guidelines (BAAQMD, 2012) would be implemented as part of **Mitigation Measure 4-1 Implement BAAQMD construction emission control measures** for the Full Conveyance Program. The Full Conveyance Program would also comply with all other applicable state and local regulations.

Air quality impacts from construction activities of the Full Conveyance Program would be short-term. Because the Full Conveyance Program would include implementation of **Mitigation Measure 4-1**, with construction emission reduction measures as required by the proposed CEQA Guidelines (BAAQMD, 2012) and according to the adopted 1999 BAAQMD CEQA significance thresholds for construction, the Full Conveyance Program construction emissions would cause temporary and less-than-significant air quality impacts.

New Headworks Project and Primary Clarifier Project

The worst-case daily construction emissions for the New Headworks Project and Primary Clarifier Project are summarized in Table 4-8. It was assumed that the worst-case daily construction activities for the New Headworks Project and the Primary Clarifier Project would be similar to that for a typical WWTP project, as discussed for the In-System Storage Program, and the two projects may be constructed simultaneously. Appendix B contains the complete construction calculations and assumptions used to assess air quality impacts.

TABLE 4-8
Estimated Worst-Case Daily Construction Emissions, New Headworks Project and Primary Clarifier Project
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

	VOC	CO	NO_x	SO_x	PM_{10} Fugitive	PM_{10} Exhaust	$PM_{2.5}$ Fugitive Dust	$PM_{2.5}$ Exhaust
	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day
New Headworks Project	3.650	36.330	37.166	0.062	2.210	1.858	0.502	1.711
Primary Clarifier Project	3.650	36.330	37.166	0.062	2.210	1.858	0.502	1.711
Total for New Headworks and Primary Clarifier Projects	7.300	72.660	74.332	0.124	4.419	3.717	1.004	7.300

As discussed for the In-System Storage Program, if the applicable control measures listed in the proposed CEQA Guidelines (BAAQMD, 2012) are implemented during construction, then air pollutant emissions from construction activities would be considered a less than significant impact.

The applicable criteria pollutant control measures required by the proposed CEQA Guidelines (BAAQMD, 2012) would be implemented as part of **Mitigation Measure 4-1 Implement BAAQMD construction emission control measures** for the New Headworks Project and Primary Clarifier Project. These projects would also comply with all other applicable state and local regulations.

Air quality impacts from construction activities of the New Headworks Project and Primary Clarifier Project would be short-term. Because the New Headworks Project and Primary Clarifier Project would include implementation of **Mitigation Measure 4-1**, with construction emission reduction measures as required by the proposed BAAQMD CEQA Guidelines and according to the adopted 1999 BAAQMD CEQA significance thresholds for construction, the New Headworks Project and Primary Clarifier Project construction emissions would cause temporary and less-than-significant air quality impacts.

Impact 4-2. Operation of the CWP may have the potential to cause emissions of criteria air pollutants.

In-System Storage Program

Although the upgraded WWTP under the In-System Storage Program would have an increased treatment capacity to handle peak wet weather flows up to 78 mgd, the WWTP's currently permitted ADWF treatment capacity of 15.7 mgd would not change. Upgrades to the WWTP would use newer and more efficient treatment equipment than the current WWTP.

Because they do not include combustion emissions, wastewater treatment pollutant emissions typically consist of VOCs. VOC emissions from a WWTP operation are usually proportional to the ADWF treatment capacity. Because the Program would not increase the permitted ADWF treatment capacity and with the improvements of the treatment technology at the WWTP, the annual average emissions of the air pollutants from the WWTP operation are expected to be similar, if not less than, the current condition. A new in-system storage basin would be in operation typically only a few times a year when it would temporarily store peak wet weather flows; the flows would not be expected to contain a substantial amount of VOC or other pollutants to cause additional emissions. Therefore, substantial emission increase that would exceed the CEQA significant thresholds as shown in Table 4-2 are not expected.

In addition, the WWTP is subject to BAAQMD's permitting requirements. Any equipment that has the potential to cause violations to the ambient air quality standards or conflict with the BAAQMD clean air plans would be not able to obtain a permit to operate. Modifications to the WWTP under the In-System Program would demonstrate compliance with the air quality standards and the BAAQMD rules, including the

Regulation II new source review rules for criteria pollutants and air toxic emissions, through the WWTP permitting process. As such, operational emissions are expected to comply with the BAAQMD's stationary source permitting requirements and CEQA Guidelines. The In-System Storage Program would not be expected to cause violations of the air quality standards or conflict with the regional clean air plans. The operation emissions from the In-System Storage Program would have less-than-significant impacts on air quality.

Routine maintenance activities of the pipelines and pump stations are expected to be similar to the current operation, and therefore are not expected to increase air emissions.

Full Conveyance Program

Similar to the In-System Storage Program, the Full Conveyance Program would not increase the permitted average daily treatment capacity of the WWTP. Therefore, the Full Conveyance Program would not cause substantial emission increase from the facility operation. During operation, the new Dale Avenue Pump Station would be electric powered; therefore, no direct emission increases would be expected from the Dale Avenue Pump Station operation.

In addition, as discussed above, any equipment that has the potential to cause violations to the ambient air quality standards or conflict with the BAAQMD clean air plans would be not able to obtain a permit to operate. Modifications to the WWTP under the Full Conveyance Program would demonstrate compliance with the air quality standards and the BAAQMD rules, including the Regulation II new source review rules for criteria pollutants and air toxic emissions, through the WWTP permitting process. As such, the CWP operation emissions are expected to comply with the BAAQMD's CEQA and stationary source permitting requirements. The CWP is not be expected to cause violations of the air quality standards or conflict with the regional clean air plans. The operation emissions from the CWP would have less-than-significant impacts on air quality for both CWP alternatives.

New Headworks Project and Primary Clarifier Projects

Because the New Headworks Project and Primary Clarifier Projects would not include combustion, criteria pollutants of concern are limited to VOC emissions. Although the overall VOC emissions from the WWTP treatment process would remain similar to the current operation condition, VOC emissions from the new headworks and the primary clarifier are estimated separately for this impact evaluation. VOC emission factors for headworks and primary clarifier was based on the data in South Coast Air Quality Management District (SCAQMD)'s Basinwide Emissions Summary by JEIP Unit Process, Joint Emissions Inventory Program (JEIP), SCAQMD Rule 1179 Emissions Inventory Report (SCAQMD 1993). Estimated VOC emissions from the headworks and the primary clarifier are shown in Table 4-9. Actual emissions from the headworks and the primary clarifier would be lower, because emissions from the New Headworks Project and the Primary Clarifier Project would be treated before venting to the atmosphere, and the two projects would be expected to be operating below permitted capacity.

VOC emissions from the headworks and primary clarifier would be much lower than the CEQA threshold of 80 pounds per day (lb/day) (see Table 4-2). Therefore, operation of the new headworks and the primary clarifier would have less than significant air quality impacts during operation.

TABLE 4-9
Estimated Operation Emissions, New Headworks Project and Primary Clarifier Project
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

	Treatment Capacity	Average VOC Emission Factor	VOC Emissions	
	mgd	lb/year/mgd	ton/year	lb/day
Headworks Project	15.7	86.37	0.68	3.72
Primary Clarifier Project	15.7	36.69	0.29	1.58

Notes:
lb/year/mgd = pounds per year per million gallons per day
mgd = million gallons per day
Emission factor source: SCAQMD, 1993.

Impact 4-3. The CWP may expose sensitive receptors to substantial pollutant concentrations.

In-System Storage Program

Exhaust emissions from construction equipment would contain toxic air contaminants, such as diesel particulate matter (DPM), that have potential cancer and non-cancer chronic health effects. The proposed WWTP projects, the in-system storage basin, and the pipeline projects would be near residential areas, parks, and schools (see Figure 14-2). Therefore, during project construction, some of the residential and other sensitive receptors may be potentially exposed to the emissions from the construction activities. The main pollutant of concern during project construction is DPM that would be emitted from the diesel powered construction equipment and heavy duty trucks, because DPM has the potential to cause cancer and non-cancer chronic health risk if exposure occurs over the long term. The construction activities would be short-term and would be limited to a relatively small area where only a few pieces of construction equipment would be operating at a time. Exposures to the toxic air contaminant emissions from the construction activities would be short term in nature, and long-term exposure to DPM from construction would not occur. In addition, for construction at the WWTP Site, the prevailing westerly and northwesterly winds generally would blow any emissions away from nearby sensitive resources, which are primarily to the east and south. Implementation of **Mitigation Measure 4-1 Implement BAAQMD construction emission control measures** such as minimizing idling times and maintaining equipment in good condition would minimize the exposure of nearby sensitive receptors to the construction-related pollutants. Therefore, with implementation of **Mitigation Measure 4-1**, the In-System Storage Program would not expose sensitive receptors to substantial pollutant concentrations during construction.

Impact 4-2 concluded that the operational emissions from the upgraded WWTP would not be substantially different compared with the current emission levels of the plant. In addition, expansion of the facilities would be to the north of the existing WWTP, away from sensitive receptors. The prevailing westerly and northwesterly winds generally would blow any emissions away from nearby sensitive resources, which are primarily to the east and south. Operation of existing treatment facilities would cease, and the facilities would be closed down or removed after the new facilities are in use, eliminating them as potential pollutant sources. The only wastewater treatment facility under consideration that would be closer to sensitive receptors would be an equalization basin on the Dale Avenue Parcel. Because the basin would be belowground and would be used only for temporary storage of wastewater flows, substantial pollutant emissions would not occur. Similarly, no substantial air emissions would be expected from an underground in-system storage basin, which would typically be used only a few times a year. Therefore, operation of the In-System Storage Program would not expose sensitive receptors to substantial pollutant concentrations. Operation of the In-System Storage Program would have a less-than-significant impact.

Full Conveyance Program

Construction of the Full Conveyance Program would be similar to the In-System Storage program in terms of duration and levels of pollutant emissions in the affected areas, except that the Full Conveyance Program would not include the in-system storage basin. The Full Conveyance Program would include the new Dale Avenue Pump Station, with similar construction impacts as for an in-system storage basin. Therefore, during project construction, some of the residential and other sensitive receptors may be potentially exposed to polllutant emissions, including DPM. Exposures to toxic air contaminant emissions from construction activities would be short term in nature, and long-term exposure to DPM from construction would not occur. In addition, for construction at the WWTP Site, the prevailing westerly and northwesterly winds generally would blow any emissions away from nearby sensitive resources, which are primarily to the east and south. Implementation of **Mitigation Measure 4-1 Implement BAAQMD construction emission control measures** such as minimizing idling times and maintaining equipment in good condition would minimize the exposure of nearby sensitive receptors to the construction-related pollutants. Therefore, with implementation of **Mitigation Measure 4-1**, the Full Conveyance Program would not expose sensitive receptors to substantial pollutant concentrations during construction.

Impact 4-2 concluded that the operational emissions from the upgraded WWTP would not be substantially different compared with the current emission levels of the plant. In addition, expansion of the facilities would be to the north of the existing WWTP, away from sensitive receptors. Operation of existing treatment facilities would cease, and the facilities would be closed down or removed after the new facilities are in use, eliminating them as potential pollutant sources. The only wastewater treatment facility under consideration that would be closer to sensitive receptors would be an equalization basin on the Dale Avenue Parcel. Because the basin would be belowground and would be used only for temporary storage of wastewater flows, substantial pollutant emissions would not occur. Similarly, no substantial air emissions would be expected from a new Dale Avenue Pump Station, which would be electric powered and belowground. In addition, the prevailing westerly and northwesterly winds generally would blow any emissions away from nearby sensitive resources, which are primarily to the east and south. Therefore, operation of the Full Conveyance Program would not expose sensitive receptors to substantial pollutant concentrations. Operation of the Full Conveyance Program would have a less-than-significant impact.

New Headworks Project and Primary Clarifier Project

During construction of the New Headworks Project and Primary Clarifier Project, nearby residences and schools could be exposed to pollutant emissions, including DPM. Implementation of **Mitigation Measure 4-1 Implement BAAQMD construction emission control measures** such as minimizing idling times and maintaining equipment in good condition would minimize the exposure of nearby sensitive receptors to the construction-related pollutants. In addition, during construction, the prevailing westerly and northwesterly winds generally would blow any emissions away from nearby sensitive resources, which are primarily to the east and south. Therefore, with implementation of **Mitigation Measure 4-1**, the New Headworks Project and Primary Clarifier Project would not expose sensitive receptors to substantial pollutant concentrations during construction.

Impact 4-2 concluded that emissions from the headworks and primary clarifier would be much lower than the CEQA threshold of 80 lb/day (see Table 4-2). Therefore, operation of the New Headworks Project and Primary Clarifier Project would not expose sensitive receptors to substantial pollutant concentrations. In addition, the prevailing westerly and northwesterly winds generally would blow any emissions away from nearby sensitive resources, which are primarily to the east and south. Operation of the New Headworks Project and Primary Clarifier Project would have a less-than-significant impact.

Impact 4-4. Operation of the CWP may create objectionable odors affecting a substantial number of people.

In-System Storage Program

Odor impacts are dependent on the distance, frequency, and intensity of the source as well as environmental factors such as wind speed and direction, air temperature, and atmospheric conditions. Sensitive receptors are located near the WWTP Site, proposed pump station project sites, and proposed in-system equalization basin locations. Sensitive receptors include residences, schools, parks, and other public facilities. See Figure 14-2 for sensitive receptor locations.

As discussed in Section 4.3.1, for potential odor sources locating near existing receptors, the determination of significance is based on the distance and frequency at which confirmed odor complaints from the public have occurred in the vicinity of a similar facility.

Many existing pump stations are located near sensitive receptors. Upgrades and construction at existing pump stations would remain within the existing footprints, and all odor control systems would be maintained or upgraded to reduce the potential for odor compared to current conditions. No confirmed odor complaints have been received for existing pump stations. Because the proposed improvements would reduce the potential for odor emissions compared to existing conditions, potential odor impacts from pump station projects would be less than significant.

An in-system equalization basin constructed as part of the In-System Storage Program would provide a potential new source of odor. Odor potential would occur only when the equalization basin is in use, which typically would be a few times a year during large storm events. In addition, the equalization basin would be underground and would be sealed, with all air vented through a carbon scrubber or similar odor filtering system. After each use, the equalization basins would be emptied and cleaned to prevent buildup of debris and waste. Odors would not be generated while the equalization basin is not in use, because it would be clean and dry between major wet weather events. Although odor control equipment would be included as part of the in-system storage basin design, **Mitigation Measure 4-4 Incorporate odor control systems for facilities with odor potential** is included for clarity.

Expansion of treatment facilities would be to the north of the existing WWTP, away from sensitive receptors. Operation of existing treatment facilities would cease, and the facilities would be closed down or removed after the new facilities are in use, eliminating them as potential odor sources. The only wastewater treatment facility under consideration that would be closer to sensitive receptors would be a belowground equalization basin on the Dale Avenue Parcel.

New and expanded facilities would result in new odor sources within the WWTP; however, these facilities would be designed with odor control systems to reduce the potential for odor compared to current conditions. Compared to existing conditions, the distance between new potential odor sources and sensitive resources would increase. Older infrastructure would be replaced with newer infrastructure in better condition, with new odor control systems with the same or better efficiency for removing odorous compounds compared to existing systems. Therefore, the potential for odor generation of the In-System Storage Program would be expected to decrease compared to current conditions. In addition, the existing WWTP has not received any confirmed odor complaints. Therefore, no significant odor impacts would occur with the In-System Storage Program.

Although potential for odor impacts would not reach the significance threshold, and odor control equipment would be included as part of the facility design, **Mitigation Measure 4-4 Incorporate odor control systems for facilities with odor potential** is included for clarity.

Full Conveyance Program

The potential for odor emissions is similar to that described for the In-System Storage Program. No confirmed odor complaints have been received for existing pump stations, including the Dale Avenue Pump

Station. The proposed improvements to existing pump stations would reduce the potential for odor emissions compared to existing conditions. The new Dale Avenue Pump Station would be underground and would be sealed, with all air vented through a carbon scrubber or similar odor filtering system, and would have lower potential to generate odor compared to the adjacent existing pump station. Potential odor impacts from pump station projects would be less than significant. Although odor control equipment would be included as part of the new Dale Avenue Pump Station design, **Mitigation Measure 4-4 Incorporate odor control systems for facilities with odor potential** is included for clarity.

New and expanded facilities would result in new odor sources within the WWTP; however, these facilities would be designed with odor control systems to reduce the potential for odor compared to current conditions. Compared to existing conditions, the distance between new potential odor sources and sensitive resources would increase. Older infrastructure would be replaced with newer infrastructure in better condition, with new odor control systems with the same or better efficiency for removing odorous compounds compared to existing systems. Therefore, the potential for odor generation of the Full Conveyance Program would be expected to decrease compared to current conditions. In addition, the existing WWTP has not received any confirmed odor complaints. Therefore, no significant odor impacts would occur with the Full Conveyance Program.

Although potential for odor impacts would not reach the significance threshold, and odor control equipment would be included as part of the facility design, **Mitigation Measure 4-4 Incorporate odor control systems for facilities with odor potential** is included for clarity.

New Headworks Project and Primary Clarifier Project

The New Headworks Project and Primary Clarifier Project would be designed with odor control systems that meet or exceed the efficiency to remove odorous compounds of the systems currently in place. In addition, the distance between these two project and sensitive receptors would be greater than the distance between the receptors and the existing WWTP. Potential odor generation of the New Headworks Project and Primary Clarifier Project would be expected to decrease compared to current conditions. In addition, the existing WWTP has not received any confirmed odor complaints. Therefore, no significant odor impacts would occur with the New Headworks Project and Primary Clarifier Project.

Although potential for odor impacts would not reach the significance threshold, and odor control equipment would be included as part of the facility design, **Mitigation Measure 4-4 Incorporate odor control systems for facilities with odor potential** is included for clarity.

4.4.2 General Conformity Applicability

Because the CWP would have federal funding for some projects, a general conformity applicability analysis was performed to determine if a detailed general conformity determination is required.

In-System Storage Program

Table 4-10 shows the annual emission increases associated with the In-System Storage Program construction and the comparisons with the de Minimis thresholds. Because only the worst-case daily construction emissions were estimated, the annual emissions were conservatively estimated based on the assumption that the worst-case emission would occur for 5 days per week and 52 weeks per year during construction period. As discussed in Section 4.4.1, operational emission increase from the In-system Storage Program would be negligible.

As shown in Table 4-10, emissions of VOCs, NO_x, $PM_{2.5}$, SO_2, and CO during construction of the In-System Storage Program are well below the de Minimis thresholds. On the basis of the conformity applicability criteria, the Program would conform to the most recent EPA-approved state implementation plan; the In-System Storage Program does not require further conformity demonstration.

TABLE 4-10
General Conformity Applicability Analysis for In-System Storage Program
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Activity	Annual Emission (tpy)				
	VOC	CO	NO_x	SO_2	$PM_{2.5}$
Construction	2.94	27.76	29.93	0.04	1.81
Operation	Neg.	Neg.	Neg.	Neg.	Neg.
De Minimis Threshold	100	100	100	100	100
Exceeds de Minimis Threshold?	No	No	No	No	No

Full Conveyance Program

Table 4-11 shows the annual emission increases associated with the Full Conveyance Program construction and the comparisons with the de Minimis thresholds. Because only the worst-case daily construction emissions were estimated, the annual emissions were conservatively estimated based on the assumption that the worst-case emission would occur for 5 days per week and 52 weeks per year during construction period. As discussed in Section 4.4.1, operational emission increase from the Full Conveyance Program would be negligible.

As shown in Table 4-11, emissions of VOCs, NO_x, $PM_{2.5}$, SO_2, and CO during construction of the Full Conveyance Program are well below the de Minimis thresholds. On the basis of the conformity applicability criteria, the Program would conform to the most recent EPA-approved state implementation plan; the In-System Storage Program is exempt from the CAA conformity requirements and does not require further conformity demonstration.

TABLE 4-11
General Conformity Applicability Analysis for Full Conveyance Program
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Activity	Annual Emission (tpy)				
	VOC	CO	NO_x	SO_2	$PM_{2.5}$
Construction	2.99	27.71	30.44	0.04	1.85
Operation	Neg.	Neg.	Neg.	Neg.	Neg.
De Minimis Threshold	100	100	100	100	100
Exceeds de Minimis Threshold?	No	No	No	No	No

New Headworks Project and Primary Clarifier Project

Table 4-9 shows the annual emission increases associated with the new headworks and primary clarifier construction and operation, and the comparisons with the de Minimis thresholds. Annual construction emissions were conservatively estimated based on the assumption that the worst-case emission would occur for 5 days per week and 52 weeks per year during the headworks and the primary clarifier construction period.

As shown in Table 4-12, emissions of VOCs, NO_x, $PM_{2.5}$, SO_2, and CO during construction of the headworks and the primary clarifier are well below the de Minimis thresholds. The only criteria pollutants that would be emitted from the headworks and the primary clarifier would be VOC, and the VOC operational emissions from the headworks and the primary clarifier would be below the general conformity de Minimis threshold. On the basis of the conformity applicability criteria, the new headworks and the primary clarifier would

conform to the most recent EPA-approved state implementation plan; the In-System Storage Program is exempt from the CAA conformity requirements and does not require further conformity demonstration.

TABLE 4-12
General Conformity Applicability Analysis for the New Headworks Project and Primary Clarifier Project
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Activity	Annual Emission (tpy)				
	VOC	CO	NO_x	SO_2	$PM_{2.5}$
Headworks Construction	0.47	4.72	4.83	0.01	0.29
Primary Clarifier Construction	0.47	4.72	4.83	0.01	0.29
Headworks and Primary Clarifier Operation	0.97	NA	NA	NA	NA
De Minimis Threshold	100	100	100	100	100
Exceeds De Minimis Threshold?	No	No	No	No	No

Note:
NA = not applicable

4.5 Mitigation Measures

Mitigation Measure 4-1 Implement BAAQMD construction emission control measures.

CWP contractors shall comply with all applicable BAAQMD construction emission control measures. Applicable construction emission control measures may include, but are not limited to, the following:

- All exposed surfaces (for example, parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered twice per day.
- All haul trucks transporting soil, sand, or other loose material offsite shall be covered.
- All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once a day. The use of dry power sweeping is prohibited.
- All vehicle speeds on unpaved roads shall be limited to 15 miles per hour.
- All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of *California Code of Regulations*). Clear signage shall be provided for construction workers at all access points.
- All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified visible emissions evaluator.
- A publicly visible sign shall be posted with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The BAAQMD phone number shall also be visible to support compliance with applicable regulations.

Mitigation Measure 4-4. Incorporate odor control systems for facilities with odor potential.

The design, construction, and operation of facilities with the potential to generate odors shall include appropriate odor control systems. The odor control system shall be sized and operated to be below BAAQMD's Regulation 9, Rule 2, Inorganic Gaseous Pollutants – Hydrogen Sulfide limits of hydrogen sulfide

below 0.06 parts per million averaged over three consecutive minutes or 0.03 parts per million averaged over any 60 consecutive minutes in any 24-hour period (BAAQMD, 1979).

4.6 References

Bay Area Air Quality Management District (BAAQMD). 1979. *Rule 9-2. Inorganic Gaseous Pollutants, Hydrogen Sulfide.* Adopted December 19. Amended March 17, 1982 and October 6, 1999.

_____. 1982. *Manual of Procedures.* Regulation 7 Odorous Substances. March 17.

_____. 1999. *BAAQMD CEQA Guidelines; Assessing the Air Quality Impacts of Projects and Plans*. December.

_____. 2001. *San Francisco Bay Area 2001 Ozone Attainment Plan for the 1-hour National Ozone Standard.* October.

_____. 2010. *Bay Area 2010 Clean Air Plan*. September.

_____. 2012. *California Environmental Quality Act Air Quality Guidelines*. PM Planning. http://www.baaqmd.gov/Divisions/Planning-and-Research/Plans/PM-Planning.aspx. Updated May 2014. Accessed November.

_____. 2015. San Mateo Water Quality Control Plant Permit to Operate. Issued March 4.

California Air Pollution Control Officers Association. 2013. *California Emission Estimator Model User's Guide* Version 2013.2. July.

California Air Resources Board (ARB). 2013. *Ambient Air Quality Standards*. http://www.arb.ca.gov/research/aaqs/aaqs2.pdf.

City of San Mateo. 2009. *Draft Environmental Impact Report for the City of San Mateo General Plan Update*. July 27.Scheidt, Sarah (Regulatory Compliance Manager, City of San Mateo Public Works). 2015. Personal communication with Andrea Gardner, CH2M HILL. October 14.

South Coast Air Quality Management District (SCAQMD). 1993. *SCAQMD Rule 1179 Emissions Inventory Report, Basinwide Emissions Summary*.

Chapter 5. Biological Resources

This chapter evaluates the potential impacts of the CWP on biological resources located in the Program Area. This chapter describes biological resources present or potentially present in the Program Area and WWTP Site; discusses federal, state and local regulations that may affect biological resources; identifies potential impacts that could occur from construction and operation of the CWP; and proposes mitigation measures to reduce any significant impacts to a less than significant level.

5.1 Existing Setting

The proposed projects in the CWP would be constructed within the Program Area in the City of San Mateo; therefore, existing setting information is presented primarily for the Program Area as shown on Figure 2-2. More detailed information is provided for the WWTP Site, as described in Chapter 2.

5.1.1 Program Area

The Program Area is in a developed urban area. Most existing land use consists of paved roadways; other transportation infrastructure, including railroads; residential, institutional, commercial, and industrial development; and landscaped parks and recreation areas. Less developed and undeveloped lands are located primarily in the hills in the western part of the City, most of which is outside of the Program Area. Within the Program Area, less developed areas are located along the Bay shoreline, creeks, and sloughs.

Creeks, sloughs, and wetlands are shown on Figure 15-1. Some segments of creeks and channels, especially in upstream areas, have vegetation on the banks and areas adjacent to the creeks. This is riparian vegetation, and it could provide valuable habitat for plants and wildlife. The creek and wetland features may be considered waters of the U.S. and state (see Sections 5.2.1 and 5.2.2).

The General Plan (City of San Mateo, 2010) identifies biological communities throughout the City, as shown on Figure C/OS-3 of the General Plan. Within the Program Area, biological communities in the vicinity of proposed project locations include the following:

- **Urban:** Occurs in the large majority of the Program Area; consists of buildings and pavement, with landscaping and ornamental trees.
- **Lacustrine:** Occurs primarily in Marina Lagoon.
- **Coastal oak woodland:** Occurs in narrow bands along upstream portions of some creeks in the Program Area, including Laurel Creek, Beresford Creek, and Polhemus Creek; also occurs in undeveloped hillsides in the western portion of the City.
- **Valley oak woodland:** Occurs in a narrow band along an upstream portion of Beresford Creek.
- **Annual grassland**: Occurs in scattered undeveloped areas in the western portion of the City.

Special-status plant and animal species are afforded special recognition by federal, state, or local resource agencies or organizations. Special-status species have relatively limited distribution and generally require specialized habitat conditions. Special-status species are defined as follows:

- Listed, proposed, or candidate for listing under the state or federal Endangered Species Acts
- Protected under other regulations (e.g., local policies, Migratory Bird Treaty Act [MBTA])
- California Department of Fish and Wildlife (CDFW) Species of Special Concern (SSC) and California Fully Protected (CFP) Species
- Included in the California Native Plant Society's Rare and Endangered Plant Inventory (Rare Plant Rank 1A, 1B, or 2)

- Species that receive consideration during environmental review under California Environmental Quality Act (CEQA).

The CDFW (formerly the California Department of Fish and Game) maintains records in the California Natural Diversity Database (CNDDB) for the distribution and known occurrences of sensitive species and habitats. A search of the CNDDB of special-status species occurrences in the last 10 years and within 5 miles of the existing WWTP was completed in 2015 and within 5 miles of the center of San Mateo at approximately SR-92 and El Camino Real was completed in September 2015 (CNDDB, 2015a; CNDDB, 2015b). The 5-mile radius includes the entire Program Area. In addition, a similar search of the California Native Plant Society (CNPS) database was performed (CNPS, 2015) and the online list of federally listed species provided by the USFWS Endangered Species Office was checked for updated species listings (USFWS, 2015). Species identified in the database searches are listed in Appendix C. Within the Program Area, known special-status species occurrences are primarily along the shore and along creeks. Known occurrences of special-status species that have potential to occur in the Program Area (see Appendix C) are shown on Figure 5-2. Special-status species with the potential to occur in the Program Area include:

- salt-marsh harvest mouse (*Reithrodontomys raviventris*, a state and federal endangered species)
- Ridgway's rail (formerly known as California clapper rail) (*Rallus longirostris obsoletus,* a state and federal endangered species and a CDFW CFP)
- California red-legged frog (*Rana draytonii*, a federal threatened species)
- San Francisco garter snake (*Thamnophis sirtalis tetrataenia*, a state and federal endangered species and CDFW CFP)
- western pond turtle (*Emys marmorata*, a CDFW species of special concern
- Central California Coast steelhead (*Oncorhynchus mykiss,* a federal threatened species)

5.1.2 Wastewater Treatment Plant Site

A survey of the WWTP Site was completed on April 1, 2015. A follow-up site visit was conducted on April 6, 2015, to complete a protocol rare plant survey and a wetland delineation. Additional protocol botanical surveys were completed on May 30 and June 22, 2015. The survey area is shown on Figure 5-3 and encompasses an area of approximately 30 acres, including the WWTP Site and adjacent areas. The survey area is located in Bay Flats subsection of the Central California Coast ecological section (Miles and Goudey, 1997). The Bay Flats subsection includes the nearly level coastal plain and estuarine areas along the south end of the San Francisco Bay that are generally less than 10 feet above the mean tide line. The geology is primarily Quaternary Bay fill composed mostly of silt and clay. Only about 15 percent of the survey area is undeveloped land.

Vegetation and habitat types in the survey area include the following as identified during the site surveys:

- **Coastal salt marsh:** Marina Lagoon (formerly Seal Slough) is located in the eastern portion of the study area and contains coastal salt marsh habitat. Coastal saltmarsh vegetation, including a large patch of pickleweed near Seal Slough Dam, was observed along the edges of Marina Lagoon (see Figure 5-3). Characteristic species in these areas include pickleweed (*Salicornia pacifica),* fleshy jaumea (*Jaumea carnosa*), and saltgrass (*Distichlis spicata*).
- **Estuarine wetland:** Leslie Creek daylights just south of the intersection of South Railroad Avenue and East 16th Street in San Mateo, approximately 1 mile southwest of the survey area. The creek runs along the southwest edge of the study area between a residential neighborhood and Bayside Park then turns east and continues along the southern edge of the existing WWTP facility to the tide gates at the confluence with Marina Lagoon. Most of the channel within the survey area is characterized by cement lined side slopes with a muddy substrate. No vegetation was evident in the channel, and adjacent

vegetation consists of mowed grasses and forbs along the west side and landscaped trees, primarily Australian pine (*Casuarina cunninghamiana*), along the north side of Bayside Park (CH2M HILL, 2015).

- **Palustrine emergent wetland:** A 0.14-acre wetland area was identified in the southern part of the Detroit Drive parcel (see Figure 5-4). The wetland is situated in a topographic low area. At the time of the survey, dense Italian ryegrass (*Festuca perennis*) occurred throughout the wetland, with some robust bulrush (*Bolboschoenus robusts*), spearscale (*Atriplex prostrata*), annual beardgrass (*Polypogon monspilensis*), and curly dock (*Rumex crispus*) in the lower parts of the wetland area. Creeping wildrye (*Elymus triticoides*) is also common and intermixed with the Italian ryegrass in the narrow arm of the wetland that extends to the west.
- **Disturbed areas:** These areas are characterized by ruderal (weedy) plant species typical of highly disturbed sites and include species such as wild oat (*Avena barbata, A. fatua*), rip-gut brome (*Bromus diandrus*), Italian ryegrass, foxtail barley (*Hordeum murinium*), pampas grass (*Cortidaria jubata*), fennel (*Foeniculum vulgare*), wild radish (*Raphanus sativa*), and bull mallow (*Malva nicaeensis*). Occasional coyote bush (*Baccharis pilularis*) shrubs are also present in some areas. This vegetation was observed primarily on the Dale Avenue parcel and portions of the Detroit Drive parcel.
- **Managed landscapes:** Bayside/Joinville Park contains planted and maintained vegetation and trees; landscaping is present around the boundaries of some of the properties. Vegetation associated with landscaped areas includes a variety of landscape/cultivated trees and shrubs including Ngaio tree (*Myoporum laetum*), blackwood acacia (*Acacia melanoxylon*), pine (*Pinus patula, P. densiflora*), eucalyptus (*Eucalyptus sideroxylon, E. rudis, and E. citriodora*), Australian pine, Siberian elm (*Ulmus pumilla*), swamp paperbark (*Melaleuca ericifolia*), and cotoneaster (*Cotoneaster* spp.).

The remainder of the survey area is paved or developed with treatment facilities, trucking facilities, roadways, and parking areas.

Special-status species with the potential to occur in the WWTP Site are listed in Appendix C. Wildlife observed during the April 1 site visit include house sparrow (*Passer domesticus*), house finch (*Haemorhous mexicanus*), mallard (*Anas platyrhynchos*), American coot (*Fulica americana*), Canada goose (*Branta canadensis*), American crow (*Corvus brachyrhynchos*), rock pigeon (*Columba livia*), northern mockingbird (*Mimus polyglottos*), black phoebe (*Sayornis nigricans*), American robin (*Turdus migratorius*), and red-winged blackbird (*Agelaius phoeniceus*). Within the Marina Lagoon, snowy egret (*Egretta thula*), double-crested cormorant (*Phalacrocorax auritus*), killdeer (*Charadrius vociferus*), western and California gulls (*Larus occidentalis* and *L. californicus*), black-necked stilt (*Himantopus mexicanus*) were observed. Plant species observed on April 6 are listed in the Wetland Delineation Report (CH2M HILL, 2015).

Nests were found in two locations on the Detroit Drive abandoned parcel parking lot (see Figure 5-3). One nest belonged to a European starling (*Sturnus vulgaris*) and was observed in the broken bulb platform of an onsite streetlight. European starlings are non-native and not protected under the MBTA. The other observed nest belonged to a mourning dove (*Zenaida macroura*), which was starting to build a nest in an ornamental shrub on the southeast corner of the parking lot.

5.2 Regulatory Framework

This section discusses specific environmental review and consultation requirements and identifies permits and approvals that may be required from local, state, and federal agencies for individual projects in the CWP. Summaries of regulations were obtained from the General Plan EIR (City of San Mateo, 2009).

5.2.1 Federal Regulations

5.2.1.1 Endangered Species Act

Provisions of the federal Endangered Species Act (FESA), as amended (16 United States Code [USC] 1531), protect federally listed threatened and endangered species and their habitats from unlawful take. “Take”

under FESA includes activities that "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or…attempt to engage in any such conduct." USFWS regulations define "harm" to include some types of "significant habitat modification or degradation." In the case of Babbitt, Secretary of Interior, et al., Petitioners v. Sweet Home Chapter of Communities for a Great Oregon, et al. (No. 94-859) (U.S. Supreme Court, 1995), the United States Supreme Court ruled on June 29, 1995, that "harm" may include habitat modification "...where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering."

For projects with a federal nexus, Section 7 of the FESA requires that federal agencies, in consultation with the USFWS or NOAA Fisheries, use their authority to further the purpose of FESA and to reduce the likelihood that their actions would jeopardize the continued existence of listed species or result in destruction or adverse modification of critical habitat. Section 7 applies to the management of federal lands and other federal actions, such as federal approval of private activities through the issuance of federal permits, licenses, funding, or other actions that may affect listed species. Section 7 directs all federal agencies to use their existing authority to conserve threatened and endangered species and, in consultation with the USFWS, reduce the likelihood that their actions would jeopardize listed species or destroy or adversely modify critical habitat. Critical habitat is defined as specific areas that are essential to the conservation of federally listed species.

Section 10(a)(1)(B) of FESA allows nonfederal entities to obtain permits for incidental taking of threatened or endangered species through consultation with USFWS or NOAA Fisheries. In general, NOAA Fisheries is responsible for protection of federally listed marine species and anadromous fish; other listed species are under USFWS jurisdiction. Section 10 of FESA provides a means for nonfederal entities (i.e., states, local agencies, and private parties) that are not permitted or funded by a federal agency to receive authorization to disturb, displace, or kill (i.e., take) threatened and endangered species. It allows USFWS and/or NOAA Fisheries to issue an incidental take permit authorizing take resulting from otherwise legal activities, if the take would not jeopardize the continued existence of the species. Section 10 requires the applicant to prepare a habitat conservation plan addressing project impacts and proposing mitigation measures to compensate for those impacts. The habitat conservation plan is subject to USFWS and/or NOAA Fisheries review and must be approved by the reviewing agency or agencies before the proposed project could be initiated. Because issuance of the incidental take permit is a federal action, USFWS and/or NOAA Fisheries must also comply with the requirements of FESA Section 7 and the National Environmental Policy Act.

5.2.1.2 Clean Water Act, Section 404

The objective of the CWA, as amended, is to restore and maintain the chemical, physical, and biological integrity of the nation's waters. Discharge of fill material into waters of the U.S., including wetlands, is regulated by the USACE under Section 404 of the federal Clean Water Act (33 USC 1251–1376). USACE regulations implementing Section 404 define waters of the U.S. to include intrastate waters, including lakes, rivers, streams, wetlands, and natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce. Wetlands are defined for regulatory purposes as "areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 Code of Federal Regulations [CFR] 328.3; 40 CFR 230.3). The jurisdictional boundaries for other waters of the U.S. are based on the presence of an ordinary high water mark, as defined in 33 CFR 328.3(e). The placement of structures in "navigable waters of the U.S." is also regulated by USACE under Section 10 of the federal Rivers and Harbors Act (33 USC 401 et seq.). Projects are permitted under either individual or general (e.g., nationwide) permits. The specific applicability of the permit type is determined by USACE on a case-by-case basis.

In 1987, USACE published a manual that standardized the manner in which wetlands were to be delineated nationwide (USACE, 1987). To determine whether areas that appear to be wetlands are subject to USACE jurisdiction (i.e., jurisdictional wetlands), a wetlands delineation must be performed. Under normal

circumstances, positive indicators from three parameters, (1) wetland hydrology, (2) hydrophytic vegetation, and (3) hydric soils, must be present to classify a feature as a jurisdictional wetland. More recently, USACE developed the Regional Supplement for identifying wetlands and distinguishing them from aquatic habitats and other non-wetlands. The supplement presents wetland indicators, delineation guidance, and other information that is specific to regional areas. For any wetland delineations submitted after June 5, 2007, USACE requires that the site be surveyed in accordance with the 1987 manual and the Regional Supplement. In addition to verifying wetlands for potential jurisdiction, USACE is responsible for issuing permits for projects that propose filling of wetlands. Any permanent loss of a jurisdictional wetland as a result of project construction activities is considered a significant impact.

5.2.1.3 Clean Water Act, Section 401

Section 401 of the CWA requires any applicant for a federal license or permit to conduct any activity that may result in a discharge of a pollutant into waters of the United States to obtain a certification that the discharge will comply with the applicable effluent limitations and water quality standards. The appropriate RWQCB regulates Section 401 requirements (see Section 5.2.2.5).

5.2.1.4 Migratory Bird Treaty Act

Migratory birds are protected under the MBTA (16 USC 703–711). The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 CFR 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR 21). The vast majority of birds found in the Planning Area are protected under the MBTA.

5.2.2 State Regulations

5.2.2.1 California Endangered Species Act

Under the California Endangered Species Act (CESA), the CDFW has responsibility for maintaining a list of endangered and threatened species (California Fish and Game Code 2070). CDFW maintains a list of "candidate species," which are under review for addition to the list of endangered or threatened species. CDFW also maintains lists of "species of special concern," which serve as species watch lists. Pursuant to the requirements of CESA, an agency reviewing a proposed project within its jurisdiction must determine whether any state-listed endangered or threatened species may be present in the project site and determine whether the proposed project will have a potentially significant impact on such species. In addition, CDFW encourages informal consultation on any proposed project that may affect a candidate species; however, this consultation is not required.

Project-related impacts on species on the CESA endangered or threatened list would be considered significant. State-listed species are fully protected under the mandates of CESA. "Take" of protected species, incidental to otherwise lawful management activities, may be authorized under California Fish and Game Code Section 206.591. Authorization from CDFW would be in the form of an Incidental Take Permit.

5.2.2.2 Coastal Zone Management Act (16 USC 1456 et seq.)

The Coastal Zone Management Act (CZMA) established national policy to preserve, protect, develop, and where possible, restore or enhance the nation's coastal zone. The coastal zone includes the territorial sea and inland bays. If a proposed project affects water use in the coastal zone, the activity must be consistent with the state's Coastal Zone Management Program to the maximum extent possible. This applies to actions by a federal entity or actions that require a federal permit. The reauthorization amendments of the CZMA in 1990 indicate that any federal action, regardless of location, is subject to the CZMA. Because the City is located on San Francisco Bay, nearly any project action proposed in the City that requires a federal permit is subject to the CZMA, which is administered by the Bay Conservation and Development Commission.

5.2.2.3 Marine Mammal Protection Act (P.L. 92-522; amended by P.L. 98-364, approved July 17, 1984)

The Marine Mammal Protection Act prohibits taking or importing marine mammals or marine mammal products except under special permit conditions. The term "take" is broadly defined to include harassing or

attempting to harass marine mammals. The term “marine mammal” includes all seals, sea lions, and other mammals that primarily occur in marine environments.

5.2.2.4 Porter-Cologne Water Quality Control Act

Water quality in California is governed by the Porter-Cologne Water Quality Control Act. This law assigns overall responsibility for water rights and water quality protection to the SWRCB and directs the nine statewide RWQCBs to develop and enforce water quality standards within their boundaries.

5.2.2.5 California Regional Water Quality Control Board Clean Water Act

Section 401 Water Quality Certification

Section 401 of the CWA (33 USC 1341) requires any applicant for a federal license or permit to conduct any activity that may result in a discharge of a pollutant into waters of the U.S. to obtain a certification that the discharge will comply with the applicable effluent limitations and water quality standards. In California, the RWQCBs regulate Section 401 requirements. The San Francisco Bay RWQCB is responsible for enforcing water quality criteria and protecting water resources within the Planning Area. The RWQCB is responsible for controlling discharges to surface waters of the state by issuing waste discharge requirements (WDR) or commonly by issuing conditional waivers to WDRs. The RWQCB requires that a project proponent obtain a Section 401 water quality certification for Section 404 permits granted by USACE. A request for water quality certification (including WDRs) by the RWQCB and a Notice of Intent (NOI) application for a General Permit for Stormwater Discharges Associated with Construction Activities are submitted after completion of the CEQA environmental document and submittal of the wetland delineation to USACE.

Waters of the State

Under California law, “waters of the state” means “any surface water or groundwater, including saline waters, within the boundaries of the state.” Therefore, water quality laws apply to surface water and groundwater. After the U.S. Supreme Court decision in *Solid Waste Agency of Northern Cook County v. U.S. Army Core of Engineer*s, the Office of Chief Counsel of the SWRCB issued a legal memorandum confirming the State’s jurisdiction over isolated wetlands. The memorandum stated that under the California Porter-Cologne Water Quality Control Act, discharges to wetlands and other waters of the state are subject to State regulation, including isolated wetlands. In general, the RWQCBs regulate discharges to isolated waters in much the same way as they do for federal-jurisdictional waters, using the Porter-Cologne Water Quality Control Act rather than CWA authority.

5.2.2.6 California Department of Fish and Wildlife Streambed Alteration Agreement (Sections 1600–1607 of the California Fish and Game Code)

State and local public agencies are subject to Section 1602 of the California Fish and Game Code, which governs construction activities that will substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake designated by the CDFW. Under Section 1602, a discretionary Streambed Alteration Agreement must be issued by the CDFW prior to construction activities on lands under CDFW jurisdiction. As a general rule, this requirement applies to work within the 100-year floodplain of a stream or river containing fish or wildlife resources.

5.2.2.7 Native Plant Protection Act

The Native Plant Protection Act (California Fish and Game Code Sections 1900–1913) prohibits take, possession, or sale within the state of any plants with a CDFW designation of rare, threatened, or endangered. An exception in the act allows landowners, under specified circumstances, to take listed plant species, provided the owners first notify CDFW and give that agency at least 10 days to retrieve (and presumably replant) the plants before they are destroyed (Fish and Game Code Section 1913 exempts “the removal of endangered or rare native plants from a canal, lateral ditch, building site, or road, or other right of way”). Impacts of a project on these species are not considered significant unless the species are known to have a high potential to occur within the area of disturbance associated with construction of the proposed project.

5.2.2.8 Birds of Prey

Under Section 3503.5 of the California Fish and Game Code, it is unlawful to take, possess, or destroy any birds in the orders of Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto.

5.2.2.9 Fully Protected Species

California statutes also accord "fully protected" status to specifically identified birds, mammals, reptiles, and amphibians. These species cannot be taken, even with an incidental take permit. Section 3505 of the California Fish and Game Code makes it unlawful to take "any aigrette or egret, osprey, bird of paradise, goura, numidi, or any part of such a bird." Section 3511 protects from take the following fully protected birds: (a) American peregrine falcon (*Falco peregrinus anatum*); (b) brown pelican (*Pelecanus occidentalis*); (c) California black rail (*Laterallus jamaicensis coturniculus*); (d) Ridgway's rail (formerly known as California clapper rail) (*Rallus longirostris obsoletus*); (e) California condor (*Gymnogyps californianus*); (f) California least tern (*Sterna albifrons browni*); (g) golden eagle; (h) greater sandhill crane (*Grus canadensis tabida*); (i) lightfooted clapper rail (*Rallus longirostris levipes*); (j) southern bald eagle (*Haliaeetus leucocephalus leucocephalus*); (k) trumpeter swan (*Cygnus buccinator*); (l) white-tailed kite (*Elanus leucurus*); and (m) Yuma clapper rail (*Rallus longirostris yumanensis*).

California Fish and Game Code Section 4700 identifies the following fully protected mammals that cannot be taken: (a) Morro Bay kangaroo rat (*Dipodomys heermanni morroensis*); (b) bighorn sheep (*Ovis canadensis*), except Nelson bighorn sheep (subspecies *Ovis Canadensis nelsoni*); (d) Guadalupe fur seal (*Arctocephalus townsendi*); (e) ring-tailed cat (genus *Bassariscus*); (f) Pacific right whale (*Eubalaena sieboldi*); (g) salt-marsh harvest mouse (*Reithrodontomys raviventris*); (h) southern sea otter (*Enhydra lutris nereis*); and (i) wolverine (*Gulo gulo*).

CDFW does not issue take permits, including Incidental Take Permits (ITP), for any of these fully protected species.

5.2.2.10 California Native Plant Society

The CNPS is a non-governmental agency that classifies native plant species according to current population distribution and threat-level of extinction. The CNPS maintains a list of plant species native to California that have low numbers, limited distribution, or are otherwise threatened with extinction. Potential impacts on populations of CNPS-listed plants receive consideration under CEQA review.

5.2.3 Local Regulations

5.2.3.1 McAteer-Petris Act

The McAteer-Petris Act established the BCDC as the agency responsible for maintaining and carrying out the provisions of the act and the San Francisco Bay Plan (Bay Plan). The Bay Plan is the primary plan governing development in San Francisco Bay; it is a comprehensive and enforceable plan for conservation of water of the Bay and development of its shoreline (BCDC, 2008). The act directs BCDC to exercise its authority to issue or deny permit applications for placing of fill in the Bay. The agency has jurisdiction over all tidal areas of the Bay and the Sacramento River, including projects within 100 feet of the shoreline.

The Bay Plan is the guiding policy document for BCDC. The Bay Plan provides the findings and policies to guide future uses of the Bay and shoreline, certain waterways, salt ponds, and managed wetlands; and the maps that apply these policies to BCDC's jurisdiction. Any person or public agency other than a federal agency that proposes certain activities in or around these areas must obtain a development permit from the BCDC.

The BCDC has jurisdiction in the following areas of the City of San Mateo:

- The first 100 feet inland from the shoreline around the Bay
- Portions of most creeks, rivers, sloughs, and other tributaries that flow into the Bay.
- Managed wetlands that have been diked off from the Bay.

Where necessary, particular portions of BCDC jurisdiction may be further clarified by BCDC regulations. BCDC jurisdiction was identified in the WWTP vicinity as part of the City of San Mateo's Bayfront Levee Improvements Project in 2008 (H.T. Harvey & Associates, 2008). The approximate limits of BCDC jurisdiction near the WWTP Site as determined in 2008 are shown on Figure 5-3. BCDC jurisdiction may be present on portions of the existing WWTP and the Bayfront parcels. No BCDC jurisdiction is present on the Detroit Drive parcel, where the New Headworks Project and Primary Clarifier Project would be located. More precise limits would need to be determined to support a permit, if one is required.

5.2.3.2 General Plan

The General Plan includes a Conservation, Open Space, Parks, and Recreation Element that contains goals, objectives, policies, actions, and strategies applicable to biological resources. The General Plan goals and policies related to biological resources include the following:

- C/OS 1.1: Lagoon Habitat. Enhance the wildlife habitat value of Marina Lagoon, whenever possible, in conjunction with recreational use and flood control management activities.
- C/OS 1.2: Bird Island. Maintain "Bird Island" as a bird nesting and breeding site.
- C/OS 1.5: Conversion of Incompatible Uses. Encourage the conversion of existing land uses which are not compatible with adjacent lagoon or wetlands to permitted compatible uses.
- C/OS 2.1: Aesthetic and Habitat Values -- Public Creeks. Preserve and enhance the aesthetic and habitat values of San Mateo, Laurel and Beresford creeks and other City-owned channels in all activities affecting these creeks.
- C/OS 2.2: Aesthetic and Habitat Values – Private Creeks. Preserve and enhance the aesthetic and habitat values of privately owned sections of all other creeks and channels when cost effective or when these values outweigh economic considerations.
- C/OS 2.3: Hydrologic Impacts. Ensure that improvement to creeks and other waterways do not cause adverse hydrologic impacts on upstream or downstream portions of the subject creek; comply with Safety Element Policy S-2.1 regarding flood control.
- C/OS 2.4: New Creekside Development Requirements. Require that new Creekside development includes the following:
    a. Adequate setback from the creek bank for flood control as directed by the Safety Element Policy S-2.2.
    b. Protection or enhancement of riparian vegetation and water (including stormwater) quality.
    c. Dedication of maintenance/bank stabilization easement in exchange for City assumption of maintenance responsibility.
    d. Dedication of public access easement where possible and desirable.
- C/OS 6.1: Tree Preservation. Preserve heritage trees in accordance with the City Heritage Tree Ordinance.
- C/OS 6.2: Replacement Planting. Require significant replacement planting when the removal of heritage trees is permitted.

- C/OS 6.3: New Development Requirements. Require the protection of heritage trees during construction activity; require that landscaping, buildings, and other improvements located adjacent to heritage trees be designed and maintained to be consistent with the continued health of the tree.
- C/OS 6.4: Tree and Stand Retention. Retain the maximum feasible number of trees and preserve the character of stands or grove trees in the design of new or modified projects.

5.2.3.3 City of San Mateo Heritage Tree Ordinance

The City of San Mateo Heritage Tree Ordinance (Chapter 13.52 of the Municipal Code [City of San Mateo, 2015]) provides for the protection of heritage trees, which are defined as any bay (*Umbellularia californica*), buckeye (*Aesculus* spp.), oak (*Quercus* spp.), cedar (*Cedrus* spp.), or redwood (*Sequoia* spp.) tree that has a diameter of 10 inches or more measured at 48 inches above natural grade; or any tree with a trunk diameter of 16 inches or more measured at 48 inches above natural grade. A permit is required for (1) removing a heritage tree, (2) pruning more than one quarter of the crown of existing foliage, or (3) removing more than one third of the root system. A Heritage Tree Application is required for the permit and includes, among other things, the number and location of trees to be removed or pruned by types and the reason for removal or pruning of each. For construction work within a radius measured from the trunk center equal to 10 times the diameter of the tree trunk measured at 4 feet above grade, or other radius determined by the City during the development review process, a tree protection plan is to be prepared by a certified arborist prior to the issuance of a permit for a development project. Trees removed under jurisdiction of a planning approval pursuant to Chapter 27.71 must conform to the replacement conditions specified in the planning approval.

5.3 Assessment Methods and Thresholds of Significance

Potential impacts on biological resources were identified based on information collected during the April 1 and April 6, 2016, site surveys, data from the CNDDB, USFWS, and CNPS searches, information from the General Plan EIR, and other existing documentation where noted. To determine the level of significance of an identified impact, the criteria included in Appendix G of the CEQA Guidelines were used.

Impacts on biological resources may occur if the CWP would result in the following:

- A substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS
- A substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the CDFW or USFWS
- A substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, and coastal) through direct removal, filling, hydrological interruption, or other means
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance
- Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan

5.4 Environmental Impacts

Potential impacts of the CWP on biological resources are summarized in Table 5-1 and described in subsequent sections.

TABLE 5-1
Summary of Biological Impacts
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Impact	In-System Storage Program	Full Conveyance Program	New Headworks Project	Primary Clarifier Project
Impact 5-1. Implementation of the CWP could have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species.	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation
Impact 5-2. Implementation of the CWP could have an adverse effect on riparian habitats.	Less than significant impact	Less than significant impact	No impact	No impact
Impact 5-3. Implementation of the CWP could result in a substantial adverse effect on federally protected wetlands.	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation
Impact 5-4. Implementation of the CWP may interfere with the movement of fish or wildlife species.	Less than significant impact with mitigation	Less than significant impact with mitigation	No impact	No impact
Impact 5-5. Implementation of the CWP could require the removal of heritage trees and potentially conflict with the City of San Mateo Heritage Tree Ordinance.	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation
Impact 5-6. Implementation of the CWP would not conflict with provisions of an adopted habitat conservation plan, natural community conservation plan, or other plan.	No impact	No impact	No impact	No impact

Impact 5-1. Implementation of the CWP could have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species.

Special-status species are not expected to occur through most of the urbanized areas within the Program Area. Special-status species, however, do have the potential to be present in and around the WWTP Site and along creeks and channels.

In-System Storage Program

Program Area (Collection System Projects)

Most of the collection system projects to be constructed as part of the In-System Storage Program would be located in highly developed urban areas. Pipeline projects generally would be constructed within existing streets or otherwise disturbed areas. Pump station projects would be constructed at existing pump station

sites, in similarly paved or disturbed locations. Projects in these locations would not be expected to contain special-status plant or wildlife species or habitat for such species.

A small number of collection system projects may include construction near areas that may contain habitat for special-status wildlife species. These would include projects located near creeks or in the western portion of San Mateo adjacent to undeveloped areas. Migratory birds may nest in trees in riparian areas along creeks or channels. Construction activities such as tree trimming and nearby excavation or micro-tunneling could disrupt nesting birds and cause abandonment of nests or young. Western pond turtle (*Emys marmorata*, a CDFW species of special concern), California red-legged frog (*Rana draytonii*, a federal threatened species), and San Francisco garter snake (*Thamnophis sirtalis tetrataenia*, a state and federal endangered species and CDFW CFP) could be present along creeks and channels throughout the Program Area and if present could be harmed by construction activities. Ridgway's rail (*Rallus longirostris obsoletus*, a state and federal endangered species and CDFW CFP) may use San Mateo Creek as foraging habitat (H.T. Harvey & Associates, 2009); however, no breeding habitat is located near the creek.

Although special-status wildlife species would not be likely to occur for these projects, because of the urbanized location, **Mitigation Measure 5-1a Perform work during seasonal avoidance windows where feasible** and **Mitigation Measure 5-1b Perform pre-construction surveys for special-status wildlife species** would be implemented for each collection system project that would cross a creek or channel, or is adjacent to creeks or undeveloped natural areas, to avoid impacts on special-status species during construction. These measures would schedule work activity when species are less likely to be present and determine if any are present prior to the start of construction. If construction would occur during the nesting bird season (typically between February 1 and August 31) and nesting birds protected under the MBTA are found during pre-construction survey, **Mitigation Measure 5-1a** and **Mitigation Measure 5-1b** would likewise reduce impacts on nesting birds. In the unlikely event that special-status species are found during construction, **Mitigation Measure 5-1c Protect special-status wildlife species found during construction** would be implemented to minimize impacts on special-status wildlife species through buffers, monitoring, and other strategies.

The Central California Coast (CCC) Distinct Population Segment (DPS) of steelhead (*Oncorhynchus mykiss*) was federally listed as threatened in 2006 and updated in 2014 (NOAA Fisheries, 2006; 2014). This DPS includes all naturally spawned steelhead populations in coastal rivers, streams, and creeks below impassable barriers from the Russian River watershed in (Mendocino and Sonoma counties) to the Aptos Creek watershed (in Santa Cruz County), all drainages of San Francisco Bay and San Pablo Bay eastward to Chipps Island at the confluence of the Sacramento River and San Joaquin River, and steelhead from two artificial propagation programs (NOAA Fisheries, 2015). San Mateo Creek may provide migration and spawning habitat for adults, and shaded pools within it may provide rearing habitat for juveniles. Two proposed pipeline projects would be installed under San Mateo Creek using trenchless technologies (see Impact 5-3). If a technology with a risk of frac-out where drilling equipment or muds break through the bed of the creek or channel would be used, impacts on CCC steelhead or habitat could occur. **Mitigation Measure 5-1a** would be implemented so that construction occurs during the seasonal avoidance window to minimize impacts on CCC steelhead.

Collection system projects that are not located adjacent to a creek, channel, or an undeveloped natural area would not be expected to affect special-status wildlife species; no mitigation for these projects would be required. This would include in-system storage basins constructed in landscaped parks, parking lots, or other developed locations.

WWTP Site (WWTP Projects)

The wastewater treatment projects for the In-System Storage Program would be constructed on the WWTP Site. Potential resources are discussed individually below.

Rare Plants

Special-status plant species have been documented within 5 miles of the WWTP Site; most of these species would not be expected to be present on the WWTP Site, because they require habitat types that do not exist there. Only one plant species on the list of documented species, arcuate bush mallow (*Malacothamnus arcuatus*), was collected from the vicinity of the project in 1935, but this occurrence is no longer present because of extensive urban development (CNDDB, 2015). In general, the potential for rare plants to occur on site is considered very low because most of the survey area is developed or landscaped, and the undeveloped areas are characterized by dense cover of invasive species such as fennel (*Foeniculum vulgare*) or consist of small areas surrounded by development that are regularly mowed. No special-status plants were found during the 2015 protocol botanical surveys; therefore, impacts on rare plants would not be expected to occur at the WWTP Site.

Special-status Wildlife

Salt Marsh Harvest Mouse

Salt marsh harvest mouse (*Reithrodontomys raviventris*), a state and federal endangered species, has been documented to occur within 3 miles of the WWTP Site (Wetland Research Associates [WRA], 2013). Suitable salt-marsh is not present in the WWTP Site. Salt marsh harvest mouse has the potential to be present in the isolated stand of pickleweed observed in Marina Lagoon, just east of the WWTP Site. However, no construction or operations activities would be performed in Marina Lagoon as part of the In-System Storage Program. In addition, substantial barriers including roads, the solid wall surrounding much of the existing WWTP, and other developments are present between the WWTP Site and the shoreline marsh (WRA, 2013). Salt marsh harvest mouse is unlikely to occur in the WWTP Site. To further minimize the potential for construction of the In-System Storage Program to affect salt marsh harvest mouse, **Mitigation Measure 5-1a, Mitigation Measure 5-1b,** and **Mitigation Measure 5-1c** would be implemented. Operation of the In-System Storage Program would not be expected to affect salt marsh harvest mouse because the site would not contain habitat for the mouse and it would be surrounded by a wall that would serve as a barrier to access from nearby salt marsh. Impacts on salt marsh harvest mouse would be less than significant.

Ridgway's Rail (*Formerly known as California Clapper Rail)*

Ridgway's rail (*Rallus longirostris obsoletus*), a state and federal endangered species and CDFW CFP, has been documented to occur within 0.2 mile of the WWTP Site (WRA, 2013). The Marina Lagoon directly east of the WWTP Site contains low-quality foraging habitat for Ridgway's rails, although it is too small and lacks a network of tidal channels for breeding rails (H.T. Harvey & Associates, 2009). A population of rails is known to exist to the northeast of the WWTP Site, north of J. Hart Clinton Drive (H.T. Harvey & Associates, 2009). No salt-marsh or typical foraging habitat is present in the WWTP Site. Barriers, including J. Hart Clinton Drive and other roadways, are present between the WWTP and suitable habitat on the Bay.

Although this species is unlikely to occur in the WWTP Site, construction-related disturbance could result in the abandonment of an active nest in nearby areas. Disturbances could occur during construction of any project on the WWTP Site, depending on its location. In addition, restoration of wetlands, if required for mitigation of wetland impacts (see Impact 5-3), could occur in or near Ridgway's rail habitat, depending on the location of the restoration work. Substantial adverse effects on the species could occur. Implementation of **Mitigation Measure 5-1a, Mitigation Measure 5-1b,** and **Mitigation Measure 5-1c** would reduce potential construction impacts to a less than significant level. Operation of the In-System Storage Program would not be expected to affect Ridgway's rail because operational noise levels would be similar to existing operational noise levels.

California Red-Legged Frog, San Francisco Garter Snake, and Western Pond Turtle

California red-legged frog (*Rana draytonii*, a federal threatened species), San Francisco garter snake (*Thamnophis sirtalis tetrataenia*, a state and federal endangered species and CDFW CFP), and western pond

turtle (*Emys marmorata*, a CDFW species of special concern), could be present in Leslie Creek on the south side of the WWTP Site. A solid wall is located along the southern boundary of the existing WWTP, providing a barrier to these animals between Leslie Creek and the WWTP Site. In addition, these species have not been observed in this portion of Leslie Creek. The most recent observation of California red-legged frog near the WWTP Site occurred in 2007 at Crystal Springs Dam on Lower Crystal Springs Reservoir, approximately 4.4 miles southwest of the WWTP Site. The most recent observation of San Francisco garter snake near the site occurred in 2013 at Upper Crystal Springs Reservoir and the southeast portion of Lower Crystal Springs Reservoir, approximately 5.1 miles southwest of the WWTP Site. The most recent observation of western pond turtle near the WWTP Site occurred in 2006 at Upper Crystal Springs Reservoir, approximately 5.1 miles southwest of the WWTP Site. No impacts on California red-legged frog, San Francisco garter snake, or western pond turtle would be expected to occur within the WWTP Site.

If determined to be necessary, interim or permanent recreation access for pedestrians and bicyclists to pass through the WWTP Site may be provided directly south of the existing WWTP (see Chapter 15). Construction of such access may including grading or installing minor structures on either bank of Leslie Creek. To avoid impacts on California red-legged frog, San Francisco garter snake, and western pond turtle during construction of recreation access, **Mitigation Measure 5-1a** and **Mitigation Measure 5-1b** would be implemented. Impacts on these species would be less than significant. Operation of the WWTP as part of the In-System Storage Program would not be expected to affect California red-legged frog, San Francisco garter snake, or western pond turtle because the WWTP Site would not contain habitat for them, and the facilities would be surrounded by a wall that would serve as a barrier to access from nearby areas.

Migratory Birds

Birds protected under the MBTA have the potential to occur in the WWTP Site. The mourning dove, which was observed building a nest on the Detroit Drive parcel, would be protected under the MBTA. Migratory birds may nest in the trees in the WWTP Site, given the proximity to the Bay and coastal salt marsh, which provide food habitat for many bird species. Construction activities near the WWTP Site could disrupt nesting birds and cause abandonment of nests or young, which is a potentially significant impact. Implementation of **Mitigation Measure 5-1a** and **Mitigation Measure 5-1b** would reduce impacts to a less than significant level.

With implementation of **Mitigation Measure 5-1a, Mitigation Measure 5-1b,** and **Mitigation Measure 5-1c**, impacts of the In-System Storage Program on candidate, sensitive, or special-status species would be less than significant.

Full Conveyance Program

Program Area (Collection System Projects)

The Full Conveyance Program would include collection system projects in the same locations as the In-System Storage Program, other than the in-system storage basins that would not be part of the Full Conveyance Program. As previously described, a small number of collection system projects may include construction near areas that may contain habitat for special-status wildlife species including migratory nesting birds, California red-legged frog, San Francisco garter snake, and western pond turtle. These would include projects located near creeks or in the western portion of the City, adjacent to undeveloped areas. Although special-status wildlife species would not be likely to occur for these projects because of the urbanized location, **Mitigation Measure 5-1a Perform work during seasonal avoidance windows where feasible** and **Mitigation Measure 5-1b Perform pre-construction surveys for special-status wildlife species** would be implemented for each collection system project that would cross a creek or channel or is adjacent to creeks or undeveloped natural areas to avoid impacts on special-status species during construction. These measures would schedule work activity when species are less likely to be present and determine if any are present prior to the start of construction. If construction would occur during nesting bird season (typically between February 1 and August 31) and nesting birds protected under the MBTA are found during preconstruction survey, **Mitigation Measure 5-1a** and **Mitigation Measure 5-1b** would similarly reduce

impacts on nesting birds. In the unlikely event that special-status species are found during the pre-construction survey, **Mitigation Measure 5-1c Protect special-status wildlife species found during construction** would be implemented to minimize impacts on special-status wildlife species.

As described for the In-System Storage Program, San Mateo Creek may provide migration and spawning habitat for adult CCC steelhead, and shaded pools within it may provide rearing habitat for juveniles. Two proposed pipeline projects would be installed under San Mateo Creek using trenchless technologies (see Impact 5-3). If a technology with a risk of frac-out would be used, impacts on CCC steelhead or habitat could occur. **Mitigation Measure 5-1a** would be implemented so that construction occurs during the seasonal avoidance windows to minimize impacts on CCC steelhead.

Collection system projects that are not located adjacent to a creek, channel, or an undeveloped natural area would not be expected to affect special-status wildlife species; no mitigation for these projects would be required. The new pump station at the Dale Avenue Pump Station site would not be located on habitat supporting special-status species.

WWTP Site (WWTP Projects)

As previously described for the In-System Storage Program, wastewater treatment projects for the Full Conveyance Program would be constructed on the WWTP Site. No special-status plants were found during the 2015 protocol botanical surveys, and rare plants would not be expected to occur at the WWTP Site. Potential impacts on migratory birds, salt-marsh harvest mouse, Ridgway's rail, California red-legged frog, San Francisco garter snake and western pond turtle could occur during construction activities. **Mitigation Measure 5-1a, Mitigation Measure 5-1b,** and **Mitigation Measure 5-1c** would be implemented to minimize impacts on special-status wildlife. Operation of the Full Conveyance Program would not be expected to affect special-status wildlife.

With implementation of **Mitigation Measure 5-1a**, **Mitigation Measure 5-1b**, and **Mitigation Measure 5-1c** impacts of the Full Conveyance Program on candidate, sensitive, or special-status species would be less than significant.

New Headworks Project and Primary Clarifier Project

As previously described for the In-System Storage Program, the New Headworks Project and Primary Clarifier Project would be constructed on the WWTP Site. No special-status plants were found during the 2015 protocol botanical surveys, and rare plants would not be expected to occur at the WWTP Site. Potential impacts on migratory birds, salt-marsh harvest mouse, Ridgway's rail, California red-legged frog, San Francisco garter snake, and western pond turtle could occur. **Mitigation Measure 5-1a Perform work during seasonal avoidance windows where feasible, Mitigation Measure 5-1b Perform pre-construction surveys for special-status wildlife species** and **Mitigation Measure 5-1c Protect special-status wildlife species found during construction** would be implemented to minimize impacts on special-status wildlife. Operation of the New Headworks Project and Primary Clarifier Project would not be expected to affect special-status wildlife, which would not be expected to occur at an active wastewater treatment plant facility.

With implementation of **Mitigation Measure 5-1a, Mitigation Measure 5-1b**, and **Mitigation Measure 5-1c,** impacts of the New Headworks Project and Primary Clarifier Project on candidate, sensitive, or special-status species would be less than significant.

Impact 5-2. Implementation of the CWP could have an adverse effect on riparian habitats.

In-System Storage Program

A small number of In-System Storage Program pipeline projects would cross creeks or channels in the Program Area. Some of the creeks and drainages contain riparian habitat. However, trenchless technologies would be used to construct these projects. Minor tree trimming in riparian areas may be required to pothole utilities or perform similar construction-related activities. Operation of the In-System Storage Program

would include maintenance activities for pipelines, pump stations, and in-system storage basins. These facilities would be accessed through manholes and entrances constructed outside riparian areas, and no operational impacts on riparian habitats would occur. No riparian habitat is present in the WWTP Site.

Adverse effects on riparian habitats from the In-System Storage Program would be less than significant. No mitigation would be required.

Full Conveyance Program

The Full Conveyance Program would include collection system projects in the same locations as the In-System Storage Program, other than the in-system storage basins that would not be part of the Full Conveyance Program. A small number of Full Conveyance Program pipeline projects would cross creeks or channels in the Program Area. Some of the creeks and drainages contain riparian habitat. However, trenchless technologies would be used to construct these projects. Minor tree trimming in riparian areas may be required to pothole utilities or perform similar construction-related activities. Operation of the Full Conveyance Program would include maintenance activities for pipelines and pump stations, including the new pump station at the Dale Avenue Pump Station site. These facilities would be accessed through manholes and entrances constructed outside riparian areas, and no operational impacts on riparian habitats would occur. No riparian habitat is present in the WWTP Site.

Adverse effects on riparian habitats from the Full Conveyance Program would be less than significant. No mitigation would be required.

New Headworks Project and Primary Clarifier Project

The New Headworks Project and the Primary Clarifier Project would be located on the WWTP Site, and riparian habitat is not present there. Construction and operation of the New Headworks Project and the Primary Clarifier Project would not result in adverse effects on riparian habitats. No mitigation would be required.

Impact 5-3. Implementation of the CWP could result in a substantial adverse effect on federally protected wetlands.

In-System Storage Program

Wastewater treatment facilities for the In-System Storage Program would be constructed at the WWTP Site. A 0.14-acre wetland feature is located in the southern part of the Detroit Drive parcel (see Figure 5-2) within the WWTP Site. This feature may meet the criteria for a federal jurisdictional wetland, as defined by Section 404 of the CWA. Wetland hydrology in this area appears to be driven by tidally influenced shallow groundwater. The wetland also appears to receive supplemental inflows from a stormwater drain along Detroit Drive that conveys roadway runoff to a cement culvert discharging in the southern part of the wetland. Construction of wastewater treatment facilities on the Detroit Drive parcel would require filling of the wetland for project siting, soils stabilization, staging, and other construction activities. This would be a potentially significant impact. Implementation of **Mitigation Measure 5-3a Provide appropriate offset for fill of jurisdictional wetlands** would reduce impacts to a less than significant level. Wetland habitat of equal or higher quality than the Detroit Drive parcel feature would be enhanced or created, as required by the Section 404 permit.

Tidal wetlands east of the WWTP Site would not be filled or excavated as part of construction activities.

A small number of pipeline projects would cross existing creeks or channels. These pipelines would be constructed using trenchless technologies to avoid disturbance of the creeks or channels. Some trenchless technologies, such as horizontal directional drilling, have a risk of frac-out. Where such technologies are used for pipeline installation under creeks or channels, impacts on jurisdictional areas within creeks or channels could occur. Impacts could include deposition of sediments or alteration of the creek bed or bank. Depending on the scale of the frac-out, the adverse effects could be substantial. Implementation of **Mitigation Measure 5-3b Prepare and implement contingency plan for frac-out** would include specific

strategies to monitor for and contain a frac-out and would reduce impacts to a less than significant level. In addition, a Streambed Alteration Agreement under Section 1600 of the California Fish and Game Code may be required for these projects.

No other wetlands or waters of the U.S. would be located within the construction footprint of collection system projects. Collection system projects that are not located adjacent to a creek or channel and would not be expected to result in adverse effects on wetlands or waters of the U.S. This would include in-system storage basins constructed in landscaped parks, parking lots, or other developed locations.

Other potential construction-related impacts on water quality are discussed in Chapter 10. With implementation of **Mitigation Measure 5-3a** and **Mitigation Measure 5-3b**, adverse effects from the In-System Storage Program on federally protected wetlands would be less than significant.

Full Conveyance Program

Wastewater treatment facilities for the Full Conveyance Program would be constructed at the WWTP Site; therefore, the impacts on federally protected wetlands from construction of wastewater treatment plant facilities would be the same as previously described for the In-System Storage Program. Fill of the 0.14-acre potential jurisdictional wetland in the southern part of the Detroit Drive parcel (see Figure 5-2) would be a potentially significant impact. Implementation of **Mitigation Measure 5-3a Provide appropriate offset for fill of jurisdictional wetlands** would reduce impacts to a less than significant level. Wetland habitat of higher quality than the Detroit Drive parcel feature would be enhanced or created.

Tidal wetlands east of the WWTP Site would not be filled or excavated as part of construction activities.

The Full Conveyance Program would include installation of pipelines under creeks and channels in the same locations as the In-System Storage Program. Therefore, as previously described, frac-out" could result, depending on the trenchless technology used for pipeline installation, and impacts on creek and channel jurisdictional areas could occur. Implementation of **Mitigation Measure 5-3b Prepare and implement contingency plan for frac-out** would include specific strategies to monitor for and contain a frac-out and would reduce impacts to a less than significant level. In addition, a Streambed Alteration Agreement under Section 1600 of the California Fish and Game Code may be required for these projects.

No other wetlands or waters of the U.S. would be located within the construction footprint of collection system projects, including the Dale Avenue Pump Station site where the new pump station would be constructed. Collection system projects that are not located adjacent to a creek or channel and would not be expected to result in adverse effects on wetlands or waters of the U.S.

Other potential construction-related impacts on water quality are discussed in Chapter 10.

With implementation of **Mitigation Measure 5-3a** and **Mitigation Measure 5-3b**, adverse effects from the Full Conveyance Program on federally protected wetlands would be less than significant.

New Headworks Project and Primary Clarifier Project

The New Headworks Project and Primary Clarifier Project would be constructed on the Detroit Drive parcel and would result in the fill of the 0.14-acre potential jurisdictional wetland located in the southern part of the Detroit Drive parcel (see Figure 5-2). This would be a potentially significant impact. Implementation of **Mitigation Measure 5-3a Provide appropriate offset for fill of jurisdictional wetlands** would reduce impacts to a less than significant level. Wetland habitat of higher quality than the Detroit Drive parcel feature would be enhanced or created.

Tidal wetlands east of the WWTP Site would not be filled or excavated as part of construction activities.

Other potential construction-related impacts on water quality are discussed in Chapter 10.

With implementation of **Mitigation Measure 5-3a**, adverse effects from the New Headworks Project and Primary Clarifier Project on federally protected wetlands would be less than significant.

Impact 5-4. Implementation of the CWP may interfere with the movement of fish or wildlife species.

In-System Storage Program

The wastewater facilities for the In-System Storage Program would be constructed at the WWTP Site. The WWTP Site does not contain established native resident or migratory wildlife corridors or native wildlife nursery sites. Construction and operation of the In-System Storage Program would not be expected to interfere with the movement of fish or wildlife species at the WWTP Site.

As described in Impact 5-1, San Mateo Creek may provide migration and spawning habitat for adult CCC steelhead. Two proposed pipeline projects would be installed under San Mateo Creek using trenchless technologies (see Impact 5-3). Other creeks or channels in the Program Area could provide movement corridors for fish. If a technology with a risk of frac-out is used, impacts on the movement of CCC steelhead or other fish could occur. **Mitigation Measure 5-1a Perform work during seasonal avoidance windows where feasible** would be implemented to minimize impacts on CCC steelhead and other fish.

Although creeks and drainages in the Program Area may provide corridors for movement of wildlife species, the use of trenchless technologies to install pipelines that cross creeks and drainages would avoid interference with wildlife movement.

Operation of the In-System Storage Program would include maintenance activities for pipelines, pump stations, and in-system storage basins. These facilities would be accessed through manholes and entrances constructed outside of wildlife corridors, and no operational impacts on the movement of fish or wildlife species would occur.

With implementation of **Mitigation Measure 5-1a**, impacts on the movement of fish or wildlife species from the In-System Storage Program would be less than significant.

Full Conveyance Program

The wastewater facilities for the Full Conveyance Program would be constructed at the WWTP Site. The WWTP Site does not contain established native resident or migratory wildlife corridors or native wildlife nursery sites. Construction and operation of the Full Conveyance Program would not be expected to interfere with the movement of fish or wildlife species at the WWTP Site.

As described in Impact 5-1, San Mateo Creek may provide migration and spawning habitat for adult CCC steelhead. Two proposed pipeline projects would be installed under San Mateo Creek using trenchless technologies (see Impact 5-3). Other creeks or channels in the Program Area could provide movement corridors for fish. If a technology with a risk of frac-out is used, impacts on the movement of CCC steelhead or other fish could occur. **Mitigation Measure 5-1a Perform work during seasonal avoidance windows where feasible** would be implemented to minimize impacts on CCC steelhead and other fish.

Although creeks and drainages in the Program Area may provide corridors for movement of wildlife species, the use of trenchless technologies to install pipelines that cross creeks and drainages would avoid interference with wildlife movement.

Operation of the Full Conveyance Program would include maintenance activities for pipelines and pump stations, including the new pump station at the Dale Avenue Pump Station site. These facilities would be accessed through manholes and entrances constructed outside of wildlife corridors, and no operational impacts on the movement of fish or wildlife species would occur.

With implementation of **Mitigation Measure 5-1a**, impacts on the movement of fish or wildlife species from the Full Conveyance Program would be less than significant.

New Headworks Project and Primary Clarifier Project

The New Headworks Project and Primary Clarifier Project would be constructed at the WWTP Site. The WWTP Site does not contain established native resident or migratory wildlife corridors or native wildlife

nursery sites. Construction and operation of the New Headworks Project and Primary Clarifier Project would not be expected to interfere with the movement of fish or wildlife species at the WWTP Site. No impacts would occur, and no mitigation would be required.

Impact 5-5. Implementation of the CWP could require the removal of heritage trees and potentially conflict with the City of San Mateo Heritage Tree Ordinance.

In-System Storage Program

No native tree species were identified in the WWTP Site during biological surveys. Several of the landscape trees, including eucalyptus and Australian pine around the outer perimeter of the existing WWTP, are greater than 16 inches diameter at 48 inches above the natural grade and would, therefore, be considered heritage trees. Other trees located on the Detroit Drive parcel or the Bayfront parcels may meet the requirements for heritage trees. Removal of these trees may occur as part of preconstruction site preparation or during construction of WWTP facilities, which would be a potential conflict with the City's Heritage Tree Ordinance. Implementation of **Mitigation Measure 5-5 Prepare and implement a tree protection plan for heritage trees** would reduce impacts to a less than significant level by avoiding trees where feasible and replacing those that are removed.

Removal of heritage trees would not be required for construction of collection system projects, which are located in roadways or other disturbed locations. The proposed locations for in-system storage basins do not include heritage trees, or the basins would be sited to avoid heritage trees.

With implementation of **Mitigation Measure 5-5,** potential impacts on heritage trees and conflicts with the City's Heritage Tree Ordinance from the In-System Storage Program would be less than significant.

Full Conveyance Program

No native tree species were identified in the WWTP Site during biological surveys. Several of the landscape trees, including eucalyptus and Australian pine around the outer perimeter of the existing WWTP, are greater than 16 inches diameter at 48 inches above the natural grade and would, therefore, be considered heritage trees. Other trees located on the Detroit Drive parcel or the Bayfront parcels may meet the requirements for heritage trees. Removal of these trees may occur as part of preconstruction site preparation or during construction of WWTP facilities, which would be a potential conflict with the City's Heritage Tree Ordinance. Implementation of **Mitigation Measure 5-5 Prepare and implement a tree protection plan for heritage trees** would reduce impacts to a less than significant level by avoiding trees where feasible and replacing those that are removed.

Removal of heritage trees would not be required for construction of collection system projects, which are located in roadways or otherwise disturbed locations. The Dale Avenue Pump Station site does not contain trees, and no tree removal would be required for construction of a new pump station.

With implementation of **Mitigation Measure 5-5**, potential impacts on heritage trees and conflicts with the City's Heritage Tree Ordinance from the Full Conveyance Program would be less than significant.

New Headworks Project and Primary Clarifier Project

The New Headworks Project and Primary Clarifier Project would be constructed on the Detroit Drive parcel. Removal of trees on the parcel may be required as part of construction. If these trees meet the requirements for heritage trees, their removal could conflict with the City's Heritage Tree Ordinance. Implementation of **Mitigation Measure 5-5 Prepare and implement a tree protection plan for heritage trees** would reduce potential impacts on heritage trees and conflicts with the City's Heritage Tree Ordinance from the New Headworks Project and Primary Clarifier Project to a less than significant level.

Impact 5-6. Implementation of the CWP would not conflict with provisions of an adopted habitat conservation plan, natural community conservation plan, or other plan.

In-System Storage Program

The Program Area is not located within the boundary of an adopted habitat conservation plan. Portions of the western part of the City are located within the Recovery Plan for Serpentine Soil Species of the San Francisco Bay Area (City of San Mateo, 2010). However, no collection system projects would be located on serpentine soils (see Chapter 7) and would, therefore, not be located in the recovery plan area. No conflict with provisions of an adopted habitat conservation plan, natural community conservation plan, or other plan from the In-System Storage Program would occur. No mitigation would be required.

Full Conveyance Program

The Program Area is not located within the boundary of an adopted habitat conservation plan. Portions of the western part of the City are located within the Recovery Plan for Serpentine Soil Species of the San Francisco Bay Area. However, no collection system projects would be located on serpentine soils (see Chapter 7) and would, therefore, not be located in the recovery plan area. No conflict with provisions of an adopted habitat conservation plan, natural community conservation plan, or other plan from the Full Conveyance Program would occur. No mitigation would be required.

New Headworks Project and Primary Clarifier Project

The New Headworks Project and Primary Clarifier Project would be located within the WWTP Site, which is not located within the boundary of an adopted habitat conservation plan, natural community conservation plan, or other plan. No conflicts with such plans would occur from the New Headworks Project or Primary Clarifier Project. No mitigation would be required.

5.5 Mitigation Measures

Mitigation Measure 5-1a. Perform work during seasonal avoidance windows where feasible.

The City of San Mateo and its contractors shall perform construction work for projects with the potential to affect special-status species during the appropriate seasonal avoidance window, where feasible. These windows avoid times of the year when the species may be more vulnerable, such as nesting or hibernating periods. The seasonal avoidance windows for species potentially present in the Program Area are shown in Table 5-2.

TABLE 5-2
Seasonal Avoidance Windows
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Nesting Birds												
SFGS												
CRLF												
Steelhead												
Western Pond Turtle												
SMHM												
Longfin Smelt												

Shading indicates avoidance periods.

Sources:

Nesting Birds: ICF International and H.T Harvey and Associates, 2013.

TABLE 5-2

Seasonal Avoidance Windows

Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

San Francisco Garter Snake (SFGS): United States Fish and Wildlife Service, 1985. This avoidance period is when the species is normally most dormant, in burrows, and therefore most vulnerable; the May to September period would not avoid the species per se, but is a better time to conduct work (Swaim, 2015).

California Red-Legged Frog (CRLF): United States Fish and Wildlife Service, 2011.

Steelhead: H.T. Harvey and Associates, 2009.

Western Pond Turtle: Stone, 2009.

Salt Marsh harvest Mouse (SMHM): U.S. Fish and Wildlife Service, 2010.

Longfin Smelt: Isaac, 2009.

Mitigation Measure 5-1b. Perform pre-construction surveys for special-status wildlife species.

The City of San Mateo or its contractors shall perform preconstruction surveys for the following special-status wildlife species:

- **Salt marsh harvest mouse:** Prior to start of construction on the Detroit Drive or Bayfront parcels, a preconstruction survey for salt marsh harvest mouse by a qualified biologist shall be completed. If salt marsh harvest mouse is found during preconstruction surveys, the area around the mouse shall be avoided until the mouse leaves the site on its own. Alternatively, USFWS and CDFW could be contacted to evaluate options. When the salt marsh harvest mouse is determined to be absent from the site, temporary barriers shall be established to prevent salt marsh harvest mouse from entering the construction site. If a new wall around the WWTP Site is constructed prior to construction of WWTP facilities, it may serve as an adequate barrier to salt marsh harvest mouse. This shall be determined by a qualified biologist. Prior to the start of work, construction workers shall be trained on the biological and habitat characteristics of salt marsh harvest mouse and the need for avoidance.
- **Ridgway's rail:** To reduce the likelihood that nesting Ridgway's rails are in the vicinity prior to construction activities at the WWTP Site or within 700 feet of the shoreline, a pre-construction nesting bird survey shall occur during the nesting season prior to the start of construction. The nesting season for Ridgway's rail extends from January 1 through August 31. If required by agencies, a USFWS-approved biologist will conduct a protocol-level survey for Ridgway's rails during the spring prior to start of construction to determine if rails are present in the vicinity of the construction site. If nesting Ridgway's rails are detected in any portion of the marsh within 700 feet of the construction site, no construction activities shall occur within 700 feet of the occupied areas (unless specifically approved by the USFWS) until occupied nests have successfully hatched young, as determined by a USFWS-approved biologist. Prior to the start of work, construction workers shall be trained on the biological and habitat characteristics of Ridgway's rail.
- **California red-legged frog, San Francisco garter snake, and western pond turtle:** A preconstruction survey shall be performed by a qualified biologist 24 hours prior to the start of construction activities for pipeline projects that cross creeks or channels and for any work proposed adjacent to Leslie Creek outside the WWTP wall. If a California red-legged frog or San Francisco garter snake is observed in or near an active work area, project activities in the immediate area shall be halted immediately and when safe to do so. A qualified biologist shall be consulted to evaluate the situation. Work shall remain stopped until the animal leaves the site on its own or another approach approved by USFWS is implemented. If a western pond turtle is observed in or near the work area, a CDFW-approved biologist shall try to passively move the turtle out of the area.
- **Nesting birds:** For any CWP projects located in the WWTP Site and for any collection system projects with 500 feet of a creek or channel with riparian vegetation, a preconstruction nesting bird survey shall be performed by a qualified biologist 14 days prior to construction if work activities are conducted

between February 1 and August 31. Should an active nest for a protected species be observed prior to construction activities, CDFW shall be notified to determine proper buffers for construction. Buffers shall be maintained until young have fledged (left the nest on their own), as determined by a qualified biologist, or the nest is no longer active due to non-construction-related reasons. If it is not practicable to avoid work in a buffer zone around an active nest, work activities shall be modified to minimize disturbance of nesting birds, but may proceed in these zones at the discretion of the biologist. The biologist shall monitor all work activities in these zones daily when construction is occurring and assess their effect on the nesting birds. If the biologist determines that particular activities pose a high risk of disturbing an active nest, the biologist will recommend additional, feasible measures to minimize the risk of nest disturbance. If work cannot proceed without disturbing the nesting birds, or signs of disturbance are observed by a monitor, work may be halted or redirected to other areas until the nesting and fledging is completed or the nest has otherwise failed for non-construction-related reasons. The USFWS and the CDFW could be contacted regarding alternate avoidance measures if halting or redirecting work is not feasible.

Mitigation Measure 5-1c. Protect special-status wildlife species found during construction.

If special-status wildlife species occur on a project site, the City or its contracts shall implement measures during construction to protect the following special-status wildlife species:

- **Salt marsh harvest mouse:** If a salt marsh harvest mouse is observed in or near an active work area, project activities in the immediate area shall immediately be halted when safe to do so, and a qualified biologist shall be consulted to evaluate the situation. Work shall remain stopped until the mouse leaves the site on its own or another approach approved by USFWS is implemented. The qualified biologist shall inspect the temporary or permanent barrier to determine if repairs or modifications are needed to prevent further access by salt marsh harvest mouse. If determined necessary, a USFWS-approved biologist shall continue to monitor the work area.
- **Ridgway's rail:** If nesting Ridgway's rail move into the nearby tidal marsh and within 700 feet of an active work area, construction shall be halted until the Ridgway's rail nestlings have fledged and left the nest. If determined necessary, a USFWS-approved biologist shall continue to monitor the work area until the nestlings have fledged.
- **California red-legged frog, San Francisco garter snake, and western pond turtle:** If a California red-legged frog or San Francisco garter snake becomes trapped during construction activities, project activities in the immediate area shall be halted immediately and when safe to do so. A qualified biologist shall be consulted to evaluate the situation. Work shall remain stopped until the animal leaves the site on its own or another approach approved by USFWS is implemented. If a western pond turtle becomes trapped during construction activities, a CDFW-approved biologist shall remove the turtle from the work area and place it in a suitable habitat in the vicinity of the project. If any of these species is discovered in the construction area during active operations, the equipment operator or equivalent shall temporarily cease operations until the animal has moved out of the way on its own accord and immediately contact the USFWS-approved biologist. If an ITP for federal or state threatened or endangered species is obtained for the CWP or individual projects, avoidance and minimization measures in the ITP shall be implemented. These measures could include relocation of California red-legged frog by a Service-approved biologist to a designated location outside the work area.
- **Migratory nesting birds:** If migratory birds begin nesting after construction has started and within 500 feet of work areas at the WWTP Site or at pipeline projects near riparian zones, it could mean the birds do not have a problem with the existing levels of noise and disturbance. Work shall continue only if the type of construction work does not increase noise or disturbance levels at the discretion of the qualified biologist. A qualified biological monitor shall monitor effects of construction on the nesting birds and shall stop construction when safe to do so if impacts on the birds are observed.

Mitigation Measure 5-3a. Provide appropriate offset for fill of jurisdictional wetlands.

The City shall submit the wetland delineation to USACE for verification of jurisdiction. If USACE determines that the wetland is federally protected, as defined by Section 404 of the CWA, the City would obtain a permit for fill under Section 404. Mitigation for fill of the jurisdictional wetland shall be included in the permit application and be a condition of the USACE permit. Mitigation may include payment into a USACE Regional Mitigation Program and/or construction of wetland enhancements or new wetland habitat along the Bay shoreline. The City shall comply with all conditions of the permit.

Mitigation Measure 5-3b. Prepare and implement contingency plan for frac-out.

The contractor shall prepare and implement a plan for monitoring drilling operations and addressing frac-out if it occurs. The plan shall include visual inspections along the bore path of the pipeline alignment during all drilling operations. Monitors shall also be stationed at appropriate distances upstream and downstream from the crossing point. All equipment required to contain and clean up a frac-out release shall be available at the work site.

Mitigation Measure 5-5. Prepare and implement a tree protection plan for heritage trees.

Prior to any vegetation clearing, a certified arborist will conduct a tree inventory and assessment. The inventory will include the species, size, and general condition of all trees to be removed or all heritage trees that could be indirectly affected. The certified arborist would then develop a tree protection plan that includes measures to avoid indirect impacts during construction and to replace heritage trees that require removal, in accordance with the City's Heritage Tree Ordinance. The CWP would comply with the City of San Mateo Heritage Tree Ordinance.

5.6 References

Bay Conservation Development Commission (BCDC). 2008. *San Francisco Bay Plan*.

California Department of Fish and Wildlife (CDFW). 2015. *California Natural Diversity Database (CNDDB).* RareFind5. Electronic Database. Sacramento, California.

California Native Plant Society (CNPS). 2015. Rare Plant Program Inventory of Rare and Endangered Plants (online edition, v8-02). Sacramento, CA. Website http://www.rareplants.cnps.org. Accessed August 24, 2015.

California Natural Diversity Database (CNDDB). 2015a. RareFind. California Department of Fish and Game. Accessed March 2015 and August 2015.

_____. 2015b. RareFind. California Department of Fish and Game. Accessed September 2015.

CH2M HILL. 2015. *Delineation of Wetlands and Other Waters of the United States, City of San Mateo Clean Water Program*. Prepared by Russell Huddleston. June.

City of San Mateo. 2009. *Draft Environmental Impact Report for the City of San Mateo General Plan Update*. July 27.

_____. 2010. *City of San Mateo General Plan – Vision 2030*. Resolution No. 134-2010. Adopted by the City Council on October 18.

_____. 2015. *San Mateo City Charter and Municipal Code*. Title 13—Parks and Recreation. http://qcode.us/codes/sanmateo/.

H.T. Harvey & Associates. 2008. Bay Conservation and Development Commission Application for City of San Mateo Bayfront Levee Improvements Project. December 8.

_____. 2009. *Bayfront Levee Improvement Project Biological Assessment*. September 4.

ICF International and H.T Harvey and Associates. 2013. *Avian Conservation Strategy: Guidelines for Bird Protection and Mitigation*. Prepared for PG&E. April.

Isaac, George. 2009. Longfin Smelt Fact Sheet. San Francisco, San Mateo, and Alameda Counties. Available online at: http://www.dfg.ca.gov/delta/data/longfinsmelt/documents/LongfinsmeltFactSheet_July09.pdf. June.

Miles, S.R. and Charles B. Goudey. 1997. *Ecological Subregions of California*. USDA, Forest Service, Pacific Southwest Region. Publication R5-EM-TP-005. San Francisco, CA.

National Oceanic and Atmospheric Administration Fisheries. 2006. *Endangered and Threatened Species: Final Listing Determinations for 10 Distinct Population Segments of West Coast Steelhead*. Federal Register, 71, 834-862.

_____. 2014. *Endangered and Threatened Wildlife: Final Rule to Revise the Code of Federal Regulations for Species Under the Jurisdiction of the National Marine Fisheries Service*. Federal Register, 20802-20817.

_____. 2015. *Central California Coast Steelhead*. http://www.westcoast.fisheries.noaa.gov/protected_species/salmon_steelhead/salmon_and_steelhead_listings/steelhead/central_california_coast/central_california_coast_steelhead.html. Accessed August 2015.

Stone, Theresa. 2009. Western Pond Turtle Species Fact Sheet. Umpqua National Forest, Roseburg, Oregon. Available online at: www.fs.fed.us/.../sfs-hr-actinemys-marmorata.

Swaim, Karen (Swaim Biological Incorporated). 2015. Personal communication with David Simi, CH2M HILL. February 25.

United States Army Corps of Engineers (USACE). 1987. Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual*. Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Miss.

United States Fish and Wildlife Service (USFWS). 1985. *Recovery Plan for the San Francisco Garter Snake*. Available online at: http://ecos.fws.gov/docs/recovery_plan/850911.pdf.

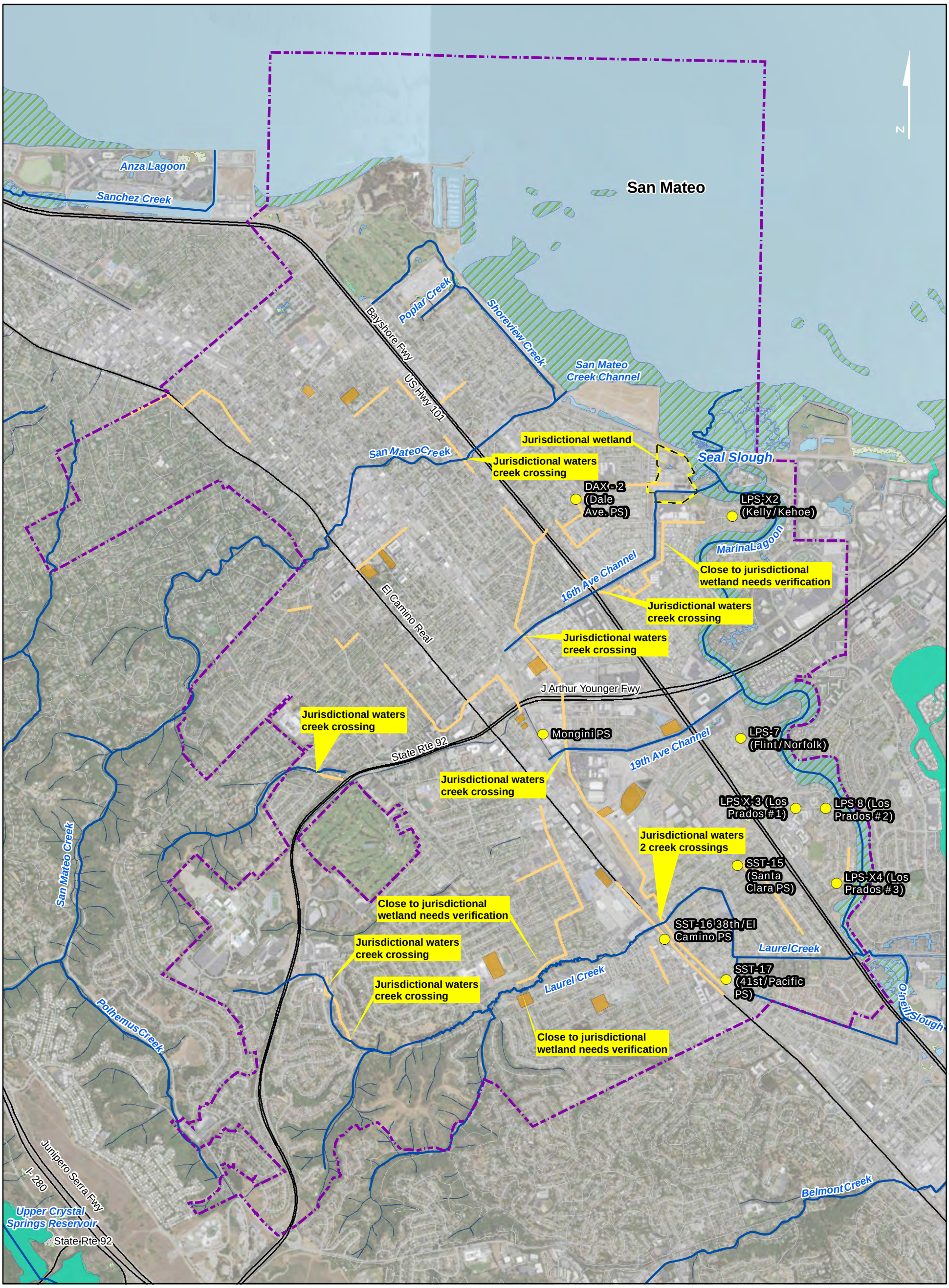
_____. 2010. *Salt Marsh Harvest Mouse (Reithrodontomys raviventris) 5-Year Review: Summary and Evaluation*. Sacramento Fish and Wildlife Office, Sacramento, California. Available online at: http://www.fws.gov/ecos/ajax/docs/five_year_review/doc3221.pdf. February.

_____. 2011. Arcata Fish and Wildlife Office. Information on California red-legged frog. Available online at: http://www.fws.gov/arcata/es/amphibians/crlf/crlf.html.

_____. 2015. ECOS Environmental Online Conservation System. IPaC Information for Planning and Conservation. Website http://ecos.fws.gov/ipac/project/2ZEOLYPJ4JGN3DFE76UJJVAECQ/resources. Accessed August 24, 2015.

U.S. Supreme Court. 1995. *Babbitt, Secretary of the Interior v. Sweet Home Chapter of Communities for a Great Oregon*, 515 U.S. 687.

Wetland Research Associates (WRA). 2013. *Draft Biological Resources Assessment for the San Mateo Corporation Yard Project*. August.



Legend

- Pump Station Project
- Pipeline Project
- Potential In-system Storage Location
- WWTP Site
- Program Area
- Major Roads
- Watercourse

National Wetlands Inventory Wetland Type

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Pond
- Lake
- Riverine

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

0 0.5
Miles

FIGURE 5-1
Creeks and Wetlands in the Program Area
Programmatic Environmental Impact Report
City of San Mateo Clean Water Program

CH2MHILL

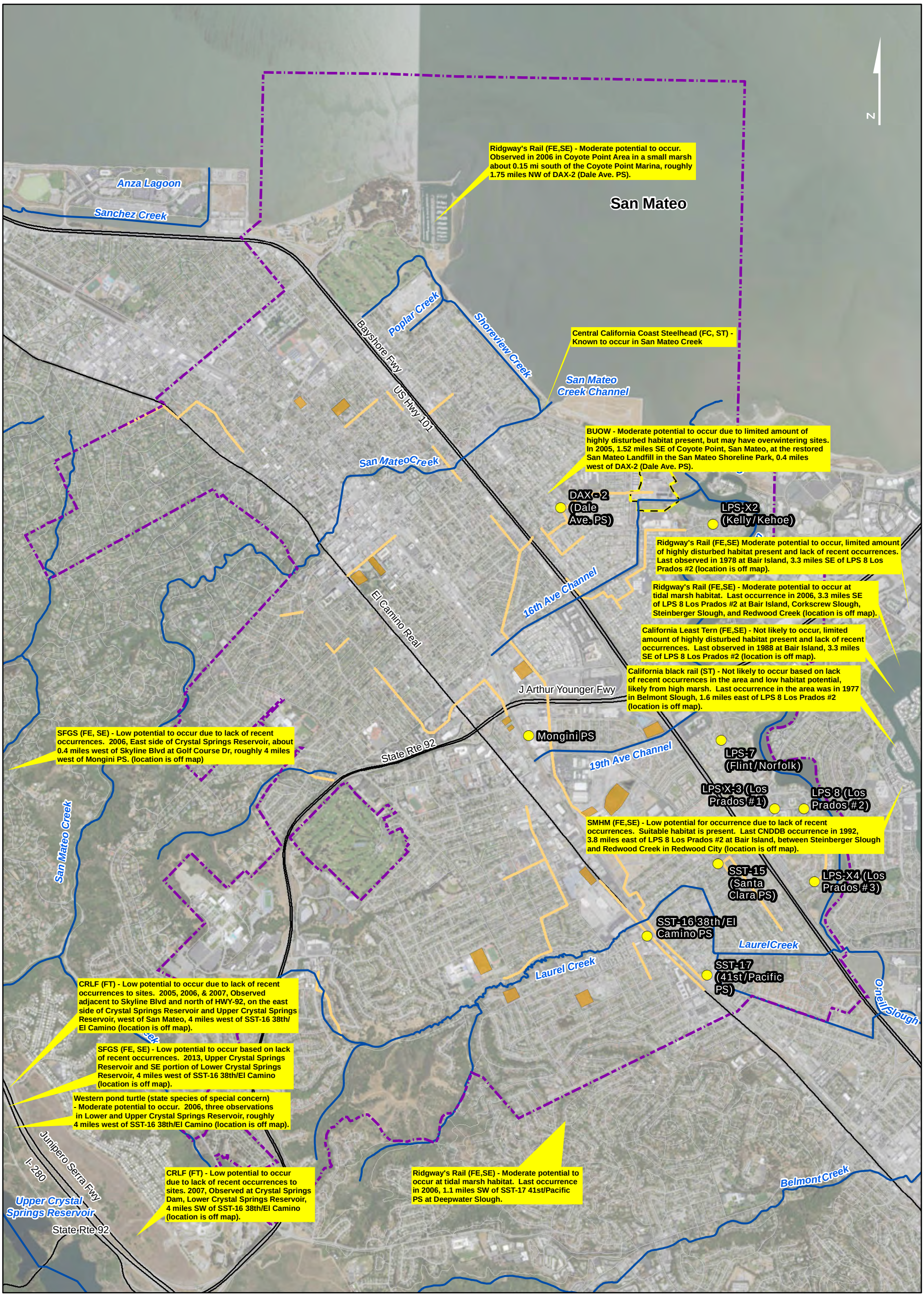


FIGURE 5-2
Known Occurrences of Special-Status Species with Potential to Occur in the Program Area
Programmatic Environmental Impact Report
City of San Mateo Clean Water Program

CH2MHILL

Nest Location

Approximate BCDC Jurisdiction Limit Within WWTP Site

WWTP Site

Biological Survey Boundary

0 100 200 400 600
Feet

Coordinate System: NAD 1983 UTM Zone 10N. Source: Esri Map Services, County of San Mateo

Figure 5-3
WWTP Site Biological Study Area
Programmatic Environmental Impact Report
City of San Mateo Clean Water Program

CH2MHILL

Figure 5-4
WWTP Site Wetland Survey Area
Programmatic Environmental Impact Report
City of San Mateo Clean Water Program

Coordinate System: NAD 1983 UTM Zone 10N. Source: Esri Map Services, County of San Mateo

CH2MHILL

Chapter 6. Cultural Resources

This chapter assesses potential effects on cultural and paleontological resources that could result from the two CWP alternatives. Cultural resources are defined as buildings, sites, districts, structures, or objects having historical, architectural, archaeological, or cultural significance. Paleontological resources are defined as fossilized remains of vertebrate and invertebrate organisms, fossil tracks and trackways, and plant fossils. This section briefly describes the prehistoric and historic setting of the Program Area, and it discusses known cultural and paleontological resources and cultural resource sensitivity in the Program Area. It identifies applicable federal, state, and local regulations; identifies potential impacts of construction and operation of the CWP; and proposes mitigation measures, where available, to reduce potentially significant impacts on cultural and paleontological resources.

6.1 Existing Setting

The proposed projects included in either CWP alternative would be constructed within the City of San Mateo; therefore, existing setting information is presented for the City of San Mateo. The existing setting is primarily summarized from the General Plan EIR (City of San Mateo, 2009) and the Citywide Archaeological Report (Chavez, 1983), and a cultural resource assessment (Basin Research Associates, 2005). This chapter incorporates by reference all of the sources from these documents. The references documents are available from the City of San Mateo Planning Division. The study area for this chapter is the City of San Mateo, where all CWP facilities would be constructed; see Figure 1-1.

6.1.1 Prehistory

San Mateo is set between two primary physical features, San Francisco Bay to the east and a ridge of hills on the City's west side. Native American occupation and use of the general area appears to extend over 5,000 to 7,000 years and may be longer. Evidence for early occupation along the bayshore has been hidden by rising sea levels from about 15,000 to 7,000 years ago or has been buried by sediments caused by marsh infilling along estuary margins since about 7,000 years ago.

Early occupants concentrated on hunting, gathering various plant foods, and collecting shellfish. According to Chavez (1983), the prehistoric way of life in the San Mateo Peninsula can be characterized as a hunting and gathering network of subsistence systems. Seasonally, parties went out from the villages to temporary camps within their territory to exploit the various available resources through hunting and gathering techniques. Subsistence patterns included the exploitation of marine resources by gathering mussel and shellfish in season, fishing for trout and salmon, taking of seals, and hunting land mammals. Intensive use of plant foods included the common use of acorns through the leaching process.

Known sites in the vicinity generally consist of dark midden (culturally affected) soils containing large quantities of shell, primarily obtained from the bayshore area. Most of the mound sites in the study area have been leveled and partially covered by roads, buildings, parking lots, and parks over the past 70 to 100 years.

6.1.2 Ethnography

The California Native Americans who occupied the Peninsula at the time of European contact are known as the Costanoan. The term Costanoan is derived from the Spanish word Costanos, meaning coast people. San Francisco Bay Area descendants of these people prefer the name Ohlone. Sources for Ohlone ethnographic data are limited primarily to European accounts during visits to the coast. Linguistic evidence suggests that the immediate ancestry of the historically known Ohlone people moved into the San Francisco region about A.D. 500. They likely migrated from the San Joaquin-Sacramento River Delta area. This theory of the arrival of Costanoan language in the San Francisco area is chronologically consistent with the appearance of Late Horizon artifact assemblages in San Francisco Bay Area archaeological sites.

The Costanoan transformed from hunters and gatherers to agricultural laborers who lived at the Franciscan missions and worked with former neighboring groups such as the Yokut, Miwok, and Patwin. After secularization of the missions between 1834 and 1836, some Native Americans returned to traditional religious and subsistence practices and others labored on Mexican ranchos. Thus, multi-ethnic Indian communities grew up in and around Costanoan territory and provided informant testimony to ethnologists from 1878 to 1933.

6.1.3 Historic Context

Spanish explorers in the late 1760s and 1770s were the first Europeans to traverse the San Francisco Peninsula. The first party, led by Gaspar de Portola and Father Juan Crespi, traveled up the coast in search of Monterey Bay but failed to recognize it based on previous descriptions. In fall 1769, they first sighted San Francisco Bay from a ridge on the Peninsula. Sergeant Jose Francisco Ortega scouted the area, although his exact route remains uncertain. The second exploration party, led by Fernando Javier Rivera and Father Francisco Palou, reached the San Francisco Peninsula in late 1774. They selected the Palo Alto area for a mission site but continued to travel north to San Francisco. In 1776, Colonel Juan Bautista de Anza and Father Pedro Font traveled from Monterey to San Francisco to select the settlement sites. Between 1769 and 1823, 21 missions were established by the Franciscan priests along the California coast between San Diego and Sonoma.

During the Spanish Period (1769–1822), the philosophy of government was directed at founding presidios, missions, and pueblos, with the land held by the Crown, whereas the later Mexican policy stressed individual ownership of land. About 1793, an adobe was built on the north bank of San Mateo Creek along El Camino Real, the trail connecting the San Francisco outpost with Monterey (City of San Mateo, 2009). This outpost functioned as a way station between Santa Clara and Mission Dolores. The footprint of the building appears to have straddled the southeast corner of Baywood Avenue and El Camino Real. The outpost produced grain and other crops, cattle, and sheep. By 1800, 30 mission-trained Native Americans were living in and around the adobe.

During the Mexican Period (1822–1848), vast tracts of land were granted to individuals. The Mexican period in California was an outgrowth of the Mexican Revolution, and its accompanying social and political views affected the mission system. The missions were secularized in 1833 and their lands divided among the Californios as land grants called ranchos. On the Peninsula, 18 ranchos were granted from mission lands. The rancho system generally remained intact until 1862–1864, when a drought forced many landowners to sell or subdivide their holdings.

The American Period started after 1848, with the initial population explosion on the Peninsula associated with the California Gold Rush, followed later by the construction of the transcontinental railroad in the late 1860s. European immigration and the development of a prosperous dairy industry had an impact on population growth in the area. Until about World War II, San Mateo County had a substantial agricultural or rural land use pattern. Former ranchos underwent a transformation in concert with the growth of transportation systems, the City of San Francisco, and other towns to the south in San Mateo County.

The town of San Mateo began to develop in the 1860s. In May 1861, construction began on the railroad to link San Francisco with San José. Charles Polhemus, a director of the San Francisco-San José Railroad, which ran through San Mateo, had William Lewis plan the town in 1862; the first plat of San Mateo consisted of about 16 blocks around the railroad depot. The first building to be erected near the tracks was the train station, and soon after buildings were constructed in the area of Main Street and Railroad Avenue. This was the beginning of downtown San Mateo. The opening of railroad service in San Mateo attracted many San Franciscans to the area. San Mateo was incorporated as a town in 1894.

6.1.4 Known Cultural Resources in San Mateo

The General Plan EIR provides a summary of the citywide cultural resources survey:

> *The 1983 survey concluded that while soil removal and construction have eliminated most above-ground shell mounds, good potential still exists for the presence of undisturbed subsurface archaeological deposits at surveyed sites. It was also concluded that high research potential exists for sites adjacent to San Mateo Creek. The "medium sensitivity" zone includes areas surrounding the high sensitivity areas and other locales where, while no sites are recorded, the settings are similar to those where recorded sites do occur. The majority of the City is in a "low sensitivity" zone wherein archaeological resources are not generally expected but may occur.*

6.1.5 Paleontological Setting

As stated in the General Plan EIR, there are no known paleontological resources in the City of San Mateo.

6.1.6 Literature Review and Site Survey for WWTP Site

CH2M HILL conducted an archival literature review and a pedestrian survey for the WWTP Site. The literature review included a records search of the files at the Northwest Information Center California Historical Resources Information System (CHRIS). A 1-mile area around the WWTP Site was included in the search. The CHRIS records search included all recorded archaeological sites and all known cultural resource survey and excavation reports. The National Register of Historic Places online database and the Office of Historic Preservation database, which includes sites listed on the California Register, California Historical Landmarks, and California Points of Historical Interest, were searched as well.

The records search revealed that approximately 35 previous studies have occurred within a 1-mile radius. Of these, three studies (S-003166, S-006425, and S-0431760) intersect the WWTP Site. No resources of any kind have been recorded within the WWTP Site. Seven resources are recorded within a 1-mile radius (P-41-000273, P-41-000308, P-41-000466, P-41-000471, P-41-002103, P-41-002104, and P-41-002146).

On May 8, 2015, CH2M HILL conducted a pedestrian survey of three parcels: (1) the WWTP parcel located at 2050 Detroit Drive in San Mateo; (2) the City-owned Dale Avenue parcel, which is located outside the Dale Avenue Gate to the WWTP; and (3) the Detroit Drive parcel located across the street (north) from the WWTP parcel. CH2M HILL had full access to all plant properties. Potential historic or prehistoric archaeological resources observed are noted below. As part of the survey, Mr. Darin Schumaker at the WWTP provided detailed information on the history of the WWTP and existing structures. An intensive survey of was conducted for all areas where ground visibility existed, including an examination of all undeveloped areas and all areas of disturbed soil. Special attention was given to examining the soil around rodent holes for any evidence of color or texture change. A fourth area, the Bayfront parcels, is located immediately northeast of the WWTP and may be used as part of the CWP implementation. The parcel is privately owned, mostly paved, and used by a trucking company; an intensive pedestrian survey was not warranted. All parcels were included in the literature review and examined for potential sensitivity.

The existing WWTP is a mostly developed site, with only small sections of undeveloped land located in the southeast corner of the parcel. The WWTP contains numerous modern structures and wastewater processing units built in 1953 (Primary Clarifier #3), 1968 (new Administration Building, Electrical Shop, and Effluent Pump Station #1), and 1976, when several structures, including secondary treatment units, were added during a major expansion of the WWTP. The undeveloped areas include untended formerly landscaped sections along the southern wall toward the southeastern end of the parcel and a storage area in the southeastern side of the WWTP. Because of their age, these structures were reported on Department of Parks and Recreation (DPR) 523 forms.

The Dale Avenue parcel is mostly undeveloped. The parcel contains an approximately 10-foot wide paved walk/bike path running east to west that curves around the western side of the WWTP, but otherwise has no development except aboveground and belowground utilities that are primarily under the paved path and

toward the northeast corner of the parcel. These utilities include, but are not limited to, a natural gas meter and power disconnect. The parcel has been used to store equipment for City contractors and as storage for assorted rocks and soils (e.g., gravel and volcanic rocks). The parcel contains several areas of re-deposited soil and sand. Much of the parcel is covered with tall, dry grasses and wildflowers. The site also contains graffiti, small trash piles of modern cans and bottles, candy wrappers, and chip bags.

The Detroit Drive parcel has three distinct areas:

1. A locked, fenced area with a building and various equipment. The area also contains large tanks, pipes, trailers, and trailer-sized dumpsters filled with a mix of trash, soil, and manure. A portion of this fenced area is paved, and the rest is overgrown with tall grasses, vines, wildflowers, wild fennel, and trees.
2. An abandoned parking lot with a shuttle bus shelter that was used by a local company for overflow parking for its employees, according to Mr. Schumaker. The abandoned parking lot is mostly paved and contains street/security lights.
3. A field that appears mostly undisturbed, with a potential wetland feature, tall grasses, bulrushes, trees, and wildflowers. The field is west of the locked fenced area and east of the abandoned parking lot.

6.2 Regulatory Framework

6.2.1 State Regulations

6.2.1.1 California Register of Historical Resources

The California Register of Historical Resources (CRHR) is a guide to cultural resources that must be considered when a government agency undertakes a discretionary action subject to CEQA. CRHR helps government agencies identify and evaluate California's historic resources and indicates which properties are to be protected, to the extent prudent and feasible, from substantial adverse change (Public Resources Code [PRC] §5024.1(a)). Resources listed in or eligible for listing in CRHR are to be considered during the CEQA process.

A cultural resource is evaluated under four CRHR criteria to determine its historical significance. For a resource to have historical significance, it must be in accordance with the one or more of the following criteria (as defined in PRC §15064.5(a)(3)):

i. Is associated with events that have made a significant contribution to the broad pattern of California's history and cultural heritage;

ii. Is associated with the lives of persons important in our past;

iii. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

iv. Has yielded, or may be likely to yield, information important in prehistory or history.

Any resource that meets the above criteria, and retains sufficient historic integrity, is considered a historical resource under CEQA.

In addition to meeting one or more of the above criteria, CRHR requires that sufficient time must have passed to allow a "scholarly perspective on the events or individuals associated with the resource." Fifty years is used as a general estimate of the time needed to understand the historical importance of a resource (California Code of Regulations [CCR] Title 14(11.5) §4852 (d)(2)). The Office of Historic Preservation recommends documenting, and taking into consideration during the planning process, any cultural resource that is 45 years or older.

CRHR also requires a resource to possess integrity, which is defined as "the authenticity of a historical resource's physical identity evidenced by the survival of characteristics that existed during the resource's

period of significance." Integrity is evaluated with regard to the retention of location, design, setting, materials, workmanship, feeling, and association.

Resources that are significant, meet the age guidelines, and possess integrity would generally be considered eligible for listing in the CRHR.

6.2.1.2 California Public Resources Code Section 21083.2

Section 21083.2 of the California Public Resources Code describes the CEQA requirements for evaluating whether a project may have a significant effect on archaeological or paleontological resources. CEQA defines a "unique archaeological resource" as an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets one or more of the following criteria:

- Contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information
- Has a special and particular quality, such as being the oldest of its type or the best available example of its type
- Is directly associated with a scientifically recognized important prehistoric or historic event or person

CEQA further defines a "historical resource" as a resource that meets any of the following criteria:

- A resource listed in or determined to be eligible for listing in, the CRHR
- A resource listed in a local register of historical resources, as defined in PRC §5020.1(k)
- A resource identified as significant (e.g., rated 1 through 5) in a historical resource survey that meets the requirements of PRC §5024.1(g)
- Determined to be a historical resource by a project's lead agency

Any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered a historical resource.

If the cultural resource in question is an archaeological site, CEQA requires that the lead agency first determine if the site is a historic resource, as defined in CCR Title 14(3)§15064.5(a). If the site qualifies as a historical resource, potential adverse impacts must be considered in the same manner as a historical resource. If the archaeological site does not qualify as a historical resource but does qualify as a unique archaeological site, then the archaeological site is treated in accordance with PRC §21083.2.

According to PRC §21083.2, if an impact on a historic or unique archaeological resource is significant, CEQA requires feasible measures to minimize the impact. Mitigation of significant impacts must lessen or eliminate the physical impact that a project will have on the resource. Generally, the use of drawings, photographs, and/or displays does not mitigate the physical impact on the environment caused by demolition or destruction of a historic resource. However, CEQA requires that all feasible mitigation be undertaken even if it does not mitigate impacts to a less than significant level.

CEQA Guidelines Section 15064.5(e) requires that excavation activities be stopped when human remains are uncovered and that the county coroner assess the remains. If the coroner determines that the remains are those of Native Americans, the Native American Heritage Commission must be contacted within 24 hours. The lead agency must consult with the appropriate Native Americans, if any, identified by the Native American Heritage Commission in a timely manner.

6.2.1.3 California Health and Safety Code

Section 7050.5(b) of the California Health and Safety Code specifies the protocol when human remains are discovered:

> *In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the human remains are discovered has determined, in accordance with Chapter 10 (commencing with Section 27460) of Part 3 of Division 2 of Title 3 of the Government Code, that the remains are not subject to the provisions of Section 27492 of the Government Code or any other related provisions of law concerning investigation of the circumstances, manner and cause of death, and the recommendations concerning treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative, in the manner provided in Section 5097.98 of the Public Resources Code.*

6.2.2 Local Regulations

6.2.2.1 City of San Mateo Zoning Code Requirements

Chapter 27.66, Historic Preservation, in the Municipal Code (City of San Mateo, 2015) requires review and approval through the City's SPAR process for projects resulting in exterior façade modification, exterior alteration, or building addition involving any individually eligible building for the National Register of Historic Places. Review and approval is also required for other specifically identified buildings in the City's Downtown Specific Plan Area and all structures in the Downtown Historic District. Modifications are evaluated for conformance with applicable federal guidelines.

6.3 Assessment Methods and Thresholds of Significance

The majority of CWP projects would be constructed in areas that are already disturbed. Therefore, data gathering was focused on (1) less-disturbed parcels where projects may be located and (2) the WWTP, which has structures that may be modified or removed. Collectively, these parcels are referred to as the WWTP Site and are described below.

Impacts on cultural resources may occur if the CWP would result in the following:

- A substantial adverse change in the significance of a historical resource, as defined in §15064.5 of the CEQA Guidelines
- A substantial adverse change in the significance of an archaeological resource, as defined in §15064.5 of the CEQA Guidelines
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature
- Disturb any human remains, including those interred outside of formal cemeteries

6.4 Environmental Impacts

Potential impacts of the CWP on cultural and paleontological resources are summarized in Table 6-1 and described in subsequent sections.

TABLE 6-1
Summary of Cultural Resources Impacts
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Impact	In-System Storage Program	Full Conveyance Program	New Headworks Project	Primary Clarifier Project
Impact 6-1. Construction of the CWP could cause a substantial adverse change in the significance of an archeological resource pursuant to CEQA §15064.5.	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation
Impact 6.2. Construction of the CWP could cause a substantial adverse change in the significance of paleontological resources.	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation
Impact 6.3. The CWP would not cause a substantial adverse change in the significance of an historic structure or building pursuant to CEQA §15064.5.	No impact	No impact	No impact	No impact

Impact 6-1. Construction of the CWP could cause a substantial adverse change in the significance of an archeological resource pursuant to CEQA §15064.5.

In-System Storage Program

The archival review did not identify any known resources within the WWTP Site. The archaeological survey did not identify any surface indicators of prehistoric and historic archaeological resources within the designated survey areas within the WWTP Site. No impacts on historic or prehistoric archaeological resources are expected to be present in the WWTP Site. Most collection system projects constructed outside the WWTP Site would be located primarily in areas that are already disturbed, including roadways, parking lots, and existing pipeline alignments and pump stations. Historic and prehistoric archaeological resources would not be expected to be present at these sites. Proposed in-system storage locations are generally located on sites that have been subject to grading or other disturbance activities.

However, prehistoric archaeological resources are known to occur in the general vicinity of the WWTP Site, as the records search demonstrated. In addition, the citywide cultural survey concluded that undisturbed subsurface archaeological deposits may be present in portions of the City. Therefore, there is some theoretical potential that prehistoric archaeological resources could be found in undisturbed soils during construction activities such as grading and excavation.

San Mateo has developed specific conditions of project approval that address the potential for discovery of cultural resources. Implementation of these conditions as **Mitigation Measure 6-1a Perform subsurface investigations prior to construction in high- and medium-archaeological sensitivity zones** would support identification, avoidance, and mitigation of cultural resources for projects in zones of greater archaeological sensitivity. In addition, **Mitigation Measure 6-1b Halt construction if archaeological resources are discovered** would provide for avoidance, recovery, or other mitigation of any unknown subsurface cultural resources encountered during construction activities at any location.

In addition to following the City's standard project conditions, the construction contractor is required to follow California Health and Safety Code Section 7050.5(b), which specifies protocols if human remains are discovered.

With implementation of **Mitigation Measure 6-1a** and **Mitigation Measure 6-1b**, impacts of the In-System Storage Program on cultural resources would be less than significant.

Full Conveyance Program

Potential impacts of the Full Conveyance Program on cultural resources would be the same as described above for the In-System Storage Program because proposed projects and facilities would be at the same sites, other than in-system storage locations that are not part of the Full Conveyance Program. Therefore, historic and prehistoric archaeological resources would not be expected to be present at the WWTP Site or most collection system project sites. However, prehistoric archaeological resources are known to occur in the general vicinity of the WWTP Site, and undisturbed subsurface archaeological deposits may be present in portions of the City. As described for the In-System Storage Program, **Mitigation Measure 6-1a Perform subsurface investigations prior to construction in high- and medium-archaeological sensitivity zones** and **Mitigation Measure 6-1b Halt construction if archaeological resources are discovered** would reduce potential impacts of the Full Conveyance Program on cultural resources to a less than significant level.

New Headworks Project and Primary Clarifier Project

The New Headworks Project and Primary Clarifier Project would be located on the WWTP Site. As described for the In-System Storage Program, historic and prehistoric archaeological resources would not be expected to be present at the WWTP Site. However, prehistoric archaeological resources are known to occur in the general vicinity of the WWTP Site. Therefore, there is some theoretical potential that prehistoric archaeological resources could be found in undisturbed soils during construction activities. Implementation of **Mitigation Measure 6-1b Halt construction if archaeological resources are discovered** would reduce impacts to unknown subsurface resources encountered. Impacts of the New Headworks Project and Primary Clarifier Project on cultural resources would be less than significant.

Impact 6-2. Construction of the CWP could cause a substantial adverse change in the significance of paleontological resources.

In-System Storage Program

Although no paleontological resources are known in San Mateo, the potential does exist for unknown subsurface paleontological resources to be encountered during construction activities such as grading and excavating. San Mateo has developed specific conditions of project approval that address the potential for discovery of paleontological resources as a result of development in the City. These conditions would be implemented as **Mitigation Measure 6-2 Halt construction if paleontological resources are discovered** to reduce impacts of construction of the In-System Storage Program to less than significant.

Full Conveyance Program

Although no paleontological resources are known in San Mateo, the potential does exist for unknown subsurface paleontological resources to be encountered during construction activities such as grading and excavating. **Mitigation Measure 6-2 Halt construction if paleontological resources are discovered** would be implemented to reduce impacts of construction of the Full Conveyance Program to less than significant.

New Headworks Project and Primary Clarifier Project

Although no paleontological resources are known on the WWTP Site where the projects would be located, the potential does exist for unknown subsurface paleontological resources to be encountered during grading, excavation, and other construction activities. **Mitigation Measure 6-2 Halt construction if paleontological resources are discovered** would be implemented to reduce impacts of construction of the New Headworks Project and Primary Clarifier Project to less than significant.

Impact 6.3. The CWP would not cause a substantial adverse change in the significance of an historic structure or building pursuant to CEQA §15064.5.

In-System Storage Program

Collection system projects would be located primarily underground. The only permanent aboveground structures associated with the collection system are small metal and concrete enclosures at the entrance to

the pump stations and over the in-system storage basins. These projects would not affect potentially historic structures or buildings.

Wastewater treatment projects would be constructed at the WWTP Site. As previously described, several parcels are vacant or do not contain buildings. Existing buildings and structures at the current WWTP facility may be demolished or removed as part of the In-System Storage Program. There are six existing historic-age structures on the WWTP parcel; the structures and the years they were constructed are as follows (Carollo Engineers, Inc., 2014):

1. The Control Building (original Administration Building), built in 1934
2. The Pump Room (connected to the Control Building), built in 1934
3. The abandoned thickener (connected to the Control Building), built in 1934
4. Primary Clarifier #1, built in 1934
5. Primary Clarifier #2, built in 1948
6. Primary Clarifier #3, built in 1953

These structures have been recorded on DPR 523 Forms by CH2M HILL, as described in Section 6.1.6. None of the buildings meet any of the criteria for listing on the CRHR (see Section 6.2.1.1); therefore, none are considered historical resources under CEQA. The recordation of these structures on DPR forms has exhausted their data potential, and no further work is recommended. Therefore, no impacts on historic buildings or structures would occur as a result of the In-System Storage Program.

Full Conveyance Program

Collection system projects would be located primarily underground. The only permanent aboveground structures associated with the collection system are small metal and concrete enclosures at the entrance to the pump stations. These projects would not affect potentially historic structures or buildings.

Wastewater treatment projects would be constructed at the WWTP Site. Existing buildings and structures at the current WWTP facility may be demolished or removed as part of the Full Conveyance Program. As described for the In-System Storage Program, none of the existing historic-age structures on the WWTP parcel meet the criteria for listing on the CRHR and none are considered historical resources under CEQA. No impacts on historic buildings or structures would occur as a result of the Full Conveyance Program.

New Headworks Project and Primary Clarifier Project

The New Headworks Project and Primary Clarifier Project would be constructed in currently vacant or undeveloped portions of the WWTP Site. No impacts on historic buildings or structures would occur.

6.5 Mitigation Measures

Mitigation Measure 6-1a. Perform subsurface investigations prior to construction in high- and medium-archaeological sensitivity zones.

Prior to issuance of a grading or building permit, the City shall determine if the project is located within a high- or medium-archaeological sensitivity zone. If the project site is determined to be located in a high- or medium-archaeological sensitivity zone, a qualified archaeologist shall perform a subsurface archaeological investigation at the site, including hand-augured borings and excavated test pits. The archaeologist shall analyze gathered data in relation to the detailed project construction plans. The findings of the investigation shall be submitted for review and approval of the chief of planning. This report shall include an evaluation of the "uniqueness" of all finds, anticipated project-related impacts, and recommendations for mitigating impacts.

Mitigation Measure 6-1b. Halt construction if archaeological resources are discovered.

In the event of the discovery of archaeological resources, the applicant shall be responsible for halting construction activities, notifying the chief of planning, and retaining a qualified archaeologist. The archaeologist would be required to evaluate the uniqueness of the find and to contact local Native American and historical organization and recommend a course of action.

Mitigation Measure 6-2. Halt construction if paleontological resources are discovered.

Should any potentially unique paleontological resources (e.g., fossils) be encountered during construction activities, work shall be halted immediately within 50 feet of the discovery. A qualified paleontologist shall determine the significance of the discovery, evaluate the uniqueness of the find, and prepare a written report documenting the find and recommending further courses of action. Depending on the significance of the discovery, the actions may include avoidance, preservation in place, excavation, documentation, recovery, or other measures determined by the paleontologist.

6.6 References

Basin Research Associates, Inc. 2005. *Monitoring and Archaeological Property(ies) Protection Plan, Versailles Senior Housing Project*.

Carollo Engineers, Inc. 2014. *City of San Mateo Integrated Wastewater Master Plan*. Prepared for City of San Mateo. October.

Chavez, David. 1983. *Citywide Archaeological Investigations, City of San Mateo, California*. As cited in City of San Mateo, 2009.

City of San Mateo. 2009. *Draft Environmental Impact Report for the City of San Mateo General Plan Update*. July 27.

_____. 2010. *City of San Mateo General Plan – Vision 2030*. Resolution No. 134-2010. Adopted by the City Council on October 18.

_____. 2015. *San Mateo City Charter and Municipal Code*. Available at http://qcode.us/codes/sanmateo/. Effective as of September 17.

Chapter 7. Geology and Soils

This chapter identifies and evaluates the potential impacts of the CWP on geology, seismicity, and soil resources. The chapter includes a description of local topography, geology, seismicity, and soil resources; summarizes applicable state, local, and regional plans and programs, objectives, and policies; identifies potential impacts related to geology and soils; and proposed mitigation measures to reduce potentially significant impacts.

7.1 Existing Setting

The proposed projects included in either CWP alternative would be constructed within the City of San Mateo; therefore, existing setting information is presented primarily for the City.

7.1.1 Geology and Topography

San Mateo is located on the west side of San Francisco Bay, within the Coast Ranges geomorphic province of California. The Coast Ranges geomorphic province extends from near the Oregon border southward to the Santa Barbara area; the San Francisco Bay separates the northern and southern Coast Ranges (Schoenherr, 1995). The Coast Ranges consists of northwest-to-southeast-trending ridges and valleys associated with faulting and folding (Schoenherr, 1995). The City is situated on the northeasterly flank of the central Santa Cruz Mountains but is separated from the mountain range by the San Andreas Fault and associated rift valley, which run subparallel to the fault. Geologic formations within and near the City include the Franciscan formation, which is typified by sedimentary-volcanic-metamorphic rocks including serpentenite, and the Santa Clara formation, which is typified by conglomerate sandstone and mudstone (City of San Mateo, 2009; 2010).

Landforms within the City are varied and include uplands, hillsides, valley, and alluvial fans (City of San Mateo, 2009; 2010). Western areas contain broad uplands and hills that have been extensively uplifted and dissected by the drainage canyons of Laurel Creek and San Mateo Creek. Near the shoreline are Bay muds and reclaimed lands, which extend to near US-101, where the historical shoreline existed prior to filling the Bay (City of San Mateo, 2009; 2010). Geologic units are shown on Figure 7-1; descriptions of the geologic units are provided in Appendix E (Brabb, et al., 1988).

Geologic hazards and soils are described in the following sections.

7.1.2 Earthquake Faults and Seismicity

The San Francisco Bay Area (Bay Area) is in a very seismically active region, with a high risk of geologic hazards that stem largely from movement of the earth's crust along well-defined active fault zones of the San Andreas Fault system (City of San Mateo, 2009). The San Andreas Fault is a northwest-southeast-trending fault zone located about 2 miles west of the City. The Hayward fault is located about 14 miles northeast of the City (City of San Mateo, 2009). There are no active faults or Alquist-Priolo Earthquake Hazard Zones located in the City; inactive fault traces, which are older features with no evidence of recent motion, have been mapped within the City. Geologic hazards that could potentially affect the CWP and its projects are described in the following sections.

7.1.2.1 Ground Shaking

Ground shaking from earthquakes can cause extensive damage to property and people. Factors that determine the amount of damage caused from ground shaking are interrelated and include the magnitude and depth of the earthquake, distance from the fault, duration of shaking, type of bedrock and soils, and topography, among others. The entire Bay Area, including the City of San Mateo, is subject to strong ground shaking during earthquakes (City of San Mateo, 2009) (see Figure 7-2). Historically, there have been several strong earthquakes in the vicinity, including the magnitude 6.9 Loma Prieta earthquake in October 1989 and the magnitude 7.8 San Francisco earthquake in 1906, both of which occurred on the San Andreas Fault

system. Ground shaking from these events was felt over large distances, and areas underlain by unconsolidated sediments experienced greater structural damage than areas underlain by bedrock. There are no mapped active or potentially active faults underlying the City; however, because of its proximity to the San Andreas Fault Zone, the Hayward Fault Zone, and other active faults, San Mateo could experience very strong intensity ground shaking during a large earthquake. According to the 2008 Uniform California Earthquake Rupture Forecast (U.S. Geological Survey, 2015) there is a 63 percent probability of a magnitude 6.7 or greater earthquake in the Bay Area within 30 years, with the greatest probabilities of earthquakes on the Hayward-Rogers Creek Fault and the San Andreas Fault. Therefore, San Mateo is very likely to experience very strong ground shaking from earthquakes in the future.

7.1.2.2 Landslides

Weak rocks and steep slopes are basic geologic characteristics that contribute to slope instability, including landslides. In susceptible areas, landslides can be triggered by earthquakes and high rainfall. In the City, the risk of landslides is greatest in the western hilly areas where landslides have occurred previously and in areas where slopes have been modified by grading (City of San Mateo, 2009; 2010). Despite recorded historic landslides, slope instability is not widespread in the City (City of San Mateo, 2009; 2010); however, during a major earthquake or heavy rainfall, landslides could occur where there has been overgrading that contributes to slope instability (City of San Mateo, 2009; 2010).

7.1.2.3 Liquefaction

Liquefaction is the transformation of saturated, unconsolidated, granular material from a solid state to a liquid state because of increased pore pressure that reduces the material's strength. During liquefaction, soil becomes fluid-like and mobile, and permanent displacement of the ground can occur, resulting in damage to utilities and structures (Association of Bay Area Governments [ABAG], 2001). Increased pore pressure in unconsolidated materials is caused by ground shaking during large earthquakes. Liquefaction can cause foundation failures in buildings and other facilities because of the reduction of foundation bearing strength. The potential for liquefaction depends on the duration and intensity of earthquake shaking, particle size distribution of the soil, density of the soil, and groundwater elevation. Areas at risk of liquefaction typically have a high groundwater table underlying low- to medium-density, granular sediments, particularly younger alluvium and artificial fill. In San Mateo, the potential for liquefaction exists in areas with fill material, Bay mud, and alluvium; Figure 7-3 shows areas of the City having potential for liquefaction (City of San Mateo, 2009).

7.1.2.4 Lateral Spreading

Lateral spreading is a ground failure that involves displacement of large blocks of ground down gentle slopes or toward stream channels. The potential for lateral spreading is highest in areas underlain by soft, saturated, liquefiable materials, especially where bordered by steep banks or adjacent hard ground. In San Mateo, lateral spreading is possible along the banks of drainage courses that are not constrained in concrete channels and/or by other protective measures (City of San Mateo, 2009).

7.1.3 Soils

The Program Area contains soil types that vary with landscape position (see Figure 7-4). On the east side of US-101, soils are mapped as Urban Land-Orthents reclaimed complex (U.S. Soil Conservation Service, 1991; Map Unit 134). These lands were once part of San Francisco Bay and tidal flats and were filled as the area was developed. Soil composition is variable because the fill material used for reclamation varied in composition. Recent subsurface investigations near Detroit Drive and J. Hart Clinton Drive, east of the WWTP, revealed that subsurface soil materials consist of fill, Bay mud, and alluvium (Engeo Inc., 2009; Ninyo and Moore, 2013). Areas within Map Unit 134 may have a groundwater table that is tidally influenced and fluctuates between 30 to 60 inches below ground surface. These soils are prone to settlement and liquefaction (see Figure 7-3).

Much of the Program Area comprises soils that have been cut and filled for development (U.S. Soil Conservation Service, 1991; Map Units 121, 122, 123, 124, 132, 133) (see Figure 7-4), such as construction of roads and buildings. Urban lands are covered by asphalt, concrete, buildings and other structures, and urban soils contain fill material, similar to Orthents. These soils are largely engineered and are unlikely to exhibit shrink-swell behavior. Where slopes are relatively flat, the erosion hazard is slight.

Within the western portion of the Program Area are steeply sloping uplands, with soils weathered from sandstone. Runoff and erosion potential on these soils (i.e., in Map Units 115 and 116) may be substantial.

Many soil types in the Program Area have physical properties that could limit construction. In the context of the CWP, such limitations include the erosion potential, shrink-swell behavior, and settlement. Settlement is the typically gradual drop in elevation of a ground surface caused by settling or compacting of soils under the weight of fill material or building loads. Settlement may continue over a long period. The degree of settlement is primarily influenced by the thickness of the settleable soils (e.g., Bay mud), site history, characteristics of fill material, and characteristics of building loads. Settlement is not always uniform; differential settlement is uneven, causing different parts of a structure to settle at a different rates. Differential settlement could potentially occur in areas with non-uniform fill material, such as the filled Bay lands (City of San Mateo, 2009). Up to 2 inches of liquefaction-induced settlement could occur along the Seal Slough Levee, near the Detroit Drive and Bayfront parcels, during a large seismic event (Engeo Inc., 2009).

Erosion is the process whereby soil particles become detached and are transported by wind or water. Rates of erosion can vary, depending on several factors including soil texture, structure, amount of soil cover, and slope factors. Steeply sloped uplands in the western Program Area have a high risk of erosion during storm events; however, other urbanized, relatively flat areas have a low erosion hazard.

Expansive soils exhibit a cycle of shrinking and swelling (contraction and expansion) with drying and wetting. This occurs in fine-textured soils containing expansive clay minerals. Structures built on expansive soils can be damaged over time, and foundations can crack or shift. Usually, proper engineering can mitigate this potential problem. Soils that have been engineered for development and reclaimed soils near the Bay would have a low shrink-swell capacity; limited areas with high shrink-swell potential may be found in the western uplands.

7.2 Regulatory Framework

This section describes the federal and state laws and regulations, and local policies and ordinances that are applicable to implementation of the CWP and selected projects with respect to geology and soil resources.

7.2.1 Federal Regulations

7.2.1.1 Clean Water Act

The federal CWA, as amended, is the fundamental federal law for regulating discharges of waste into waters of the U.S. Section 402 of the CWA provides NPDES requirements, which have been established for stormwater discharges from a range of industrial discharge categories, including construction activities. The U.S. Environmental Protection Agency (EPA) has delegated administrative authority for implementing the NPDES program to the State of California. The SWRCB and nine RWQCBs have authority to implement the CWA in California. In San Mateo, the San Francisco Bay RWQCB oversees implementation of the NPDES program. Construction projects with disturbance areas greater than 1 acre that are implemented as part of the CWP would require coverage under the State's Construction General Permit (CGP) (CAS0000001, Order 2009-0009-DWQ as amended by Orders 2010-0014-DWQ and 2012-0006-DWQ). The permit requires development and implementation of a site-specific Storm Water Pollution Prevention Plan (SWPPP), which must include best management practices (BMPs) to provide an effective combination of erosion and sediment controls. Chapter 10 also contains a discussion of Clean Water Act requirements that are relevant to the CWP.

7.2.2 State Regulations

7.2.2.1 Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act provides for protection of the quality of all waters of the State of California. The act gives the SWRCB and the RWQCBs regulatory authority to establish water quality standards and an implementation plan for achieving those standards. SWRCB and RWQCB authority under the act includes implementation of the NPDES program in California.

7.2.2.2 Seismic Hazards Mapping Act of 1990

The Seismic Hazards Mapping Act of 1990 (Public Resources Code, Chapter 7.8, Sections 2690–2699.6) directs the Department of Conservation, California Geological Survey to identify and map areas prone to earthquake hazards, including liquefaction, earthquake-induced landslides, and amplified ground shaking. In addition, the act requires local permitting agencies to regulate certain development projects within these hazard zones. Before a local development permit is issued for a site within a seismic hazard zone, a geotechnical investigation of the site must be conducted and appropriate mitigation measures incorporated into the project design.

7.2.2.3 Alquist-Priolo Earthquake Fault Zoning Act of 1972

The Alquist-Priolo Earthquake Fault Zoning Act (Alquist-Priolo) prohibits the siting of structures for human occupancy across traces of active faults that represent a potential hazard to structures because of surface faulting or fault creep. Alquist-Priolo only addresses the hazard of surface fault rupture and is not directed toward other earthquake hazards. Alquist-Priolo requires the State Geologist to establish regulatory zones (known as Earthquake Fault Zones) around the surface traces of active faults and to issue appropriate maps. The maps are distributed to all affected cities, counties, and state agencies for use in planning and controlling new or renewed construction. All land division and most structures for human occupancy are regulated by local agencies within the Earthquake Fault Zones; however, local agencies can be more restrictive than state laws.

Before a project can be permitted, cities and counties must require a geologic investigation to demonstrate that proposed buildings would not be constructed across active faults. An evaluation and written report for the specific site must be prepared by a licensed geologist. If an active fault is found, structures for human occupancy must be set back from the fault (generally 50 feet) (California Geological Survey, 2015).

7.2.2.4 California Building Code

The California Building Code (CBC) is codified in 24 CCR Part 2. The California Building Standards Commission administers Title 24. The CBC establishes minimum standards to safeguard public health, safety, and general welfare through structural strength, means of egress facilities, and general stability. The CBC regulates and controls the design, construction, quality of materials, use and occupancy, location, and maintenance of all building and structures within its jurisdiction. In addition, the CBC contains requirements that are based on the American Society of Civil Engineers Minimum Design Standards 7-05, including requirements for general structural design and a means for determining earthquake loads and other loads (e.g., flood and wind) for inclusion in building codes. CBC provisions apply to the construction, alteration, movement, replacement, and demolition of every building, structure, and appurtenance connected or attached to such buildings or structures throughout California. The earthquake design requirements take into account the occupancy category of the structure, site class, soil classifications, and various seismic coefficients used to determine a Seismic Design Category (SDC) for projects. The SDC is a classification system that combines the occupancy categories with the level of expected ground motions at the site; classifications range from SDC A (very small seismic vulnerability) to SDC E/F (very high seismic vulnerability and near a major fault). Design specifications are determined in accordance with the SDC.

7.2.3 Local Regulations

7.2.3.1 Association of Bay Area Governments Manual of Standards for Erosion and Sediment Control

The *Manual of Standards for Erosion and Sediment Control* (ABAG, 1995) provides policy guidance, legal guidelines, and technical standards to control erosion and sediment control impacts for urban and developing areas, with an emphasis on construction erosion management.

7.2.3.2 City of San Mateo Site Development Code

The City of San Mateo Site Development Code (Chapter 23.40 of the Municipal Code [City of San Mateo, 2015]) establishes administrative procedures, regulations, required approvals, and performance standards for site grading, construction on slopes, and removal of major vegetation. Its intent is to minimize adverse impacts on people and property as the result of development. The code provides an exemption from applying for and obtaining a site development permit for various types of projects, including excavation below finished grade for installation of sewer facilities and excavations by public companies or the City within public utility easements, streets, rights-of-way, or property owned in fee title by the utility company for the purpose of maintaining or installing new facilities, either aboveground or belowground (Section 23.40.030(d) of the Municipal Code). Therefore, construction of many CWP projects may be exempt from requirements of the Site Development Code.

7.2.3.3 General Plan – Safety and Hazardous Waste Management

The following applicable safety and hazardous waste policies are listed as they appear in the General Plan (City of San Mateo, 2010):

> **Policy S 1.1: Geologic Hazards.** Require site specific geotechnical and engineering studies, subject to the review and approval of the City Engineer and Building Official, for development proposed on sites identified in Figure S-2 as having moderate or high potential for ground failure. Permit development in areas of potential geologic hazards only where it can be demonstrated that the project will not be endangered by, nor contribute to, the hazardous condition on the site or on adjacent properties.
>
> **Policy S 1.3: Erosion Control.** Require erosion control measures for all development sites where grading activities are occurring, including those having landslide deposits, past erosion problems, the potential for storm water quality impacts, or slopes of 15% or greater which are to be altered. Control measures shall retain natural topographic and physical features of the site if feasible.

7.3 Assessment Methods and Thresholds of Significance

Potential impacts on geology and soil resources were evaluated by using existing information regarding the geologic, soil, and seismic characteristics of the Program Area and overlaying CWP and project features on maps of geological and soil constraints. Impact thresholds were based on criteria in Appendix G of the CEQA Guidelines.

Impacts related to geology and soil resources may occur if the CWP would result in the following:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
  - Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault. Refer to Division of Mines and Geology Special Publication 42.
  - Strong seismic ground shaking
  - Seismic-related ground failure, including liquefaction
  - Landslides

- Substantial soil erosion or the loss of topsoil
- A project being located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in onsite or offsite landslide, lateral spreading, subsidence, liquefaction or collapse
- A project being located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property

7.4 Environmental Impacts

Potential impacts of the CWP related to geology and soils are summarized in Table 7-1 and described in subsequent sections.

TABLE 7-1
Summary of Geology and Soils Impacts
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Impact	In-System Storage Program	Full Conveyance Program	New Headworks Project	Primary Clarifier Project
Impact 7-1. Implementation of the CWP could expose people or structures to potential substantial adverse effects involving rupture of a known earthquake fault, strong seismic shaking, and/or seismic-related ground failure, including liquefaction and landslides.	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation
Impact 7-2. Implementation of the CWP could result in substantial soil erosion or loss of topsoil.	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation
Impact 7-3. Projects constructed under the CWP may be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project, potentially resulting in onsite or offsite landslides, lateral spreading, subsidence, liquefaction, or collapse.	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation
Impact 7-4. Projects constructed under the CWP may be located on expansive soils, creating substantial risks to property.	Less than significant impact	Less than significant impact	Less than significant impact	Less than significant impact

Impact 7-1. Implementation of the CWP could expose people or structures to potential substantial adverse effects involving rupture of a known earthquake fault, strong seismic shaking, and/or seismic-related ground failure, including liquefaction and landslides.

In-System Storage Program

There are no active faults or potentially active faults within the Program Area, according to published geologic maps; the Program Area is not within an Alquist-Priolo Earthquake Fault Study Area. The San Andreas Fault is approximately 2 miles west of the City boundary, and the Hayward Fault is approximately 14 miles to the east (City of San Mateo, 2009). There is no evidence of surface rupturing in the Program Area during the last one million years, and inactive faults show no evidence of recent motion. Therefore, impacts related to rupture of a known earthquake fault resulting from implementation of the In-System Storage Program are considered to be less than significant.

The entire Bay Area is susceptible to strong ground shaking during major earthquakes because of the proximity to active earthquake faults. Ground shaking is amplified and lasts longer where soils are unconsolidated or saturated with water, such as the east part of the City near San Francisco Bay where soils are comprised of Bay muds (City of San Mateo, 2009; 2010). Ground shaking impacts would be less severe in upland areas underlain by hard bedrock (City of San Mateo, 2009). In San Mateo, ground shaking intensity is potentially very strong or violent (see Figure 7-2). Damage to buildings and utilities in San Mateo would likely be greatest east of US-101 in areas underlain by alluvial deposits, Bay mud, and artificial fill (ABAG, 2015).

Ground shaking associated with earthquakes could affect the In-System Storage Program by causing pipeline breakage or damage to WWTP, storage basin, or pump station structures. Most of the In-System Storage Program structures, including treatment facilities, pump stations, and in-system storage basins, would be unoccupied, with only occasional occupancy by operations staff for maintenance and related activities. The new administration building would be the only regularly occupied structure; damage to this building from ground shaking could expose people to potential adverse effects.

The WWTP Site and pump station project locations are located east of US-101, in areas with high liquefaction potential (see Figure 7-3). Proposed new and upgraded WWTP facilities and pump stations could be damaged by earthquake-induced liquefaction.

Most of the existing and proposed pipeline alignments are within areas of high to moderate liquefaction potential. Pipeline breaks resulting from ground displacement in liquefiable areas during earthquakes is common, and pipelines carrying domestic waste are particularly susceptible because that type of pipe is brittle and does not have sealed joints (ABAG, 2001). However, most of the proposed pipeline projects would be placed in City rights-of-way, primarily in streets, which are likely already composed of engineered fill and would be less prone to displacement.

The western portion of the Program Area has a low or very low risk of liquefaction. However, portions of this area have had landslides in the past and/or are at high risk of having landslides in the future (see Figure 7-3). Infrastructure in these areas could be damaged by a landslide.

Mitigation Measure 7-1 Perform site-specific geotechnical and engineering studies and implement recommendations would be implemented for all In-System Storage Program projects located in areas with moderate to high potential for ground shaking, liquefaction, or landslide. This mitigation would result in identification of appropriate site-specific and project-specific geotechnical and engineering methods to minimize risks from ground shaking, landslides or liquefaction to a level meeting City requirements, CBC earthquake design requirements, and other building safety codes. With implementation of **Mitigation Measure 7-1**, exposure of people or structures to potential adverse effects from ground shaking, landslide, or liquefaction of the In-System Storage Program would be a less than significant impact.

Full Conveyance Program

The Full Conveyance Program would be constructed and operated within the Program Area and would have similar impacts as described for the In-System Storage Program. There are no active faults or potentially active faults within the Program Area, it is not within an Alquist-Priolo Earthquake Fault Study Area, and does not contain evidence of recent inactive fault motion or of surface rupturing during the last one million years. Therefore, impacts related to rupture of a known earthquake fault resulting from implementation of the Full Conveyance Program are considered to be less than significant.

As described for the In-System Storage Program, ground shaking associated with earthquakes could affect the Full Conveyance Program by causing pipeline breakage or damage to structures, including WWTP facilities and pump stations. The new administration building would be the only regularly occupied structure; damage to this building from ground shaking could expose people to potential adverse effects.

The WWTP Site and pump station project locations are located east of US-101, in areas with high liquefaction potential (see Figure 7-3). Proposed new and upgraded WWTP facilities and pump stations could be damaged by earthquake-induced liquefaction. Although located in areas with moderate to high liquefaction potential, most of the proposed pipeline projects would be placed in City rights-of-way, primarily in streets, which are likely already composed of engineered fill and would be less prone to displacement.

The western portion of the Program Area has a low or very low risk of liquefaction. However, portions of this area have had landslides in the past and/or are at high risk of having landslides in the future (see Figure 7-3). Infrastructure in these areas could be damaged by a landslide.

Mitigation Measure 7-1 Perform site-specific geotechnical and engineering studies and implement recommendations would be implemented for all Full Conveyance Program projects located in areas with moderate to high potential for ground shaking, liquefaction, or landslide. This mitigation would result in identification of appropriate site-specific and project-specific geotechnical and engineering methods to minimize risks from ground shaking, landslides or liquefaction to a level meeting City requirements, CBC earthquake design requirements, and other building safety codes. With implementation of **Mitigation Measure 7-1**, exposure of people or structures to potential adverse effects from ground shaking, landslide, or liquefaction of the Full Conveyance Program would be a less than significant impact.

New Headworks Project and Primary Clarifier Project

The New Headworks Project and Primary Clarifier Project would be constructed and operated within the Program Area. As described for the In-System Storage Program, there are no active faults or potentially active faults within the Program Area, it is not within an Alquist-Priolo Earthquake Fault Study Area, and does not contain evidence of recent inactive fault motion or of surface rupturing during the last one million years. Therefore, impacts related to rupture of a known earthquake fault resulting from implementation of the New Headworks Project and Primary Clarifier Project are considered to be less than significant.

As described for the In-System Storage Program, ground shaking associated with earthquakes could affect the New Headworks Project and Primary Clarifier Project by causing damage to structures. These facilities would be generally unoccupied, with only occasional occupancy by operations staff for maintenance and related activities.

The WWTP Site, where the New Headworks Project and Primary Clarifier Project would be located, is in an area designated as having high liquefaction potential. The projects could be damaged by earthquake-induced liquefaction. The projects are located in a level area and landslides would not be expected to occur.

Mitigation Measure 7-1 Perform site-specific geotechnical and engineering studies and implement recommendations would be implemented for the New Headworks Project and Primary Clarifier Project. This mitigation would result in identification of appropriate site-specific and project-specific geotechnical and engineering methods to minimize risks from ground shaking or liquefaction to a level meeting City requirements, CBC earthquake design requirements, and other building safety codes. With implementation of **Mitigation Measure 7-1**, exposure of people or structures to potential adverse effects from ground shaking, landslide, or liquefaction of the New Headworks Project and Primary Clarifier Project would be a less than significant impact.

Impact 7-2. Implementation of the CWP could result in substantial soil erosion or loss of topsoil.

In-System Storage Program

The In-System Storage Program would include construction of WWTP facilities, pipeline installation or rehabilitation, pump station upgrade or rehabilitation, and new in-system storage basins. Construction activities (e.g., installation or rehabilitation of pipelines) in urbanized areas and within City rights-of-way, including roadways, would limit disturbance acreage to the excavation footprint and thereby limit the risk of erosion. Soils within the relatively flat areas in the eastern portion of the Program Area have low erosion

hazard, further reducing erosion risk (see Figures 7-1 and 7-4). However, steep slopes in the central and western portions of the Program Area have soils that are highly erodible, and measures would need to be implemented during construction to control erosion and loss of topsoil. See Appendix E for erosion hazards associated with geologic units and soils in the Program Area.

Construction of new pipeline sections, wastewater facilities, and storage basins would require substantial soil trenching and/or excavation. If not properly managed, substantial erosion of stockpiled soils could occur, and sediment could be transported into storm drains or sensitive receiving waters. Projects constructed during implementation of the CWP typically would not store soil materials within work areas but would instead stockpile materials in a central location where they could be effectively managed. This would aid stockpile management and reduce the risk of erosion and sediment transport outside of project work areas.

Projects constructed during implementation of the In-System Storage Program would require coverage under the State's CGP if the land disturbance area is greater than or equal to 1 acre. Because many of the proposed projects are within paved, urbanized areas, land disturbance would likely be less than 1 acre, and CGP coverage would not be required. However, General Plan Policy 1.3 requires erosion control measures for all development sites where grading activities occur, including those having landslide deposits, past erosion problems, the potential for stormwater quality impacts, or slopes of 15 percent or greater that are to be altered. Therefore, even projects with land disturbance acreage less than 1 acre would be required to implement appropriate erosion and sediment control measures where there is substantial risk of erosion and/or impacts on water quality. The *Manual of Standards for Erosion and Sediment Control* (ABAG, 1995) provides guidance and technical standards for erosion and sediment control measures during construction; conformance to the standards would provide further control of erosion and topsoil loss.

Implementation of **Mitigation Measure 7-2 Comply with regulations and policies for erosion control** would reduce impacts of the In-System Storage Program to a less than significant level. Compliance with the CGP, if required, and local policies for implementing appropriate erosion control measures, including appropriate management of soil stockpiles, would minimize erosion and topsoil loss.

Full Conveyance Program

The Full Conveyance Program would include construction of WWTP facilities, pipeline installation or rehabilitation, and pump station upgrade or rehabilitation in the same locations as the In-System Storage Program. In addition, the new Dale Avenue Pump Station would be constructed next to the existing pump station. Therefore, the same potential impacts from erosion described for the In-System Storage Program could occur during construction of the Full Conveyance Program. However, implementation of **Mitigation Measure 7-2 Comply with regulations and policies for erosion control** would reduce impacts of the Full Conveyance Program to a less than significant level.

New Headworks Project and Primary Clarifier Project

The New Headworks Project and Primary Clarifier Project would be constructed in the WWTP Site, which is part of the impact area evaluated for the In-System Storage Program. Therefore, the same potential impacts from erosion described for the In-System Storage Program could occur during construction of the New Headworks Project and Primary Clarifier Project. However, implementation of **Mitigation Measure 7-2 Comply with regulations and policies for erosion control** would reduce impacts of the Full Conveyance Program to a less than significant level.

Impact 7-3. Projects constructed under the CWP may be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project, potentially resulting in onsite or offsite landslides, lateral spreading, subsidence, liquefaction, or collapse.

In-System Storage Program

Much of the Program Area contains geologic units or soils that are unstable and have a moderate to high potential for liquefaction, lateral spreading, landslides, subsidence, or collapse. Figure 7-3 shows areas prone to liquefaction. These areas are also prone to soil settlement (i.e., areas near the Bay with a high water table, non-uniform fill material, and liquefiable soils). Lateral spreading may also occur in areas underlain by soft, saturated, liquefiable materials, especially where bordered by steep banks or adjacent hard ground. In San Mateo, areas with potential for lateral spreading occur along the banks of water drainage courses that are not retained by concrete channels and/or other protective measures. Landslides have occurred in the past and could occur in the future in the central and western portions of the Program Area that have steep slopes and weak soils (City of San Mateo, 2009; 2010).

The In-System Storage Program could have geological, seismic, and soil impacts where projects would occur on geologic units or soils having potential for liquefaction, landslides, lateral spreading, settlement, shrink-swell behavior, and/or erosion. **Mitigation Measure 7-1 Perform site-specific geotechnical and engineering studies and implement recommendations** would require site-specific geotechnical and engineering studies, which are subject to the review and approval of the city engineer and building official, for development projects planned in areas with moderate or high potential for ground failure. By implementing geotechnical and engineering recommendations from these studies and by following CBC earthquake design requirements, implementation of the In-System Storage Program would not cause or contribute to increased instability of the soils or geologic unit. With **Mitigation Measure 7-1**, impacts of the In-System Storage Program would be less than significant.

Full Conveyance Program

The Full Conveyance Program would include WWTP, pipeline, and pump station projects in the same locations as the In-System Storage Program. In addition, the new Dale Avenue Pump Station would be constructed next to the existing pump station. Therefore, as described for the In-System Storage Program, the Full Conveyance Program could have geological, seismic, and soil impacts where projects would occur on geologic units or soils having potential for liquefaction, landslides, lateral spreading, settlement, shrink-swell behavior, and/or erosion. **Mitigation Measure 7-1 Perform site-specific geotechnical and engineering studies and implement recommendations** would require site-specific geotechnical and engineering studies, which are subject to the review and approval of the city engineer and building official, for development projects planned in areas with moderate or high potential for ground failure. By implementing geotechnical and engineering recommendations from these studies and by following CBC earthquake design requirements, implementation of the Full Conveyance Program would not cause or contribute to increased instability of the soils or geologic unit. With **Mitigation Measure 7-1**, impacts of the Full Conveyance Program would be less than significant

New Headworks Project and Primary Clarifier Project

The New Headworks Project and Primary Clarifier Project would be constructed in the WWTP Site, which is part of the impact area evaluated for the In-System Storage Program. Therefore, as described for the In-System Storage Program, the New Headworks Project and Primary Clarifier Project could have geological, seismic, and soil impacts because they are located on geologic units or soils having potential for liquefaction, lateral spreading, settlement, and/or erosion. **Mitigation Measure 7-1 Perform site-specific geotechnical and engineering studies and implement recommendations** would require site-specific geotechnical and engineering studies, which are subject to the review and approval of the city engineer and building official. By implementing geotechnical and engineering recommendations from these studies and by following CBC earthquake design requirements, implementation of the New Headworks Project and Primary Clarifier

Project would not cause or contribute to increased instability of the soils or geologic unit. With **Mitigation Measure 7-1**, impacts of the New Headworks Project and Primary Clarifier Project would be less than significant

Impact 7-4. Projects constructed under the CWP may be located on expansive soils, creating substantial risks to property.

In-System Storage Program

Many parts of the Program Area are urbanized and have previously been cut and filled for development, including areas within City streets where pipelines would be rehabilitated or new pipe installed. Engineered fill is well graded and would not shrink or and swell. Some areas in the eastern part of the Program Area were reclaimed from the Bay (i.e., filled) to allow development. Soils in these areas are also not considered to be subject to shrink-swell behavior (Ninyo and Moore, 2013). Impacts of the In-System Storage Program from expansive soils would be less than significant.

Full Conveyance Program

Many parts of the Program Area are urbanized and have previously been cut and filled for development, including areas within City streets where pipelines would be rehabilitated or new pipe installed. Engineered fill is well graded and would not shrink or and swell. Some areas in the eastern part of the Program Area were reclaimed from the Bay (i.e., filled) to allow development. Soils in these areas are also not considered to be subject to shrink-swell behavior (Ninyo and Moore, 2013). Impacts of the Full Conveyance Program from expansive soils would be less than significant.

New Headworks Project and Primary Clarifier Project

The New Headworks Project and Primary Clarifier Project would be located on the WWTP Site, which was reclaimed from the Bay (i.e., filled) to allow development. Soils in this area are not considered to be subject to shrink-swell behavior (Ninyo and Moore, 2013). Impacts of the New Headworks Project and Primary Clarifier Project from expansive soils would be less than significant.

7.5 Mitigation Measures

Mitigation Measure 7-1. Perform site-specific geotechnical and engineering studies and implement recommendations.

The City of San Mateo and its design engineers shall perform site specific geotechnical and engineering studies as required by General Plan Policy S 1.1. The studies shall be completed prior to completion of design and prior to submittal of applicable design permits, including building permits and SPAR requests. Studies shall be subject to the review and approval of the City Engineer and Building Official for projects proposed on sites identified as having moderate to high potential for ground failure. The review shall verify compliance with federal, state and local regulations related to reducing earthquake and soils hazards. The City shall approve projects in areas of potential geologic hazards only where it can be demonstrated that the project would not be endangered by, nor contribute to, the hazardous condition on the site or on adjacent properties.

The studies shall include identification of site specific geotechnical and engineering measures. Typical geotechnical or engineering report measures to reduce impacts related to liquefaction, settlement or other ground failure could include earthwork and foundation measures such as the following:

- Verify backfill material is suitable for its purpose. Areas for construction of WWTP facilities and storage basins may need to have soils overexcavated and replaced with engineered fill material. Bay muds having high organic matter content would not be used as fill material (Ninyo and Moore, 2013).

- Stone columns may be used as a measure to mitigate settlement, where needed. Stone columns installed well below the finished grade compress settleable soil layers and increase soil stiffness, thereby reducing settlement potential (Ninyo and Moore, 2013).
- For construction of lightly loaded structures, spread footings or mat foundations may be recommended in project design for areas where there is risk of substantial settlement. For design of structures having moderate to heavy loads, pile foundations may be recommended, with measures to reduce the potential for damage to nearby structures as a result of vibrations or ground displacement during pile driving operations (Ninyo and Moore, 2013).
- Consider potential for liquefaction-induced settlement in engineering design of new pipeline installations (Engeo Incorporated, 2009).
- Expansive or liquefiable soils may be overexcavated and replaced with engineered fill.
- Liquefiable soils may be stabilized by grouting, densification, or dewatering (ABAG, 2001).
- Soils in an area with potential for lateral spreading may be stabilized by installation of buttresses (ABAG, 2001).

Mitigation Measure 7-2. Comply with regulations and policies for erosion control.

The City of San Mateo and its construction contractors shall develop prior to start of construction and implement a project-specific SWPPP for construction projects with a land disturbance area equal to or greater than 1 acre. For projects with disturbance area less than 1 acre in size, a site-specific Erosion and Sediment Control Plan shall be prepared. For projects with any land disturbance, construction shall comply with the San Mateo Site Development Code and shall incorporate an effective combination of erosion and sediment control measures that are identified in ABAG and/or California Stormwater Quality Association (CASQA) guidance manuals. Construction erosion and sediment control BMPs typically include, but are not limited to, the following measures:

- Scheduling site grading during the non-rainy season (April 15 to October 15), where possible
- Segregation of topsoil during rough grading
- Temporary soil stabilization during site grading and active construction
- Permanent post-construction site soil stabilization
- Erosion and sediment controls during construction dewatering activities
- Control of site run-on and run-off to isolate the work area and prevent onsite or offsite erosion and sediment transport during construction
- Dust suppression
- Stockpile management; in accordance with City standard construction practices, materials shall be stockpiled at central location(s) instead of within work areas, where feasible

7.6 References

Association of Bay Area Governments (ABAG). 1995. *Manual of Standards for Erosion and Sediment Control*. 422 pp.

_____. 2001. *The Real Dirt on Liquefaction: A Guide to the Liquefaction Hazard in Future Earthquakes Affecting the San Francisco Bay Area*. 29 pp.

_____. 2015. *Resilience Program, San Mateo Earthquake Hazard*. http://resilience.abag.ca.gov/earthquakes/sanmateo/. Accessed May 21, 2015.

Brabb, E.E., R.W. Graymer, and D.L. Jones. 1998. *Geology of Onshore Part of San Mateo County*. U.S. Geological Survey Open-File Report 98-137.

California Geological Survey. 2015. "Alquist-Priolo Earthquake Fault Zoning Act." http://www.consrv.ca.gov/cgs/rghm/ap/Pages/main.aspx. Accessed 5/21/15

City of San Mateo. 2009. *Draft Environmental Impact Report for the City of San Mateo General Plan Update*. July 27.

_____. 2010. *City of San Mateo General Plan – Vision 2030*. Resolution No. 134-2010. Adopted by the City Council on October 18.

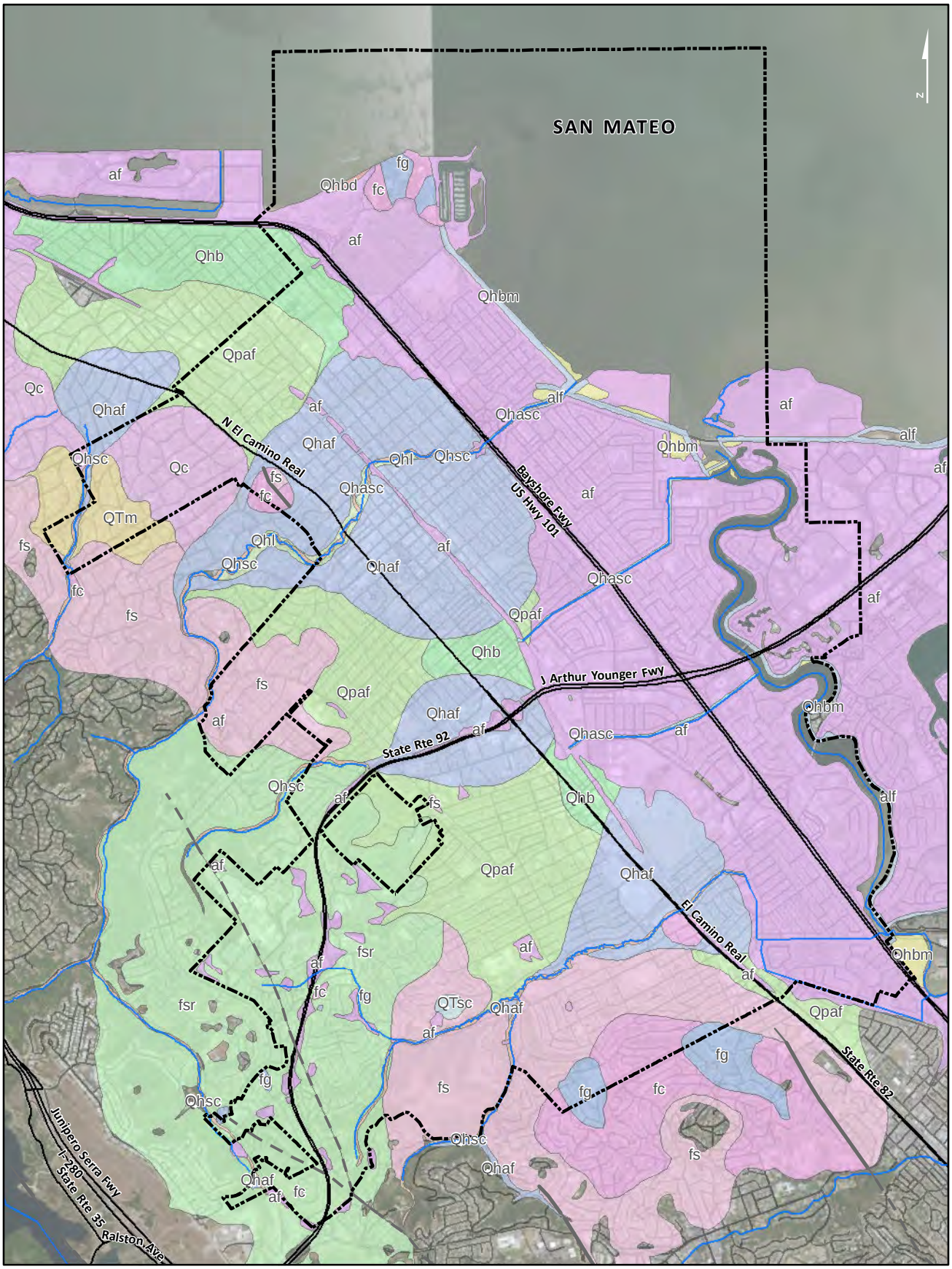
Engeo, Inc. 2009. Supplemental Geotechnical Exploration. City of San Mateo Bayfront Levee Improvements – Seal Slough Site and East Levee Site. San Mateo, CA. September 4. 143 pp.

Kashiwagi, J.H. and L.A. Hokholt. 1991. *Soil Survey of San Mateo County, Eastern Part, and San Francisco County, California*. U.S. Department of Agriculture Soil Conservation Service. 120 pp.

Ninyo and Moore. 2013. *Preliminary Geotechnical Evaluation, San Mateo Corporation Yard, Detroit Drive and J. Hart Clinton Drive, San Mateo California*. Prepared for Dreyfuss and Blackford Architects. August 30.

Schoenherr, A.A. 1995. *A Natural History of California*. Chapter 1: California's Natural Regions. University of California Press. 772 pp.

U.S. Geological Survey. 2015. *2008 Bay Area Earthquake Probabilities*. http://earthquake.usgs.gov/regional/nca/ucerf/. Accessed May 21, 2015.



Coordinate System: NAD 1983 UTM Zone 10N. Source: Esri Map Services, County of San Mateo, USGS Open File 98-137.

Figure 7-1
Program Area Geology
Programmatic Environmental Impact Report
City of San Mateo Clean Water Program

CH2MHILL

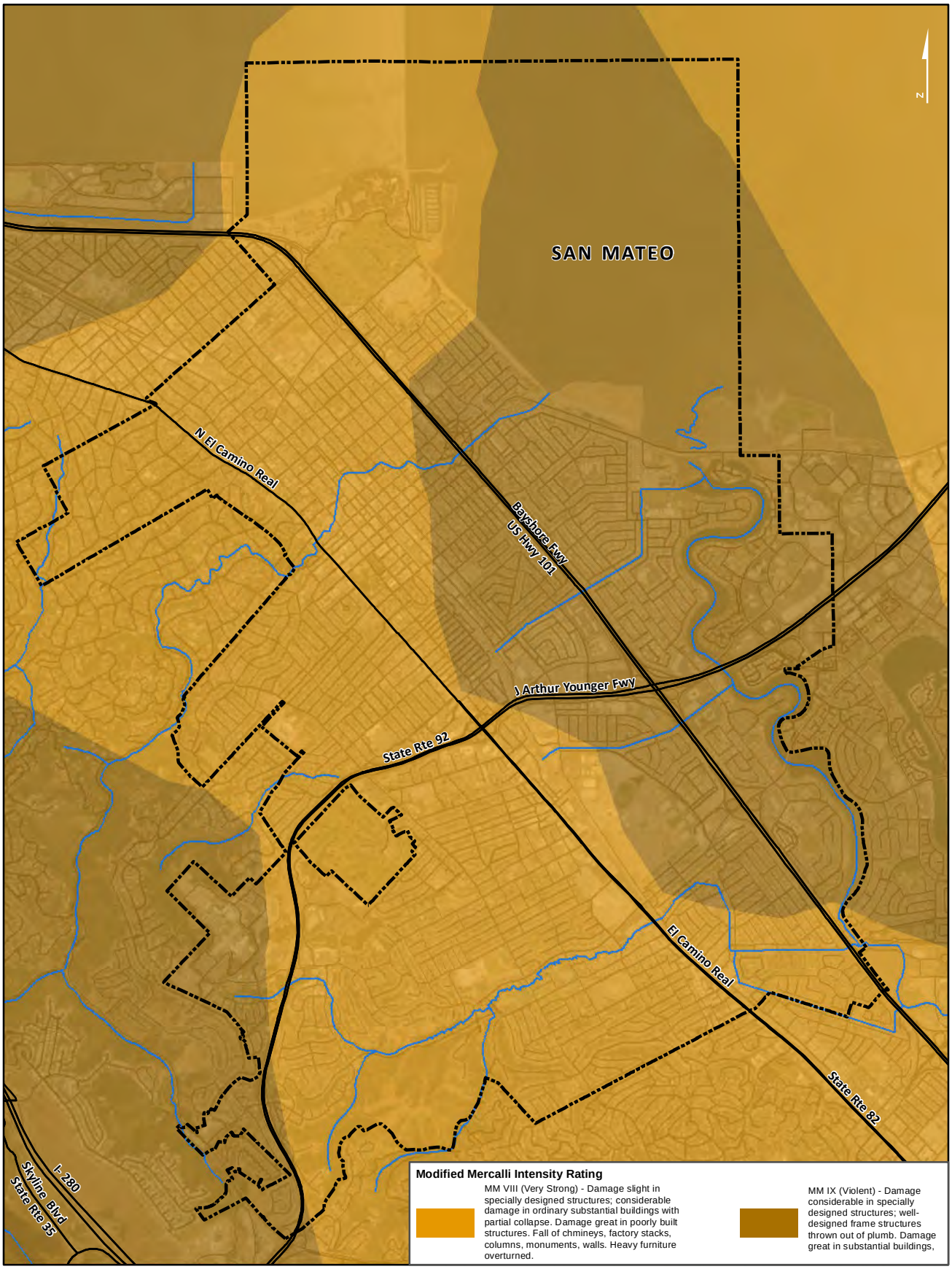


Figure 7-2
Program Area Shaking Intensity
Programmatic Environmental Impact Report
City of San Mateo Clean Water Program

Coordinate System: NAD 1983 UTM Zone 10N. Source: Esri Map Services, County of San Mateo, California Integrated Seismic Network

CH2MHILL

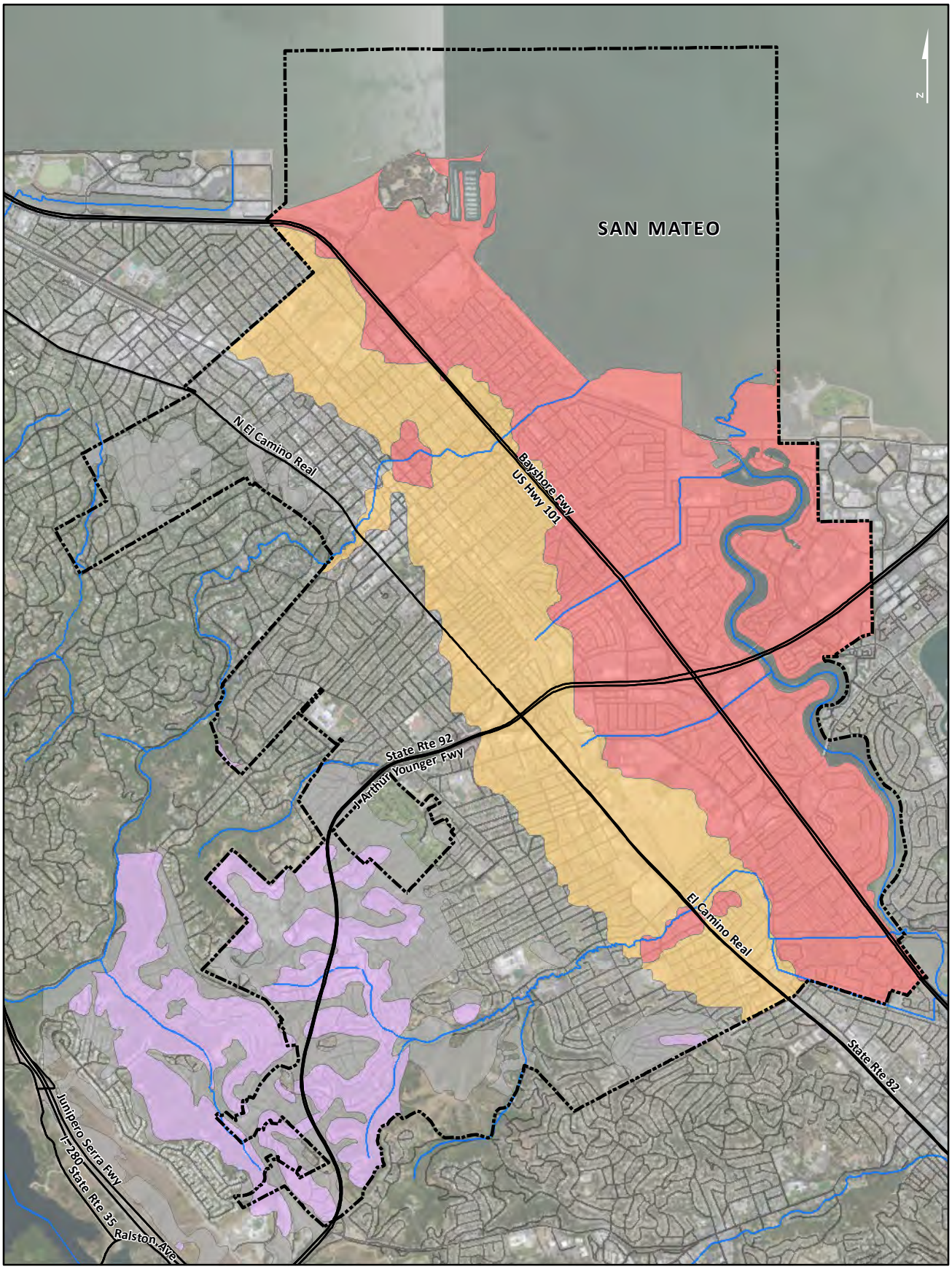


Figure 7-3
Slope Stability and Liquefaction Potential
Programmatic Environmental Impact Report
City of San Mateo Clean Water Program

Coordinate System: NAD 1983 UTM Zone 10N. Source: Esri Map Services, County of San Mateo, USGS Open-File Report 2006-1037

CH2MHILL

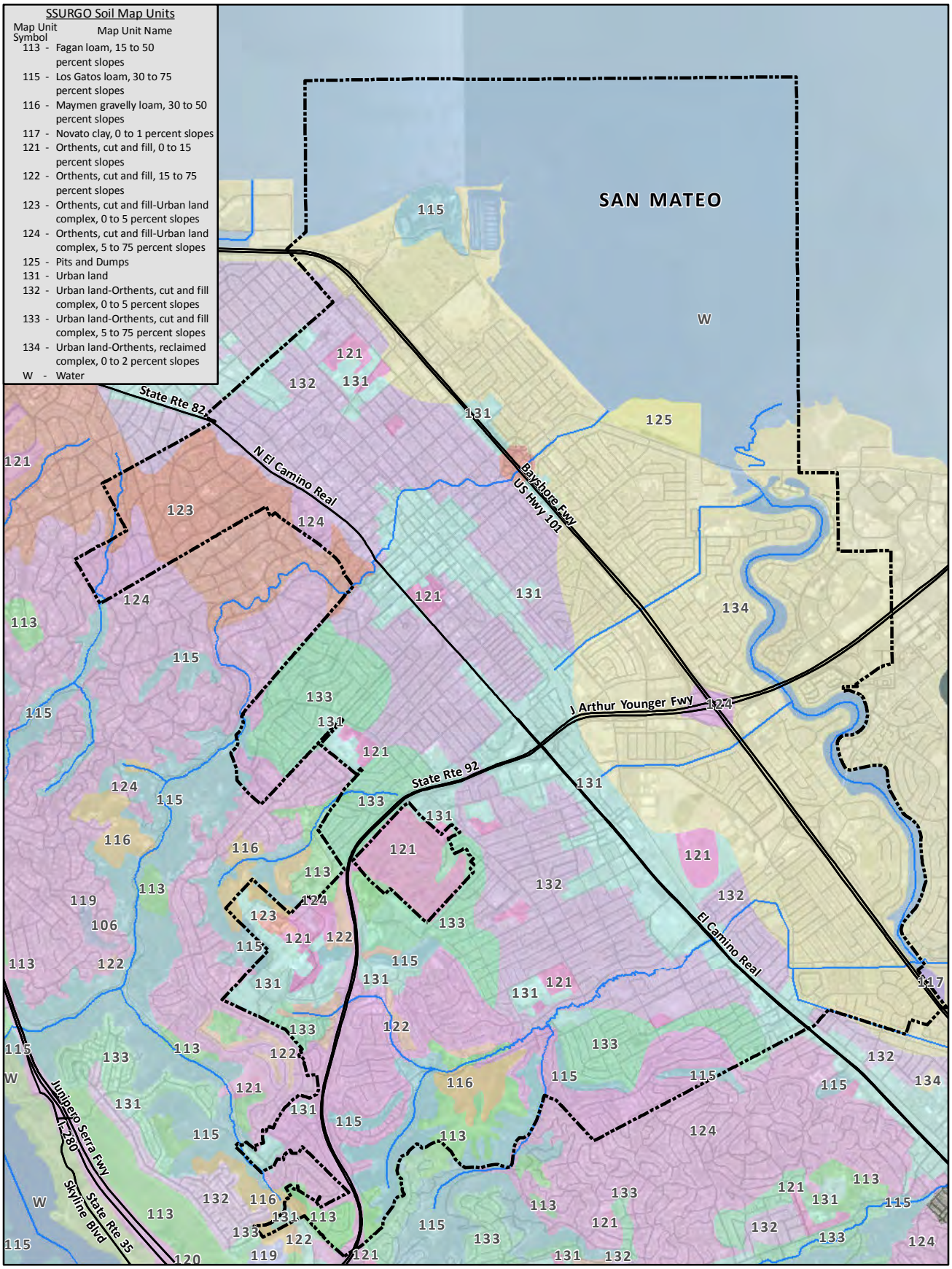


Figure 7-4
Program Area Soils
Programmatic Environmental Impact Report
City of San Mateo Clean Water Program

Coordinate System: NAD 1983 UTM Zone 10N. Sources: Esri Map Services, County of San Mateo, USDA Soil Survey Staff

CH2MHILL

Chapter 8. Greenhouse Gases

This section describes the regulatory background and existing conditions related to GHG emissions. It discusses the estimated GHG emissions of the two CWP alternatives, the potential impacts of the emissions, and mitigation to reduce impacts.

8.1 Existing Setting

Greenhouse gas (GHG) includes naturally occurring and anthropogenic gases, such as carbon dioxide (CO_2), methane, nitrous oxide, hydro-chlorofluorocarbons, perfluorocarbons, and sulfur hexafluoride. GHGs absorb infrared radiation, trap the energy from the sun, and help maintain the temperature of the Earth's surface, creating a process known as the greenhouse effect. The accumulation of GHGs in the atmosphere influences the long-term range of average atmospheric temperatures. Scientific evidence indicates a trend of increasing global temperature over the past century due to an increase in GHG emissions from human activities. The climate change associated with this global warming is predicted to produce economic and social consequences across the globe. GHGs are collectively measured as CO_2-equivalent (CO_2e), where the global warming potential of each greenhouse gas is equated to that of CO_2.

GHGs are collectively measured as CO_2-equivalent (CO_2e), where the global warming potential of each gas is equivalent to CO_2. In 2012, the most recent year for which data is provided, the annual California statewide GHG emissions were 458.68 million metric tons of CO_2e (ARB, 2015). The transportation sector accounts for about 37 percent of the statewide GHG emissions inventory. The electric power sector accounts for about 21 percent of the total statewide GHG emissions inventory.

According to BAAQMD, in 2007 GHG emissions were 95.8 million metric tons of CO_2e, of which about 36 percent was from the transportation sector and 16 percent was from electricity use/co-generation (BAAQMD, 2010). The dominant GHG emitted was CO_2, primarily from fossil fuel combustion.

The City updated its 2005 GHG inventory in its CAP (Pacific Municipal Consultants, 2015). In 2005, the City's community-wide GHG emissions totaled 804,290 metric tons of carbon dioxide equivalent ($MTCO_2e$) for the sectors as shown in Table 8-1. The sector with the largest portion of emissions was on-road transportation, which produced 464,070 $MTCO_2e$, or 58 percent of all community emissions. The next largest sector, commercial/industrial built environment, produced 144,790 $MTCO_2e$, 18 percent of the total. Water and wastewater (3,030 $MTCO_2e$) each comprised less than 1 percent of total emissions.

TABLE 8-1
San Mateo 2005 Community-Wide GHG Emissions
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Sector	$MTCO_2e$	Percentage
On-road transportation	464,070	58
Commercial/industrial built environment	144,790	18
Residential built environment	136,790	17
Solid waste generation	26,960	3
Off-road equipment	11,690	1
Landfill	7,020	1%
Point sources	6,070	1
Caltrain	3,870	Less than 1
Water and wastewater	3,030	Less than 1
Total	**804,290**	**100**

Source: Pacific Municipal Consultants, 2015

The City's GHG inventory of 2010 indicates that the GHG emissions were 9 percent below 2005 levels. The three largest sources of emissions (on-road transportation, commercial/industrial built environment, and residential built environment) all had lower emissions in 2010 than in 2005, along with the landfill and solid waste generation sectors. Emission levels increased in four remaining sectors, most noticeably in the off-road equipment sector, although the relatively small size of these sources meant that they had only a limited impact on communitywide emissions. The relative distribution of emissions within the sectors did not change in a meaningful way from 2005 to 2010 (Pacific Municipal Consultants, 2015).

8.2 Regulatory Framework

8.2.1 Federal Regulations

Climate change and its associated effects are being addressed through various efforts at the federal level to improve fuel economy and energy efficiency, such as the National Clean Car Program and Executive Order (EO) 13514 – Federal Leadership in Environmental, Energy and Economic Performance. These focus on reducing GHGs internally in federal agency missions, programs and operations and also directs federal agencies to participate in the Interagency Climate Change Adaptation Task Force, which is developing a national strategy for adapting to climate change.

U.S. Environmental Protection Agency (EPA) authority to regulate GHG emissions stems from the U.S. Supreme Court decision in *Massachusetts v. EPA* (2007). The Supreme Court ruled that GHGs must meet the definition of air pollutants under the existing Clean Air Act and be regulated if these gases could be reasonably anticipated to endanger public health or welfare. Responding to the Court's ruling, EPA finalized an endangerment finding in December 2009. Based on scientific evidence, it found that six GHGs constitute a threat to public health and welfare. Thus, it was the Supreme Court's interpretation of the existing Act and EPA's assessment of the scientific evidence that formed the basis for EPA's regulatory actions. EPA in conjunction with the National Highway Traffic Safety Administration (NHTSA) issued the first of a series of GHG emission standards for new cars and light-duty vehicles in April 2010 (Center for Climate and Energy Solutions, 2014).

The EPA and the NHTSA are taking coordinated steps to enable the production of a new generation of "clean" vehicles with reduced GHG emissions and improved fuel efficiency for on-road vehicles and engines. The next steps include developing the first GHG regulations for heavy-duty engines and vehicles, as well as additional light-duty vehicle GHG regulations.

The final combined standards that made up the first phase of this national program apply to passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012 through 2016. The standards implemented by this program are expected to reduce GHG emissions by an estimated 960 million metric tons and save 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program (model years 2012 through 2016).

On August 28, 2012, EPA and NHTSA issued a joint final rulemaking to extend the national program for fuel economy standards to model year 2017 through 2025 passenger vehicles. Over the lifetime of the model years 2017 through 2025 standards, projections are that approximately 4 billion barrels of oil would be saved and 2 billion metric tons of GHG emissions would be eliminated.

The complementary EPA and NHTSA standards that make up the Heavy-Duty National Program apply to combination tractors (semi-trucks), heavy-duty pickup trucks and vans, and vocational vehicles (including buses and refuse or utility trucks). Together, these standards would cut GHG emissions and domestic oil use significantly. This program responds to President Obama's 2010 request to jointly establish GHG emissions and fuel efficiency standards for the medium- and heavy-duty highway vehicle sector. The agencies estimate that the combined standards would reduce CO_2 emissions by about 270 million metric tons and save about 530 million barrels of oil over the life of model year 2014 to 2018 heavy duty vehicles.

In March 2013, EPA proposed Tier 3 Motor Vehicle Emission and Fuel Standards to reduce air pollution from passenger cars and trucks to set new vehicle emissions standards and lower the sulfur content of gasoline, considering the vehicle and its fuel as an integrated system.

8.2.2 State Regulations

With the passage of several pieces of legislation, including State Senate and Assembly Bills and EOs, California launched an innovative and proactive approach to address GHG emissions and potential climate change-related impacts. The legislation includes the following:

- AB 1493, Vehicular Emissions: Greenhouse Gases, 2002: This bill requires ARB to develop and implement regulations to reduce automobile and light truck GHG emissions. These stricter emissions standards were designed to apply to automobiles and light trucks beginning with the 2009 model year.
- EO S-3-05 (June 1, 2005): The goal of this EO is to reduce California's GHG emissions to (1) year 2000 levels by 2010, (2) year 1990 levels by the 2020, and (3) 80 percent below year 1990 levels by 2050. In 2006, this goal was further reinforced with the passage of AB 32.
- AB 32, The Global Warming Solutions Act of 2006: AB 32 sets the same overall GHG emissions reduction goals as outlined in EO S-3-05, while further mandating that ARB create a scoping plan and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." In December 2008, the ARB approved the initial Scoping Plan, which included a suite of measures to sharply cut GHG emissions. Key elements of the initial Scoping Plan included the following:
  - Expand and strengthen energy efficiency programs, including building and appliance standards.
  - Increase electricity generation from renewable resources to at least 33 percent of the statewide electricity mix by 2020.
  - Establish targets for passenger vehicle-related GHG emissions for regions throughout California and pursue policies and incentives to achieve those targets. Included with this strategy is support for the development and implementation of a high speed rail system to expand mobility choices and reduce GHG emissions.
  - Adopt and implement measures pursuant to existing State laws and policies, including California's clean car standards and the Low Carbon Fuel Standard.
  - Develop a cap-and-trade program to ensure the target is met, while providing flexibility to California businesses to reduce emissions at low cost.

  In May 2014, ARB approved the first update to the Climate Change Scoping Plan (First Update). The First Update identifies opportunities to leverage existing and new funds to further drive GHG emission reductions through strategic planning and targeted low carbon investments. The First Update highlights California's progress toward meeting the "near-term" 2020 GHG emission reduction goals defined in the initial Scoping Plan. It also evaluates how to align the State's "longer-term" GHG reduction strategies with other State policy priorities for water, waste, natural resources, clean energy, transportation, and land use.
- EO S-20-06 (October 18, 2006): This EO establishes the responsibilities and roles of the Secretary of the California Environmental Protection Agency and state agencies with regard to climate change.
- EO S-01-07 (January 18, 2007): This EO set forth the low carbon fuel standard for California. Under this EO, the carbon intensity of California's transportation fuels is to be reduced by at least 10 percent by 2020.
- SB 97, Chapter 185, 2007, Greenhouse Gas Emissions: SB 97 required the Governor's Office of Planning and Research to develop recommended amendments to the CEQA Guidelines for addressing GHG emissions. The amendments became effective March 18, 2010.

- SB 375, Chapter 728, 2008, Sustainable Communities and Climate Protection: This bill requires ARB to set regional emissions reduction targets from passenger vehicles. The Metropolitan Planning Organization for each region must then develop a "Sustainable Communities Strategy" that integrates transportation, land use, and housing policies to plan for the achievement of the emissions target for their region.
- SB 391, Chapter 585, 2009 California Transportation Plan: This bill requires the state's long-range transportation plan to meet California's climate change goals under AB 32.
- Renewables Portfolio Standard (RPS): Established in 2002 under SB 1078, accelerated in 2006 under Senate Bill 107 and expanded in 2011 under SB 2, California's RPS is one of the most ambitious renewable energy standards in the country. The RPS program requires investor-owned utilities, electric service providers, and community choice aggregators to increase procurement from eligible renewable energy resources to 33 percent of total procurement by 2020.

8.2.3 Local Climate Actions

San Mateo's CAP is a comprehensive strategy to reduce GHG emissions and streamline the environmental review of GHG emissions of future development projects in the City (Pacific Municipal Consultants, 2015). The CAP identifies a strategy, reduction measures, and implementation actions the City will use to achieve the GHG emissions reduction target of 15 percent below 2005 emissions levels by 2020.

Specific measures to reduce GHG emissions that could be applicable to the CWP include the following:

- RE5 – renewable energy systems for new nonresidential buildings
- RE6 – renewable energy systems for existing nonresidential buildings
- ME1 – energy efficiency for new City buildings
- ME2 – energy efficiency at existing City buildings
- WW2 – water efficient landscaping
- WW3 – develop new sources of nonpotable water
- OR2 – alternative fuel construction equipment

The However, as described in the CAP, applying these strategies City-wide would be estimated to result in only 720 of the 57,210 $MTCO_2e$, or just over one percent, targeted for emissions reduction.

8.3 Assessment Methods and Thresholds of Significance

Under California Environmental Quality Act (CEQA), state and local agencies are required to identify any significant environmental impacts that occur as a result of their actions. CEQA also requires that these agencies avoid or mitigate any impacts on the extent feasible. BAAQMD has developed specific GHG guidelines for compliance with CEQA (BAAQMD, 2012), which provide criteria on how to assess and mitigate project-related impacts on GHG.

Impacts on GHG emissions may occur if the CWP or associated projects would result in the following:

- GHG emissions, either directly or indirectly, that may have a significant impact on the environment
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs

BAAQMD adopted CEQA thresholds of significance for GHGs in June 2010 that are currently the subject of recent judicial actions (BAAQMD, 2014) and BAAQMD is no longer recommending these thresholds. However, the City has determined, in its discretion, that the BAAQMD guidelines and thresholds of significance for GHG emissions are based on substantial evidence to "attribute an appropriate share of

greenhouse gas emission reductions necessary to reach AB 32 goals to land use development projects in BAAQMD's jurisdiction that are evaluated pursuant to CEQA" (BAAQMD, 2011). Therefore, in its discretion, the City is using these guidelines for the purpose of evaluating the proposed CWP. The proposed 2010 BAAQMD threshold at a plan level for operational GHG emissions is compliance with a qualified GHG reduction strategy or 6.6 $MTCO_2e$ per service population (SP) per year (BAAQMD, 2011). The emissions from wastewater treatment represent only a fraction of the total per capita GHG emissions. Therefore, the CWP GHG impacts were evaluated based on whether the CWP GHG emissions may have a significant impact on the environment, more specifically, if the GHG emissions from the CWP would hinder or delay California's ability to meet the GHG reduction targets set in AB 32, i.e. to reduce California's GHG emissions to year 2000 levels by 2010, year 1990 levels by 2020, and 80 percent below year 1990 levels by 2050, or if the CWP would hinder or delay the City's GHG emission reduction goals in the CAP (Pacific Municipal Consultants, 2015).

8.4 Environmental Impacts

GHG and climate change impacts associated with construction and operation of CWP projects were analyzed based on the anticipated activities and associated emission changes. The impacts are summarized in Table 8-2 and described in detail following the table.

TABLE 8-2
Summary of Air Quality Impacts
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Impact	In-System Storage Program	Full Conveyance Program	New Headworks Project	Primary Clarifier Project
Impact 8-1. The implementation of the CWP would generate GHG emissions that could affect the environment.	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation
Impact 8-2. The CWP may conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation

Impact 8-1. The implementation of the CWP would generate GHG emissions that could affect the environment.

In-System Storage Program

The GHG impacts for the In-System Storage Program were evaluated based on whether the GHG emissions would hinder or delay California's ability to meet the GHG reduction targets set in AB 32 and in the region's climate action plan.

GHG emissions increases would occur during construction from the construction equipment and vehicles. During operation, direct emissions of GHG from the WWTP may increase. In-System Storage Program operation would also increase the electricity usage due to the upgraded WWTP with its greater level of treatment facilities to pump wet weather flows, and would result in indirect GHG emissions from power generation.

Although a quantitative threshold is not used, for information purposes, construction and operation emissions of GHG were estimated. GHG emissions from the construction equipment and vehicles from the proposed In-System Storage Program construction were estimated using CalEEMod (California Air Pollution Control Officers Association, 2013). The same construction assumptions used for the air quality impact

analysis were used for the GHG emission estimate. To be conservative, the worst-case daily GHG emissions were multiplied by 365 days to obtain the annual GHG emissions.

A summary of the GHG emissions from the In-System Storage Program construction are shown in Table 8-3. Emissions in Table 8-3 represent a conservative estimate of the GHG emissions, assuming the worst-case daily emissions would occur on everything day for the entire year. GHG emissions from construction would be short term. Implementation of **Mitigation Measure 4-1 Implement BAAQMD construction emission control measures** would minimize idling times and maintain equipment in good condition, reducing GHG emissions.

TABLE 8-3
Construction GHG Emissions for In-System Storage Program
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Program	$MTCO_2e$ per Year
New WWTP Project	719.0
New WWTP Project	719.0
Large Pipeline Project	404.9
Large Pipeline Project	404.9
Average Pipeline Project	403.4
Average Pipeline Project	403.4
Average Pipeline Project	403.4
Large Pump Station Wet Well	296.6
In-system Storage Basin	316.9
Total for In-System Storage Program	**4,071.7**

Note:
Construction emissions were modeled using CalEEMod. Assumed all construction activities would occur simultaneously during a worst-case day.

Operation of the In-system Storage would result in direct GHG emissions from the WWTP equipment operation and indirect emissions associated with the electricity usage. Direct GHG emissions were not quantified for the WWTP operation. In-System Storage Program has treatment options as described in Chapter 2 and may result in slightly different GHG emissions from the plant operation. However, because the annual average treatment capacity of the WWTP would not change, direct GHG emissions related to WWTP operation are expected to be similar to current emission levels, and substantial GHG emission increases would not be expected. Methane would be captured and flared or converted to a useable form such as compressed natural gas.

Indirect GHG emissions are due to the additional power usage that would be required to operate the upgraded WWTP and to pump wet weather flows from equalization basins. GHG emissions associated with power generation were estimated for the existing condition and future operations. Power usage of the existing condition was obtained from the plant electricity use record. Future electricity use was calculated using standard measures. The anticipated minimum and maximum electricity usages for the In-system Storage operation in future years were estimated to represent the potential electricity usage range. GHG emission factors for power generation were obtained from EPA eGRID 9th Edition Version 1.0, Year 2010 GHG Annual Output Emission Rates (EPA, 2014). A summary of the GHG emission increase due to the increase electricity usage are shown in Table 8-4. Indirect GHG emissions may increase by 1,058 to 2,122 metric tons per year from implementation of the In-System Storage Program. Appendix B provides the construction calculations and assumptions used to assess GHG emissions.

TABLE 8-4
Indirect GHG Emissions from Operations for In-System Storage Program
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Program	Energy Usage (megawatt-hours per year)	$MTCO_2e$ per Year	$MTCO_2e$ Increase per Year
Existing Condition[a]	6,753.62	1,879	NA
Operation (maximum)	14,382.49	4,001	2,122
Operation (minimum)	10,558.18	2,937	1,058

Note:
Energy usage of existing condition was based on the historical data record of the WWTP and pump station operation.

The GHG emission increases shown in Table 8-4 represent a conservative estimate of the operation emissions. The estimated increase in energy use and GHG emissions would result primarily from the increased level of treatment, as well as the modest increase in. The highly treated effluent would be available for recycled water use, potentially offsetting energy use to treat and pump water from potable sources. In addition, the emission calculation used the EPA 2010 eGRID emission factor published in February 2014, and it assumes that GHG emission rate from power generation would not change in future years. As discussed in the sections below, all electricity retailers in California is required by the RPS program to reach a goal of using 33 percent renewable energy by 2020. Therefore, GHG emissions associated with the In-System Storage Program electricity use are expected to decrease in future years, and the actual emission increase would be lower.

The In-System Storage Program would use the electricity that is coming from the California's power grid. The new RPS signed under SB 2 in 2011 preempts ARB's 33 percent Renewable Electricity Standard and applies to all electricity retailers in the state including publicly owned utilities, investor-owned utilities, electricity service providers, and community choice aggregators. As mandated by the new RPS, all of these entities must adopt the new RPS goals of 20 percent of retails sales from renewables by the end of 2013, 25 percent by the end of 2016, and the 33 percent requirement being met by the end of 2020. Therefore, consuming electric energy from California's power grid would be within the already regulated RPS program.

In summary, the In-System Storage Program construction would have temporary GHG emissions from the construction equipment and vehicles. Construction GHG emissions would be minimized by implementing **Mitigation Measure 4-1 Implement BAAQMD construction emission control measures**. Indirect operational emission may increase because of the increased electricity needs. Because the In-System Storage Program would use electricity from the California power grid that complies with the RPS and AB 32 Scoping Plan requirements, operation is consistent with the state and local GHG reduction strategies. With implementation of **Mitigation Measure 4-1**, the In-System Storage Program would result in a less than significant impact on GHG emissions.

Full Conveyance Program

The Full Conveyance Program would include similar treatment facilities as the In-System Storage Program. The Full Conveyance Program would include a new pump station instead of in-system storage basins. Therefore, potential impacts would be similar as described for the In-System Storage Program.

The estimated GHG emissions for construction the Full Conveyance Program are shown in Table 8-5. Emissions in Table 8-5 represent a conservative estimate of the GHG emissions, assuming the worst-case daily emissions would occur on everything day for the entire year. GHG emissions from construction would be short term. Implementation of **Mitigation Measure 4-1 Implement BAAQMD construction emission control measures** would minimize idling times and maintain equipment in good condition, reducing GHG emissions.

TABLE 8-5
Construction GHG Emissions for Full Conveyance Program
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Program	$MTCO_2e$ per Year
New WWTP Project	719.0
New WWTP Project	719.0
Large Pipeline Project	404.9
Large Pipeline Project	404.9
Average Pipeline Project	403.4
Average Pipeline Project	403.4
Average Pipeline Project	403.4
Large Pump Station Wet Well	296.6
New Pump Station	296.6
Total for Full Conveyance Program	**4,051.4**

Note:
Construction emissions were modeled using CalEEMod. Assumed all construction activities would occur simultaneously during a worst-case day.

Operations emissions from the Full Conveyance Program would be the same as for the In-System Storage Programs shown in Table 8-4.

In summary, the Full Conveyance Program construction would have temporary GHG emissions from the construction equipment and vehicles. Construction GHG emissions would be minimized by implementing **Mitigation Measure 4-1 Implement BAAQMD construction emission control measures**. Indirect operational emission may increase because of the increased electricity needs. Because the Full Conveyance Program would use electricity from the California power grid that complies with the RPS and AB 32 Scoping Plan requirements, operation is consistent with the state and local GHG reduction strategies. With implementation of **Mitigation Measure 4-1**, the Full Conveyance Program would result in a less than significant impact on GHG emissions.

New Headworks Project and Primary Clarifier Project

Emissions from construction of the New Headworks Project and the Primary Clarifier Project are shown in Table 8-6. Emissions in Table 8-6 represent a conservative estimate of the GHG emissions, assuming the worst-case daily emissions would occur on everything day for the entire year. GHG emissions from construction would be short term. Implementation of **Mitigation Measure 4-1 Implement BAAQMD construction emission control measures** would minimize idling times and maintain equipment in good condition, reducing GHG emissions.

TABLE 8-6
Construction GHG Emissions for New Headworks Project and Primary Clarifier Project
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Program	$MTCO_2e$ per Year
New Headworks Project	920.1
Primary Clarifier Project	920.1
Total for New Headworks Project and Primary Clarifier Project	**1,840.2**

Note:
Construction emissions were modeled using CalEEMod. Assumed all construction activities would occur simultaneously during a worst-case day.

Operations emissions from the New Headworks Project and Primary Clarifier Project would be part of the emissions described for the In-System Storage Program, shown in Table 8-4.

In summary, construction of the New Headworks Project and Primary Clarifier Project would have temporary GHG emissions from the construction equipment and vehicles. Construction GHG emissions would be minimized by implementing **Mitigation Measure 4-1 Implement BAAQMD construction emission control measures**. Indirect operational emission may increase because of the increased electricity needs. Because the New Headworks Project and Primary Clarifier Project would use electricity from the California power grid that complies with the RPS and AB 32 Scoping Plan requirements, operation is consistent with the state and local GHG reduction strategies. With implementation of **Mitigation Measure 4-1**, the New Headworks Project and Primary Clarifier Project would result in a less than significant impact on GHG emissions.

Impact 8-2. The project would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

In-System Storage Program, Full Conveyance Program, New Headworks Project and Primary Clarifier Project

Other than the EO S-3-5 and AB 32 GHG reduction goals and the AB 32 Scoping Plan and the First Update, the CAP (Pacific Municipal Consultants, 2015) set the local GHG emission reduction goals. Based on the City's GHG emission inventory, the water and wastewater sectors combined contribute less than one percent of the GHG inventory of the City. As shown in Table 8-4, operation of the CWP would generate up to approximately twice the current level of GHG emissions from the existing WWTP and pump stations. This would still represent less than two percent of the City's GHG inventory. Therefore, the GHG emission changes associated with this CWP are unlikely to affect or hinder the City's ability to meet the GHG reduction goal. Implementation of **Mitigation Measure 4-1 Implement BAAQMD construction emission control measures** would minimize idling times and maintain equipment in good condition, reducing GHG emissions. Operation of the CWP would use electricity from the state's power grid that comply with the RPS and AB 32 Scoping Plan GHG reduction strategy. Therefore, the CWP GHG emissions would not hinder or otherwise conflict with the AB 32 or the AB 32 Scoping Plan and the updates of reducing GHG emissions to 1990 levels by 2020.

Although the First Update identified and described a long-term vision and near-term activities to put California on the path to its 2050 emission reductions goal, many factors would influence the state's ability to attain the 2050 GHG reduction goal, including changes in regulatory standards, fuel, transportation and power generation technologies, growth in population, land use development patterns and other factors that cannot presently be known. Because reaching a conclusion about the project's effect on compliance with the 2050 target identified in EO S-3-5 and the AB 32 would require speculation, the CWP is unable to reach a determination about the project's potential to result in a significant impact with regard to this goal. In all other respects the proposed project would not hinder or delay California's ability to meet the GHG reduction targets in AB 32 and the Scoping Plan**.**

The CWP would support implementation of several measures of the City's CAP. For example, opportunities for incorporating renewable energy, such as rooftop solar panels, would be evaluated for individual CWP projects as feasible, supporting implementation of CAP Measures RE5 (renewable energy systems for new nonresidential buildings) and RE6 (renewable energy systems for existing nonresidential buildings). The new facilities and equipment will provide greater energy efficiency than existing equipment, supporting implementation of CAP Measures ME1 (energy efficiency for new City buildings) and ME2 (energy efficiency at existing City buildings). Consistent with CAP Measure WW3, the CWP would produce water available for recycled use, thereby creating a new source of nonpotable water. Therefore, the CWP would not conflict with nor hinder the City's ability to meet its GHG reduction goals in the CAP.

8.5 Mitigation Measures

Mitigation Measure 4-1 Implement BAAQMD construction emission control measures is described in Chapter 4.

8.6 References

Bay Area Air Quality Management District (BAAQMD). 2010. *Source Inventory of Bay Area Greenhouse Gas Emissions*. February.

_____. 2011. CEQA Air Quality Guidelines. May.

_____. 2012. *California Environmental Quality Act Air Quality Guidelines*. http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Updated-CEQA-Guidelines.aspx. Updated May 2012.

California Air Pollution Control Officers Association. 2013. California Emission Estimator Model User's Guide Version 2013.2. July.

California Air Resources Board (ARB). 2015. http://www.arb.ca.gov/cc/inventory/data/tables/ghg_inventory_scopingplan_00-12_2014-03-24.pdf.pdf. Accessed June 14, 2015.

Center for Climate and Energy Solutions. 2015. Federal Vehicle Standards website. http://www.c2es.org/federal/executive/vehicle-standards#ldv_2012_to_2025. Accessed October 14.

Pacific Municipal Consultants. 2015. *City of San Mateo Climate Action Plan*. Prepared for City of San Mateo. February.

U.S. Environmental Protection Agency (EPA). 2014. eGRID 9th Edition Version 1.0, Year 2010 GHG Annual Output Emission Rates. February.

Chapter 9. Hazards and Hazardous Materials

This chapter evaluates the potential of the two CWP alternatives to affect public health and safety through exposure to hazards and hazardous materials during construction and operation.

9.1 Existing Setting

A material is considered hazardous if it appears on a list of hazardous materials prepared by a federal, state, or local agency, or if it has characteristics defined as hazardous by such an agency. A hazardous material is defined in the Title 22 CCR Section 66260.10:

> *…A substance or combination of substances which, because of its quantity, concentration, or physical, chemical or infectious characteristics, may either (1) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported or disposed of or otherwise managed.*

Routine activities require the handling, use, and storage of the following hazardous materials for the operation and maintenance of the WWTP (Carollo Engineers, Inc., 2014).

- Ferric chloride, in an iron salts liquid form, is used as part of the biosolids handling process to maintain the hydrogen sulfide levels within the digester gas to levels below 200 parts per million volume. The ferric chloride is added to the gravity thickeners and stored in the same building. Ferric chloride causes the sulfides to precipitate into the biosolids, which reduces the sulfide concentration in the biogas.
- Prior to final discharge, partially filtered secondary effluent is disinfected with sodium hypochlorite. Sodium hypochlorite is stored in liquid form in four 10,500-gallon bulk storage tanks in the northeastern portion of the existing WWTP. Chemical feed pumps meter sodium hypochlorite into two chlorine contact basins from the two 1,000-gallon day tanks adjacent to the chlorine contact basins.
- After disinfection with sodium hypochlorite, the effluent is dechlorinated with sodium bisulfite before final discharge. The sodium bisulfite is stored in two tanks at the southern edge of the existing WWTP.
- Oil, diesel, lubricants, and other flammable materials are stored in various locations at the WWTP and at some pump stations.

Other hazardous materials may be present in the buildings and structures at the WWTP and in the collection system. Older facilities may contain asbestos building materials, such as pipe and electrical insulation, flooring, ceiling tiles, and fireproofing materials. Potential health hazards of exposure to asbestos include respiratory illness and increased risk of cancer. Lead-based paint may be present in WWTP and collection system structures and facilities constructed prior to 1978, when the Consumer Product Safety Commission banned the use of lead in paint. Lead may cause a range of health effects, from behavioral problems and learning disabilities to seizures and death.

Several plans and programs to manage hazardous materials are followed at the WWTP:

- The hazard communication program outlines responsibilities, equipment, procedures, training and recordkeeping for hazardous material handling and is written to the standards of Title 8 CCR Section 5194, and California Proposition 65, the "Safe Drinking Water and Toxic Enforcement Act" of 1986.
- A hazardous materials business plan, as required by the County of San Mateo under the California Environmental Reporting System, identifies where flammable or toxic materials are used and stored, allowing appropriate response to a fire or other emergency. The Hazardous Materials Business Plan also includes emergency contact and notification information, containment and cleanup procedures, clean

up and first aid supplied on site and their locations, and facility evacuation procedures. The Hazardous Material Business Plan, training records and Material Safety Data Sheets are on file at the WWTP.

- A spill prevention, control, and countermeasures (SPCC) plan for the WWTP was prepared in accordance with the Code of Federal Regulations Chapter 40, Part 112. A SPCC plan is required for all facilities with an oil storage capacity greater than 1,320 gallons that could potentially discharge oil to surface waters. The WWTP has a 154,000-gallon aboveground diesel fuel storage tank and piping system. In addition, several 55-gallon barrels of lubrication oil are currently stored at the WWTP. The SPCC plan provides information about the storage, containment, loading, and unloading of oil at the WWTP. The SPCC plan contains a contact list, spill response protocols, reporting procedures, and forms. Training and inspection record keeping are also outlined.

A review of the GeoTracker database (State Water Resources Control Board [SWRCB], 2015), EnviroMapper for EnviroFacts (EPA, 2015a), the Cortese list in the EnviroStor (Department of Toxic Substances Control [DTSC], 2007), and other Internet searches relevant to hazardous materials were conducted. There are no Superfund sites within the Program Area, or within San Mateo County (EPA, 2015b). Seventeen sites are listed in EnviroStor, including 6 with no further action required; 10 that have been referred to San Mateo County and DTSC; and 1 that is inactive, with action required. The site that requires action was a furniture upholstery business from 1950 until after 1970 and is currently used as a dental office and other commercial office space. Leaking underground fuel tanks and spills, leaks, investigation, and cleanups sites have been identified at numerous locations throughout the San Mateo (SWRCB, 2015).

No spills or releases were recorded in the GeoTracker, EnviroMapper, or EnviroStor databases for the WWTP, and no underground storage tanks are present at the WWTP; materials are stored in aboveground storage tanks. A fuel spill was reported at the Dale Avenue Pump Station in 1991; the record was closed in 1993 (SWRCB, 2015).

Excavated soils from past City of San Mateo projects have been deposited at the Detroit Drive parcel. This material is of unknown origin and has not been tested for potential contamination.

9.2 Regulatory Framework

Hazardous materials use, transportation, and disposal are governed by laws and regulations at all levels of government.

9.2.1 Federal Regulations

The EPA is the lead federal agency that regulates hazardous waste handling, transport, generation, and disposal. The EPA delegates permitting and compliance assurance to the State. Table 9-1 lists federal regulatory agencies that oversee hazardous materials handling and hazardous waste management, and the statutes and regulations they administer.

TABLE 9-1
Summary of Federal Regulations for Hazardous Waste
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Regulatory Agency	Authority	Summary
EPA	Clean Water Act	Requires a National Pollutant Discharge Elimination System permit to discharge water.
	Clean Air Act (42 USC 7401 et seq., as amended)	Regulates accidental releases of hazardous materials through hazard assessments and response programs.
	Resource Conservation and Recovery Act	Regulates the generation, transportation, treatment, storage, and disposal of hazardous waste. DTSC is authorized to implement the State's hazardous waste management program for the EPA.
	Toxic Substances Control Act 1976 (15 USC 2605)	Requires reporting, record keeping and testing requirements, and restrictions relating to chemical substances and/or mixtures.

TABLE 9-1
Summary of Federal Regulations for Hazardous Waste
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Regulatory Agency	Authority	Summary
	Comprehensive Environmental Response, Compensation and Liability Act	Provides funding to clean up uncontrolled or abandoned hazardous waste sites as well as accidents, spills, and other emergency releases of pollutants and contaminants into the environment.
U.S. Department of Transportation	Hazardous Materials Transport Act – CFR 49	Regulates the transportation of hazardous materials, types of hazardous materials, and vehicle marking during transport.
OSHA	Occupational Safety and Health Act (29 CFR 1910)	Protect workers by setting standards related to safety and health.

Notes:
CFR = Code of Federal Regulations
OSHA = Occupational Safety and Health Administration
USC = United States Code

9.2.2 State Regulations

The California Environmental Protection Agency (CalEPA) and the SWRCB establish rules governing the use of hazardous materials and management of hazardous waste. Applicable state laws are summarized in Table 9-2.

TABLE 9-2
Summary of California Regulations for Hazardous Waste
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Regulatory Agency	Authority	Summary
CalEPA through the San Mateo Public Works Department	Certified United Program Agency under the California Health and Safety Code	The San Mateo Public Works Department has been certified by Cal/EPA to implement the six State environmental programs within the local agency's jurisdiction: 1. Hazardous Material Business Plan 2. Hazardous Waste Generators 3. Underground Storage Tanks 4. Tiered Permitting (Hazardous Waste Treatment or Permit by Rule) 5. California Accidental Release Program 6. Uniform Fire Code
California Highway Patrol	California Vehicle Code	Designates routes to be used for the transportation of inhalation hazards.
Department of Industrial Relations	California Occupational Safety and Health Act	Requires employee training, safety equipment, prevention and hazardous substance exposure warnings. Requires employer to monitor exposure to listed hazardous substances and notify employees of exposure.
The State Office of Emergency Services	Hazardous Materials Release Response Plans and Inventory Law (also known as the Business Plan Act)	Requires the preparation of hazardous materials business plans that include an inventory of hazardous materials that are handled, their storage locations, an emergency response plan, employee safety training, and emergency response procedures.
California Office of Environmental Health Hazard Assessment	Safe Drinking Water and Toxic Enforcement Act	Protects water drinking water from chemical contamination.
	Aboveground Petroleum Storage Act	An inspection program for aboveground storage tanks. Requires owners or operators of aboveground petroleum storage tanks to file a storage statement and implement measures to prevent spills.

9.2.3 Local Regulations, Policies, and Programs

Local regulations, policies, and programs for hazardous materials management are determined by the County of San Mateo and the City of San Mateo.

9.2.3.1 San Mateo County Hazardous Waste Management Plan Program

The San Mateo County Hazardous Waste Management Plan Program (County of San Mateo, 2015) was created to provide assistance to small-quantity hazardous waste generators. The program provides education, coordinated identification, permitting, and inspection of the waste generators. The program also identifies hazardous waste disposal locations for treatment, storage, or transfer.

9.2.3.2 Fire Code

The *San Mateo City Code and Municipal Code* (City of San Mateo, 2015), includes a building and construction fire code for all development and construction activities within the City. The fire code requires compliance with the California Fire Code and Uniform Fire Code.

9.2.3.3 General Plan

The *City of San Mateo General Plan – Vision 2030* (General Plan) (City of San Mateo, 2010) includes the following policies related to the use, storage, and disposal of hazardous wastes:

> ***S 5.1: County Cooperation.*** *Cooperate with the County of San Mateo in the regulation of hazardous materials and transportation of such material in San Mateo.*
>
> ***S 5.2: County Hazardous Waste Management Plan.*** *Adopt by reference all goals, policies, implementation measures, and supporting data contained in the San Mateo County Hazardous Waste Management Plan.*
>
> ***S 5.3: On-site Waste Treatment.*** *Promote on-site treatment of hazardous wastes by waste generators to minimize the use of hazardous materials and the transfer of waste for off-site treatment.*
>
> ***S 5.4: Transportation Routes.*** *Restrict the transportation of hazardous materials and waste to truck routes designated in Circulation Policy C-1.3, and limit such transportation to non-commute hours.*
>
> ***S 5.10: Contaminated Sites.*** *Require the clean-up of contaminated sites indicated on the Hazardous Waste and Substances Sites List published by the Department of Toxic Substance Control and/or the Health Department in conjunction with substantial site development or redevelopment, where feasible.*
>
> ***S 5.11: Cost Recovery.*** *Require San Mateo County businesses which generate hazardous waste or applicants for hazardous waste management facilities to pay necessary costs for implementation of the HWMP programs and for application costs, and to pay for costs associated with emergency response services in the event of a hazardous material release, to the extent permitted by law.*

9.3 Assessment Methods and Thresholds of Significance

The analysis of impacts was derived from of the results of the government database searches including the EPA and the DTSC; information about existing hazardous materials and practices at the WWTP and collection system facilities; and proposed changes in the CWP.

Impacts related to hazards and hazardous materials may occur if the CWP or its projects would result in the following:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment

- Release hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school
- Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment
- For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, result in a safety hazard for people residing or working in the project area
- For a project within the vicinity of a private airstrip, result in a safety hazard for people residing or working in the project area
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan
- Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

9.4 Environmental Impacts

There are no airports or private air strips within 2 miles of the Program Area. Construction activities within the Program Area would not be within an area addressed by an airport land use plan and would not create a significant safety hazard. Therefore, no hazards associated with airports would occur, and this issue is not discussed further.

The Program Area is located within a highly urbanized area and is not adjacent to wildlands; therefore, no hazards associated with wildland fires would occur, and this issue is not discussed further.

TABLE 9-3
Summary of Hazards and Hazardous Materials Impacts
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Impact	In-System Storage Program	Full Conveyance Program	New Headworks Project	Primary Clarifier Project
Impact 9-1. Construction of the CWP could expose the public or the environment to hazardous materials through routine use, transport, or disposal of hazardous materials or reasonably foreseeable upset and accident conditions involving the release of hazardous materials.	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation
Impact 9-2. Operation of the CWP could expose the public or the environment to hazardous materials through routine use, storage, transport, and disposal of hazardous materials.	Less than significant impact	Less than significant impact	Less than significant impact	Less than significant impact
Impact 9-3. CWP projects may be constructed in areas containing hazardous materials and could result in a hazard to the public or the environment.	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation

TABLE 9-3
Summary of Hazards and Hazardous Materials Impacts
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Impact	In-System Storage Program	Full Conveyance Program	New Headworks Project	Primary Clarifier Project
Impact 9-4. Construction and operation of CWP could emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or wastes within 0.25 mile of an existing school.	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation
Impact 9-5. Implementation of the CWP may interfere with an adopted emergency response plan or emergency evacuation plan.	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation

Impact 9-1. Construction of the CWP could expose the public or the environment to hazardous materials through routine use, transport, or disposal of hazardous materials or reasonably foreseeable upset and accident conditions involving the release of hazardous materials.

In-System Storage Program

Construction of the In-System Storage Program would include the use, transport, storage, and disposal of hazardous materials.

Construction of the In-System Storage Program would require the use of vehicles and other construction equipment, which would use hazardous materials such as fuels, lubricants, and solvents. Accidental releases of small quantities of these materials could expose people and the environment to hazardous materials. However, the handling and storage of these materials would be in accordance with all DTSC, EPA, Occupational Safety and Health Administration [OSHA], and Fire Department regulations and would comply with measure S 5.4 of the General Plan (City of Mateo, 2010).

Construction workers could be exposed to asbestos or lead through the rehabilitation or demolition of facilities at the WWTP and the collection system. The potential health hazards of asbestos are increased during construction and demolition when asbestos-containing materials are disturbed. Airborne exposure to lead is possible during removal of paint or painted materials. As described in **Mitigation Measure 9-1 Complete testing for asbestos and lead in existing structures**, facilities that potentially contain asbestos or lead shall be tested and screened prior to modification or demolition activities to allow the implementation of best management practices and state and federal management requirements. Certified contractors shall remove the materials to reduce the potential for exposure. OSHA and City policies shall be followed in the creation and implementation of an asbestos or lead abatement plan.

Compliance with regulatory requirements would minimize potential impacts associated with the use, transport, and disposal of hazardous materials during construction and rehabilitation and demolition of existing facilities for the In-System Storage Program. With implementation of **Mitigation Measure 9-1**, impacts would be less than significant.

Full Conveyance Program

Impacts of the Full Conveyance Program would be the same as described for the In-System Storage Program. Compliance with regulatory requirements would minimize potential impacts associated with the use, transport, and disposal of hazardous materials during construction and rehabilitation and demolition of existing facilities for the Full Conveyance Program. As described in **Mitigation Measure 9-1 Complete testing for asbestos and lead in existing structures**, facilities that potentially contain asbestos or lead shall be tested and screened prior to modification or demolition activities to allow the implementation of best

management practices and state and federal management requirements. With implementation of **Mitigation Measure 9-1**, impacts would be less than significant

New Headworks Project and Primary Clarifier Project

Impacts of the New Headworks Project and Primary Clarifier Project would be the same as described for construction for the In-System Storage Program. Compliance with regulatory requirements would minimize potential impacts associated with the use, transport, and disposal of hazardous materials during construction and rehabilitation and demolition of existing facilities for the New Headworks Project and Primary Clarifier Project. As described in **Mitigation Measure 9-1 Complete testing for asbestos and lead in existing structures**, facilities that potentially contain asbestos or lead shall be tested and screened prior to modification or demolition activities to allow the implementation of best management practices and state and federal management requirements. With implementation of **Mitigation Measure 9-1**, impacts would be less than significant.

Impact 9-2. Operation of the CWP could expose the public or the environment to hazardous materials through routine use, storage, transport, and disposal of hazardous materials.

In-System Storage Program

Operation of the rehabilitated and new treatment and collection system facilities would require the use of hazardous materials, such as ferric chloride, sodium bisulfite, sodium hypochlorite, oil, diesel fuel, lubricants, and other flammable substances. Existing plans and programs to store and handle hazardous materials, including a hazard communication program; hazardous materials business plan; and spill prevention, control, and countermeasures plan would be updated as required by regulation and would continue to be implemented for the In-System Storage Program. Potential impacts from use, storage, transport, and disposal of these materials would be less than significant. No mitigation would be required.

Full Conveyance Program

Operation of the rehabilitated and new treatment and collection system facilities would require the use of hazardous materials, such as ferric chloride, sodium bisulfite, sodium hypochlorite, oil, diesel fuel, lubricants, and other flammable substances. Existing plans and programs to store and handle hazardous materials, including a hazard communication program; hazardous materials business plan; and spill prevention, control, and countermeasures plan would be updated as required by regulation and would continue to be implemented for the Full Conveyance Program. Potential impacts from use, storage, transport, and disposal of these materials would be less than significant. No mitigation would be required.

New Headworks Project and Primary Clarifier Project

Operation of the Primary Clarifier Project may include the use of chemicals such as ferric chloride, alum, and a polymer. Operation of the New Headworks Project is not expected to use hazardous materials. Existing plans and programs to store and handle any hazardous materials, including a hazard communication program; hazardous materials business plan; and spill prevention, control, and countermeasures plan would be updated as required by regulation and would continue to be implemented for the New Headworks Project and Primarily Clarifier Project. Potential impacts from use, storage, transport, and disposal of these materials would be less than significant. No mitigation would be required.

Impact 9-3. CWP projects may be constructed in areas containing hazardous materials and could result in a hazard to the public or the environment.

In-System Storage Program

Projects such as new treatment facilities, pipelines, equalization basins, and pump station wet wells that include excavation and other soil-disturbing activities would be constructed throughout the City. The WWTP and pump stations are not listed in the GeoTracker (SWRCB, 2015), the EnviroFacts/EnviroMapper (EPA, 2015) or EnviroStor (DTSC, 2007). However, during excavation localized contamination could potentially be

encountered in soils or groundwater from leaking underground fuel tanks identified on EnviroStor, from previously excavated soils of unknown origin placed on the Detroit Drive parcel, or other sources of known or unknown contamination. Contaminated soils or groundwater could expose workers, the environment, and the public to hazardous materials. With implementation of **Mitigation Measure 9-3 Perform a Phase I investigation as needed prior to construction and remediate, control, or dispose of contaminated materials as appropriate,** contaminated soil and groundwater would be identified and safely removed and disposed and impacts would be less than significant.

Full Conveyance Program

Projects such as new treatment facilities, pipelines, and a new pump station that include excavation and other soil-disturbing activities would be constructed throughout the City. The WWTP and pump stations are not listed in the GeoTracker (SWRCB, 2015), the EnviroFacts/EnviroMapper (EPA, 2015) or EnviroStor (DTSC, 2007). However, during excavation localized contamination could potentially be encountered in soils or groundwater from leaking underground fuel tanks identified on EnviroStor, from previously excavated soils of unknown origin placed on the Detroit Drive parcel, or other sources of known or unknown contamination. Contaminated soils or groundwater could expose workers, the environment, and the public to hazardous materials. With implementation of **Mitigation Measure 9-3 Perform a Phase I investigation as needed prior to construction and remediate, control, or dispose of contaminated materials as appropriate,** contaminated soil and groundwater would be identified and safely removed and disposed and impacts would be less than significant.

New Headworks Project and Primary Clarifier Project

The New Headworks Project and Primary Clarifier Project would include excavation and other soil-disturbing activities in the Detroit Drive parcel. The WWTP Site is not listed in the GeoTracker (SWRCB, 2015), the EnviroFacts/EnviroMapper (EPA, 2015) or EnviroStor (DTSC, 2007). However, during excavation localized unknown contamination could potentially be encountered. Contaminated soils or groundwater could expose workers, the environment, and the public to hazardous materials. With implementation of **Mitigation Measure 9-3 Perform a Phase I investigation as needed prior to construction and remediate, control, or dispose of contaminated materials as appropriate,** contaminated soil and groundwater would be identified and safely removed and disposed and impacts would be less than significant.

Impact 9-4. Construction and operation of the CWP could emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or wastes within 0.25 mile of an existing school.

In-System Storage Program

Two schools are located within 0.25 mile of the WWTP: Bayside STEM Academy is directly south of the WWTP, and Horrall/LEAD Elementary School is west of the WWTP, at the intersection of Dale Drive and Ocean View Avenue. The WWTP has been operating within the community and near these schools for decades. As discussed for Impacts 9-1 and 9-2, the use, storage, transport, and disposal of hazardous materials at the WWTP would be similar to current practices and would continue under existing regulations, programs, and plans, including a hazardous materials business plan and spill prevention control and countermeasures plan. Safety, training, and emergency response procedures would remain in effect during construction and operation of the CWP and would be updated regularly to account for changes in hazardous materials use. As discussed for Impact 9-3, with implementation of **Mitigation Measure 9-3 Perform a Phase I investigation as needed prior to construction and remediate, control, or dispose of contaminated materials as appropriate,** contaminated soil and groundwater would be identified and safely removed and disposed. No significant impacts would be expected due to handling of soils of unknown origin on the Detroit Drive parcel or other parcels within the WWTP Site.

As described for Impact 9-1, construction activities for collection system projects would include the handling of fuels, oils, and lubricants for construction equipment throughout the City. Some of these project locations may be within 0.25 mile of schools (see Chapter 14). Accidental releases of fuels, oils, and lubricants would

be contained within the work site and addressed in accordance with all DTSC, EPA, OSHA, and fire department regulations; impacts from the use of these materials during construction would be less than significant. Likewise, some locations may include soil disturbance in areas of known or unknown contamination, as discussed for Impact 9-3. With implementation of **Mitigation Measure 9-3 Perform a Phase I investigation as needed prior to construction and remediate, control, or dispose of contaminated materials as appropriate,** contaminated soil and groundwater would be identified and safely removed, and potential impacts would be less than significant.

Full Conveyance Program

Impacts of the Full Conveyance Program would be the same as described for the In-System Storage Program. With implementation of **Mitigation Measure 9-3 Perform a Phase I investigation as needed prior to construction and remediate, control, or dispose of contaminated materials as appropriate,** contaminated soil and groundwater would be identified and safely removed and disposed and potential impacts would be less than significant.

New Headworks Project and Primary Clarifier Project

Impacts of the New Headworks Project and Primary Clarifier Project would be the same as described for the In-System Storage Program. With implementation of **Mitigation Measure 9-3 Perform a Phase I investigation as needed prior to construction. And remediate, control, or dispose of contaminated materials as appropriate,** contaminated soil and groundwater would be identified and safely removed and disposed and potential impacts would be less than significant.

Impact 9-5. Implementation of the CWP may interfere with an adopted emergency response plan or emergency evacuation plan.

In-System Storage Program

The City has a multihazard functional plan (City of San Mateo, 1995) as required by the California Emergency Services Act, and a local hazard mitigation plan (ABAG, 2010), as required by the Federal Emergency Management Agency. These plans include information related to the City's response to hazardous materials releases. First responders frequently conduct drills simulating emergencies, including hazardous materials releases. The City's Emergency Operations Center, which is located at the Police Department at 200 Franklin Parkway, would serve as the communication headquarters for emergency responses would serve as the communication headquarters for emergency responses. Emergency supplies and equipment are stored at the Emergency Operations Center. The San Mateo Police Department (SMPD) and the San Mateo Fire Department (SMFD) would act jointly as incident command, unless the release occurred on a State highway under the authority of the California Highway Patrol. The Belmont–San Carlos Fire Department is able to provide assistance through a fully equipped hazardous materials response vehicle.

As discussed in Chapter 14, construction of projects within roadways or near emergency facilities such as hospitals and fire stations could interfere with emergency access and evacuation. The locations of fire and police stations in the Program Area are shown on Figure 14-1. Construction of individual pipeline sections would last up to only approximately 5 days and would not significantly affect emergency access.

Construction activities within roadways, including site access to work areas, may interfere with emergency access or emergency evacuation plans. Implementation of **Mitigation Measure 9-4 Coordinate emergency services during construction** would maintain emergency access during construction, and impacts on emergency response or evacuation plans would be less than significant.

Full Conveyance Program

Impacts of the Full Conveyance Program would be the same as described for the In-System Storage Program. Construction activities within roadways, including site access to work areas, may interfere with emergency access or emergency evacuation plans. Implementation of **Mitigation Measure 9-4 Coordinate emergency**

services during construction would maintain emergency access during construction, and impacts on emergency response or evacuation plans would be less than significant.

New Headworks Project and Primary Clarifier Project

Impacts of the New Headworks Project and Primary Clarifier Project would be the same as described for the In-System Storage Program. Construction activities within roadways, including site access to work areas, may interfere with emergency access or emergency evacuation plans. Implementation of **Mitigation Measure 9-4 Coordinate emergency services during construction** would maintain emergency access during construction, and impacts on emergency response or evacuation plans would be less than significant.

9.5 Mitigation Measures

Mitigation Measure 9-1. Complete testing for asbestos and lead in existing structures.

Facilities that potentially contain asbestos or lead shall be tested and screened prior to construction of projects that include modification, rehabilitation, or demolition of existing structures to allow the implementation of best management practices and state and federal management requirements. Certified contractors shall remove the materials to reduce the potential for exposure. OSHA and City policies shall be followed in the creation and implementation of an asbestos or lead abatement plan.

Mitigation Measure 9-3. Perform a Phase I investigation as needed prior to construction and remediate, control, or dispose of contaminated materials as appropriate.

New facility locations shall be reviewed for inclusion in the lists of hazardous materials compiled pursuant to Government Code Section 65962.5. Where contamination is suspected, a Phase I site assessment of the proposed work area shall be performed prior to start of construction activities, including excavation and other soil-disturbing activities such as tunneling. The Phase I site assessment shall comply with standards of the ASTM International and shall include recommendations for reducing or eliminating the source or mechanisms of contamination, if contamination is found. Recommendations may include removing the contaminated soil and disposing of it at a licensed facility in accordance with all regulations.

Mitigation Measure 9-4. Coordinate emergency services during construction.

For any project within the WWTP Site that have work areas located near roadways, or that may otherwise interfere with emergency access, the City shall follow its standard measures to coordinate in advance with the SMPD and establish signage and detours so that emergency access, including police and fire access, is maintained during temporary construction activities. Signage and notifications to the public regarding parking, driving, and pedestrian access disruptions shall be made. Emergency personnel and coordination centers shall be notified of construction locations and schedules prior to start of construction.

9.6 References

Association of Bay Area Governments (ABAG). 2010. *Taming Natural Disasters – Multi-jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area*.

Carollo Engineers, Inc. 2014. *City of San Mateo Integrated Wastewater Master Plan.* Prepared for City of San Mateo. October.

City of San Mateo. 1995. *City of San Mateo Multi-Hazard Functional Plan.*

_____. 2010. *City of San Mateo General Plan – Vision 2030*. Resolution No. 134-2010. Adopted by the City Council on October 18.

County of San Mateo. 1989. *San Mateo County Hazardous Waste Management Plan*.

_____. 2015. Website on Hazardous Material Business Plan Program. http://smchealth.org/HazMat%20Business%20Plan. Accessed June.

Department of Toxic Substances Control (DTSC). 2007. EnviroStor. http://www.envirostor.dtsc.ca.gov/public/. Accessed June 8, 2015.

State Water Resource Control Board (SWRCB). 2015. Geotracker. Available at: http://geotracker.waterboards.ca.gov/map/?CMD=runreport&myaddress=san+mateo+CA. Accessed June 8, 2015.

U.S. Environmental Protection Agency (EPA). 2015a. EnviroMapper. http://www.epa.gov/myem/efmap/index.html. Accessed June 8, 2015.

_____. 2015b. Pacific Southwest, Region 9: Superfund. Accessed June 19, 2015.

Chapter 10. Hydrology and Water Quality

This chapter evaluates the potential impacts on hydrology and water quality of the CWP. This chapter describes existing hydrology and water quality in the Program Area and the applicable regulatory framework, and it identifies potential impacts.

10.1 Existing Setting

San Mateo is bound on the east side by San Francisco Bay and on the west side by a ridge of hills. Much of the historical native vegetation in the area has been converted to urban and suburban uses, including parks and open space. Several creeks are located within the service area. San Mateo Creek forms the northern boundary of the City with Hillsborough, and Laurel Creek runs along the southern boundary with the City of Belmont. Other notable creeks are scenic Edgewood Creek, which parallels Edgewood Road as it crosses private property; Madera Creek, which runs from the hills in western San Mateo to the 19th Avenue Channel; and relatively natural Beresford Creek, which flows from the canyons south of Campus Drive to the 19th Avenue Channel (City of San Mateo, 2010).

10.1.1 Precipitation

The regional climate is temperate and subhumid and is modified greatly by marine influence. Summer fog is common in this area. Annual temperatures range from an average maximum of 66.8 degrees Fahrenheit (°F) to an average minimum of 47.1°F. The average total mean annual precipitation for the San Mateo area is 20.16 inches, and the mean freeze-free period is about 250 to 300 days (City of San Mateo, 2009).

10.1.2 Watersheds

San Mateo County encompasses four hydrologic basins and 34 watersheds, all of which ultimately drain west to the Pacific Ocean or east to San Francisco Bay. The City of San Mateo includes four major drainage basins (the San Mateo Creek complex, the North San Mateo complex, the Marina Lagoon complex, and the 3rd and Detroit watershed), each composed of numerous stream channels, culverts, and storm drainage piping systems. The Marina Lagoon complex is further divided into four minor drainage basins; therefore, there are a total of seven major and minor drainages basins (both artificial and natural) within the City.

Figure C/OS-2 of the San Mateo General Plan shows the City's seven watersheds. Laurel Creek, 19th Avenue, 16th Avenue, and Mariner's Island drain to Marina Lagoon and the remaining three drain to the Bay either by gravity or pumping (City of San Mateo, 2009). The watersheds are:

1. Laurel Creek
2. 19th Avenue Channel
3. 16th Avenue Channel
4. San Mateo Creek
5. North San Mateo
6. Shoreview Park
7. Mariner's Island

Major waterbodies in the Program Area are shown in Figure 10-1.

10.1.3 City Drainage System

The majority of the open channels carry only seasonal flows. Water quality in the service area creeks and channels has not been specifically characterized, but is generally thought to be poor because of intercepted urban runoff, which typically carries high concentrations of oil, grease, and metals. In addition, some of the creeks and channels in the service area drain undeveloped areas upstream, often resulting in higher levels of coliform bacteria and suspended solids (EDAW, Inc., 2004).

The service area captures and conveys storm and flood waters through a system that includes the following:

- 130 miles of storm drains
- 20 miles of open creeks and drainage channels
- 1 flood control lagoon
- 9 pumping stations
- 3 miles of bayfront levee

10.1.4 Wastewater Treatment Plant Stormwater System

The WWTP is located near the border with Foster City, on the east side of the City, on Detroit Drive. The WWTP Site is approximately 20 acres and more than 75 percent of the site is covered by impermeable surfaces. The permeable areas are either landscaped or unimproved.

Four storm drains serve the northern half of the site and connect to a storm drain on Detroit Drive. The storm drain discharges to the Shoreview Stormwater Pump Station. The remainder of the site drains south through one storm drain and a small surface spillway into the 16th Avenue drainage channel, which discharges to Marina Lagoon or Seal Slough, depending on the position of the discharge control gates.

Treatment at the WWTP consists of primary clarification, secondary treatment through aeration basins and secondary clarifiers, partial effluent filtration, disinfection, and solids handling. Final effluent from the WWTP is pumped to the outfall and discharged into San Francisco Bay (Carollo Engineers, Inc., 2014).

10.1.5 Groundwater

Groundwater in the service area is part of the San Mateo Plain groundwater subarea, which is in the larger South Bay Groundwater Basin. Groundwater throughout the area is ample, with groundwater flows typically traveling northeasterly, originating in the Coastal Range and flowing toward San Francisco Bay. Local variations in groundwater flow occur in relation to topography, geology, and the geometry of local aquifers. Approximately 16 groundwater wells are operated throughout the City, supplying limited supplies of groundwater for domestic use and irrigation by private, commercial, and government users. Varying groundwater quality and physical entrapment of groundwater within discontinuous and fine-grained sediments, however, limit the use of groundwater as a primary source of water supply in the City.

Groundwater studies were completed for the Bay Meadows Project, which is located approximately in the center of the Program Area. Groundwater beneath the Bay Meadows area may be influenced by tidal fluctuations, because of its proximity to the Bay; however, the controlled water levels of Marina Lagoon likely minimize this effect. Groundwater has been encountered at depths of approximately 10 to 13.5 feet in the Bay Meadows area; groundwater levels rose to depths of only 3 to 5 feet below grade within 7 hours after drilling during groundwater studies. In later studies, groundwater was encountered at depths of 7 to 10 feet. During subsequent geotechnical investigations of the Bay Meadows area, groundwater was encountered at depths from 4 to 19 feet below the existing grade (EDAW, Inc., 2004).

10.1.6 Flooding

Since 2001, the Federal Emergency Management Agency (FEMA) has issued Flood Zone maps for San Mateo designating certain sections of town as “high risk.” These high risk areas are required to carry flood insurance if properties have a federally backed mortgage. As development in San Mateo has continued, FEMA has reevaluated the high risk maps and made adjustments to their rate maps. The most recent Flood Zone Map for San Mateo was revised and official as of July, 2015 (City of San Mateo, 2015a).

Flood hazard areas identified on the Flood Insurance Rate Map (FIRM) are identified as a Special Flood Hazard Area (SFHA). SFHA are defined as the area that will be inundated by the flood event having a 1-percent chance of being equaled or exceeded in any given year. The 1-percent annual chance flood is also referred to as the base flood or 100-year flood. SFHAs are labeled as different zones. SFHA present in the Program Area include the following, as shown on Figure 10-1 (City of San Mateo, 2015a; FEMA, 2015):

- Zone A: Areas subject to inundation by the 1-percent-annual-chance flood event generally determined using approximate methodologies. Because detailed hydraulic analyses have not been performed, no Base Flood Elevations or flood depths are shown. Mandatory flood insurance purchase requirements and floodplain management standards apply.
- Zone AE: Areas subject to inundation by the 1-percent-annual-chance flood event determined by detailed methods. Mandatory flood insurance purchase requirements and floodplain management standards apply.
- Zone AH: Areas subject to inundation by 1-percent-annual-chance shallow flooding (usually areas of ponding) where average depths are between one and three feet. Base Flood Elevations are derived from detailed hydraulic analyses. Mandatory flood insurance purchase requirements and floodplain management standards apply.
- Zone AO: Areas subject to inundation by 1-percent-annual-chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between one and three feet. Average flood depths are derived from detailed hydraulic analyses. Mandatory flood insurance purchase requirements and floodplain management standards apply.

As shown on Figure 10-1, SFHA zones are present in low-lying areas of northeastern San Mateo; in limited areas along roadways including El Camino Real and East Hillsdale Boulevard in central San Mateo; and along Marina Lagoon and San Mateo Creek. The only part of the WWTP Site that is designated as being within a 100-year flood hazard area is a small portion of the Bayfront parcels. Most of the Program Area is located in a zone of minimal flood hazard, which are the areas outside the SFHA and higher than the elevation of the 0.2-percent-annual-chance flood. These are labeled as Zone X on Figure 10-1 (City of San Mateo, 2015a; FEMA, 2015).

Though San Mateo is near San Francisco Bay, it is not subject to risk of flooding from tsunami or tidal action, because the potential for tsunami or extreme tidal fluctuations is low in the Bay. In addition, the City's levees are structurally stable and have a low probability of failure, though dike failure would only flood a minor portion of the project area along its eastern edge and flooding would only affect areas below an elevation of 104.7 feet (see Figure 4.8-2 in the General Plan EIR). The service area (see Figure 1-1) is, however, within the area of potential inundation in the event of a failure of Crystal Springs Dam and Laurel Creek Dam. Crystal Springs Dam, which retains the water supply for San Francisco and most cities within San Mateo County, and Laurel Creek Dam, which provides important flood control for the City of San Mateo, both have an extremely low risk of failure.

10.2 Regulatory Framework

The CWP projects are subject to all federal, state, and local regulations pertaining to water quality, pollutant emissions, and drainage. Regulations pertaining to hydrology and water quality in the service area are discussed in the following sections.

10.2.1 Federal Regulations

The federal Clean Water Act (CWA), originally passed in 1972, is the primary surface water protection legislation throughout the country. By using a variety of regulatory and non-regulatory tools and practices, including established water quality standards, permits, monitoring discharges, and managing polluted runoff, the CWA aims to restore and maintain the chemical, physical, and biological integrity of surface waters to support "the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water." The CWA regulates both the pollutant content of point source discharges and addressing polluted runoff.

The CWP projects are subject to federal regulations governing discharge from point sources and "wet weather point sources," such as urban storm sewer systems and construction sites, as defined in Sections 1311–1330 of the CWA (33 USC 26, Subchapter III). In addition, the projects are subject to federal permit

requirements, as applicable, including an NPDES permit, a Construction Activities Storm Water Permit, and a CWA Section 401/404 permit (EDAW, Inc., 2004).

The 2013 NPDES permit for the WWTP requires the elimination of "blending" (i.e., bypassing primary effluent around the secondary treatment process during wet weather flow events). Eliminating blending requires increasing the capacity of the secondary treatment process.

10.2.2 State Regulations

The SWRCB and RWQCBs are responsible for preserving, enhancing, and restoring the quality of California's water resources and drinking water for the protection of the environment, public health, and all beneficial uses, and to ensure proper water resource allocation and efficient use, for the benefit of present and future generations (SWRCB, 2015). The SWRCB makes statewide regulations governing water use and point source and non-point source pollutant discharges; the RWQCBs work in regions of the state to implement SWRCB policies and regulations, while also establishing additional region- and area-specific regulations and policies to achieve water quality goals. Operation of the sanitary sewer collection system and WWTP is regulated by the San Francisco Bay RWQCB. The City's collection system has a history of wet weather sanitary sewer overflows (SSO) that result in the discharge of untreated or partially treated wastewater. In March 2009, the RWQCB issued a Cease and Desist Order jointly to the City of San Mateo, the Town of Hillsborough, and the CSCSD mandating elimination of SSOs in the collection system and requiring specific corrective actions.

10.2.3 Local Regulations

10.2.3.1 San Mateo Countywide Water Pollution Prevention Program

Water pollution degrades surface waters, making them unsafe for drinking, fishing, swimming, and other activities. The San Mateo Countywide Water Pollution Prevention Program was established in 1990 to reduce the pollution carried by stormwater into local creeks, San Francisco Bay, and the Pacific Ocean. The program is a partnership of the City/County Association of Governments of San Mateo County, each incorporated city and town in the county, and San Mateo County, which share a common NPDES permit. The federal CWA and the Porter-Cologne Water Quality Control Act requires that large urban areas discharging stormwater into San Francisco Bay or the Pacific Ocean have an NPDES permit to prevent harmful pollutants from being dumped or washed away by stormwater runoff into the stormwater system and then discharged into local water bodies. Cities in San Mateo, Santa Clara, Alameda, Marin, Solano, San Francisco, and Contra Costa counties have each obtained these permits.

The Stormwater Management Plan outlines the priorities, key elements, strategies, and evaluation methods for the San Mateo Countywide Water Pollution Prevention Program. The comprehensive program includes pollution reduction activities for construction sites, industrial sites, illegal discharges and illicit connections, new development, and municipal operations. The program also includes a public education effort, target pollutant reduction strategy, and monitoring program.

10.2.3.2 San Mateo City Charter and Municipal Code

Ordinances addressing stormwater management and controlling non-stormwater discharge in the City of San Mateo are contained in Title 7, Chapter 39, Stormwater Management and Discharge Control, of the City's Municipal Code (City of San Mateo, 2015b). Included in the Code is the City's requirement for a Stormwater Pollution Prevention Program (STOPPP) construction permit. The permit regulates the discharge into the City's stormwater system and is in coordination with the San Mateo Countywide Water Pollution Prevention program discussed in Section 10.2.3.1.

Ordinances addressing flooding damage prevention in San Mateo are contained in Title 23, Chapter 33, Floodplain Management, of the City's Municipal Code (City of San Mateo, 2015b), which establishes the City's eligibility to participate in the National Flood Insurance Program. The City requires all new buildings in Special Flood Hazard Areas be built with finished floors above base flood elevations established by FEMA. Individual development projects are required to complete a detailed hydrologic study before the City issues development permits. The studies identify downstream areas that experience localized flooding, detail

potential impacts on these areas that proposed projects could create, and identify onsite and offsite mitigation measures to prevent those impacts.

10.3 Assessment Methods and Thresholds of Significance

This impact analysis focuses on potential effects on drainage, flooding, and water quality associated with implementation of CWP projects. The analysis was made by using available information regarding the water quality and hydrologic characteristics of the project area, subsurface testing, project plans, and applicable regulations and guidelines. Impacts on hydrology and water quality may occur if the program or project would result in the following:

- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)
- Violate any water quality standards or waste discharge requirements or otherwise substantially degrade water quality
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff, in a manner which would result in flooding or substantial erosion or siltation onsite or offsite, or exceed the capacity of existing or planned stormwater drainage systems
- Expose people or structures to a significant risk of loss, injury, or death involving flooding
- Place structures within a 100-year flood hazard area that would impede or redirect flood flows
- Inundation by seiche, tsunami, or mudflow

The objectives of the CWP include eliminating blending and SSOs and meeting anticipated future regulatory requirements, including total nitrogen and total phosphorous concentrations, pathogens. Operation of the new WWTP facilities would be permitted by the RWQCB, subject to specific discharge requirements. Operation of the CWP would result in a significant improvement in water quality, for both wastewater discharge and stormwater runoff, compared to current conditions. Therefore, the evaluation of impacts to water quality in Section 10.4 focuses on construction impacts.

As described in Section 10.1.6, the City of San Mateo is not subject to risk of inundation by seiche or tsunami. Nearly all above-ground structures for the CWP would be located at the WWTP Site, which is level and not subject to mudflows. Proposed collection system projects in the eastern portion of the Program Area, where some slopes exist, would be belowground and not subject to mudflows. Impacts associated with inundation by seiche, tsunami, or mudflow are not discussed further.

10.4 Environmental Impacts

This section describes potential impacts of the CWP on hydrology and water quality. Table 10-1 summarizes environmental impacts.

TABLE 10-1
Summary of Hydrology and Water Quality Impacts
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Impact	In-System Storage Program	Full Conveyance Program	New Headworks Project	Primary Clarifier Project
Impact 10-1. Implementation of the CWP could reduce groundwater supplies.	Less than significant impact	Less than significant impact	Less than significant impact	Less than significant impact
Impact 10-2. Construction of the CWP could degrade water quality.	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation
Impact 10-3. Implementation of the CWP could alter drainage patterns or increase the amount of surface runoff.	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation
Impact 10-4. The CWP would place structures within a 100-year flood hazard area that could impede or redirect flood flows.	Less than significant impact	Less than significant impact	Less than significant impact	Less than significant impact

Impact 10-1. Implementation of the CWP could reduce groundwater supplies.

In-System Storage Program

Excavation during construction of an in-system storage basin, construction of collection system projects, and construction of wastewater treatment projects could result in excavation in the water table. This could result in impacts on groundwater supplies due to dewatering during excavation. However, dewatering would be required only during the initial phases of excavation and construction of building foundations and would not occur for substantial periods of time. Because of the short duration of dewatering, the volume of groundwater removed would be expected to be minor. As described in Section 10.1.5, groundwater throughout the area is ample but is not widely used as a water source due to quality and accessibility. Impacts of construction of the In-System Storage Program on groundwater supplies would be less than significant.

Operation of the In-System Storage Program would not use groundwater resources. The Detroit Drive parcel encompasses approximately 6.2 acres, of which approximately 2.5 acres is currently paved and 3.7 acres is non-native vegetation with a small wetland feature. The In-System Storage Program would result in pavement or development on this 3.7 acres, resulting in a minor increase in impervious surfaces. This increase would be negligible compared to the overall size of the watershed and any effect on groundwater recharge also would be negligible. Collection system projects, including an in-system storage basin, would result in negligible to no increase in impervious surfaces because the ground surface would be returned generally to pre-project conditions. Replacement of wastewater pipelines would reduce I/I of rainwater or groundwater into the pipelines, potentially resulting in a very minor increase in groundwater supplies compared to existing conditions. Operation of the In-System Storage Program would not result in significant impacts to groundwater supplies.

Full Conveyance Program

Potential impacts of the Full Conveyance Program on groundwater supplies would be the same as described for the In-System Storage Program. Short-term construction would result in removal of a minor amount of groundwater. As described in Section 10.1.5, groundwater throughout the area is ample but is not widely used as a water source due to quality and accessibility. Impacts of construction of the Full Conveyance Program on groundwater supplies would be less than significant.

Operation of the Full Conveyance Program would not use groundwater resources. The 3.7-acre increase in impervious surfaces on the Detroit Drive parcel would be negligible compared to the overall size of the watershed and any effect on groundwater recharge also would be negligible. Collection system projects, including a new Dale Avenue Pump Station, would result in negligible to no increase in impervious surfaces because the ground surface would be returned generally to pre-project conditions. Replacement of wastewater pipelines would reduce I/I of rainwater or groundwater into the pipelines, potentially resulting in a very minor increase in groundwater supplies compared to existing conditions. Operation of the Full Conveyance Program would not result in significant impacts to groundwater supplies.

New Headworks Project and Primary Clarifier Project

Potential impacts of the New Headworks Project and Primary Clarifier Project on groundwater supplies would be the same as described for the In-System Storage Program. Short-term construction would result in removal of a minor amount of groundwater. As described in Section 10.1.5, groundwater throughout the area is ample but is not widely used as a water source due to quality and accessibility. Impacts of construction of the New Headworks Project and Primary Clarifier Project on groundwater supplies would be less than significant.

Operation of the New Headworks Project and Primary Clarifier Project would not use groundwater resources. The projects would be constructed on the Detroit Drive parcel. The 3.7-acre increase in impervious surfaces on the Detroit Drive parcel would be negligible compared to the overall size of the watershed and any effect on groundwater recharge also would be negligible. Operation of the New Headworks Project and Primary Clarifier Project would not result in significant impacts to groundwater supplies.

Impact 10-2. Construction of the CWP could degrade water quality.

In-System Storage Program

Construction of the In-System Storage Program would entail excavation, grading, and other earth-disturbing activities that would expose and disturb soils, resulting in the potential for increased erosion by wind or water. Erosion could result in downstream siltation and increase nutrient loading and total suspended solids concentrations in receiving waters. Groundwater encountered during construction and water used during construction, for example for certain micro-tunneling techniques, could affect water quality if discharged improperly. Paving, refueling and use of construction equipment, and other activities have the potential to create pollutants such as gasoline, oil, rubber particles, herbicides, paint, adhesives, and tar that could enter nearby waterways and degrade water quality.

Mitigation Measures 10-2 Install and apply erosion control and stormwater best management practices during construction shall be implemented as applicable during all earth-disturbing activities. Measures such as protecting adjacent properties and waterways with sediment barriers, filters, or vegetative buffer strips and using sediment controls and filtration to remove sediment from water generated by dewatering would protect water quality. With implementation of **Mitigation Measure 10-2 Install and apply erosion control and stormwater best management practices during construction**, the In-System Storage Program would not significantly degrade water quality.

Full Conveyance Program

The potential of the Full Conveyance Program to degrade water quality would be the same as described for the In-System Storage Program. With implementation of **Mitigation Measure 10-2 Install and apply erosion control and stormwater best management practices during construction,** the Full Conveyance Program would not significantly degrade water quality.

New Headworks Project and Primary Clarifier Project

The potential of the New Headworks Project and Primary Clarifier Project to degrade water quality would be the same as described for the In-System Storage Program. With implementation of **Mitigation Measure 10-2**

Install and apply erosion control and stormwater best management practices during construction, the New Headworks Project and Primary Clarifier Project would not significantly degrade water quality.

Impact 10-3. Implementation of the CWP could alter drainage patterns or increase the amount of surface runoff.

In-System Storage Program

Construction of the In-System Storage Program could result in temporary changes in localized drainage patterns that could change surface runoff and affect stormwater facilities or offsite water quality. As discussed in Impact 10-2, implementation of **Mitigation Measure 10-2 Install and apply erosion control and stormwater best management practices during construction** would reduce effects of surface runoff during construction to a less than significant level.

The Detroit Drive parcel encompasses approximately 6.2 acres, of which approximately 2.5 acres is currently paved and 3.7 acres is non-native vegetation with a small wetland feature. The In-System Storage Program would result in pavement or development on this 3.7 acres, resulting in a minor increase in impervious surfaces and a potential minor change in localized drainage patterns. This could result in a minor change in local drainage patterns and surface water runoff. A substantial increase in the rate or amount of surface runoff would not be expected, and would not cause flooding or exceed the capacity of existing stormwater facilities. To further minimize any potential impacts, **Mitigation Measure 10-3 Develop a stormwater drainage plan** would be implemented. The drainage plan would be required to demonstrate no net increase in flooding onsite or offsite due to exceedance of stormwater drainage system capacity. The pavement and development of the Detroit Drive parcel would reduce the likelihood of erosion or siltation compared to current conditions.

Collection system projects, including an in-system storage basin, would not result in changes to drainage patterns or increase surface runoff because the ground surface would be returned generally to pre-project conditions. In addition, nearly all collection system projects would be belowground and would not affect drainage patterns.

Neither construction nor operation of the In-System Storage Program would alter the course of a stream or river. The only proposed collection system projects located near streams or rivers are several pipeline projects, which would be expected to use trenchless technologies to cross under streams and rivers. Although the WWTP Site is adjacent to Leslie Creek and Marina Lagoon, no alternations of these waterways would occur.

With implementation of **Mitigation Measure 10-2 Install and apply erosion control and stormwater best management practices during construction** and **Mitigation Measure 10-3 Develop a stormwater drainage plan**, effects of the In-System Storage Program on drainage patterns and surface runoff would be minor, and impacts on flooding, erosion, and stormwater drainage system capacity would be less than significant. Because these impacts would be minor, people or structures would not be exposed to a significant risk of loss, injury, or death involving flooding.

Full Conveyance Program

The potential of the Full Conveyance Program to affect drainage patterns and surface runoff would be the same as described for the In-System Storage Program. With implementation of **Mitigation Measure 10-2 Install and apply erosion control and stormwater best management practices during construction** and **Mitigation Measure 10-3 Develop a stormwater drainage plan**, effects of the Full Conveyance Program on drainage patterns and surface runoff would be minor, and impacts on flooding, erosion, and stormwater drainage system capacity would be less than significant. Because these impacts would be minor, people or structures would not be exposed to a significant risk of loss, injury, or death involving flooding.

New Headworks Project, and Primary Clarifier Project

The potential of the New Headworks Project and Primary Clarifier Project to affect drainage patterns and surface runoff would be the same as described for the In-System Storage Program. With implementation of **Mitigation Measure 10-2 Install and apply erosion control and stormwater best management practices during construction** and **Mitigation Measure 10-3 Develop a stormwater drainage plan**, effects of the New Headworks Project and Primary Clarifier Project on drainage patterns and surface runoff would be minor, and impacts on flooding, erosion, and stormwater drainage system capacity would be less than significant. Because these impacts would be minor, people or structures would not be exposed to a significant risk of loss, injury, or death involving flooding.

Impact 10-4. The CWP would place structures within a 100-year flood hazard area that could impede or redirect flood flows.

In-System Storage Program

Nearly all new aboveground structures for the In-System Storage Program would be located at the WWTP Site. The only other aboveground structures would be minor appurtenances associated with an in-system storage basin and potentially minor changes to existing pump station appurtenances. As shown in Figure 10-1, the only part of the WWTP Site that is designated as being within a 100-year flood hazard area is a small portion of the Bayfront parcels, labeled as Zone A. This area would be proposed for use as a corporation yard, including equipment storage and related administrative functions. New structures would be limited to small commercial buildings for administrative uses. No significant impedance or redirection of flood flows would occur, and impacts of the In-System Storage Program would be less than significant.

Full Conveyance Program

Nearly all new aboveground structures for the Full Conveyance Program would be located at the WWTP Site. The only other aboveground structures would be minor appurtenances associated with the new Dale Avenue Pump Station and potentially minor changes to existing pump station appurtenances. As shown in Figure 10-1, the only part of the WWTP Site that is designated as being within a 100-year flood hazard area is a small portion of the Bayfront parcels, labeled as Zone A. This area would be proposed for use as a corporation yard, including equipment storage and related administrative functions. New structures would be limited to small commercial buildings for administrative uses. No significant impedance or redirection of flood flows would occur, and impacts of the Full Conveyance Program would be less than significant.

New Headworks Project and Primary Clarifier Project

The New Headworks Project and Primary Clarifier Project would be located at the Detroit Drive parcel, which is not located within a 100-year flood hazard area. No impacts would occur.

10.5 Mitigation Measures

Mitigation Measures 10-2. Install and apply erosion control and stormwater best management practices during construction.

Applicable erosion control and stormwater best management practices shall be installed and maintained during construction for all earth-disturbing activities. Construction activities shall be required to comply with all RWQCB regulations and procedures for discharging wastewater, including dewatering discharges, as detailed in the SWPPP and STOPPP prepared for each project and as required under Chapter 7.39 of the Municipal Code (City of San Mateo, 2015b). Applicable BMPs to reduce erosion and siltation and protect water quality can include, but are not limited to: designate construction access routes; stabilize construction access points; stabilize cleared and excavated areas by providing vegetative buffer strips, plastic coverings, and applying ground base on areas to be paved; protect adjacent properties and waterways by installing sediment barriers, filters, or vegetative buffer strips; prevent surface runoff from discharging into storm

drains; use sediment controls and filtration to remove sediment from water generated by dewatering; and avoid refueling and vehicle maintenance on construction sites as feasible.

Mitigation Measure 10-3. Develop a stormwater drainage plan.

The City or its contractors shall develop a stormwater drainage plan for the various portions of the WWTP Site as they are developed. Storm Water Management and Discharge Control Ordinance (Chapter 7.39 of the Municipal Code [City of San Mateo, 2015b]) requires that applicants for all projects develop a stormwater drainage plan that produces no net increase in flooding onsite or offsite due to exceedance of stormwater drainage system capacity. As stated in the ordinance, project drainage plans shall be approved by the City prior to construction of a project, and stormwater drainage plans shall be implemented in conjunction with project construction.

10.6 References

Carollo Engineers, Inc. 2014. *City of San Mateo Integrated Wastewater Master Plan*. Prepared for City of San Mateo. October.

City of San Mateo. 2009. *Draft Environmental Impact Report for the City of San Mateo General Plan Update*. July 27.

_____. 2010. *City of San Mateo General Plan – Vision 2030*. Resolution No. 134-2010. Adopted by the City Council on October 18.

_____. 2015a. City of San Mateo FEMA Flood Map website. http://www.cityofsanmateo.org/index.aspx?nid=1797. Accessed October 16.

_____. 2015b. *San Mateo City Charter and Municipal Code*. Available at http://qcode.us/codes/sanmateo/. Effective as of September 17.

EDAW, Inc. 2004. *San Mateo Corridor Plan and Bay Meadows Specific Plan Amendment EIR*.

Federal Emergency Management Agency (FEMA). 2015. Flood zone definitions website. http://www.fema.gov/flood-zones. Accessed October 16.

State Water Resources Control Board (SWRCB). 2015. "About The Water Board" website. http://www.swrcb.ca.gov/about_us/.

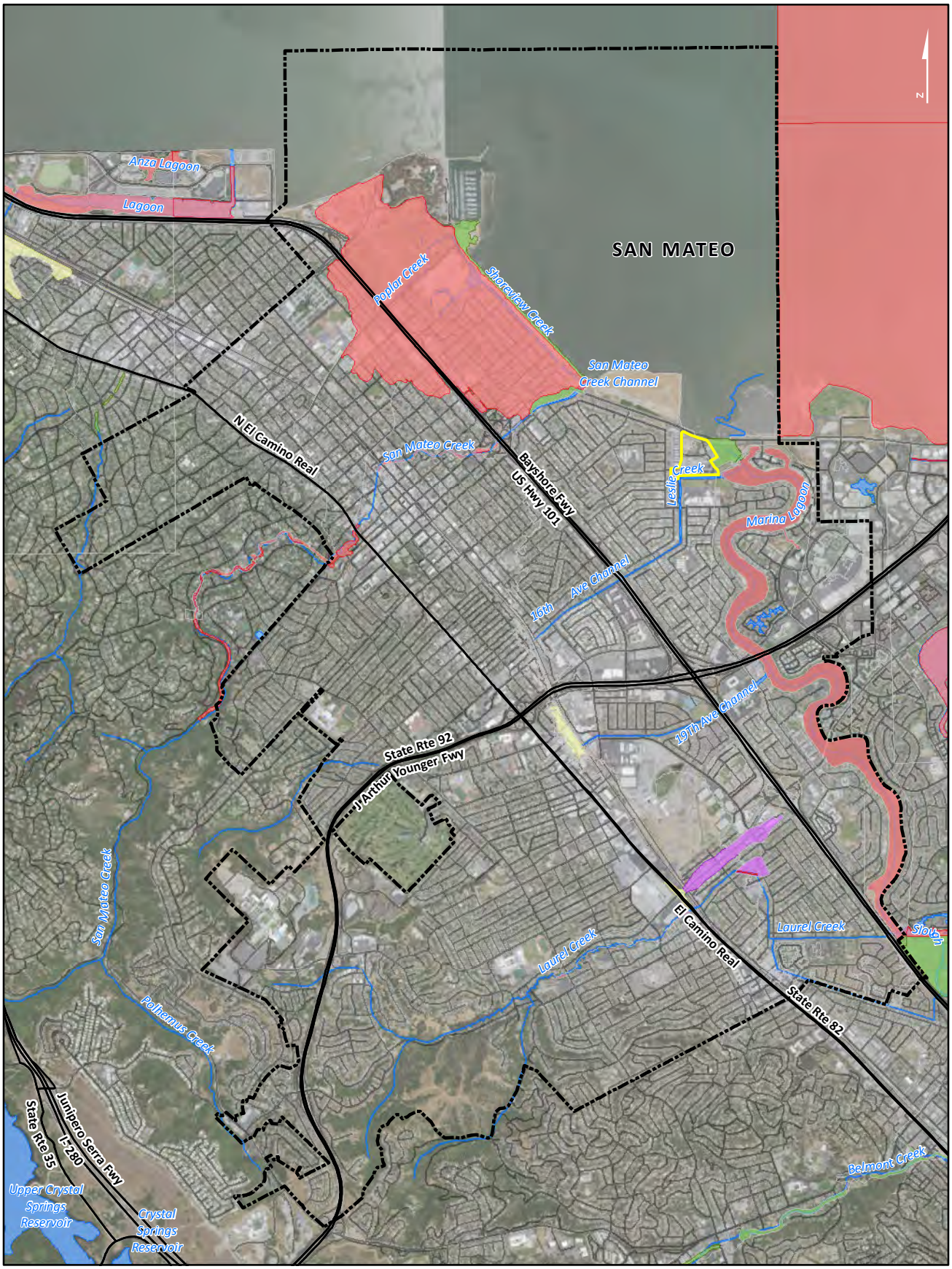


Figure 10-1
Program Area Hydrology
Programmatic Environmental Impact Report
City of San Mateo Clean Water Program

Coordinate System: NAD 1983 UTM Zone 10N. Source: Esri Map Services, County of San Mateo, FEMA

CH2MHILL

Chapter 11. Land Use

This chapter describes and discusses existing land uses in the Program Area. Applicable plans and policies related to land use and planning are presented, and potential impacts and mitigation measures from the two CWP alternatives are identified.

11.1 Existing Setting

The Program Area, where the full CWP would be constructed and operated, is located within the City of San Mateo. The parcels where WWTP Projects would be constructed is referred to as the WWTP Site (see Figures 2-2 and 2-4 in Chapter 2).

The City occupies approximately 15.7 square miles in central San Mateo County. The City is bordered by San Francisco Bay and the City of Foster City on the east, the City of Burlingame and the City of Hillsborough to the north, Highlands-Baywood Park and I-280 to the west, and the City of Belmont to the south (see Figure 2-1 in Chapter 2). San Mateo is an urbanized area and is largely built out, with only a few individual areas left undeveloped that are not otherwise classified as open space or environmental preserves. Currently, collection system pipelines and pump stations are primarily located underground in existing streets or dedicated rights-of-way that are typically paved or covered with ruderal or landscaped vegetation.

The WWTP Site consists of the existing wastewater treatment plant (WWTP) site, an undeveloped parcel on Detroit Drive to the north (Detroit Drive parcel), three commercial parcels (the Bayfront parcels) to the east, and the undeveloped Dale Avenue parcel to the southwest of the WWTP (Dale Avenue parcel); see Figure 11-1.

The In-System Storage Program would include one or more in-system storage basins. Proposed locations, listed in Chapter 2, are currently used for recreation fields, parks, and parking lots.

No portion of the Program Area is located on unique or prime farmland, or is currently used for agricultural purposes (California Department of Conservation, 2015).

11.2 Regulatory Framework

This section summarizes existing land use regulations that would apply to the Program Area. Land use is regulated primarily at the local level.

11.2.1 General Plan – Land Use

The General Plan (City of San Mateo, 2010) describes the long-term goals and policies for development and provides the framework for all zoning and land use decisions within the City. The General Plan identifies a land use category for each parcel; each land use category includes specific permitted uses of the parcel.

In 2004 voters in San Mateo approved Measure P, an extension of Measure H, a 1991 amendment to the General Plan. These measures state that requests for height changes consistent with height ranges for specific land uses may be considered by the City Council only when accompanied by a request for a change in land use designation and subject to certain findings (City of San Mateo, 2004). The City Council may not amend the General Plan inconsistent with the purposes, intent, or operative provisions of these initiatives, including provisions reducing maximum height limits.

The land use designations and allowed building heights for the WWTP Site parcels, the Dale Avenue Pump Station, and the proposed in-system storage locations are shown in Table 11-1. The WWTP Site land uses are shown on Figure 11-2.

TABLE 11-1

Land Use Designations

Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Parcel	Land Use Category	Allowed Uses
Existing WWTP	Public facility	Facilities owned and/or operated by the City, other government agencies, and/or the public school districts. Building height limit is 65 feet.
Detroit Drive Parcel	Public facility	Facilities owned and/or operated by the City, other government agencies, and/or the public school districts. Building height limit is 45 feet.
Bayfront Parcels (3 parcels)	Regional/community commercial	Larger shopping centers and districts providing goods and services usually not available in neighborhood shopping centers. These centers rely on large trade areas and may include department stores, banks, furniture stores, auto dealerships, appliance stores, toy stores, hotels, and offices. Regional centers include Hillsdale Shopping Center and The Island Shopping Center and certain strip commercial areas, such as El Camino Real (SR-82). Characterized by medium to high FARs of 1.0 to 2.5 and heights of 35 to 55 feet. Homeless shelters and other forms of transitional housing are permitted uses in this land use category. Building height limit is 45 feet.
Dale Avenue Parcel	Single family residential	One dwelling unit per parcel, with the potential for a secondary dwelling unit. Other uses that are potentially compatible with single-family neighborhoods but require special use permits include but are not limited to religious facilities, day care and group care facilities, schools, and cemeteries. Home occupations are permitted subject to compliance with City standards. Up to 9 units per acre and 0 to 20 persons per acre allowed. Building height limit is 32 feet.
Dale Avenue Pump Station	Public facility	Facilities owned and/or operated by the City, other government agencies, and/or the public school districts. Building height limit is 24 feet.
Abbot Middle School	Public facility	Facilities owned and/or operated by the City, other government agencies, and/or the public school districts. Building height limit is 24 feet.
Bay Meadows Phase II Park	Transit-oriented development	Public parks, City-owned conservation lands, and private open space or recreation facilities. Building height limit is 45 feet.
California Water Services Company	Public facility	Facilities owned and/or operated by the City, other government agencies, and/or the public school districts. Building height limit is 35 feet.
Caltrain Station – Park Green Development	Transit-oriented development	Land uses within this area should be transit supportive, including multifamily housing and major employment centers. Retail uses are intended to be convenience oriented such as, but not limited to, shops that carry smaller goods, cafes, newsstands, dry cleaners, neighborhood grocery stores, specialized services, and shops such as daycare, bicycle shops, art stores, or similar uses. These uses should be developed within larger mixed-use buildings, combined with residential or offices uses. Childcare facilities and daycare centers should be incorporated within employment centers and multifamily projects. Densities may range from 25 to 50 units per acre; FARs may range from 0.3 to 3.0. Building height limit is 55 feet.
Central Park	Parks/open space	Public parks, City-owned conservation lands, and private open space or recreation facilities. Building height limit is 32 feet.

TABLE 11-1
Land Use Designations
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Parcel	Land Use Category	Allowed Uses
Fiesta Meadows Park	Parks/open space	Public parks, City-owned conservation lands, and private open space or recreation facilities. Building height limit is 32 feet.
Hillsdale High School	Public facility	Facilities owned and/or operated by the City, other government agencies, and/or the public school districts. Building height limit is 24 feet.
Hillsdale Shopping Center	Regional/community commercial	Larger shopping centers and districts providing goods and services usually not available in neighborhood shopping centers. These centers rely on large trade areas and may include department stores, banks, furniture stores, auto dealerships, appliance stores, toy stores, hotels and offices. Regional centers include Hillsdale Shopping Center and The Island Shopping Center and certain strip commercial areas such as El Camino Real (SR-82). Characterized by medium to high FARs of 1.0 to 2.5. Homeless shelters and other forms of transitional housing are permitted uses in this land use category. Building height limit is 40 to 60 feet.
Martin Luther King Park	Parks/open space	Public parks, City-owned conservation lands, and private open space or recreation facilities. Building height limit is 24 feet.
San Mateo County Expo Center	Major institution/ special facility	Private and public institutional, educational, recreational, and community service uses, which includes the San Mateo County Hospital, San Mateo County Event Center, Peninsula Golf and Country Club, and the College of San Mateo. Building height limit is 45 feet.
San Mateo County Hospital	Major institution/ special facility	Private and public institutional, educational, recreational, and community service uses, which includes the San Mateo County Hospital, San Mateo County Event Center, Peninsula Golf and Country Club, and the College of San Mateo. Building height limit is 35 to 45 feet.
Trinta Park	Parks/open space	Public parks, City-owned conservation lands, and private open space or recreation facilities. Building height limit is 32 feet.

Source: City of San Mateo, 2010. Building height limit is from General Plan Figure LU-4.

Note:

FAR = floor area ratio

11.2.2 General Plan Goals and Policies

The General Plan contains goals and policies and the land use framework described in section 11.2.1 to help guide development within San Mateo. Goals and policies applicable to land use in the Program Area and the proposed activities are cited below, in part or in whole.

> **GOAL 1e:** Provide adequate transportation, utilities, cultural, educational, recreational, and public facilities, and ensure their availability to all members of the community.
>
> **GOAL 1i:** Consider the effects of Climate Change on the City of San Mateo. Incorporate Sustainability into the City's policies, work programs and standard operations.
>
> **LU 1.1: Planning Area Growth and Development to 2030.** Plan for land uses, population density, and land use intensity as shown on the Land Use, Height and Building Intensity and City Image Plans for the entire planning area. Design the circulation system and infrastructure to provide capacity for the total development expected in 2030. Review projections annually and adjust infrastructure and circulation requirements as required if actual growth varies significantly from that projected.

LU 1.5: Building Height. Maintain maximum building height limits contained in Appendix C, and as specified in Policy LU 6A.2, closely matched with the Land Use categories and Building Intensity standards.

Requests for height changes consistent with the height ranges for specific land uses as designated in Appendix C, titled "Building Height," may be considered by the City Council only when accompanied by a request for change in land use designation. Such requests may be approved only if the following findings are made:

1. The building has high design quality, which is enhanced by additional building height;
2. Increased building heights are visually related to surrounding building heights and promote the creation of a coherent City image;
3. Increased building heights will still provide for a variety of building heights in the vicinity of the project and the surrounding areas;
4. Increased building heights are compatible with surrounding land uses, and will not create adverse shadow or visual impacts on surrounding residential uses; and
5. The City's infrastructure is adequate to accommodate the proposed development

LU 4.5: Wastewater Treatment Plant Expansion. Provide adequate wastewater treatment for the projected 2010 service area population, employment and development. Require that any future expansion of the WWTP be designed to be compatible with the adjacent parks, school, and low-density residential areas by screening views of the WWTP with extensive and tall landscaping and reducing the height of all new structures to the maximum practicably feasible.

PA 4.6: J. Hart Clinton Drive/Detroit Drive Vicinity.

1. Development of private parcels having frontage on Marina Lagoon should retain public access, providing a connection between Shoreline Park and Bayside/Joinville Park.
2. Properties bounded by Detroit Drive should be developed with low-scale, low occupancy commercial uses as delineated on the Building Height and Intensity Plans. The *Shoreline Park Specific Plan* (City of San Mateo, 1979) allows mini-warehouse or light industry with ancillary offices and precludes hotel and restaurant uses. Building design should be of high quality, reflective of the prominence of the site from J. Hart Clinton Drive and the future development of Shoreline Park.

Land adjacent to Detroit Drive is highly visible from J. Hart Clinton Drive, Shoreline Park, and Marina Lagoon. To be compatible with the surrounding areas, development will be required to be sensitively designed with ample landscaping to enhance the project appearance from J. Hart Clinton Drive, and limited to low occupancy uses due to the adjacent sewage treatment plant.

PA 4.7: Wastewater Treatment Plant. Maintain the Wastewater Treatment Plant as designated in Policy LU-4.5.

UD 1.2: Preservation of Natural Focal Points. Preserve and enhance views of and access to the foothills and the Bay through the design of new development consistent with the *Shoreline Park Specific Plan* (City of San Mateo, 1979)). By featuring the natural amenities of the foothills and Bay, San Mateo's identity can be strengthened. Where possible development should orient views and access to take advantage of these natural features.

UD 1.3: Gateways. Develop gateways by creating strong architectural or landscape features exhibiting the character of San Mateo at the following locations: entrances to the Downtown, the north and south ends of El Camino Real (SR-82), US-101 and 3rd Avenue, US-101 and Hillsdale Boulevard, and Mariner's Island Boulevard and J. Hart Clinton Drive at the border of Foster City.

By developing gateway features, the entries to the City will be identified. Gateways may be constructed in a variety of ways: a prominent landscape or architectural feature, a notable open area or possibly an arch to pass through. All gateways should have some common element or feature to give San Mateo a unique and consistent image.

C/OS 1.5: Conversion of Incompatible Uses. Encourage the conversion of existing land uses which are not compatible with adjacent Lagoon or wetlands to permitted compatible uses. The adopted Land Use Element and Shoreline Park and Detroit Drive Plans, as well as the Shoreline zoning district allow for a limited number of recreation related land uses. Some land uses not directly related to recreation or marine areas can be compatible with the shoreline and Lagoon environment. Similarly, uses and development types which are not compatible due to concerns about noise, runoff, habitat, and aesthetics should be restricted.

C/OS 1.6: Public Access. Continue to require public access from new developments adjacent to the Lagoon and Shoreline consistent with the *Shoreline Park Specific Plan.*

11.2.3 Zoning

The City of San Mateo Zoning Ordinance, Title 27 of the Municipal Code (City of San Mateo, 2015), regulates certain things, such as building height and setback to promote public health and safety, conserve property values, protect the character and stability of neighborhoods, reduce land use conflicts, and support other community goals. The current zoning for the WWTP Site parcels, the Dale Avenue Pump Station, and the proposed in-system storage locations are shown in Table 11-2. The WWTP Site zoning is shown on Figure 11-3.

Chapter 27.74 of the Zoning Ordinance describes the requirements for special use permits. The zoning code identifies permitted uses for each land use type in the City. In addition, the Zoning Ordinance recognizes that other uses may be necessary or desirable in a given district but may have influence upon neighboring uses or public facilities; these uses need to be carefully regulated with respect to location or operation for the protection of the community. Such uses are classified as "special uses."

Chapter 27.06 of the Zoning Ordinance notes that "[e]very project which is fully or partially funded by the City and which is subject to Planning Commission review under 27.06.040" requires final approval by the City Council (City of San Mateo, 2015). These approvals include special use permits, SPAR, and site development permits.

TABLE 11-2
Current Zoning
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Parcel	Zoning	Permitted Uses
Existing WWTP	S – Shoreline	Public parks and recreation facilities, including but not limited to public open space, parks, bathing beaches, fishing piers, marinas, boardwalks, bicycle and pedestrian paths, trails, picnic areas, and other similar uses. Open space for the preservation, maintenance, and enhancement of lands in their natural state, or their restoration, and as habitat for wildlife. Private boat facilities in Marina Lagoon. Uses that may also be permitted if their site locations and proposed development plans are first approved as provided in Chapters 27.06 through 27.12, 27.62, 27.74 and 27.80 include public facilities, including but not limited to, transmission lines, sanitary and storm sewer installations, treatment plants, and pumping stations, streets, and water distribution systems. Other requirements include setbacks. When an S-zoned parcel is contiguous to any Residential (R) district, an adequate landscape buffer shall be maintained adjacent to the R-zoned property. The depth (width) of this buffer shall be at least 15 feet and shall be landscaped. Parking may be located in the buffer setback area, subject to landscaping screening requirements.

TABLE 11-2
Current Zoning
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Parcel	Zoning	Permitted Uses
		Alterations or additions to the existing WWTP would require a modification of the existing special use permit.
Detroit Drive Parcel	S – Shoreline	See description for Existing WWTP.
Bayfront Parcels (3)	S – Shoreline	See description for Existing WWTP.
Dale Avenue Parcel	OS – Open Space	Parks, playgrounds, community centers and facilities that are publicly owned; vacant land for open space preservation. Public utility facilities are allowed if a special use permit is approved.
Dale Avenue Pump Station	R1-C – One Family Dwelling "C"	Include one-family detached dwellings, secondary units under certain provisions, accessory structures, and community care facilities. Minimum parcel size of 5,000 square feet and parcel width of 50 feet. Public utility facilities are allowed if a special use permit is approved.
Abbot Middle School	R1-B – One Family Dwelling "B"	Include one-family detached dwellings, secondary units under certain provisions, accessory structures, and community care facilities. Minimum parcel size of 6,000 square feet and parcel width of 60 feet. Public utility facilities are allowed if a special use permit is approved.
Bay Meadows Phase II Park	BMSP – Bay Meadows Specific Plan	Parks, playgrounds, community centers, and facilities that are publicly owned; vacant land for open space preservation. Public utility facilities are allowed if a special use permit is approved.
California Water Services Company	R3 – Multiple Family Dwellings – Medium Density	Uses permitted include any in the R1 and R2 zoning, multiple family dwellings, and accessory uses necessary to these buildings. Public utility facilities are allowed if a special use permit is approved.
Caltrain Station – Park Green Development	TOD – Transit Oriented Development	Uses designated in the Rail Corridor Plan Land Use Plan. Nondesignated uses that the Planning Commission concludes are so similar to any specifically permitted use, as designated in the Rail Corridor Plan Land Use Plan, so as to be virtually identical thereto in terms of impact and land use requirements may also be allowed as special uses, subject to review and approval as a special use permit by the Planning Commission.
Central Park	OS – Open Space	Parks, playgrounds, community centers, and facilities that are publicly owned; vacant land for open space preservation. Public utility facilities are allowed if a special use permit is approved.
Fiesta Meadows Park	OS – Open Space	Parks, playgrounds, community centers and facilities that are publicly owned; vacant land for open space preservation. Public utility facilities are allowed if a special use permit is approved.
Hillsdale High School	R1-B – One Family Dwelling "B"	Include one-family detached dwellings, secondary units under certain provisions, accessory structures, and community care facilities. Minimum parcel size of 6,000 square feet and parcel width of 60 feet. Public utility facilities are allowed if a special use permit is approved.
Hillsdale Shopping Center	C2-2/Q5 – Regional/ Community Commercial, Qualified	Uses include hotels, restaurants, medical clinics, offices, retail uses, and parking facilities. Projects requiring a SPAR may be required to make additional findings related to design and traffic/transit. Public utility and public service uses may also be permitted, subject to approval of a special use permit.
Martin Luther King Park	OS – Open Space	Parks, playgrounds, community centers, and facilities that are publicly owned; vacant land for open space preservation. Public utility facilities are allowed if a special use permit is approved.

TABLE 11-2
Current Zoning
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Parcel	Zoning	Permitted Uses
San Mateo County Expo Center	A - Agricultural	Include all uses commonly classified as agriculture, horticulture, or forestry, including crop and tree farming, and nursery operation; horse racetracks; public parks and recreation areas; golf courses; and public utility facilities.
San Mateo County Hospital	R1-C – One Family Dwelling "C"	Include one-family detached dwellings, secondary units under certain provisions, accessory structures, and community care facilities. Minimum parcel size of 5,000 square feet and parcel width of 50 feet. Public utility facilities are allowed is a special use permit is approved.
Trinta Park	OS – Open Space	Parks, playgrounds, community centers, and facilities that are publicly owned; vacant land for open space preservation. Public utility facilities are allowed if a special use permit is approved.

Source: City of San Mateo, 2015; Title 27–Zoning

11.2.4 Shoreline Park Specific Plan

The *Shoreline Park Specific Plan* (City of San Mateo, 1979) addresses 885 acres around the north end of Marina Lagoon and along the adjacent shoreline, and it provides greater detail than the General Plan regarding policies and requirements for development in this area. The WWTP Site is located in Plan Area 3, Seal Cove. The plan identifies several improvement and recreational opportunities for this area, including preservation of existing natural vegetation, development of bicycle and pedestrian paths, and park improvements for public parks and recreation purposes. Privately owned lands bounded by J. Hart Clinton Drive and Detroit Drive, primarily the Bayfront parcels, are allowed marine commercial, recreational, mini-warehouse, and light industrial uses. Hotel and restaurant uses are not allowed due to proximity to the WWTP.

11.2.5 City of San Mateo Development Permit

Chapter 23.40 of the Municipal Code was adopted in part to protect public and private lands from erosion, earth movement, and flooding; to preserve the natural scenic character of the City; and to maximize visually pleasant relationships with adjacent sites during development activities, including grading and removal of major vegetation. Depending on the quantity of grading, a site development permit is required for site development on private property and may also be used for review of public projects that require a planning application and public review. A permit would include requirements such as slope setback.

11.3 Assessment Methods and Thresholds of Significance

The assessment of potential impacts was based on Appendix G of the CEQA Guidelines. Impacts on land use may occur if the CWP would result in the following:

- Physically divide an established community.
- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the program (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.
- Conflict with any applicable habitat conservation plan or natural community conservation plan.

11.4 Environmental Impacts

Table 11-3 summarizes environmental impacts.

TABLE 11-3
Summary of Land Use Impacts
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Impact	In-System Storage Program	Full Conveyance Program	New Headworks Project	Primary Clarifier Project
Impact 11-1. The CWP would include development that could divide an established community.	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation
Impact 11-2. Implementation of the CWP could conflict with City of San Mateo land use and zoning regulations.	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation
Impact 11-3. Implementation of the CWP would not conflict with habitat or natural conservation plans.	No impact	No impact	No impact	No impact

Impact 11-1. The CWP would include development that could divide an established community.

In-System Storage Program

The existing WWTP presents a partial barrier for residents travelling on foot or by bicycle between the east and west sides of the facility and to the recreation fields and parks adjacent to the WWTP. Currently, pedestrians and bicyclists travel around the WWTP by using Dale Avenue, a small access road west of the facility, Detroit Drive, north of the facility, and Joinville Park Road, east of the facility. Construction for the In-System Storage Program would likely result in the closure of Detroit Drive for approximately 10 years; depending on the final configuration of new WWTP facilities, this section of Detroit Drive may be permanently closed. The access roads on the east and west sides of the existing WWTP may also be temporarily closed by construction. These closures could affect access to other parts of the community and could increase the division between the existing neighborhoods to the east and west of the WWTP Site. Implementation of **Mitigation Measure 11-1 Provide pedestrian and bicycle access around the WWTP Site** would reduce impacts to a less than significant level by providing a clearly marked, safe, and accessible route past the WWTP Site.

Collection system projects for the In-System Storage Program would be located primarily underground, in streets or in dedicated City rights-of-way. The only new permanent aboveground structures associated with collection system projects would be minor modifications of existing pump station appurtenances. The in-system storage basins would be located under parking lots, recreation fields, or parks, and the only aboveground structures would be access hatches and vents. These facilities would not divide an established community. Construction of collection system projects may require short-term closures, typically up to a week or two, of one or two lanes of existing roadways. These closures would not be permanent or result in the division of an established community.

With implementation of **Mitigation Measure 11-1 Provide pedestrian and bicycle access around the WWTP Site**, the potential of the In-System Storage Program to cause impacts from the division of an established community would be less than significant.

Full Conveyance Program

The Full Conveyance Program would include similar facilities in the same locations on the WWTP Site and collection system sites as the In-System Storage Program, except for the in-system storage basins.

Therefore, the same potential impacts would occur, and the same mitigation measures would apply as described for the In-System Storage Program. The only other exception would be the new Dale Avenue Pump Station, which is part of the Full Conveyance Program but not the In-System Storage Program. The new pump station would be constructed on the existing Dale Avenue Pump Station site. Although the site is located in a residential area, it is not publicly accessible and addition of the new pump station to the site would not result in a new division of the neighborhood.

With implementation of **Mitigation Measure 11-1 Provide pedestrian and bicycle access around the WWTP Site**, the potential of the Full Conveyance Program to cause impacts from the division of an established community would be less than significant.

New Headworks Project and Primary Clarifier Project

The New Headworks Project and the Primary Clarifier Project would be constructed on the WWTP Site. Therefore, as described for the In-System Storage Program, closure of Detroit Drive could affect residents' ability to access other parts of the community and could increase the division between the existing neighborhoods to the east and west of the WWTP Site. Implementation of **Mitigation Measure 11-1 Provide pedestrian and bicycle access around the WWTP Site** would reduce impacts to a less than significant level by providing a clearly marked, safe, and accessible route past the WWTP Site.

With implementation of **Mitigation Measure 11-1 Provide pedestrian and bicycle access around the WWTP Site**, the potential for the New Headworks Project and the Primary Clarifier Project to cause impacts from the division of an established community would be less than significant.

Impact 11-2. Implementation of the CWP could conflict with City of San Mateo land use and zoning regulations.

In-System Storage Program

The current land use and zoning designations are listed in Tables 11-1 and 11-2, respectively, for parcels in the Program Area where in-system storage projects may be constructed. As shown in the tables, the current zoning for the Detroit Drive parcel, the Bayfront parcels, and all the potential in-system storage basins, except the County Expo site, does not include public facilities such as wastewater treatment as allowed uses. In all cases, a special use permit approved by the City and subject to certain conditions and findings would be required to construct the facilities at these locations. Implementation of **Mitigation Measure 11-2 Obtain approval for a special use permit for each applicable parcel** would bring the In-System Storage Program into compliance with zoning regulations. The use permit for the existing WWTP facility would also be amended, as needed, for faculties to be located there. In addition, the Planning Commission may conclude during the use permit application process that some parcels would require a change in land use designation for consistency. In particular, the Bayfront parcels and/or the Dale Avenue parcel in the WWTP Site may require a land use change from Regional/Community Commercial and Single-Family Residential, respectively, to Public Facility. As described in **Mitigation Measure 11-2**, this approval would be made by the City Council.

The design of the facilities on the WWTP Site could conflict with general plan design policies, such as LU 4.5: Wastewater Treatment Plant Expansion, and shoreline design-related zoning requirements, such as setbacks and buffers. The potential effects of these conflicts are detailed in Chapter 3, Impact 3-1. With implementation of **Mitigation Measure 3-1 Obtain design review approval**, impacts from conflicts with design-related General Plan policies or zoning requirements would be less than significant.

With implementation of **Mitigation Measure 11-2 Obtain approval for a special use permit for each applicable parcel** and **Mitigation Measure 3-1 Obtain design review approval**, potential impacts of the In-System Storage Program from conflicts with City land use and zoning regulations would be less than significant.

Full Conveyance Program

The Full Conveyance Program would include similar facilities in the same locations on the WWTP Site and collection system sites as the In-System Storage Program, except for the in-system storage basins. Therefore, the same potential impacts for parcels in the WWTP Site would occur, and the same mitigation measures would apply as described for the In-System Storage Program. The only other exception would be the new Dale Avenue Pump Station, which is part of the Full Conveyance Program but not the In-System Storage Program. The new pump station would be constructed on the existing Dale Avenue Pump Station site. The special-use permit for the existing site may need to be modified for the pump station. No conflicts with land use and zoning regulations from the new Dale Avenue Pump Station would occur.

With implementation of **Mitigation Measure 11-2 Obtain approval for a special use permit for each applicable parcel** and **Mitigation Measure 3-1 Obtain design review approval**, potential impacts of the Full Conveyance Program from conflicts with City land use and zoning regulations would be less than significant.

New Headworks Project and Primary Clarifier Project

The New Headworks Project and the Primary Clarifier Project would be constructed on the WWTP Site, likely on the Detroit Drive parcel. As previously described for the In-System Storage Program, the current zoning for the Detroit Drive parcel does not include public facilities, such as headworks and primary clarifiers. A special use permit approved by the City and subject to certain conditions and findings would be required to construct the New Headworks Project and the Primary Clarifier Project on the Detroit Drive parcel. Implementation of **Mitigation Measure 11-2 Obtain approval for a special use permit for each applicable parcel** would bring the New Headworks Project and the Primary Clarifier Project into compliance with zoning regulations. In addition, design of these projects could conflict with General Plan design policies and shoreline design-related zoning requirements. The potential effects of these conflicts are detailed in Chapter 3, Impact 3-1. With implementation of **Mitigation Measure 3-1 Obtain design review approval**, impacts from conflicts with design-related General Plan policies or zoning requirements would be less than significant. With implementation of **Mitigation Measure 11-2 Obtain approval for a special use permit for each applicable parcel** and **Mitigation Measure 3-1 Obtain design review approval**, potential impacts of the New Headworks Project and the Primary Clarifier Project from conflicts with City land use and zoning regulations would be less than significant.

Impact 11-3. Implementation of the CWP would not conflict with habitat or natural conservation plans.

As discussed in Chapter 5, Impact 5-6, the Program Area is not located within the boundary of an adopted habitat conservation plan. Portions of western San Mateo are located within the Recovery Plan for Serpentine Soil Species of the San Francisco Bay Area (City of San Mateo, 2010). However, no collection system projects for either the In-System Storage Program or the Full Conveyance Program would be located on serpentine soils (see Chapter 7) and would, therefore, not be located in the recovery plan area. No conflict with provisions of an adopted habitat conservation plan, natural community conservation plan, or other plan from the In-System Storage Program, Full Conveyance Program, New Headworks Project, or Primary Clarifier Project would occur. No mitigation would be required.

11.5 Mitigation Measures

Mitigation Measure 3-1 Obtain design review approval is described in Chapter 3.

Mitigation Measure 11-1 Provide pedestrian and bicycle access around the WWTP Site.

The City shall identify and establish a pedestrian and bicycle access route around the WWTP Site to allow pedestrians and bicyclists to traverse between residential and recreation uses to the east and west of the WWTP Site. Different routes may be used for temporary access during construction and for permanent access. The route shall meet all applicable health and safety codes and include clear signage to direct users to the route. Route options include a new access trail between the southern wall of the WWTP and Leslie

Creek; a pedestrian/bike bridge over Leslie Creek to connect to existing recreation areas; and a designated pathway from Dale Avenue parcel north on Detroit Drive to Joinville Park Road and south.

Mitigation Measure 11-2 Obtain approval for a special use permit for each applicable parcel.

The City of San Mateo Department of Public Works shall apply for a special use permit prior to approval of any project on a parcel where wastewater collection, pumping, or treatment facilities are not a regularly-permitted use. If appropriate, the WWTP Site shall be addressed as a single special use permit. Permit applications shall be reviewed and approved by the Planning Commission and City Council if all conditions are met.

11.6 References

California Department of Conservation. 2015. Farmland Mapping and Monitoring Program website. http://www.conservation.ca.gov/DLRP/fmmp/Pages/Index.aspx. Accessed October 16.

City of San Mateo. 1971. Shoreline Park Specific Plan. Revised 1979, 1990.

_____. 2004. Measure P Ordinance. General Plan Initiative approved by voters.

_____. 2010. *City of San Mateo General Plan – Vision 2030*. Resolution No. 134-2010. Adopted by the City Council on October 18.

_____. 2015. *San Mateo City Charter and Municipal Code*. Available at http://qcode.us/codes/sanmateo/. Effective as of September 17.

P Potential Construction Parking

Existing WWTP Facility

Bayfront Parcels

Dale Avenue Parcel

Detroit Drive Parcel

0 100 200 400 600

Feet

Figure 11-1
WWTP Site Parcels
Programmatic Environmental Impact Report
City of San Mateo Clean Water Program

Coordinate System: NAD 1983 UTM Zone 10N. Source: Esri Map Services, County of San Mateo

CH2MHILL

Regional Community Commercial
Public Facility
Single Family Residential

0 100 200 400 600
Feet

Figure 11-2
WWTP Site Land Use
Programmatic Environmental Impact Report
City of San Mateo Clean Water Program

Coordinate System: NAD 1983 UTM Zone 10N. Source: Esri Map Services, County of San Mateo

CH2MHILL

Figure 11-3
WWTP Site Zoning
Programmatic Environmental Impact Report
City of San Mateo Clean Water Program

Coordinate System: NAD 1983 UTM Zone 10N. Source: Esri Map Services, County of San Mateo

CH2MHILL

Chapter 12. Noise

This chapter evaluates the potential noise impacts caused by construction and operation of the two CWP alternatives. The chapter summarizes the relevant existing setting and regulatory framework, identifies the thresholds of significance, and identifies impacts and mitigation measures related to potential noise generation.

12.1 Fundamentals of Acoustics

Acoustics is the study of sound, and noise is defined as unwanted sound. Airborne sound is a rapid fluctuation or oscillation of air pressure above and below atmospheric pressure creating a sound wave. Acoustical terms used in this section are summarized in Table 12-1.

TABLE 12-1
Definitions of Acoustical Terms
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Term	Definition
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise or sound at a given location. The ambient noise level is typically defined by the L_{eq} level.
Background Noise Level	The underlying ever-present lower level noise that remains in the absence of intrusive or intermittent sounds. Distant sources, such as traffic, typically make up the background. The background level is generally defined by the L_{90} percentile noise level.
Intrusive	Noise that intrudes over and above the existing ambient noise level at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, time of occurrence, tonal content, the prevailing ambient noise level as well as the sensitivity of the receiver. The intrusive level is generally defined by the L_{10} percentile noise level.
Sound Pressure (Noise) Level Decibel (dB)	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).
A-Weighted Sound Pressure (Noise) Level (dBA)	The sound level in decibels as measured on a sound level meter using the A-weighted filter network. The A-weighted filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. All sound (noise) levels in this report are A-weighted.
Equivalent Noise Level (L_{eq})	The average A-weighted noise level, on an equal energy basis, during the measurement period.
Percentile Noise Level (L_n)	The noise level exceeded during n percent of the measurement period, where n is a number between 0 and 100 (for example, L_{90})
Day-Night Noise Level (L_{dn} or DNL)	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels from 10:00 p.m. to 7:00 a.m.

The most common metric is the overall A-weighted sound level measurement adopted by regulatory bodies worldwide. The A-weighting network measures sound to the way in which a person perceives or hears sound. There is consensus that A-weighting is appropriate for estimating the hazard of noise-induced hearing loss. With respect to other effects, such as annoyance, A-weighting is acceptable if largely if middle- and high-frequency noise is present; however, if the noise is unusually high at low frequencies or contains prominent low-frequency tones, the A-weighting may not give a valid measure.

A-weighted sound levels are typically measured or presented as equivalent noise level (L_{eq}), which is defined as the average noise level, on an equal energy basis for a stated period of time, and is commonly used to measure steady-state sound or noise that is usually dominant. Statistical methods are used to capture the

dynamics of a changing acoustical environment. Statistical measurements are typically denoted by $L_{xx,}$ where xx represents the percentile of time the sound level is exceeded. The L_{90} measurement represents the noise level that is exceeded during 90 percent of the measurement period. Similarly, L_{10} represents the noise level exceeded for 10 percent of the measurement period.

Some metrics used in determining the impact of environmental noise consider the different response that people have to daytime and nighttime noise levels. During the nighttime, exterior background noises are generally lower than the daytime levels. However, most household noise also decreases at night and exterior noise becomes more noticeable. Furthermore, most people sleep at night and are sensitive to intrusive noises. To account for human sensitivity to nighttime noise levels, the day-night sound level (L_{dn} or DNL) was developed. L_{dn} is a noise index that accounts for the greater annoyance of noise during the nighttime hours.

L_{dn} values are calculated by averaging hourly L_{eq} sound levels for a 24-hour period, and apply a weighting factor to nighttime L_{eq} values. The weighting factor, which reflects the increased sensitivity to noise during nighttime hours, is added to each hourly L_{eq} sound level before the 24-hour L_{dn} is calculated. For the purposes of assessing noise, the 24-hour day is divided into two time periods, with the following weightings:

- Daytime: 7:00 a.m. to 10:00 p.m. (15 hours) weighting factor of 0 dB
- Nighttime: 10:00 p.m. to 7:00 a.m. (9 hours) weighting factor of 10 dB

The two time periods are averaged to compute the overall L_{dn} value. For a continuous noise source, the L_{dn} value is easily computed by adding 6.4 dBA to the overall 24-hour noise level (L_{eq}). For example, if the expected continuous noise level from a facility was 60.0 dBA, the resulting L_{dn} from the facility would be 66.4 dBA.

The effects of noise on people can be listed in three general categories:

1. Subjective effects of annoyance, nuisance, and dissatisfaction
2. Interference with activities such as speech, sleep, and learning
3. Physiological effects such as startling and hearing loss

In most cases, environmental noise produces effects in the first two categories only. However, workers in industrial plants may experience noise effects in the third category. No completely satisfactory way exists to measure the subjective effects of noise or to measure the corresponding reactions of annoyance and dissatisfaction. This lack of a common standard is primarily due to the wide variation in individual thresholds of annoyance and habituation to noise. Thus, one way of determining a person's subjective reaction to a new noise is by comparing it to the existing, ambient environment to which that person has adapted. In general, the more the level or the tonal (frequency) variations of a noise exceed the previously existing ambient noise level or tonal quality, the less acceptable the new noise will be, as judged by the exposed individual.

Table 12-2 shows the relative A-weighted noise levels of common sounds measured in the environment and in industry for various sound levels.

TABLE 12-2
Typical Sound Levels Measures in the Environment and Industry
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Noise Source at a Given Distance	A-Weighted Noise Level (dB)	Noise Environments	Subjective Impression
Shotgun (at shooter's ear)	140	Carrier flight deck	Painfully loud
Civil defense siren (at 100 feet)	130		
Jet takeoff (at 200 feet)	120		Threshold of pain
Loud rock music	110	Rock music concert	
Pile driver (at 50 feet)	100		Very loud
Ambulance siren (at 100 feet)	90	Boiler room	
Pneumatic drill (at 50 feet)	80	Noisy restaurant	
Busy traffic; hair dryer	70		Moderately loud
Normal conversation (at 5 feet)	60	Data processing center	
Light traffic (at 100 feet); rainfall	50	Private business office	
Bird calls (distant)	40	Average living room, library	Quiet
Soft whisper (at 5 feet); rustling leaves	30	Quiet bedroom	
	20	Recording studio	
Normal breathing	10		Threshold of hearing

Source: Beranek, 1998.

12.2 Existing Setting

12.2.1 Existing Noise Levels and Sensitive Receptors

The proposed projects in the CWP would be constructed within the City of San Mateo; therefore, existing setting information is presented primarily for the City. In particular, most projects would be constructed within the eastern half of the City (see Figure 2-2 in Chapter 2), referred to as the Program Area, or at the wastewater treatment plant (WWTP) site (see Figure 2-5, also in Chapter 2). The Program Area is located generally in a mix of low-, medium-, and high-density residential neighborhoods and office and commercial centers combined with parks and open spaces. Sensitive resources, such as schools, hospitals, and residences, are located throughout the Program Area (see Chapter 14).

The WWTP Site consists of the existing WWTP, an undeveloped parcel to the north on Detroit Drive, three commercial parcels to the east (the Bayfront parcels), and an undeveloped parcel southwest of the WWTP on Dale Avenue. Sensitive resources near the WWTP Site include the Bayside/Joinville Park, which extends east of the WWTP and contains an off-leash dog walk. Bayside STEM Academy is directly south of the WWTP and Horrall/LEAD Elementary School is west of the WWTP, at the intersection of Dale Drive and Ocean View Avenue. Residential neighborhoods are located west of the existing WWTP, where the nearest residence is approximately 150 feet from the WWTP boundary, and southeast of the WWTP, where the nearest residence is approximately 500 feet from the WWTP boundary. Residences nearest to the Detroit Drive parcel, where new WWTP facilities may be constructed, are 400 feet west of that parcel.

Westerly through northwesterly winds are most common in the area, reflecting the orientation of the Bay and the San Francisco Peninsula.

Noise exposure in the City can be described as follows (City of San Mateo, 2009):

> *"...[noise] is dominated by traffic on highways and major arterial roads and trains on the Southern Pacific (SPRR)/Caltrain rail line. Aircraft activity associated with San Francisco International Airport*

does not significantly affect noise levels in San Mateo, although some neighborhoods in the northeastern portion of the City are impacted by the airport approach path. Localized noise sources include the San Mateo County Fairgrounds, when events are being held. Generally, noise created by manufacturing uses does not have a major impact on the community, although occasional complaints are received from neighbors immediately adjacent to the manufacturing sites."

The City is located outside of the airport's community noise equivalent level 65 dBA noise contour.

Present day traffic volumes and noise levels at 50 feet (L_{dn}, or DNL) are provided in Table 4.6-1 of the General Plan EIR. Major streets located in the Program Area and their current L_{dn} include:

- El Camino Real between approximately 2nd Avenue and 42nd Avenue – L_{dn} at 50 feet ranges from 68.8 to 70.6 dB
- Delaware Street between approximately Poplar Street and Saratoga Avenue – L_{dn} at 50 feet ranges from 61.2 to 65.3 dB
- Third Avenue between approximately Mariners Island Boulevard and El Camino Real – L_{dn} at 50 feet ranges from 62.7 to 68.4 dB
- 42nd Avenue west of El Camino Real – L_{dn} at 50 feet of 63.4 dB
- Hillsdale Boulevard between approximately Norfolk Street and Campus Drive – L_{dn} at 50 feet ranges from 66.5 to 71 dB
- US-101 through all of San Mateo (with 10-foot tall sound walls) – L_{dn} at 50 feet of 84.9 dB
- State Route 92 (SR-92) between approximately the San Mateo Bridge to Ralston – L_{dn} at 50 feet ranges from 81.1 to 83.3 dB

Existing noise contours in the City are shown on Figure 4.6-2 in the General Plan EIR. The majority of the Program Area is located within the 60 to 64 dBA and the 65 to 69 dBA contours. The WWTP Site, including the existing WWTP, is located in the less than 60 dBA contour, though the nearby J. Hart Clinton Drive is located within the 60 to 64 dBA contour.

12.3 Regulatory Framework

The following sections describe the federal, state, and local noise regulations applicable to the CWP.

12.3.1 Federal Regulations

12.3.1.1 U.S. Environmental Protection Agency

EPA guidelines (1974) assist state and local governments in developing state and local laws, ordinances, regulations, and standards for noise. Because local regulations apply to the CWP, the EPA guidelines are not applicable.

12.3.1.2 Occupational Safety and Health Administration

On-site and occupational noise levels are regulated through the OSHA. The noise exposure level of workers is regulated at 90 dBA over an 8-hour work shift to protect hearing (29 Code of Federal Regulations 1910.95). On-site noise levels will generally range from 70 to 85 dBA. Areas where noise levels exceed 85 dBA will be posted as high-noise level areas, and hearing protection will be required when entering or working in those areas. The CWP will implement a hearing conservation program for applicable employees and maintain exposure levels below 90 dBA.

12.3.2 State Regulations

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

The California Department of Industrial Relations, Division of Occupational Safety and Health (also known as Cal/OSHA) enforces state noise regulations that are the same as the federal OSHA regulations described previously. Agency regulations are contained in the California Code of Regulations, Title 8, General Industrial Safety Orders, Article 105, Control of Noise Exposure, Sections 5095, et seq.

12.3.2.2 California Vehicle Code

Noise limits for highway vehicles are regulated under the California Vehicle Code, Sections 23130 and 23130.5. The limits are enforceable on the highways by the California Highway Patrol and county sheriff offices.

12.3.3 Local Regulations

12.3.3.1 General Plan

The Noise Element in the *City of San Mateo General Plan – Vision 2030* (General Plan) (City of San Mateo, 2010) establishes goals, objectives, and policies that address how potential noise effects are evaluated within the City's jurisdiction. The City established land use compatibility guidelines for various land uses in Tables N-1 and N-2 of the General Plan; these are summarized in Table 12-3.

TABLE 12-3
City of San Mateo Noise Sensitive Land Use Compatibility Guidelines for Community Noise Environments
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Land Use Category	Normally Acceptable Sound Level	Conditionally Acceptable Sound Level	Normally Unacceptable Sound Level
Single-family Residential	50 to 59	60 to 70	Greater than 70
Multi-family Residential	50 to 59	60 to 70	Greater than 70
Hotels, Motels and Other Lodging Houses	50 to 59	60 to 70	Greater than 70
Long-term Care Facilities	50 to 59	60 to 70	Greater than 70
Hospitals	50 to 59	60 to 70	Greater than 70
Schools	50 to 59	60 to 70	Greater than 70
Multi-family common open space intended for the use and enjoyment of residents	50 to 67	---	Greater than 67
Parks and Playgrounds	50 to 65	---	Greater than 65

Sound levels are shown in Ldn, decibels except for Parks and Playgrounds, which is shown in Leq, decibels.

The following noise policies are excerpted from the General Plan:

> *N 1.1: Interior Noise Level Standard. Require submittal of an acoustical analysis and interior noise insulation for all "noise sensitive" land uses listed in Table N-1 that have an exterior noise level of 60 dBA (L_{dn}) or above, as shown on Figure N-1. The maximum interior noise level shall not exceed 45 dBA (L_{dn}) in any habitable rooms.*
>
> *N 1.2: Exterior Noise Level Standard. Require an acoustical analysis for new parks, play areas, and multi-family common open space (intended for the use and the enjoyment of residents) that have an exterior noise level of 60 dBA (L_{dn}) or above, as shown on Figure N-1. Require an acoustical analysis that uses peak hour L_{eq} for new parks and play areas. Require a feasibility analysis of noise reduction measures for public parks and play areas. Incorporate necessary mitigation measures into residential project design to minimize common open space noise levels. Maximum exterior noise should not*

exceed 67 dBA (L_{dn}) for residential uses and should not exceed 65 dBA (L_{eq}) during the noisiest hour for public park uses.

N 2.1: Noise Ordinance. Continue implementation and enforcement of the City's existing noise control ordinance: a) which prohibits noise that is annoying or injurious to neighbors of normal sensitivity, making such activity a public nuisance, and b) restricts the hours of construction to minimize noise impact.

N 2.2: Minimize Noise Impact. Protect all "noise-sensitive" land uses listed in Tables N-1 and N-2 from adverse impacts caused by the noise generated on-site by new developments. Incorporate necessary mitigation measures into development design to minimize noise impacts. Prohibit long-term exposure increases of 3 dBA (L_{dn}) or greater at the common property line, or new uses which generate noise levels of 60 dBA (L_{dn}) or greater at the property line, excluding existing ambient noise levels.

N 2.3: Minimize Commercial Noise. Protect land uses other than those listed as "noise sensitive" in Table N-1 from adverse impacts caused by the on-site noise generated by new developments. Incorporate necessary mitigation measures into development design to minimize noise impacts. Prohibit new uses that generate noise levels of 65 dBA (L_{dn}).

12.3.3.2 San Mateo Municipal Code

Chapter 7.30 of the *San Mateo City Charter and Municipal Code* (Municipal Code) (City of San Mateo, 2015) establishes maximum permissible noise levels for various noise zones and land uses. The noise zones and the maximum permissible noise levels are shown in Table 12-4.

TABLE 12-4
San Mateo Municipal Code Maximum Permissible Noise Levels
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Noise Zone	Description	Time Period	Noise Level (dB)
1	All property in any single family residential zone (including adjacent parks and open space) as designated on the City's zoning map prepared pursuant to the provisions of Title 27, or any revisions thereto.	10:00 p.m. to 7:00 a.m. 7:00 a.m. to 10:00 p.m.	50 60
2	All property in any commercial/mixed residential, multi-family residential, specific plan district, or public utility district as designated.	10:00 p.m. to 7:00 a.m. 7:00 a.m. to 10:00 p.m.	55 60
3	All property in any commercial or central business district as designated on the City's zoning map prepared pursuant to the provisions of Title 27, or any revisions thereto.	10:00 p.m. to 7:00 a.m. 7:00 a.m. to 10:00 p.m.	60 65
4	All property in any manufacturing or industrial zone as designated on the City's zoning map prepared pursuant to the provisions of Title 27, or any revisions thereto.	Anytime	70

Source: City of San Mateo, 2015.

In addition, Chapter 7.30 of the Municipal Code states it is unlawful for any person to operate or cause to be operated any source of sound at any location within the City or allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, which causes the noise level when measured on any other property to exceed:

- The noise level standard for that property as specified in above for a cumulative period of more than 30 minutes in any hour
- The noise level standard plus 5 dBA for a cumulative period of more than 15 minutes in any hour
- The noise level standard plus 10 dBA for a cumulative period of more than 5 minutes in any hour

- The noise level standard plus 15 dBA for a cumulative period of more than 1 minute in any hour
- The noise level standard or the maximum measured ambient noise level, plus 20 dBA for any period of time

If the measured ambient noise level for any area is higher than the standard established above, then the ambient noise level shall be the base noise level standard. In such cases, the noise levels shall be increased in 5-dBA increments above the ambient noise level.

The Municipal Code states that utility and street repairs, street sweepers, garbage services, emergency response warning noises, emergency generators and fire alarm systems are exempt from this chapter. The Municipal Code also notes that construction, alteration, repair or land development activities that are authorized by a valid City permit shall be allowed on weekdays between 7 a.m. and 7 p.m., on Saturdays between 9 a.m. and 5 p.m., and on Sundays and holidays between 12 p.m. and 4 p.m., or at such other hours as may be authorized or restricted by the permit, if they meet at least one of the following noise limitations:

- No individual piece of equipment shall produce a noise level exceeding 90 dBA at a distance of 25 feet. If the device is housed within a structure or trailer on the property, the measurement shall be made outside the structure at a distance as close to 25 feet from the equipment if possible.
- The noise level at any point outside of the property plane of the project shall not exceed 90 dBA.
- The operation of leaf blowers shall additionally comply with Chapter 10.80 in the Municipal Code (City of San Mateo, 2015).

In addition, Section 7.30.070 of the Municipal Code allows exceptions if the applicant can show to the city manager, or the manager's designee, that a diligent investigation of available noise abatement techniques indicates that immediate compliance with the requirements would be impractical or unreasonable. A permit to allow exception from the provisions may be issued, with appropriate conditions to minimize the public detriment caused by such exceptions. The duration of the permit will be as short as possible, but in no case for longer than 6 months. These permits are renewable upon showing good cause, and shall be conditioned by a schedule for compliance and details of compliance methods in appropriate cases.

Chapter 23.06 Administrative Code of the Municipal Code identifies the conditions under which construction work outside of regularly allowed hours may occur (City of San Mateo, 2015). Specifically, the Code states:

> As a condition of approval of a planning application issued pursuant to Title 26 and Title 27 of this code, a condition may be established which authorizes an exemption from the hours of work designated in Section 23.06.060 if the Building Official finds that:
>
> (a) The following criteria are met:
>
> (1) Permitting extended hours of construction will decrease the total time needed to complete the project thus mitigating the total amount of noise associated with the project as a whole; or
>
> (2) An emergency situation exists where the construction is necessary to correct an unsafe or dangerous condition resulting in obvious and eminent peril to public health and safety. If such a condition exists, the City may waive any of the remaining requirements outlined below.
>
> (b) The exemption will not conflict with any other conditions of approval required by the City to mitigate significant impacts.
>
> (c) The contractor or owner of the property will notify residential and commercial occupants of property adjacent to the construction site of the hours of construction activity which may

impact the area. This notification must be provided three days prior to the start of the construction activity.

(d) The approved hours of construction activity will be posted at the construction site in a place and manner that can be easily viewed by an interested member of the public.

(e) The Building Official may revoke the exemption at any time if the contractor or owner of the property fails to abide by the conditions of the exemption or if it is determined that the peace, comfort and tranquility of the occupants of adjacent residential or commercial properties are impaired because of the location and nature of the construction.

A Waiver of Work Hours application can be submitted for staff approval for nighttime work. A letter of notification must be sent to the residents in the surrounding neighborhood (Kenyon, 2015).

12.4 Assessment Methods and Thresholds of Significance

The analysis of impacts was based on noise levels of typical construction equipment and treatment plant facilities. One of the more recent and complete compilations of construction equipment noise is the Roadway Construction Noise Model prepared by the Federal Highway Administration (FHWA). The *Roadway Construction Noise Model User's Guide* (RCNM User Guide) (FHWA, 2006) is one of the most comprehensive construction noise databases ever developed in the United States, and the expected equipment noise levels listed in it are used for this evaluation. Given the linear nature of highway and pipeline construction, the method developed by FHWA can be reasonably applied to pipeline construction activities.

Equipment noise levels from Table 1 in the RCNM User Guide are shown in Table 12-5. All listed noise levels are maximum A-weighted sound pressure levels at a reference distance of 50 feet. The acoustical usage factor is the fraction of time that the equipment generates noise at the maximum level. The model calculates the total noise level at the receptor by determining the noise from each piece of equipment, taking into account the reduction of noise with distance due to geometric divergence, and logarithmically adding the contribution of each piece of equipment to get the total noise anticipated from all of the construction equipment. Geometric divergence is the primary mechanism of noise reduction close to a noise source. At farther distances, additional attenuation (e.g., ground effects and atmospheric attenuation) can be significant. This excess attenuation is not accounted for in the model; therefore, the model output should be considered conservatively high.

TABLE 12-5
Construction Equipment Noise Levels from the RCNM User Guide
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Equipment Description	Acoustical Usage Factor (%)	Specified L_{max} at 50 feet (dBA)	Actual Measured L_{max} at 50 feet (dBA)	Number of Actual Data Samples
All Other Equipment Greater than 5 Horsepower	50	85	N/A	0
Auger Drill Rig	20	85	84	36
Backhoe	40	80	78	372
Bar Bender	20	80	N/A	0
Blasting	N/A	94	N/A	0
Boring Jack Power Unit	50	80	83	1
Chain Saw	20	85	84	46
Clam Shovel (dropping)	20	93	87	4
Compactor (ground)	20	80	83	57
Compressor (air)	40	80	78	18

TABLE 12-5

Construction Equipment Noise Levels from the RCNM User Guide

Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Equipment Description	Acoustical Usage Factor (%)	Specified L_{max} at 50 feet (dBA)	Actual Measured L_{max} at 50 feet (dBA)	Number of Actual Data Samples
Concrete Batch Plant	15	83	N/A	0
Concrete Mixer Truck	40	85	79	40
Concrete Pump Truck	20	82	81	30
Concrete Saw	20	90	90	55
Crane	16	85	81	405
Dozer	40	85	82	55
Drill Rig Truck	20	84	79	22
Drum Mixer	50	80	80	1
Dump Truck	40	84	76	31
Excavator	40	85	81	170
Flat Bed Truck	40	84	74	4
Front End Loader	40	80	79	96
Generator	50	82	81	19
Generator (less than 25 kilovolt-amperes, VMS signs)	50	70	73	74
Gradall	40	85	83	70
Grader	40	85	N/A	0
Grapple (on backhoe)	40	85	87	1
Horizontal Boring Hydraulic Jack	25	80	82	6
Hydra Break Ram	10	90	N/A	0
Impact Pile Driver	20	95	101	11
Jackhammer	20	85	89	133
Man Lift	20	85	75	23
Mounted Impact Hammer (hoe ram)	20	90	90	212
Pavement Scarafier	20	85	90	2
Paver	50	85	77	9
Pickup Truck	40	55	75	1
Pneumatic Tools	50	85	85	90
Pumps	50	77	81	17
Refrigerator Unit	100	82	73	3
Rivet Buster/chipping gun	20	85	79	19
Rock Drill	20	85	81	3
Roller	20	85	80	16
Sand Blasting (single nozzle)	20	85	96	9

TABLE 12-5
Construction Equipment Noise Levels from the RCNM User Guide
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Equipment Description	Acoustical Usage Factor (%)	Specified L_{max} at 50 feet (dBA)	Actual Measured L_{max} at 50 feet (dBA)	Number of Actual Data Samples
Scraper	40	85	84	12
Shears (on backhoe)	40	85	96	5
Slurry Plant	100	78	78	1
Slurry Trenching Machine	50	82	80	75
Soil Mix Drill Rig	50	80	N/A	0
Tractor	40	84	N/A	0
Vacuum Excavator (vac-truck)	40	85	85	149
Vacuum Street Sweeper	10	80	82	19
Ventilation Fan	100	85	79	13
Vibrating Hopper	50	85	87	1
Vibratory Concrete Mixer	20	80	80	1
Vibratory Pile Driver	20	95	101	44
Warning Horn	5	85	83	12
Welder/Torch	40	73	74	5

Source: FHWA, 2006.
N/A = not applicable

As described in the RCNM User Guide, the average noise level from each piece of equipment is determined by the following formula for geometric spreading:

Reference Noise Level – 20*log(distance to receptor/50) + 10*log(usage factor %/100)

The total noise level is determined in the model adding of the decibel contribution for each piece of equipment. Additional details are provided in the RCNM User Guide.

Review of the table of construction equipment noise levels indicates that the loudest equipment generally emits noise in the range of 80 to 90 dBA at 50 feet. Noise at any specific receptor is dominated by the closest and loudest equipment. The types and numbers of construction equipment near any specific receptor location will vary over time. At this time, the specific types and relative locations of construction equipment are not precisely known. The construction noise estimate was based on conservative assumptions of multiple pieces of loud equipment operating close to each other. This is believed to be a conservative, yet realistic, scenario. Assumptions include the following:

- One piece of equipment generating a reference noise level of 85 dBA at 50 feet with a 40 percent usage factor located at the edge of the construction area
- Two pieces of equipment generating reference 85-dBA noise levels located 50 feet farther away from the edge of construction
- Two more pieces of equipment generating reference 85-dBA noise levels located 100 feet farther away the edge of construction

Average construction equipment noise levels at various distances, based on this scenario, are presented in Table 12-6. This extrapolation likely overstates noise impacts because it only considers geometric spreading and does not account for atmospheric absorption, ground effects, or other noise attenuation mechanisms.

TABLE 12-6
Construction Equipment Noise Levels versus Distance
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Distance from Construction Boundary (feet)	L_{eq} Noise Level (dBA)
50	83
100	79
200	74
400	69
800	63
1,600	58

Sound barriers are a common noise minimization measure that may be implemented to address construction or operational noise concerns. Noise walls interrupt noise propagation and create an "acoustic shadow zone." The sound pressure level is lower in the shadow zone than in the respective unobstructed free field. Permanent noise barriers typically consist of earthen berms, freestanding walls (usually concrete), a combination of berms and walls, or pre-engineered panels. The effectiveness of these barriers depends on two primary design features:

1. The barrier must be high enough to break the line of sight between the observer and the noise source and long enough to prevent noise leaks around the ends.
2. Noise must not be transmitted through the barrier.

The effectiveness of a noise barrier is quantified by its field insertion loss, which is the difference in the noise levels at the same location before and after the barrier is constructed.

Plywood walls, mass-loaded vinyl (vinyl impregnated with metal), and hay bales have been used to create temporary walls around noisy equipment or site perimeters. The barrier should be tall enough to block the line of sight to the noise-generating portion of project area. For most diesel-powered equipment, the wall would have to be tall enough to block the line of sight to the engine exhaust. A barrier wall constructed of ¾-inch plywood that minimizes open spaces (gaps) may achieve a 5- to 10-dBA reduction; a practical limit of barrier effectiveness is typically 20 dBA.

12.4.1 Thresholds of Significance

The CWP would cause a significant impact related to noise if it would result in the following:

- Exposure of persons to or generation of noise levels in excess of standards established in the General Plan or noise ordinance, or applicable standards of other agencies.
- Exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels.
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

- For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, the project would expose people residing or working in the project area to excessive noise levels.
- For a project within the vicinity of a private airstrip, the project would expose people residing or working in the project area to excessive noise levels.

12.5 Environmental Impacts

The Program Area is not located within an airport land use plan area, within 2 miles of a public airport or private airstrip. Therefore, noise impacts related to airports are not discussed further. Table 12-7 summarizes noise impacts from the CWP.

TABLE 12-7
Summary of Noise Impacts
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Impact	In-System Storage Program	Full Conveyance Program	New Headworks Project	Primary Clarifier Project
Impact 12-1. Construction of the CWP could result in generation of noise levels in excess of standards.	Significant and unavoidable impact	Significant and unavoidable impact	Significant and unavoidable impact	Significant and unavoidable impact
Impact 12-2. Operation of the CWP could result in a substantial temporary or permanent increase in ambient noise levels in the project vicinity above levels existing without the CWP.	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation
Impact 12-3. Implementation of the CWP could generate perceptible offsite vibration.	Significant and unavoidable impact	Significant and unavoidable impact	Significant and unavoidable impact	Significant and unavoidable impact

Impact 12-1. Construction of the CWP could result in generation of noise levels in excess of standards.

In-System Storage Program

For temporary construction activities, the Municipal Code provides higher sound levels when authorized by a City permit and in compliance with Chapter 7.30 of the San Mateo Municipal Code.

Collection System Projects

Construction activities related to pipeline repair, upgrades, replacements, and new pipes would occur throughout the duration of the CWP and throughout the Program Area. As previously discussed, Section 7.30 of the Municipal Code states that utility repairs are exempt from the noise standards.

For individual pipeline projects involving replacement or new pipeline construction, the construction duration would be approximately 3 to 5 days for a 500-foot segment. Therefore, the period of greatest potential noise generation from pipeline replacement or new pipeline construction in any one area would be limited in duration. Major construction activities that may generate substantial noise would be expected to be 1 to 4 months in duration for major pump station improvements and up to 6 months for in-system equalization basin construction. The construction schedule for collection system projects would comply with the days and hours set forth in the Municipal Code.

The Municipal Code states that the noise level at any point outside of the property plane of the project shall not exceed 90 dBA. As shown in Table 12-6, the average construction equipment noise level would be approximately 83 dBA at 50 feet. Many of the typical pieces of construction equipment listed in Table 12-5 have individual measured noise levels at 50 feet up to 83 dBA. The Noise Element of the General Plan (City

of San Mateo, 2010) notes that doubling of the distance from a fixed noise source results in a 6 dBA decrease in noise level. Therefore, the average construction equipment noise level and the noise level for many individual pieces of construction equipment at 25 feet would be approximately 89 dBA, below the 90 dBA threshold. Most construction would be taking place more than 25 feet from the property plane. However, if individual construction equipment such as jackhammers, clam shovels, or auger drill rigs that could generate noise at 84 dBA or higher at 50 feet (see Table 12-5) are used, the equipment could exceed the 90 dBA limit if used close to the property plane. This is a potentially significant impact. Implementation of **Mitigation Measure 12-1a Develop and implement construction noise minimization measures**, **Mitigation Measure 12-1b Operate a construction noise hot line**, and **Mitigation Measure 12-1c Resolve construction noise complaints** would help minimize construction noise impacts from collection system construction projects. However, on occasion individual equipment noise may still exceed 90 dBA at the property plane, even with mitigation implemented. Impacts from construction would be significant and unavoidable, depending on the equipment type and location used.

Wastewater Treatment Plant Projects

Construction of treatment plant facilities is expected to generally be similar to other industrial projects in terms of the equipment used and types of activities; typical construction equipment is listed in Table 12-5. Noise levels will vary during the construction period, depending on the construction phase. Construction of industrial facilities can generally be divided into five phases that use different types of construction equipment: (1) site preparation and excavation; (2) concrete pouring; (3) steel erection; (4) mechanical installation; and (5) cleanup (Miller et al., 1978).

Average or equivalent construction noise levels projected at various distances from the site are presented in Table 12-8. These results are representative of long-term averages; instantaneous levels could be higher or lower, depending on the specific activity. Most new wastewater treatment facilities would need to be constructed on piles, because of the soil conditions at the WWTP Site. As listed in Table 12-5, pile drivers could have a measured noise level of 101 dBA at 50 feet or 107 dBA at 25 feet. The pile drivers and other equipment could exceed 90 dBA at the property plane, depending on location used. This is a potentially significant impact for the In-System Storage Program. Implementation of **Mitigation Measure 12-1a Develop and implement construction noise minimization measures**, **Mitigation Measure 12-1b Operate construction noise hot line**, and **Mitigation Measure 12-1c** Resolve **construction noise complaints** would help minimize noise impacts from wastewater treatment construction projects. However, individual equipment noise may still exceed 90 dBA at the property plane, even with mitigation incorporated. In addition, nighttime construction would be performed occasionally, when WWTP operations must be taken offline for several hours, as allowed through an hours of work exemption. Impacts from construction would be significant and unavoidable.

TABLE 12-8
Average Construction Noise Levels at Various Distances
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Construction Phase	Noise Level (dBA)		
	At 375 feet	At 1,500 feet	At 3,000 feet
Demolition, Site Clearing, and Excavation	71	59	53
Concrete Pouring	60	48	42
Steel Erection	69	57	51
Mechanical	69	57	51
Cleanup	71	59	53

Source: Barnes et al. (1976)

Full Conveyance Program

The construction noise impacts of the Full Conveyance Program would be the same as described for the In-System Storage Program. Potentially significant construction impacts could occur from use of construction equipment that exceeds 90 dBA at the property plane. Implementation of **Mitigation Measure 12-1a Develop and implement construction noise minimization measures**, **Mitigation Measure 12-1b Operate a construction noise hot line**, and **Mitigation Measure 12-1c Resolve construction noise complaints** would help minimize noise impacts from collection system and wastewater treatment construction projects. However, individual equipment noise may still exceed 90 dBA at the property plane, even with mitigation incorporated. In addition, nighttime construction would be required occasionally, when WWTP operations must be taken offline for several hours. Construction noise impacts of the Full Conveyance Program would be significant and unavoidable.

New Headworks Project and Primary Clarifier Project

The impacts of the New Headworks Project and Primary Clarifier Project would be the same as described for the In-System Storage Program. Potentially significant construction impacts could occur from use of construction equipment that exceeds 90 dBA at the property plane. Implementation of **Mitigation Measure 12-1a Develop and implement construction noise minimization measures**, **Mitigation Measure 12-1b Operate a construction noise hot line**, and **Mitigation Measure 12-1c Resolve construction noise complaints** would help minimize noise impacts from project construction. However, individual equipment noise may still exceed 90 dBA at the property plane, even with mitigation incorporated. In addition, nighttime construction would be required occasionally, when WWTP operations must be taken offline for several hours. Construction noise impacts from the New Headworks Project and Primary Clarifier Project would be significant and unavoidable.

Impact 12-2. Operation of the CWP could result in a substantial temporary or permanent increase in ambient noise levels in the project vicinity above levels existing without the CWP.

In-System Storage Program

The General Plan defines a substantial or significant increase as an increase in the existing L_{dn} of at least 3 dBA at noise sensitive receivers such as residences, hotels/motels/lodging, long-term care facilities, hospitals, schools, and multifamily common open-space areas (see Figure 14-2). A project would also be considered to a have a significant impact if it generates noise levels above an L_{dn} of 60 dBA at noise-sensitive receivers and above L_{dn} 65 dBA in commercial areas.

Short-term operational and maintenance activities may result in a temporary increase in noise levels, but such levels are not anticipated to exceed current noise levels from operations and maintenance. In addition, the new infrastructure would be in better condition and require less maintenance than existing infrastructure, reducing the amount of maintenance required.

Pump station projects include replacing existing pumps with larger pumps or installing new pumps, which could increase the level of noise generated by the pumps. However, the pumps would be located underground, and changes in noise levels would not be expected to be discernible at the ground surface. The in-system storage basin would include new pumps to empty the basin after use; these pumps would be underground and their noise would not be expected to be discernible at the ground surface. In addition, the in-system storage basin pumps would typically be used only a few times each year.

Off-site operational sound levels are anticipated to be less than existing operational noise levels. The new WWTP facilities would be located farther from sensitive receptors than the existing facilities they would replace and could reduce noise levels compared to existing conditions. No substantial permanent increase in ambient noise levels from implementation of the In-System Storage Program would be expected. Implementation of **Mitigation Measure 12-2 Incorporate noise minimization in WWTP facility design** would further reduce any noise generated.

Full Conveyance Program

The operational noise impacts of the Full Conveyance Program would be the same as described for the In-System Storage Program. Short-term operational and maintenance activities may result in a temporary increase in noise levels, but the levels are not anticipated to exceed current noise levels from operations and maintenance. In addition, the new infrastructure would be in better condition and require less maintenance than existing infrastructure, reducing the amount of maintenance required.

Pump station projects include (1) replacing existing pumps with larger pumps or installing new pumps, which could increase the level of noise generated by the pumps, and (2) the new Dale Avenue Pump Station, which would include new pumps. However, the pumps would be located underground, and changes in noise levels would not be expected to be discernible at the ground surface.

Offsite operational sound levels are anticipated to be less than existing operational noise levels. The new WWTP facilities would be located farther from sensitive receptors than the existing facilities they would replace. The newer equipment would require less maintenance, operate more efficiently, and be enclosed in upgraded buildings, all contributing to reducing noise levels compared to existing conditions. No substantial permanent increase in ambient noise levels from implementation of the Full Conveyance Program would be expected. Implementation of **Mitigation Measure 12-2 Incorporate noise minimization in WWTP facility design** would reduce any noise generated.

New Headworks Project and Primary Clarifier Project

The operational noise impacts of the New Headworks Project and Primary Clarifier Project would be the same as described for operations of the WWTP for the In-System Storage Program. Offsite operational sound levels are anticipated to be less than existing operational noise levels. The new facilities would be located on Detroit Drive, farther from sensitive receptors than the existing facilities they would replace. The newer equipment would require less maintenance and operate more efficiently, contributing to reduced noise levels compared to existing conditions. No substantial permanent increase in ambient noise levels from implementation of the New Headworks or the Primary Clarifier Project would be expected. Implementation of **Mitigation Measure 12-2 Incorporate noise minimization in WWTP facility design** would further reduce any noise generated.

Impact 12-3. Implementation of the CWP could generate perceptible offsite vibration.

In-System Storage Program

Construction of pipeline projects in roadways or construction of in-system storage basins could be 50 to 100 feet from residences, potentially creating perceptible vibration. Construction of the In-System Storage Program would entail pile driving, primarily at the WWTP Site, which could create perceptible offsite vibration. Depending on the nature of activity and the type and proximity to structures, various vibration criteria, such as Federal Transit Administration criteria, could be exceeded. Implementation of **Mitigation Measure 12-3 Incorporate vibration issues into project construction** would reduce the effects of offsite vibration. However, depending on type, location, and duration of the construction activity, vibration impacts may still exceed applicable criteria; impacts from construction may be significant and unavoidable.

The equipment that would be used in the In-System Storage Program would be well balanced and designed to produce very low vibration levels throughout the life of the facilities. In addition, the new WWTP facilities would be located farther from sensitive receptors than the existing facilities they would replace. No operational vibration impacts would be expected.

Full Conveyance Program

Construction of pipeline projects in roadways or construction of the new Dale Avenue Pump Station could be 50 to 100 feet from residences, potentially creating perceptible vibration. Construction of the Full Conveyance Program would entail pile driving, primarily at the WWTP Site, which could create perceptible offsite vibration. Depending on the nature of activity and the type and proximity to structures, various

vibration criteria, such as Federal Transit Administration criteria, could be exceeded. Implementation of **Mitigation Measure 12-3 Incorporate vibration issues into project construction** would reduce the effects of offsite vibration. However, depending on type, location, and duration of the construction activity, vibration impacts may still exceed applicable criteria; impacts from construction may be significant and unavoidable.

The equipment that would be used in the Full Conveyance Program would be well balanced and designed to produce very low vibration levels throughout the life of the facilities. In addition, the new WWTP facilities would be located farther from sensitive receptors than the existing facilities they would replace. No operational vibration impacts would be expected.

New Headworks Project and Primary Clarifier Project

Construction of the New Headworks Project and Primary Clarifier Project would entail pile driving, which could create perceptible offsite vibration. Depending on the nature of activity and the type and proximity to structures, various vibration criteria, such as Federal Transit Administration criteria, could be exceeded. Implementation of **Mitigation Measure 12-3 Incorporate vibration issues into project construction** would reduce the effects of offsite vibration. However, depending on type, location, and duration of the construction activity, vibration impacts may still exceed applicable criteria; impacts from construction may be significant and unavoidable.

The equipment that would be used in the New Headworks Project and Primary Clarifier Project would be well balanced and designed to produce very low vibration levels throughout the life of the facilities. In addition, the new WWTP facilities would be located farther from sensitive receptors than the existing facilities they would replace. No operational vibration impacts would be expected.

12.6 Mitigation Measures

Mitigation Measure 12-1a. Develop and implement construction noise minimization measures. General noise minimization measures available to reduce sound levels from construction activities include but are not limited to the following:

- Specify general construction noise mitigation measures that require the contractor to use equipment that is in good working order, adequately muffled, and maintained in accordance with the manufacturers' recommendations.
- Use semi-permanent stationary equipment (e.g., generators and lights) with "quiet" packages (as available) and stationing it as far from sensitive areas as possible.
- During construction, erect temporary barriers using materials such as intermodal containers or frack tanks, plywood walls, mass-loaded vinyl (vinyl impregnated with metal), or hay bales. Barriers shall be erected as close as safely feasible to the noise source. Barriers shall be used when equipment is expected to exceed 90 dBA at the property plane, based on actual measured noise levels for the specific equipment, as cited in *Roadway Construction Noise Model User's Guide* (FHWA, 2006). The barrier shall be designed to provide sufficient attenuation to reduce noise to less than 90 dBA at the property plane, as feasible.

If a diligent investigation of available noise abatement techniques indicates that immediate compliance with the requirements would be impractical or unreasonable, the contractor shall obtain an exceptions permit per Section 7.30.070 of the Municipal Code. The permit shall be issued by the city manager, or the manager's designee, with appropriate conditions to minimize the public detriment caused by such exceptions. The duration of the permit shall be as short as possible, but in no case for longer than 6 months.

Mitigation Measure 12-1b. Operate a construction Noise Hot Line. The City shall establish a telephone number for use by the public to report any significant undesirable noise conditions associated with construction and demolition of CWP projects. If the telephone is not staffed 24 hours per day, the City shall include an automatic answering feature, with date and time stamp recording, to answer calls when the

phone is unattended. This telephone number shall be posted at the project site during construction and demolition so that it is visible to passersby. This telephone number shall be maintained during CWP construction.

Mitigation Measure 12-1c. Resolve construction Noise Complaints. Throughout construction of the CWP, all legitimate project-related noise complaints shall be documented, investigated, evaluated, and resolved as feasible. The City or its authorized agent shall be responsible for the following:

- Use the Noise Complaint Resolution Form typically suggested by the CEC, or a functionally equivalent procedure, to document and respond to each noise complaint.
- Attempt to contact the person(s) making the noise complaint within 24 hours.
- Conduct an investigation to attempt to determine the source of noise related to the complaint.
- If the noise complaint is legitimate, implement feasible measures to reduce the noise.

Mitigation Measure 12-2. Incorporate noise minimization in WWTP facility design. The final WWTP design would implement necessary measures so that noise-generating equipment with appropriate noise-minimization features to comply with applicable requirements. Potential noise design measures include but are not limited barriers, enclosures, vibration isolation, and quieter equipment specifications. Final design shall include noise minimization measures to limit sound levels attributable to each project to an increase in existing L_{dn} of less than 3 dBA or L_{dn} of 60 dBA at noise-sensitive receivers and less than L_{dn} 65 dBA in commercial areas.

Mitigation Measure 12-3. Incorporate vibration issues into project construction. As part of the final design effort, the potential for construction activities to result in excess vibration shall be assessed and site specific minimization measures for each CWP project implemented as necessary.

12.7 References

Barnes, J.D., L.N. Miller, and E.W. Wood. 1976. *Prediction of Noise from Power Plant Construction.* Bolt Beranek and Newman, Inc. Cambridge, MA. Prepared for Empire State Electric Energy Research Corporation, Schenectady, NY.

Beranek, L.L. 1998. *Noise and Vibration Control.* Institute of Noise Control Engineering. McGraw Hill.

City of San Mateo. 2009. *Draft Environmental Impact Report for the City of San Mateo General Plan Update*. July 27.

_____. 2010. *City of San Mateo General Plan – Vision 2030*. Resolution No. 134-2010. Adopted by the City Council on October 18.

_____. 2015. *San Mateo City Charter and Municipal Code*. Available at http://qcode.us/codes/sanmateo/. Effective as of September 17.

Federal Highway Administration (FHWA). 2006. *Roadway Construction Noise Model User's Guide.* FHWA-HEP-05-054, DOT-VNTSC-FHWA-05-01. January.

Kenyon, Michelle (Construction Inspector, City of San Mateo Public Works). 2015. Personal Communication with Andrea Gardner, CH2M HILL. October 14.

Miller, L.N., E.W. Wood, R.M. Hoover, A.R. Thompson, S.L. Thompson, and S.L. Paterson. 1978. *Electric Power Plant Environmental Noise Guide*, Vol. 1. Bolt Beranek & Newman, Inc. (publisher), Cambridge, MA. Prepared for Edison Electric Institute, New York.

U.S. Environmental Protection Agency (EPA). 1974. *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*. EPA-550/9-74-004. March.

Chapter 13. Population and Housing

This chapter describes the setting and the potential population and housing impacts of the CWP. It describes existing conditions related to population and housing and associated regulatory frameworks. The potential impacts are analyzed and mitigation measures are proposed, as needed.

13.1 Existing Setting

The San Mateo WWTP service area encompasses the City of San Mateo, the Foster City and Estero Municipal Improvement District (EMID), the Town of Hillsborough (Hillsborough), Crystal Springs County Sanitation District (CSCSD), and portions of San Mateo County. The service area is shown on Figure 2-1 in Chapter 2. Because the provision of wastewater services could affect population and housing throughout the service area, the existing setting provides information for each of the local governments in the service area.

13.1.1 City of San Mateo

The City of San Mateo occupies approximately 15.7 square miles (City of San Mateo, 2010a). The City is bordered by San Francisco Bay and urban and suburban development on all sides. Population growth has generally remained slow, mainly due to the lack of vacant land available for development. The General Plan (City of San Mateo, 2009) includes population and household projections through 2030. Growth is expected to continue at a slow rate, from an estimated 2015 population of 108,500 to an estimated 2030 population of 119,800, an increase of approximately 18 percent from 2013. The number of households in 2030 is projected to be 48,570, up from an estimated total of 43,260 households in 2015 (City of San Mateo, 2009). The population and housing increases would be a result of increased infill development and the development of Bay Meadows Phase 2 (City of San Mateo, 2009).

In 2004, the City introduced Voter Initiative Measure P, a reauthorization of Measure H, originally approved by the voters in 1991. The purpose of Measure P was to maintain "the San Mateo General Plan so as to preserve the livability and suburban character of the City of San Mateo by essentially maintaining height limits and densities established by San Mateo voters in 1991, while providing for the level of economic growth projected in the San Mateo General Plan and increasing the City's commitment to providing its fair share of affordable housing." In general, Measure P permits residential development at a range of densities from 9 to 50 units net per acre, with the higher end of the density range to be used only for projects that provide substantial public benefits. Residential development is also allowed in commercial districts. Measure P includes a requirement for inclusionary housing administered by the City's Below Market Rate Housing Program.

13.1.2 City of Foster City and Estero Municipal Improvement District

The EMID encompasses Foster City and a small part of the City of San Mateo. The 2013 population of Foster City was 31,120 (City of Foster City, 2015). For the same year, the number of households was estimated to be 11,971 (U.S. Census Bureau, 2013). Foster City is bordered by San Francisco Bay and the City of San Mateo. The population of Foster City is projected to reach 33,000 by 2030 (City of Foster City, 2015), an increase of approximately 6 percent.

13.1.3 Town of Hillsborough

As of January 2013, the population of Hillsborough was 11,115 (Town of Hillsborough, 2014). The 2030 population is expected to reach approximately 13,000, an increase of approximately 17 percent, though the estimate by the Association of Bay Area Governments on which the town's data is based may be overstated (Town of Hillsborough, 2014). In 2010, Hillsborough contained approximately 3,912 housing units.

13.1.4 San Mateo County and Crystal Springs County Sanitation District

The San Mateo WWTP service area includes a portion of San Mateo County. CSCSD encompasses a developed residential area in unincorporated San Mateo County bounded approximately by Interstate 280,

State Route 92 (SR-92), Crystal Springs Road, and Parrott Drive (County of San Mateo, 1999) (see Figure 2-1 in Chapter 2). CSCSD is located within the San Mateo Highlands planning area of the San Mateo County Housing Element (County of San Mateo, 2012). The County Housing Element identifies 10 remaining vacant developable sites.

13.2 Regulatory Framework

13.2.1 State Regulations

The California Government Code Section 65580–65589.8 addresses housing needs in California. The code provides direction for local governments in planning for housing needs and states, including the following:

- The availability of housing is of vital statewide importance, and the early attainment of decent housing and a suitable living environment for every Californian, including farmworkers, is a priority of the highest order.
- The provision of housing affordable to low- and moderate-income households requires the cooperation of all levels of government.
- Local and state governments have a responsibility to use the powers vested in them to facilitate the improvement and development of housing to make adequate provision for the housing needs of all economic segments of the community.
- The Legislature recognizes that in carrying out this responsibility, each local government also has the responsibility to consider economic, environmental, and fiscal factors and community goals set forth in their general plan and to cooperate with other local governments and the state in addressing regional housing needs.
- Counties and cities should recognize their responsibilities in contributing to the attainment of the state housing goal.
- Counties and cities will prepare and implement housing elements which, along with federal and state programs, will move toward attainment of the state housing goal.

Government Code Section 65400 requires each governing body (i.e., city council or board of supervisors) to prepare an annual report on the status and progress in implementing the jurisdiction's housing element of their general plan, as overseen by the California Housing and Community Development Department.

13.2.2 Local Regulations

13.2.2.1 General Plan

The General Plan (City of San Mateo, 2010a) policies that address housing and population are included in its Housing Element, which is currently being updated. The Housing Element was adopted in 2009 and revised in 2010 (City of San Mateo, 2010b). Policies included in the 2010 update of the Housing Element, which are also contained in the proposed update in the same or similar form, include the following:

- H 2.2: Jobs/Housing Balance – Maintain an overall balance of housing and employment within the community over the term of the plan.
- H 2.5: Distribution of Low- and Moderate-Income Housing – Attempt to distribute low- and moderate-income housing developments throughout the City. Encourage the mixing of market-rate and low/moderate-income units where feasible.
- H 2.6: Rental Housing – Encourage development of rental housing for households unable to afford ownership housing.
- H 2.10: Housing Densities – Maintain a density range, with densities at the higher end of the range to be considered based on provision of public benefits such as affordable housing, increased open space,

public recreational facilities, or offsite infrastructure improvements, or location adjacent or near (generally within a 0.5-mile walking distance) transit nodes.

13.2.2.2 City of Foster City

The *City of Foster City – General Plan* (City of Foster City, 1999), including the latest Housing Element (City of Foster City, 2015), contains several policies regarding population and housing, including the following:

- LUC-A Preservation of the City's Residential Neighborhoods – Preserve and strengthen the identity and qualities of Foster City's residential neighborhoods and assure that (1) all new development, renovation or remodeling are harmoniously designed and operated to integrate with existing neighborhoods; (2) noise, traffic, and other conflicts between residential and no-residential land uses are eliminated to the extent possible, and (3) each residential neighborhoods has access to developed park or park-like recreational area within walking distance.
- H-A Reinforce the City's Commitment to Meeting Housing Needs – Establish and monitor goals, policies and programs to address Foster City's housing needs, encourage public participation in all housing policy matters, and promote equal housing opportunities.
- H-A-1 City Leadership – Provide an active leadership role in helping to attain the objectives of the Housing Element by following through on the actions prescribed in the Housing Element in a timely manner and monitoring progress annually to review housing goals and target achievements. Foster City will provide a statistical summary of residential building activity correlated to various types of housing, household needs, incomes, and Housing Element program targets.
- H-A-4 Review Potential Environmental Impacts of New Housing – When a new housing development is proposed, perform a review of potential environmental impacts so that the impacts on existing and prospective residents are considered.
- H-D-1 Housing Opportunity Areas – Given the diminishing availability of developable land, Foster City will identify housing opportunity areas and sites where a special effort will be made to provide affordable housing consistent with other Foster City General Plan (City of Foster City, 1999) policies.
- H-D-3 Encourage Housing as Part of New Development Projects – As opportunities for the redevelopment of property occur, whether financed with public funds or not, evaluate whether the subject site and project could and/or should include multifamily housing units as a part of the overall project, including apartments, condominiums, townhouses, or a mix of housing types.
- H-D-5 Planned Development Process – Encourage the use of the planned development process to achieve a diversity of housing types and tenure and to provide greater choice for residents and workers in Foster City.

13.3 Assessment Methods and Thresholds of Significance

Impacts on population or housing may occur if the CWP would result in the following:

- Induce substantial population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)
- Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere
- Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere

13.4 Environmental Impacts

TABLE 13-1
Summary of Population and Housing Impacts
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Impact	In-System Storage Program	Full Conveyance Program	New Headworks Project	Primary Clarifier Project
Impact 13-1. Implementation of the CWP could induce population growth.	Less than significant impact	Less than significant impact	Less than significant impact	Less than significant impact
Impact 13-2. Implementation of the CWP would not displace housing or people.	No impact	No impact	No impact	No impact

Impact 13-1. Implementation of the CWP could induce population growth.

In-System Storage Program

The existing WWTP is permitted to treat an average dry weather flow (ADWF) of 15.7 mgd and currently has sufficient hydraulic capacity to support this flow. The actual current ADWF is approximately 11 mgd (Carollo Engineers Inc., 2014). Existing processes within the WWTP have a treatment capacity of over 15.7 mgd, except for the centrifuges for the biosolids, which have a dry weather capacity of 14.6 mgd (Carollo Engineers, Inc., 2014). Based on the modest population growth expected in the service area and planned for in the local government general plans, the 2035 ADWF is expected to be 13.9 mgd and expansion of the permitted capacity for dry conditions is not anticipated to be needed. Therefore, the permitted ADWF under the In-System Storage Program would continue to be 15.7 mgd. The In-System Storage Program would increase the capacity of the WWTP to collect and treat peak wet weather flows (PWWF) to eliminate SSOs and comply with current and future regulations. The In-System Storage Program would also enable the WWTP to more reliably meet the 15.7 mgd ADWF, and because the permitted ADWF would not change, the In-System Storage Program is not expected to induce population growth. Impacts would be less than significant.

When fully implemented, the In-System Storage Program would produce water that could be used as recycled water. Recycled water use could offset the use of existing potable supplies and increase the overall availability of water resources, potentially inducing growth. However, the infrastructure does not currently exist to convey and use recycled water. Although there have been discussions with the local water supplier, California Water Service Company (Cal Water), regarding recycled water use, no plans have been prepared or approved by Cal Water to construct recycled water infrastructure. The availability of the treated wastewater is not expected to induce population growth. Impacts would be less than significant.

Full Conveyance Program

The impacts of the Full Conveyance Program would be the same as described for the In-System Storage Program. Impacts would be less than significant.

New Headworks Project and Primary Clarifier Project

Because the New Headworks Project and Primary Clarifier Project would be a part of either CWP alternative, the impacts of the New Headworks Project and Primary Clarifier Project would be the same as described for the In-System Storage Program. Impacts would be less than significant.

Impact 13-2. Implementation of the CWP would not displace housing or people.

In-System Storage Program

WWTP facilities would be constructed on the parcels included in the WWTP Site (see Figure 2-6 in Chapter 2). None of these parcels currently contains housing, and none of them has a land use designation or zoning that supports housing (see Chapter 11).

Repaired, rehabilitated, and new collection system facilities for the In-System Storage Program would be underground and would not displace housing or people or change the land use or zoning of properties. Excavation required for construction of collection system projects would be done in streets or other public rights-of-way. Although these construction activities may cause minor interruptions in site access, such as blocking a driveway, the effects would be temporary, generally less than a few days. Occupation of housing would not be affected, and housing and people would not be displaced.

One or more locations may be used for an in-system equalization storage basin as part of the In-System Storage Program. Locations would include City-owned parks, parking lots, or undeveloped parcels; and parking lots or other open space associated with commercial, institutional, and industrial land uses. Sites containing or planned for housing would not be used for the in-system equalization basin.

Full Conveyance Program

WWTP facilities would be constructed on the parcels included in the WWTP Site (see Figure 2-6 in Chapter 2). None of these parcels currently contains housing, and none of them has a land use designation or zoning that supports housing (see Chapter 11).

Repaired, rehabilitated, and new collection system facilities for the Full Conveyance Program would be underground and would not displace housing or people or change the land use or zoning of properties. Excavation required for construction of collection system projects would be done in streets or other public rights-of-way. Although these construction activities may cause minor interruptions in site access, such as blocking a driveway, the effects would be temporary, generally less than a few days. Occupation of housing would not be affected, and housing and people would not be displaced.

New Headworks Project and Primary Clarifier Project

New Headworks Project and Primary Clarifier Project would be constructed on the parcels included in the WWTP Site (see Figure 2-6 in Chapter 2). None of these parcels currently contains housing, and none of them has a land use designation or zoning that supports housing (see Chapter 11). The New Headworks and Primary Clarifier projects would be located at the WWTP Site and would not displace housing or people.

13.5 Mitigation Measures

All impacts to population and housing would be less than significant and no mitigation measures are required.

13.6 References

Carollo Engineers, Inc. 2104. *City of San Mateo Integrated Wastewater Master Plan*. Prepared for City of San Mateo. October.

City of Foster City. 1999. *City of Foster City – General Plan.* Chapter 3. Land Use and Circulation Element. Amended June 1999.

_____. 2015. *City of Foster City Housing Element*. Adopted February 2.

City of San Mateo. 2009. *Draft Environmental Impact Report for the City of San Mateo General Plan Update*. July 27.

_____. 2010. *City of San Mateo General Plan – Vision 2030*. Resolution No. 134-2010. Adopted by the City Council on October 18.

_____. 2010b. *City of San Mateo Housing Element of the General Plan*. Revised February 1.

County of San Mateo. 1999. *Crystal Springs County Sanitation District Sewer Master Plan*. Prepared by Brown & Caldwell. August.

_____. 2012. *2007–2014 Draft Housing Element*. Revised. May.

Town of Hillsborough. 2014. *Town of Hillsborough 2014 Housing Element Covering the Period 2014–2022*. Prepared by Baird + Driskell Community Planning. October.

U.S. Census Bureau. 2013. Quick Facts Reference – Foster City, California. http://quickfacts.census.gov/qfd/states/06/0625338.html.

Chapter 14. Public Services

This chapter describes the public services for the Program Area. For this analysis, public services are defined as follows: police protection, fire protection, schools, libraries, and hospitals. Applicable plans and policies related to public services are presented and potential impacts and mitigation measures that could result from implementation of the proposed Program are identified.

14.1 Existing Setting

Existing public services provided in the Program Area are described in the following sections.

14.1.1 San Mateo Police Department

The SMPD provides law enforcement services to the entire City of San Mateo (City). The SMPD station is located at 200 Franklin Parkway in San Mateo (see Figure 14-1). Mutual and automatic aid agreements with the San Mateo County Sheriff's Department, which is located at 400 County Center in Redwood City, and the police departments in Foster City, Belmont, and Hillsborough augment the City's ability to respond to calls in the jurisdictional boundary areas and to emergency events.

The SMPD has 114 sworn full-time officers (1 chief, 1 deputy chief, 2 captains, 6 lieutenants, 17 sergeants, and 87 officers), 15 dispatchers, 9 community service officers, and 5 administrative staff, totaling 155 employees who provide police services and public safety dispatching to approximately 100,000 residents for the San Mateo.

14.1.2 San Mateo Fire Department

The SMFD provides fire protection services in the City of San Mateo. The department has six fire stations (see Figure 14-1). The service area covers 15.7 square miles.

The SMFD provides for the safety, health, and well-being of all individuals, property, and the environment through a comprehensive range of programs designed to respond to threats from fire hazards. Their primary activity is response to requests for medical assistance and structure fires. The SMFD has 88 full-time employees including 75 operations, 2 training, 2 administration, 5 fire prevention, and 4 support staff (City of San Mateo, 2009). Daily staffing of the Operations Division consists of 1 battalion chief, 7 fire captains, and 15 firefighter/paramedics. All fire stations are staffed 24 hours per day, 365 days per year. Each station has one fire engine staffed with three firefighters. The Fire Department has one 100-foot ladder truck, which is assigned to Station 21. The ladder truck is staffed by four personnel. All SMFD apparatus are staffed with a firefighter/paramedic. The battalion chief supervises all on-duty personnel and provides scene management for significant incidents requiring multiple units or resources.

The SMFD responds to over than 8,000 emergencies calls annually; 90 percent of the emergency calls are responded to in 6 minutes and 18 seconds (City of San Mateo, 2009). The Insurance Services Office (ISO) rating is the recognized classification for a fire department's or district's ability to defend against major fires. A rating of 10 generally indicates no protection, whereas an ISO rating of 1 indicates high firefighting capability. The SMFD has an ISO rating of 3.

14.1.3 Schools and Libraries

The City of San Mateo is served by three public school districts: the San Mateo–Foster City School District (SMFCSD), which serves grades pre-kindergarten through grade 8; the San Mateo Union High School District (SMUHSD), which serves grades 9–12; and the San Mateo County Community College District (SMCCCD), which serves high school graduates and anyone over 18. In addition, several private schools are located in the City. The locations of schools are shown on Figure 14-2.

14.1.3.1 San Mateo–Foster City School District

The SMFCSD operates 20 schools in San Mateo and Foster City and in an unincorporated area west of San Mateo. The district has a total enrollment of approximately 12,000 students (SMFCSD, 2015).

14.1.3.2 San Mateo Union High School District

The SMUHSD operates six high schools, a Middle College program in conjunction with the College of San Mateo, and a continuation school. The District serves approximately 8,200 students. In addition, it operates an adult school with an enrollment of up to 8,000 adults (SMUHSD, 2015).

14.1.3.3 San Mateo County Community College District

The SMCCCD operates three colleges: Skyline College in San Bruno; Cañada College in Redwood City; and the College of San Mateo in San Mateo. Together they serve approximately 40,000 students (SMCCCD, 2015).

14.1.3.4 City of San Mateo Library Department

The City's Library Department oversees three public libraries: Main Library, Hillsdale Library, and Marina Library (City of San Mateo, 2015). The locations of the libraries are shown on Figure 14-1.

14.2 Regulatory Framework

14.2.1 State Regulations

14.2.1.1 Emergency Response and Evacuation Plans

The State of California passed legislation authorizing the Office of Emergency Services (OES) to prepare a Standard Emergency Management System (SEMS), which sets forth measures by which a jurisdiction should handle emergency disasters. Non-compliance with SEMS could result in the state withholding disaster relief from the non-complying jurisdiction in the event of an emergency disaster. The San Mateo County Sheriff's Office in cooperation with OES and the Department of Homeland Security prepared an emergency operations plan to incorporate and coordinate all City facilities and personnel into an efficient organization capable of responding effectively to any emergency. The plan addresses emergency organization, assigns tasks, specifies policies and general procedures, and provides for coordination of planning efforts of the various emergency staff and service elements using the SEMS program as a guideline.

14.2.2 Local Regulations

14.2.2.1 General Plan

The General Plan (City of San Mateo, 2009) contains several polices that apply to public services:

LU 4.8: Library Resources and Services. Continue to maintain a comprehensive collection of resources and services to help the community discover, enjoy, connect and learn in an ever-changing world while offering quality library services and programs to a diverse community promoting literacy and ongoing learning.

LU 4.10: Police Station. Provide Police Station facilities to meet the facility requirements through 2030. Completed in 2009, the new San Mateo Police Station facility consists of a two-story 45,000-square-foot main building and includes various functional ancillary and service areas and parking. The new station houses the City's Emergency Operation Center and Dispatch Center. The new police station uses sustainable or "green" technology, incorporating many energy saving features that will save the City energy costs compared to conventional buildings.

LU 4.11: Fire Stations. Maintain a high level of service by modernizing Fire Stations. Provide new stations and improvements to existing stations and training facilities to meet equipment, staffing, and training requirements, as well as, Essential Services Building Requirements.

LU 4.17: Library Service. Maintain a materials budget, staffing, and service hours for the City's library system that are adequate to meet the community needs, provide current and adequate materials, and meet the continuing changes in information technology.

LU 4.29: Effective Police Services. Maintain facilities, equipment, and personnel to provide an effective police force to serve existing and future population and employment as identified in the Land Use Element.

14.3 Assessment Methods and Thresholds of Significance

To evaluate potential impacts on public services, the locations of public service facilities were mapped and compared to the locations of CWP projects. Applicable policies were reviewed. Impacts on public service resources may occur if the CWP would result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services:

- Police protection
- Fire protection
- Hospitals
- Schools
- Libraries

14.4 Environmental Impacts

Potential impacts of the CWP on cultural and paleontological resources are summarized in Table 14-1 and described in subsequent sections.

TABLE 14-1
Summary of Public Services Impacts
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Impact	In-System Storage Program	Full Conveyance Program	New Headworks Project	Primary Clarifier Project
Impact 14-1. Implementation of the CWP could affect police or fire services.	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation
Impact 14-2. Implementation of the CWP could affect hospital, schools, or libraries.	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation

Impact 14-1. Implementation of the CWP could affect police or fire services.

In-System Storage Program

Law enforcement services for the project would be provided by the SMPD. Calls for service at the project site would be typical of current calls for service in the vicinity, such as trespassing or vandalism. Calls for service from the existing WWTP facilities are rare. The In-System Storage Program would include new infrastructure underground or on the existing WWTP Site and is not expected to increase the number of calls, which would affect the ability of the police and fire departments to provide adequate emergency services to their service area.

Construction of some In-System Storage Program projects, especially pipeline projects, would occur in roadways and would require the closure of up to two lanes of traffic. The lane closures could temporarily affect emergency access by emergency vehicles and access to police or fire stations. However, construction of individual pipeline sections would last up to approximately 5 days. In addition, as described in **Mitigation Measure 9-4 Coordinate emergency services during construction**, the City would follow its standard measures to coordinate in advance with the SMPD and establish signage and detours so that emergency access is maintained during the temporary construction activities.

Construction of WWTP facilities would occur on or adjacent to the existing WWTP and would not affect emergency access. There would be limited access along the portions of Detroit Drive and Bayside/Joinville Park between the Detroit Drive parcel, the Bayfront parcels, and the WWTP during construction. Upon completion of the expansion of the WWTP, access to portions of Detroit Drive and Bayside/Joinville Park may be limited or closed to the public for operations; however, street access east of the WWTP along Detroit Drive, adjacent to the American Self Storage business, would remain open for access to the business and the WWTP. With implementation of **Mitigation Measure 9-4 Coordinate emergency services during construction**, the impacts of In-System Storage Program on emergency services would be less than significant.

Full Conveyance Program

The impacts of the Full Conveyance Program would be the same as described for the In-System Storage Program. With implementation of **Mitigation Measure 9-4 Coordinate emergency services during construction**, the impacts of the Full Conveyance Program on emergency services would be less than significant.

New Headworks Project and Primary Clarifier Project

The impacts of the New Headworks Project and Primary Clarifier Project would be the same as described for the In-System Storage Program at the WWTP Site. With implementation of **Mitigation Measure 9-4 Coordinate emergency services during construction**, the impacts of the New Headworks and Primary Clarifier Projects on emergency services would be less than significant.

Impact 14-2. Implementation of the CWP could affect hospitals, schools, and libraries.

In-System Storage Program

Implementation of the In-System Storage Program could affect schools and hospitals. The nearest medical centers to the Program Area are the Boston Medical Group, VITAS Healthcare, and Holtorf Medical Group. Access to these medical facilities would not be affected by the expansion of the WWTP in the Program Area. Construction at the WWTP may affect access through J. Hart Clinton Drive or E. 3rd Avenue for ambulances or the general public. Ambulances and the general public would still have access to the hospitals via US-101 and SR-92.

Program construction and operations may limit access to roadways around the WWTP Site. However, access to Bayside Middle School and Bayside Performing Arts Center along Shoreview Avenue, Kehoe Avenue, and Crestview Drive would not be affected by construction or operation of the Program. Access to Horrall Elementary School could be affected by rehabilitation of the Dale Avenue Pump Station on Dale Avenue and S. Norfolk Street. Construction at the Dale Avenue Pump Station would primarily be underground; however, parking and access around the intersection of S. Norfolk Street and Dale Avenue may be reduced because of space needed for staging equipment and parking for the construction crew. Coordination would be done with the appropriate authority and appropriate BMPs would be implemented. With implementation of **Mitigation Measure 9-4 Coordinate emergency services during construction**, the impacts of the In-System Storage Program on schools would be less than significant.

The nearest public library to the Program Area is Marina Public Library (see Figure 14-2). Access to the library and operations of the library would not be affected by the In-System Storage Program.

Full Conveyance Program

The impacts of the Full Conveyance Program would be the same as described for the In-System Storage Program. With implementation of **Mitigation Measure 9-4 Coordinate emergency services during construction**, the impacts of the Full Conveyance Program would be less than significant.

New Headworks Project and Primary Clarifier Project

The impacts of the New Headworks Project and Primary Clarifier Project would be the same as described for the In-System Storage Program. With implementation of **Mitigation Measure 9-4 Coordinate emergency services during construction**, the impacts of the New Headworks and Primary Clarifier Projects would be less than significant.

14.5 Mitigation Measures

Mitigation Measure 9-4. Coordinate emergency services during construction is described in Chapter 9.

14.6 References

City of San Mateo. 2009. *Draft Environmental Impact Report for the City of San Mateo General Plan Update*. July 27.

_____. 2010. *City of San Mateo General Plan – Vision 2030*. Resolution No. 134-2010. Adopted by the City Council on October 18.

_____. 2015. "Library Locations & Hours" website. http://www.cityofsanmateo.org/index.aspx?NID=514.

San Mateo Community College District (SMCCCD). 2015. Website http://smccd.edu/accounts/smccd/.

San Mateo-Foster City School District (SMFCSD). 2015. Website. http://www.smfcsd.net/en/about-smfcsd/about-smfcsd.html. Accessed April 8.

San Mateo County. 2011. *Emergency Operations Plan*. San Mateo County Sheriff's Office of Emergency Services and Homeland Security. Accessed January 28, 2011.

San Mateo County Sheriff's Department. 2015. *San Mateo County Operational Area, Emergency Operations Plan*. http://www.smcsheriff.com/sites/default/files/downloads/EOP_2011_Final.pdf. Accessed May 13, 2015.

San Mateo Union High School District (SMUHSD). 2015. "About the District" website. http://www.smuhsd.org/cms/page_view?d=x&piid=&vpid=1324365621336.

San Mateo Medical Center. 2015. Web site. http://www.sanmateomedicalcenter.org/content/AboutUs.htm. Accessed June 4, 2015. Accessed June 5, 2015.

San Mateo Schools, Map. 2015. https://www.google.ca/maps/search/san+mateo+california+private+schools/@37.5430325,-122.307272,13z/data=!3m1!4b1

San Mateo Union High School District (SMUHSD). 2015. Web site. http://www.smuhsd.org/cms/page_view?d=x&piid=&vpid=1324365621336.

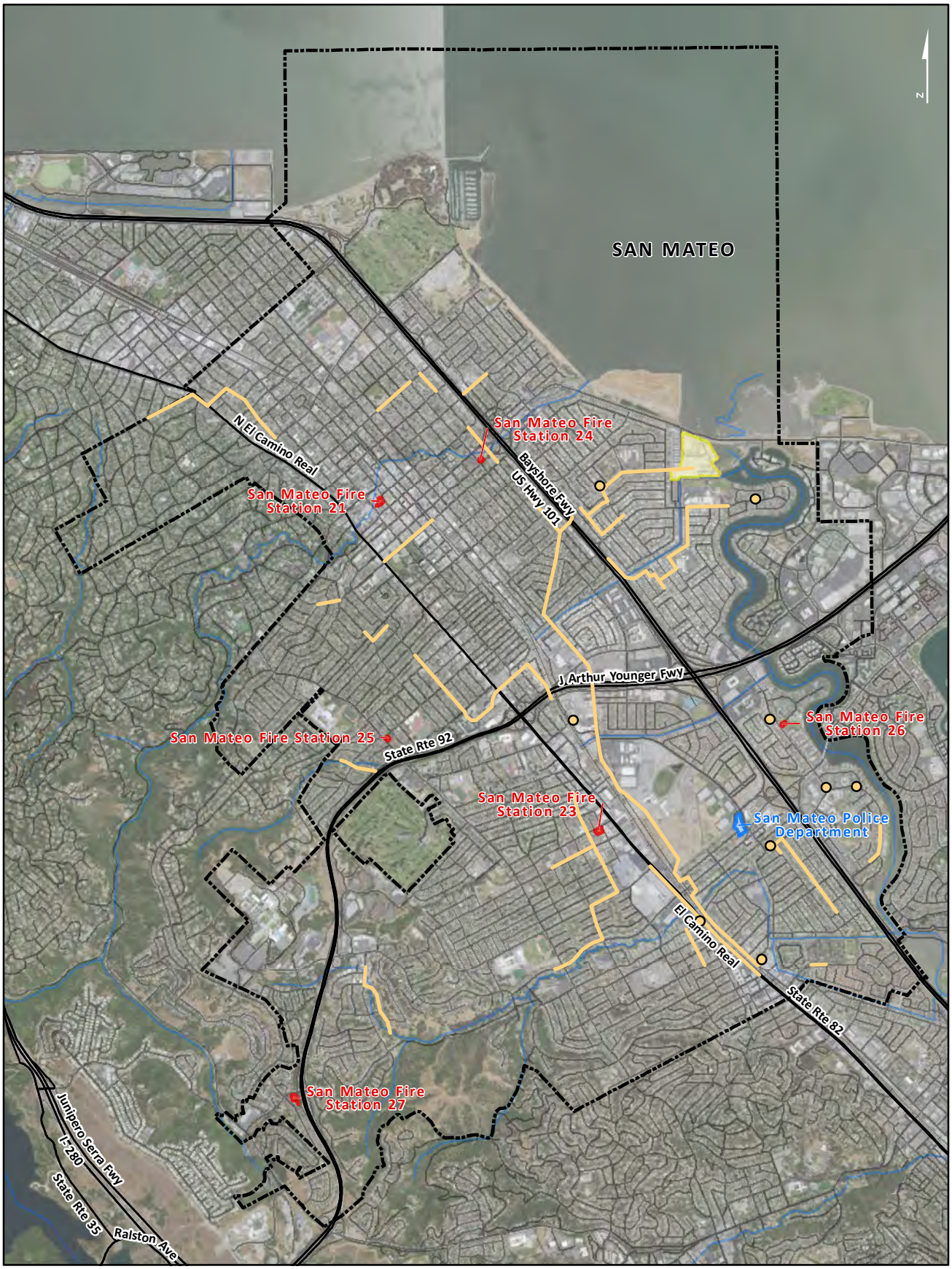


Figure 14-1
Public Services - Police and Fire
Programmatic Environmental Impact Report
City of San Mateo Clean Water Program

Coordinate System: NAD 1983 UTM Zone 10N. Source: Esri Map Services, County of San Mateo

CH2MHILL

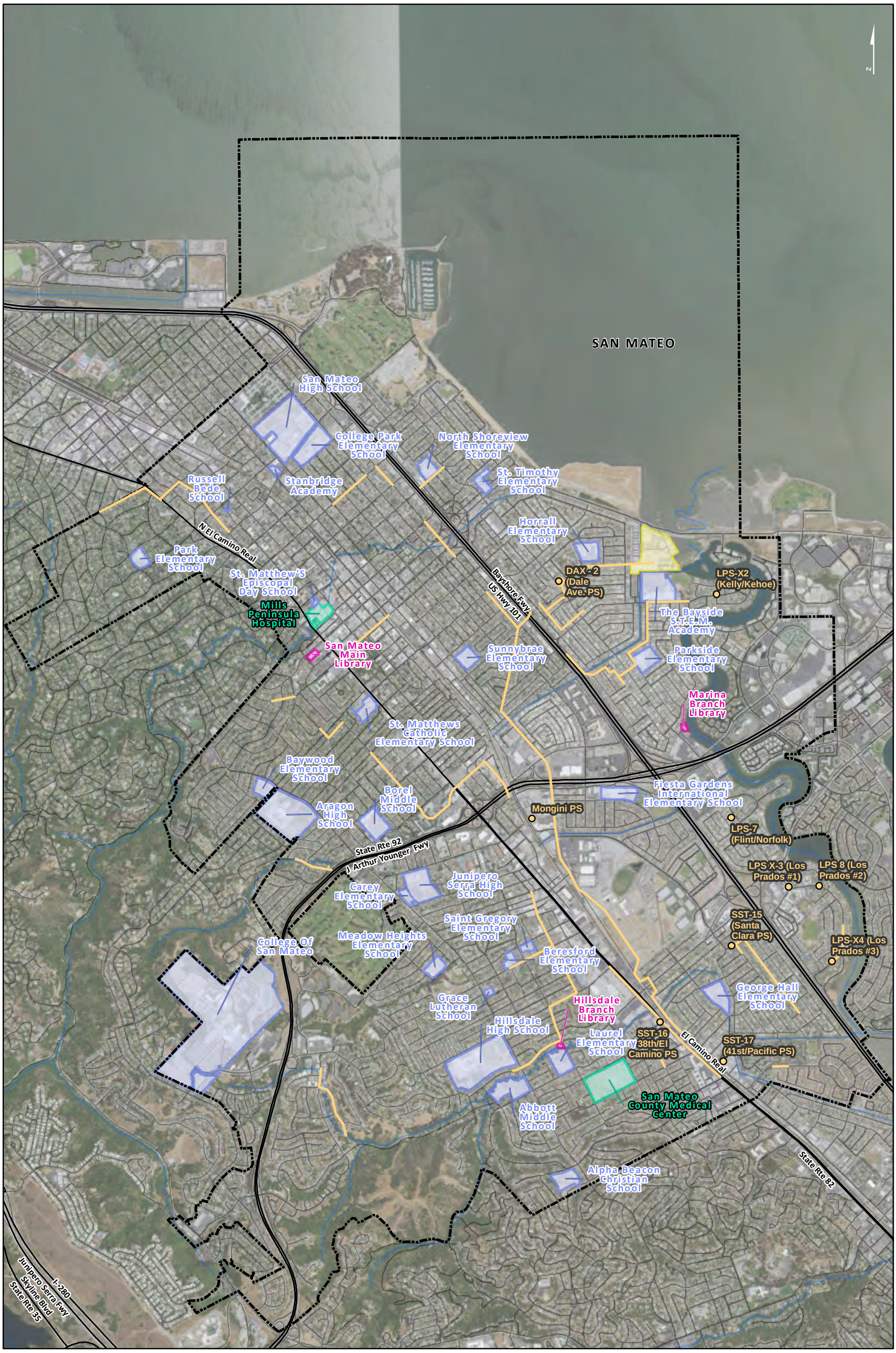


Figure 14-2
Public Services - Schools, Libraries, Hospitals
Programmatic Environmental Impact Report
City of San Mateo Clean Water Program

Coordinate System: NAD 1983 UTM Zone 10N. Source: Esri Map Services, County of San Mateo

CH2MHILL

Chapter 15. Recreation

This chapter evaluates the potential impacts of the two CWP alternatives on recreational facilities, including parks, located in the Program Area. This chapter describes recreational facilities present in the Program Area; discusses local regulations related to recreation; identifies potential impacts that could occur from construction and operation; and proposes mitigation measures to reduce any significant impacts to a less than significant level.

15.1 Existing Setting

The City of San Mateo Department of Parks and Recreation maintains parks and recreation facilities throughout the City that provide more than 200 acres of open space and recreation fields. The parks and facilities vary in size and services provided to the public and include the following (City of San Mateo, 2010):

- Mini parks – The smallest parks, usually less than one acre, are located throughout the City and are generally limited in facilities to a single use. The general service radius of a mini-park is one-quarter mile.
- Neighborhood Parks – These parks may be up to six acres in size, and are optimally at least 4 acres. Neighborhood parks typically service multiple uses such as multi-purpose turf area, playground equipment, picnic and seating areas, opportunity for passive enjoyment of landscape, and a multi-use court. The general service radius of a neighborhood park is one-third mile.
- Community Parks – These are major, multi-use facilities that are intended to address City-wide as well as neighborhood recreation needs. Community parks are typically at least five acres in size and contain uses such as athletic game facilities, community centers, large group picnic areas, swimming pools, outdoor performing facilities, and tennis or game courts. The service radius of community parks ranges from one mile to the entire City.
- Regional Parks – These are major facilities such as Shoreline Park and Laurelwood/Sugarloaf Mountain that meet City-wide recreation needs and draw significant use from people outside the City.

Figure 15-1 shows the location of existing parks and recreational facilities in the Program Area. These parks and facilities include the following:

- **Bayside/Joinville Park** is a 20.5 acre community park that includes amenities such as the John Lee Memorial Dog Park, a children's playground, an aquatics center, tennis courts, and night-lighted softball and multi-purpose fields (Canzian, 2015). The park supports activities such as youth sports, group picnics and seasonal aquatics activities. It is located directly south and east of the existing WWTP.
- **Shoreline Parks** is a large regional park system comprised of Ryder, Seal Point, and Tidelands Parks, the Bay Marshes, and the Bay Trail (Canzian, 2015). Seal Point Park includes a three-acre off-leash dog park. Ryder Park includes a children's playground and group picnic areas. The Bay Marshes includes observation points and a boardwalk for viewing native habitats. Tidelands Park remains an undeveloped parcel. Numerous walking and biking paths connect the parks and the San Francisco Bay Trail where it passes through San Mateo. This park system is located generally north of the WWTP Site across from J. Hart Clinton Drive.
- **Mariner's Island Park** is a 4-acre neighborhood park that includes two children's play areas, a passive lawn, picnic tables, and a baseball field (Canzian, 2015). Mariners Island Park is located between the Marina Lagoon and San Mateo's easterly city limits, to the east of the WWTP Site.
- **Bay Meadows Community Park** is a 12-acre park that includes amenities such as a pond, soccer field, picnic tables, a passive lawn area, and a loop walking path (Canzian, 2015). The pond serves as a storm water storage basin for the area and the soccer field serves as dry storage for excess storm water flows. The current amenities at Bay Meadows Park are part of an interim design because the park has yet to be

completely master planned. Bay Meadows Community Park is one of the proposed locations for an in-system equalization storage basin.

- **Fiesta Meadows Park** is a 4.7 acre park located in the Fiesta Gardens neighborhood (Canzian, 2015). This neighborhood park includes picnic tables, a soccer field, and an asphalt perimeter pathway. Fiesta Meadows Park is one of the proposed locations for an in-system equalization storage basin.
- **Central Park** is an approximately 16-acre park near downtown San Mateo and is considered San Mateo's signature park (City of San Mateo, 2015a). It includes lighted tennis courts, a playground, baseball field, mini-train, Japanese tea garden, picnic areas with tables and grills, and a recreation center. Central Park is one of the proposed locations for an in-system equalization storage basin.
- **Trinta Park** is a 1.8-acre baseball park with two baseball diamonds as well as a basketball court and a playground (City of San Mateo, 2015a). Trinta Park is one of the proposed locations for an in-system equalization storage basin.

The Dale Avenue parcel, in the southwest portion of the WWTP Site, is zoned as Open Space and is considered to be land under the management of the Department of Parks and Recreation.

15.2 Regulatory Framework

The Program Area contains only local recreation facilities and parks; no state or federal parks or recreation facilities are located in the Program Area. Therefore, this section summarizes local regulations related to recreational facilities and parks. Applicable local regulations include relevant sections of the General Plan (City of San Mateo, 2010), the *Shoreline Park Specific Plan* (City of San Mateo, 1971), and the City's Zoning Ordinance (City of San Mateo, 2015b).

15.2.1 City of San Mateo General Plan

General plan goals and policies applicable to recreation facilities and parks include those listed below as they appear in the General Plan (City of San Mateo, 2010).

15.2.1.1 Environmental Stewardship

Goal 2: Conserve and manage the City's natural resources to ensure that current and future generations will enjoy the environmental, social and economic benefits derived from our urban forest, parks and open spaces.

C/OS 1.1: Lagoon Habitat. Enhance the wildlife habitat value of Marina Lagoon, whenever possible, in conjunction with recreational use and flood control management activities.

C/OS 1.2: Bird Island. Maintain "Bird Island" as a bird nesting and breeding site.

C/OS 1.3: Interpretive Opportunities. Promote public awareness of the value and care of the Shoreline through on-site interpretive programs or outdoor displays which are in character with the adjacent open spaces.

C/OS 1.4: Shoreline Parks Master Plan. Continue to seek funding for the implementation of the remaining phases of the Shoreline Parks Master Plan through RDA and grant funding.

C/OS 10.1: Public Open Space Design. Review planning applications for opportunities to promote exceptional design and use of public open spaces in new developments and new public buildings.

15.2.1.2 Parks and Recreation

Goal 5: Provide a comprehensive park and recreation system of programs and facilities based on the needs of the City's residents for all ages and interests by including active, passive, social, educational, and cultural opportunities that insure access for all.

Goals 7: Maintain and upgrade park infrastructure to optimize its value in meeting community recreation needs and cost effectiveness of its operations.

Goal 8: Support the continued utilization of school sites to augment City recreation facilities, meet community needs, and encourage school agencies to adopt reasonable user fees and operating practices that allow continued community access.

C/OS 12.1: Balanced Park System. Provide the appropriate mix of parkland that balances the needs of active and passive facilities, formal and informal uses and that are accessible to all residents, and meet existing and future recreation needs.

C/OS 12.1: Facility Standards. Adopt and use the Parks and Recreation Facility Standards to assess the adequacy of existing facilities, designing, developing and redeveloping sites, and acquiring or accepting new sites.

C/OS 12.3: Maximizing Park Assets. Create an asset management plan that identifies the highest and best use of undeveloped parcels or underutilized areas within existing parks to insure they are best positioned to meet current and future needs and where appropriate, consider options for non-park uses. Ensure that appropriate value or credit is restored to the park system for loss of land.

C/OS 12.5: Compatible Public Use. Provide for public access, study, and recreation opportunities at the Shoreline, Sugarloaf Mountain, San Mateo and Laurel creeks that are compatible with their setting and natural attributes; ensure that significant natural qualities and habitat are protected.

C/OS 12.6: Resident Access. Provide use and reservation policies that give priority to residents of San Mateo; in particular, ensure that regional usage of Sugarloaf and Shoreline does not diminish resident opportunities to use these facilities.

C/OS 14.5: Central Park. Enhance Central Park's character as the city's signature park and community gathering place.

15.2.2 Shoreline Park Specific Plan

The *Shoreline Park Specific Plan* (City of San Mateo, 1979) addresses 885 acres around the north end of Marina Lagoon and along the adjacent shoreline, and it provides greater detail than the General Plan regarding policies and requirements for development in this area. The WWTP Site is located in Plan Area 3, Seal Cove. The plan identifies several improvement and recreational opportunities for this area, including preservation of existing natural vegetation, development of bicycle and pedestrian paths, and park improvements for public parks and recreation purposes. Recreation and open space facilities in the plan area include Marina Lagoon, Coyote Point Park and Marina, the golf course, and numerous smaller parks.

Major goals of the Shoreline Specific Plan include, but are not limited to, the following:

- Establishment of a waterfront development usable by all the people in San Mateo
- Establishment of a variety of uses so all types of needs, interests and activities will be accommodated
- Establishment of as much open space as possible
- Reduction of bay fill to an absolute minimum

15.2.3 City of San Mateo Zoning Ordinance

The current zoning of parcels on which CWP facilities would be constructed is discussed in Chapter 11. Title 13 of the City's Zoning Ordinance (City of San Mateo, 2015b) addresses parks and recreation, including hours of access, park impact fees for residential development, park use fees, and closure of parks and recreational areas.

15.3 Assessment Methods and Thresholds of Significance

The assessment of impacts was based on consideration of CWP construction and operation activities and how they might affect use of parks and recreation facilities in the Program Area.

Impacts on recreational resources may occur if the CWP would result in the following:

- Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.
- Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.
- Conflict with any applicable recreation land use plan, policy, or regulation of an agency with jurisdiction over the program (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect

15.4 Environmental Impacts

Potential impacts of the CWP on recreation facilities and parks are summarized in Table 15-1 and described in subsequent sections.

TABLE 15-1
Summary of Recreation Impacts
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Impact	In-System Storage Program	Full Conveyance Program	New Headworks Project	Primary Clarifier Project
Impact 15-1. The CWP could increase use of existing parks and recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.	Less than significant impact	Less than significant impact	No impact	No impact
Impact 15-2. The CWP may include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.	Less than significant impact	No impact	No impact	No impact
Impact 15-3. The CWP could affect use of existing parks or recreation facilities, inconsistent with applicable policies.	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation

Impact 15-1. The CWP could increase use of existing parks and recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.

In-System Storage Program

As discussed in Impact 13-1 in Chapter 13, the In-System Storage Program would not change the currently permitted ADWF of the WWTP and would therefore not induce population growth beyond what is currently planned that could place demand on parks and recreation facilities.

Construction of the In-System Storage Program would occur over a 10- to 20-year period and could require up to several dozen construction workers at any given time. The need for construction workers is expected to be met from the local Bay Area workforce; workers would be expected to commute daily to the worksites and return home at the end of each work day. Therefore, construction workers are not expected to increase use of existing parks and recreation facilities compared to current levels.

Construction of pipeline projects would require temporary closure of one or more lanes of roads for up to several days. Depending on the project location, the roadway closures could prevent access to parks or recreational facilities. Users of these facilities may increase use of nearby parks or recreation facilities during the road closures. However, such closures would be expected to be no more than a few days in duration, and substantial or accelerated deterioration of other parks and recreation facilities would not be expected.

Potential sites for the in-system storage basin include several parks: Bay Meadows Park, Fiesta Meadows Park, Central Park, and Trinta Park. Construction of the basin would require up to several months, during which time up to approximately 2 acres of the site would be closed for excavation, construction access and staging, and other construction purposes. For the smaller parks, Fiesta Meadows and Trinta Park, this could entail closure of the entire park during this period. Users of the affected park could instead increase use of other nearby parks or recreation facilities. However, because the closure would be temporary, substantial or accelerated deterioration of other parks and recreation facilities would not be expected.

As described in Chapter 2, operation of the In-System Storage Program would require approximately the same number of staff that currently operate the existing WWTP and collection system. Automation could further decrease the number of required staff. Increased use of existing parks and recreation facilities would not be expected to occur as a result of the operations workforce.

Implementation of the In-System Storage Program may results in a minor temporary increase of existing parks and recreation facilities during construction, but would not be expected to result in substantial or accelerated deterioration of parks and recreation facilities. Impacts would be less than significant and no mitigation would be required.

Full Conveyance Program

As discussed in Impact 13-1 in Chapter 13, the Full Conveyance Program would not change the currently permitted ADWF of the WWTP and would therefore not induce population growth beyond what is currently planned that could place demand on parks and recreation facilities.

Construction of the Full Conveyance Program would occur over a 10- to 20-year period and could require up to several dozen construction workers at any given time. The need for construction workers is expected to be met from the local Bay Area workforce; workers would be expected to commute daily to the worksites and return home at the end of each work day. Therefore, construction workers are not expected to increase use of existing parks and recreation facilities compared to current levels.

Construction of pipeline projects would require temporary closure of one or more lanes of roads for up to several days. Depending on the project location, the roadway closures could prevent access to parks or recreational facilities. Users of these facilities may increase use of nearby parks or recreation facilities during the road closures. However, such closures would be expected to be no more than a few days in duration, and substantial or accelerated deterioration of other parks and recreation facilities would not be expected. Construction of the new Dale Avenue Pump Station would not affect access to parks or recreation facilities.

As described in Chapter 2, operation of the Full Conveyance Program would require approximately the same number of staff that currently operate the existing WWTP and collection system. Automation could further decrease the number of required staff. Increased use of existing parks and recreation facilities would not be expected to occur as a result of the operations workforce.

Implementation of the Full Conveyance Program may results in a minor temporary increase of existing parks and recreation facilities during construction, but would not be expected to result in substantial or accelerated deterioration of parks and recreation facilities. Impacts would be less than significant and no mitigation would be required.

New Headworks Project and Primary Clarifier Project

Implementation of the New Headworks Project and Primary Clarifier Project would not change the currently permitted ADWF of the WWTP as described in Chapter 13, and would therefore not induce population growth beyond what is currently planned that could place demand on parks and recreation facilities.

Construction of the New Headworks Project and Primary Clarifier Project would last approximately two years and could require up to several dozen construction workers at any given time. The need for construction workers is expected to be met from the local Bay Area workforce; workers would be expected to commute daily to the worksites and return home at the end of each work day. Therefore, construction

workers are not expected to increase use of existing parks and recreation facilities compared to current levels.

Operation of the New Headworks Project and Primary Clarifier Project would not require new permanent staff and would therefore not result in an increased use of existing parks and recreation facilities from additional workforce.

No substantial or accelerated deterioration of parks and recreation facilities would occur from implementation of the New Headworks Project and Primary Clarifier Project.

Impact 15-2. The CWP may include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

In-System Storage Program

The In-System Storage Program entails the construction and operation of wastewater collection and treatment facilities; it does not include any recreational facilities.

As described under Impact 15-1, the In-System Storage Program would not change the currently permitted ADWF of the WWTP and would therefore not induce population growth beyond what is currently planned or generate demand for new or expanded recreational facilities.

The Dale Avenue parcel, part of the WWTP Site, is currently unused. As described in Chapter 11, the Dale Avenue parcel is zoned Open Space and allowed uses include parks, playgrounds and community centers. The In-System Storage Program may include wastewater treatment-related facilities on this parcel; however, any treatment facilities would be underground and use of the parcel for recreation purposes would not be prevented.

Potential sites for the in-system storage basin include several parks: Bay Meadows Park, Fiesta Meadows Park, Central Park, and Trinta Park. Specific locations within these parks for the basin would be under existing ball fields or open space areas. Following construction, all in-system storage basin facilities would be underground except for minor appurtenances for access and cleaning. These structures would occupy approximately 300 square feet. The parcels would continue to be used for parks and open space.

Implementation of the In-System Storage Program would not include recreational facilities or require the construction or expansion of recreational facilities. No significant impacts would occur.

Full Conveyance Program

The Full Conveyance Program entails the construction and operation of wastewater collection and treatment facilities; it does not include any recreational facilities.

As described under Impact 15-1, the Full Conveyance Program would not change the currently permitted ADWF of the WWTP and would therefore not induce population growth beyond what is currently planned or generate demand for new or expanded recreational facilities.

The Dale Avenue parcel, part of the WWTP Site, is currently unused. As described in Chapter 11, the Dale Avenue parcel is zoned Open Space and allowed uses include parks, playgrounds and community centers. The Full Conveyance Program may include wastewater treatment-related facilities on this parcel; however, any treatment facilities would be underground except for minor appurtenances for access and cleaning and use of the parcel for recreation purposes would not be prevented. No other Full Conveyance Program facilities would be located at existing parks or recreation facilities.

Implementation of the Full Conveyance Program would not include recreational facilities or require the construction or expansion of recreational facilities. No impacts would occur.

New Headworks Project and Primary Clarifier Project

The New Headworks Project and Primary Clarifier Project entail the construction and operation of wastewater treatment facilities; no recreational facilities are included.

As described under Impact 15-1, the New Headworks Project and Primary Clarifier Project would not change the currently permitted ADWF of the WWTP and would therefore not induce population growth beyond what is currently planned or generate demand for new or expanded recreational facilities.

The New Headworks Project and Primary Clarifier Project would be located on the Detroit Drive parcel, which is not currently zoned or used for park or recreational purposes.

Implementation of the New Headworks Project and Primary Clarifier Project would not include recreational facilities or require the construction or expansion of recreational facilities. No impacts would occur.

Impact 15-3. The CWP could affect use of existing parks or recreation facilities, inconsistent with applicable policies.

In-System Storage Program

Currently, pedestrians and bicyclists travel around the WWTP by using Dale Avenue, a small access road west of the facility; Detroit Drive, north of the facility; and Joinville Park Road, east of the facility. Construction for the In-System Storage Program would likely result in the closure of Detroit Drive for approximately 10 years; depending on the final configuration of new WWTP facilities, this section of Detroit Drive may be permanently closed. The access roads on the east and west sides of the existing WWTP may also be temporarily closed by construction. These closures could affect access between residential areas and recreation facilities to the east and west of the WWTP Site. Implementation of **Mitigation Measure 11-1 Provide pedestrian and bicycle access around the WWTP Site** would reduce impacts to a less than significant level by providing a clearly marked, safe, and accessible route past the WWTP Site.

Construction of pipeline projects for the In-System Storage Program would require temporary closure of one or more lanes of roads for up to several days. Depending on the project location, the roadway closures could prevent access to parks or recreational facilities. However, these closures would typically be no more than a few days and significant impacts to use of these parks and recreation facilities would not occur.

Potential sites for the in-system storage basin include several parks: Bay Meadows Park, Fiesta Meadows Park, Central Park, and Trinta Park. Construction of the basin would require up to several months, during which time up to approximately 2 acres of the site would be closed for excavation, construction access and staging, and other construction purposes. For the smaller parks, Fiesta Meadows and Trinta Park, this could entail closure of the entire park during this period. During construction, other nearby parks and recreation facilities would be available for use.

After construction, a small portion of the in-system storage basin site, approximately 300 square feet, would be occupied by minor appurtenances for access and cleaning. The appurtenances could include hatches set into the ground or a small building. If the basin is located in a park, this area would change from park to utility use. In addition, future uses of the park area over the basin would be limited; for example, facilities such as pools or recreation buildings could not be constructed over the basin. Those changes represent a potentially significant impact on the use of existing parks or recreation facilities. **Mitigation Measure 15-3 Provide park improvements to offset lost uses** would create increased park use opportunities at the affected park, reducing impacts to a less than significant level.

The potential impacts from odors are discussed in Impact 4-4 in Chapter 4. As described there, the potential for odor generations from the in-system storage basin is low and significant impacts would not occur.

With implementation of **Mitigation Measure 11-1** and **Mitigation Measure 15-3**, impacts of the In-System Storage Program on the use of existing parks or recreation facilities would be less than significant.

Full Conveyance Program

Currently, pedestrians and bicyclists travel around the WWTP by using Dale Avenue, a small access road west of the facility; Detroit Drive, north of the facility; and Joinville Park Road, east of the facility. Construction for the In-System Storage Program would likely result in the closure of Detroit Drive for approximately 10 years; depending on the final configuration of new WWTP facilities, this section of Detroit Drive may be permanently closed. The access roads on the east and west sides of the existing WWTP may also be temporarily closed by construction. These closures could affect access between residential areas and recreation facilities to the east and west of the WWTP Site. Implementation of **Mitigation Measure 11-1 Provide pedestrian and bicycle access around the WWTP Site** would reduce impacts to a less than significant level by providing a clearly marked, safe, and accessible route past the WWTP Site.

Construction of pipeline projects for the Full Conveyance Program would require temporary closure of one or more lanes of roads for up to several days. Depending on the project location, the roadway closures could prevent access to parks or recreational facilities. However, these closures would typically be no more than a few days and significant impacts to use of these parks and recreation facilities would not occur.

New Headworks Project and Primary Clarifier Project

The New Headworks project and Primary Clarifier Project would be constructed within the WWTP Site, likely on the Detroit Drive parcel. Currently, pedestrians and bicyclists travel around the WWTP by using Dale Avenue, a small access road west of the facility; Detroit Drive, north of the facility; and Joinville Park Road, east of the facility. Construction for the In-System Storage Program would likely result in the closure of Detroit Drive for approximately 10 years; depending on the final configuration of new WWTP facilities, this section of Detroit Drive may be permanently closed. The access roads on the east and west sides of the existing WWTP may also be temporarily closed by construction. These closures could affect access between residential areas and recreation facilities to the east and west of the WWTP Site. Implementation of **Mitigation Measure 11-1 Provide pedestrian and bicycle access around the WWTP Site** would reduce impacts to a less than significant level by providing a clearly marked, safe, and accessible route past the WWTP Site.

15.5 Mitigation Measures

Mitigation Measure 11-1. Provide pedestrian and bicycle access around the WWTP Site is described in Chapter 11.

Mitigation Measure 15-3. Provide park improvements to offset lost uses.

The City shall provide improvements at any park used for in-system storage to offset the lost uses. Improvements shall be coordinated with the Department of Parks and Recreation and may include improved landscaping for improved aesthetics, upgrading grass to synthetic turf to allow increased field use, or additional amenities such as picnic tables or playground equipment. In addition, construction work areas, other than the aboveground appurtenances, shall be returned to the same uses in as good or better condition compared to pre-construction.

15.6 References

Canzian, Sheila (Director of Parks and Recreation, City of San Mateo). 2015. Personal communication with Andrea Gardner, CH2M HILL. August 3.

City of San Mateo. 1971. *Shoreline Park Specific Plan*. Revised 1979, 1990.

_____. 2015a. Department of Parks and Recreation Parks and Facilities website. http://www.cityofsanmateo.org/index.aspx?nid=574. Accessed August 26.

_____. 2015b. *San Mateo City Charter and Municipal Code*. Available at http://qcode.us/codes/sanmateo/. Effective as of September 17.

Figure 15-1
San Mateo Parks and Recreation Facilities
Programmatic Environmental Impact Report
City of San Mateo Clean Water Program

Coordinate System: NAD 1983 UTM Zone 10N. Source: Esri Map Services, County of San Mateo

CH2MHILL

Chapter 16. Transportation and Traffic

This chapter addresses the potential effects of construction and operation of the two CWP alternatives on transportation and traffic. This chapter describes existing roadways and transit facilities; discusses applicable state and local regulations; identifies potential impacts that could occur from construction and operation; and proposes mitigation measures to reduce any significant impacts to a less than significant level.

16.1 Existing Setting

This section describes the existing roadway network, bicycle and pedestrian facilities, and transit service in the vicinity of the Program Area. Information on existing traffic levels and how intersection level of services is determined is presented in the Section 16.3.

16.1.1 Regional and Local Roadways

Regional access to the Program Area is provided via US-101 and SR-92. Local access to the WWTP is provided primarily from SR-82, Norfolk Street, 3rd Avenue, J. Hart Clinton Drive, Detroit Drive, Foster City Boulevard, Chess Drive, and Metro Center Boulevard. A description of the roadways is provided below:

US-101 is an eight-lane, north-south freeway in the vicinity of the Program Area. US-101 extends northward through San Francisco and southward through San José. Access to the WWTP will be provided via the full interchange at 3rd Avenue/J. Hart Clinton Drive. Northbound on and off ramps are also provided at Kehoe Avenue. US-101 carries 260,000 average daily trips (ADT) between SR-92 and 3rd Avenue (California Department of Transportation [Caltrans], 2015).

SR-92 is a four- to six-lane, east-west highway that provides access to the Program Area via US-101. SR-92 extends from Half Moon Bay in west San Mateo County to Hayward in Alameda County. SR-92 carries 142,000 ADT between US-101 and Mariners Island Boulevard and 120,000 ADT between Mariners Island Boulevard and Foster City Boulevard (Caltrans, 2015).

SR-82 (S. El Camino Real) is an east-west state highway that begins at I-880 in San José to the south to I-280 in San Francisco to the north. SR-82 follows the San Francisco Peninsula and parallels the Caltrain Line along much of the route. Locally, SR-82 is referred to as El Camino Real. Within San Mateo, SR-82 is a four- to six-lane arterial and carries between 29,500 to 46,500 ADT between SR-92 and 3rd Avenue (Caltrans, 2015). Caltrans plans to improve and reconstruct the existing SR-82/SR-92 interchange to a partial cloverleaf interchange. The project would realign and widen the diagonal off-ramps and construct signalized intersections at the off-ramp terminals; add exclusive right turn lanes to the loop on-ramps on SR-82; construct a concrete barrier between the on-ramps and diagonal off-ramps; realign and widen the diagonal and loop on-ramps; provide maintenance vehicle pullouts and California Highway Patrol (CHP) enforcement areas on the on-ramps; construct soundwalls and retaining walls at the on-ramps and off-ramps; and add provisions for safe bicyclist travel in the northbound and southbound direction on SR-82 within the ramp intersections. The project is scheduled to be constructed in 2019 (Caltrans, 2014a).

Norfolk Street is a two- to four-lane collector street east of US-101 that provides access to the WWTP via 3rd Avenue/J. Hart Clinton Drive and Detroit Drive. Norfolk Street is approximately 3 miles long and is parallel to US-101 from Huron Avenue in the north to La Selva Street/Los Prados Street in the south.

3rd Avenue is an east-west roadway through central San Mateo from Crystal Springs Road in the west to Norfolk Street in the east. From US-101 to Delaware Street, 3rd Avenue is a one-way, westbound, two-to-three-lane roadway that forms a two-way couplet with 4th Avenue. From US-101 to Norfolk Street, 3rd Avenue is a two-way, four-lane roadway. East of Norfolk Street, 3rd Avenue becomes J. Hart Clinton Drive.

J. Hart Clinton Drive is a four-lane collector street from Norfolk Street to Mariners Island Boulevard. East of Mariners Island Boulevard the roadway becomes 3rd Avenue in Foster City. J. Hart Clinton Drive provides access to the WWTP via Detroit Drive.

Detroit Drive is a two-lane undivided local street approximately 0.25 mile long that terminates at J. Hart Clinton Drive. Detroit Drive provides direct access to the WWTP via an existing driveway.

Foster City Boulevard is a four- to six-lane arterial that extends from East 3rd Avenue, across SR-92, to Beach Park Boulevard. It is a major north-south arterial in Foster City and provides access to SR-92 via Chess Drive and Metro Center Boulevard.

Chess Drive is a two- to four-lane road extending from Bridgepointe Parkway (to the east) across Foster City Boulevard and then curving to the north and west to intersect again with Foster City Boulevard at Vintage Park Drive. Access to westbound SR-92 is provided via hook ramps just west of Foster City Boulevard. Chess Drive is four lanes wide west of Foster City Boulevard and two lanes wide to north and east of Foster City Boulevard.

Metro Center Boulevard is a four-lane, east-west roadway that runs parallel to SR-92 to the south and extends between Edgewater Boulevard and Foster City Boulevard, where it becomes Triton Drive. Access to eastbound SR-92 is provided via hook ramps just west of Foster City Boulevard.

16.1.2 Bicycle Facilities

The City has installed approximately 40 miles of bikeways, including 12 miles of Class I multiuse paths (separated path), 13 miles of Class II bike lanes (on-street striped bike lane), and 15 miles of Class III bike routes (signed bike route only, no striping). The existing bicycle facilities are illustrated on Figure 16-1. The longest bikeway, Shoreline Path, is approximately 3.6 miles long and runs from Airport Boulevard to the southern City limit (Alta Planning + Design, 2011).

In the vicinity of the WWTP, Detroit Drive is a Class III bike route. Detroit Drive provides a connection between the Class I bike paths adjacent to the shoreline throughout San Mateo and Foster City and the short, Class I bike path between Detroit Drive and Dale Avenue. There are Class II bike lanes on Norfolk Street from 3rd Avenue/ J. Hart Clinton Drive to Roberta Drive; on Norfolk Street from the river crossing near Waters Park Drive to Marina Court; and on Kehoe Avenue from Norfolk Street to Cobb Street. Roberta Drive between Norfolk Street and Kehoe Avenue is a Class II bike route.

16.1.3 Pedestrian Facilities

Pedestrian facilities near the WWTP consist of a few non-continuous sidewalks, nearby Class I bike paths, and crosswalks at signalized intersections. Sidewalks exist along the west side of Detroit Drive from J. Hart Clinton Drive to the Class I bike path adjacent to the WWTP Site. There are no sidewalks along the frontage of the WWTP Site.

There are sidewalks are on J. Hart Clinton Drive east of Detroit Drive but none west of Detroit Drive. However, pedestrians may use the Class I bike path adjacent to J. Hart Clinton Drive to walk to Norfolk Street and 3rd Avenue.

16.1.4 Transit Service

San Mateo County Transit District (SamTrans) and the Peninsula Corridor Joint Powers Board (Caltrain) provide transit service throughout San Mateo County and into adjoining San Francisco and Santa Clara counties. The Redi-Wheels program operated by SamTrans and private taxi companies provides paratransit services (City of San Mateo, 2012). Transit routes are shown on Figure 16-2.

16.1.4.1 Bus Service

Several SamTrans routes operate in San Mateo, with major transfer points at the downtown San Mateo Caltrain Station in the northern portion of the City and El Camino Real and Hillsdale Boulevard in the southern portion. Express lines operate daily to San Francisco during the morning and return in the evening. Most of the local routes are in midtown, extending in a north–south direction on arterials such as El Camino Real, Alameda de las Pulgas, Delaware Street, and Norfolk Street. Service is also provided on Hillsdale

Boulevard, SR-92, Parrott Drive, and Polhemus Road to the outlying east–west regions (City of San Mateo, 2012).

In the vicinity of the WWTP, SamTrans Route 250 provides weekday and weekend bus service on Norfolk Street between the College of San Mateo, the Hillsdale Caltrain station, downtown San Mateo, and the San Mateo Caltrain station. This bus service has 30-minute headways during the a.m. and p.m. peak commute periods. The nearest bus stop on the main route is located approximately 0.5 mile from the WWTP Site, at the intersection of Norfolk Street and Dale Avenue. A Route 250 connector provides limited service on Kehoe Avenue, with a stop at the Bayside STEM Academy near the corner of Kehoe Avenue and Van Buren Street (SamTrans, 2015).

16.1.4.2 Shuttle Service

Free commuter shuttles are available at the Hillsdale Caltrain Station and within the Bridgepointe business area. The shuttles operate between transit stations and major employment areas during commute hours. The Norfolk Area Shuttle serves the areas in the vicinity of SR-92 between Delaware Street and Norfolk Street. The Campus Drive Area Shuttle operates between the Hillsdale Station and the Campus Drive office development. The Mariners Island Area Shuttle operates from the Hillsdale Station, serving businesses on Saratoga Drive before continuing to Foster City, near SR-92. The Mariners Island Area Shuttle stops along Mariners Island Boulevard, adjacent to the Bridgepointe Shopping Center in San Mateo. The North Foster City Shuttle also serves the Bridgepointe Shopping Center area. The shuttle takes riders to Millbrae Station for Bay Area Rapid Transit (BART) and Caltrain connections (City of San Mateo, 2012).

16.1.4.3 Commuter Rail

Caltrain provides regional commuter rail throughout the Bay Area. There are three Caltrain stations in San Mateo: Downtown, Hayward Park, and Hillsdale. The Downtown Station is located at 2 North B Street, north of First Avenue. The Hayward Park Station is located near SR-92 and Concar Drive, on the east side of the railroad tracks. The Hillsdale Station, the most heavily used station in the City, provides transit access to several major destinations, including the Hillsdale Shopping Mall, Bay Meadows Phase II Specific Plan transit-oriented development, and the San Mateo County Events Center. Hillsdale Station is located on the west side of the railroad tracks, on El Camino Real, north of Hillsdale Boulevard (City of San Mateo, 2012).

16.2 Regulatory Framework

Transportation-related regulations applicable to the CWP include the Caltrans policy on level of service (LOS) (Caltrans, 2002) and the Circulation Element of the General Plan (City of San Mateo, 2010). The regulations are described in the following sections.

16.2.1 State Regulations

16.2.1.1 California Department of Transportation

Caltrans is responsible for planning, designing, constructing, operating, and maintaining all state-owned roadways. Federal standards for interstate highways are implemented in California by Caltrans. In the vicinity of the Program Area, Caltrans operates and maintains US-101 and SR-92, which provide regional access to the San Mateo and the neighboring cities.

According to the *Guide for the Preparation of Traffic Impact Studies* (Caltrans, 2002), “Caltrans endeavors to maintain a target LOS at the transition between LOS C and LOS D on state highway facilities; however, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the target LOS. If an existing State highway facility is operating at less than the appropriate target LOS, the existing LOS should be maintained.” In addition, a proposed project may have a significant transportation or circulation effect if it will result in a safety hazard to pedestrians or motorists.

16.2.2 Local Regulations

16.2.2.1 General Plan – Circulation

The General Plan (City of San Mateo, 2010) provides the framework for all zoning and land use decisions within the City. State law requires that the General Plan include a comprehensive, long-term plan for a City's physical development. City policy requires that the General Plan be periodically reviewed and updated. The 2010 update extends of the General Plan to the year 2030 (City of San Mateo, 2012).

The Circulation Element of the General Plan describes existing and proposed roadways and other transportation such as public transit, bikeways, pedestrian routes, and parking facilities. It analyzes traffic conditions and needed improvements so that existing and projected circulation needs may be adequately met (City of San Mateo, 2012).

The Circulation Element notes City goals to make it convenient for residents to travel to work and school, obtain services, shop, and recreate without always using single-occupant vehicle trips. The Circulation Element focuses on improving public transit, bikeways, pedestrian routes, roadways, and parking facilities. The Circulation Element includes goals and policies to reduce single-occupant vehicle trips and embraces a "complete streets" approach by considering all modes of transportation by addressing pedestrian and bicycle master planning, bike parking facilities, and transit improvements. Other important components of the Circulation Element address the Transportation Fee Ordinance, high-speed rail, transit-oriented development, transportation demand measures, and the establishment of a Transportation Management Association to reduce vehicle trips, encourage transit use, and promote bicycle and pedestrian accessibility and funding. The Rail Corridor Plan focuses high-density development along public transit routes.

Goal 2 of the Circulation Element and its associated policies are relevant to the CWP:

GOAL 2: Maintain a street and highway system which accommodates future growth while maintaining acceptable LOS.

Policy C 2.1: Acceptable Levels of Service. Maintain a Level of Service (LOS) no worse than mid LOS D, average delay of 45.0 seconds, as the acceptable Level of Service for all intersections within the City.

Policy C 2.7: Exceeding the Acceptable Level of Service. In addition to paying the transportation impact fee, a development project may be required to fund offsite circulation improvements which are needed as a result of project generated traffic, if:

- The level of service at the intersection drops below mid-level LOS D (average delay of more than 45 seconds) when the project traffic is added, and
- An intersection that operates below its level of service standard under the base year conditions experiences an increase in delay of four or more seconds, and
- The needed improvement of the intersection(s) is not funded in the applicable 5-year City Capital Improvement Program from the date of application approval

16.3 Assessment Methods and Thresholds of Significance

The traffic analysis for the CWP was conducted in accordance with the methodologies and procedures outlined in the *Highway Capacity Manual* (Transportation Research Board, 2010). Potential CWP impacts were also evaluated against the City's traffic impact thresholds.

ADT volumes from Caltrans (2015) for US-101 and SR-92 (see Section 16.1) and the potential daily increase in traffic on these highways was evaluated for project conditions. Daily roadway volumes were not available for local roadways in the City. A.M. and P.M. peak hour intersection LOS information was obtained from the *San Mateo Corporation Yard Draft Traffic Impact Analysis* (Hexagon Transportation Consultants, Inc., 2013)

and the *Lincoln Centre Life Sciences Research Campus Project Draft EIR* (Urban Planning Partners, Inc., 2015) for the following signalized intersections:

- J. Hart Clinton Drive/3rd Avenue/Norfolk Street
- J. Hart Clinton Drive/Detroit Drive
- Mariners Island Boulevard/3rd Avenue
- Foster City Boulevard/3rd Avenue
- SR-92 Westbound Ramps/Chess Drive
- Foster City Boulevard/Chess Drive
- SR-92 Eastbound Ramps/Metro Center Boulevard
- Foster City Boulevard/Metro Center Boulevard

The *San Mateo Corporation Yard Draft Traffic Impact Analysis* is based on peak hour turning movement counts conducted in April 2013, and the *Lincoln Centre Life Sciences Research Campus Project Draft EIR* is based on peak hour turning movement counts conducted in 2014. The *Lincoln Centre Life Sciences Research Campus Project Draft EIR* noted that traffic volumes have increased substantially along East 3rd Avenue (as well as on Foster City Boulevard and through the SR-92/Metro Center Boulevard interchange) during the P.M. peak hour between 2012 and 2014. According to the study, traffic volumes on eastbound East 3rd Avenue between Norfolk Street and Foster City Boulevard have increased by approximately 90 to 200 percent during the P.M. peak hour and between 20 to 40 percent during the A.M. peak hour since 2012. The report notes that although some development has occurred since 2012, much of the increase in traffic is due to traffic bypassing congestion at the US-101/SR-92 interchange to reach the San Mateo Bridge or destinations in Foster City.

16.3.1 Intersection Level of Service

LOS is a qualitative description of traffic operating conditions that range from LOS A (free-flow conditions with little or no delay) to LOS F (forced-flow conditions with extreme delays). The City's adopted methodology for determining LOS at signalized intersections is to evaluate the average intersection delay, which is calculated by summing the average delay (in seconds) for vehicles in each lane for all intersection approaches (City of San Mateo, 2012). General descriptions of LOS and the corresponding control delays are provided in Table 16-1. The City's LOS threshold is mid-LOS D (45 seconds of delay) or less for signalized intersections.

TABLE 16-1
LOS Criteria for Signalized Intersection Operations
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

LOS	Control Delay (seconds per vehicle)	Traffic Flow Characteristics
A	≤10.0	Very low delay occurring with exceptionally favorable progression or short cycle lengths. Most vehicles arrive during the green indication and travel through the intersection without stopping.
B	>10.0 and ≤20.0	Operations with low delay occurring with highly favorable progression or short cycle lengths.
C	>20.0 and ≤35.0	Operations with average delays with favorable progression or moderate cycle lengths. Individual cycle failures begin to appear.
D	>35.0 and ≤55.0	Operations with longer delays due to a combination of ineffective progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.
E	>55.0 and ≤80.0	Operations with high delay values indicating unfavorable progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent.
F	>80.0	Operation with unacceptable delays to most drivers occurring due to very high V/C ratios, very poor progression, and long cycle lengths. Most cycles fail to clear the queue.

TABLE 16-1
LOS Criteria for Signalized Intersection Operations
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Source: Transportation Research Board (2010)
Notes:
> = greater than
≤ = less than or equal to
V/C = volume to capacity

16.3.2 Existing Traffic Conditions

US-101 currently carries 260,000 ADT between SR-92 and 3rd Avenue. SR-92 carries 142,000 ADT between US-101 and Mariners Island Boulevard and 120,000 ADT between Mariners Island Boulevard and Foster City Boulevard and SR-82 carries 29,500 to 46,500 ADT between SR-92 and 3rd Avenue (Caltrans, 2015).

Table 16-2 summarizes the existing LOS for the study intersections. As shown in Table 16-2, two of the study intersections do not meet the City's LOS thresholds. The J. Hart Clinton Drive/3rd Avenue/ Norfolk Street intersection is currently operating at LOS E during the morning peak hour and the Foster City Boulevard/Chess Drive intersection is operating at LOS E during the afternoon peak hour.

TABLE 16-2
Existing Intersection LOS Summary
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Intersection	A.M. Peak Hour		P.M. Peak Hour	
	Delay (seconds)	LOS	Delay (seconds)	LOS
J. Hart Clinton Drive/3rd Avenue/ Norfolk Street	55.9	E[a]	43.2	D
J. Hart Clinton Drive/Detroit Drive	3.4	A	2.9	A
Mariners Island Boulevard /3rd Avenue	18.3	B	20.1	C
Foster City Boulevard/3rd Avenue	9.4	A	10.8	B
SR-92 Westbound Ramps/Chess Drive	20.6	C	23.4	C
Foster City Boulevard/Chess Drive	25.5	C	75.1	E
SR-92 Eastbound Ramps/Metro Center Boulevard	16.8	B	29.0	C
Foster City Boulevard/ Metro Center Boulevard	28.6	C	34.2	C

[a] The *San Mateo Corporation Yard Draft Traffic Impact Analysis* shows the J. Hart Clinton Drive/3rd Avenue/ Norfolk Street intersection operating at LOS D (41.4 seconds of delay). However, the *Lincoln Centre Life Sciences Research Campus Project Draft EIR* is based on more recent traffic counts and has been used as a more conservative analysis.

16.3.3 Key Assumptions Used in Analysis

Analysis is presented for two CWP alternatives, each of which includes multiple capital projects described in Chapter 2. Under either alternative, the CWP would be constructed over a 10- to 20-year period, starting in 2016. Analysis is also presented for two individual CWP projects, the New Headworks project and Primary Clarifier Project. All project scheduling would be based on technical requirements, financing, and other implementation considerations. The construction schedule and activities, equipment needs, and workforce requirements would generally be the same for both alternatives.

Multiple projects are expected to be under construction at any given time. An expected scenario for more intensive periods of CWP construction would include simultaneous construction of two major new facilities at the WWTP Site, two large pipeline projects, three small/medium pipeline projects, and two pump station wet well expansions. Because of the similarity in construction approaches and daily construction activities,

the pump station wet well expansion would also reflect construction conditions for in-system storage. Construction approaches for individual projects are discussed in Chapter 2.

It is assumed the each employee would generate two trips (one incoming and one outgoing trip). Table 16-3 shows the estimated peak construction daily trip generation, based on these assumptions and the project descriptions in Chapter 2.

TABLE 16-3
Peak Construction Daily Trips[a]
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Trip Type	New WWTP Facilities (2 projects)	Large Pipeline (2 projects)	Small/ Medium Pipeline (3 projects)	Pump Station (2 projects)	TOTAL
Import/Export Heavy Haul Trips	40	18	30	16	104
Equipment/Pipeline Haul Trips	10	4	6	2	22
PCE Trucks Trips (1.5)[b]	75	33	54	27	189
Workforce Trips[c]	100	40	60	20	220
Total Daily Construction Trips	**175**	**73**	**114**	**47**	**409**

[a] Assumes concurrent construction of two WWTP projects, two large pipeline projects, three small/medium pipeline projects, and two pump station projects.

[b] Truck trips were converted into a PCE at a rate of 1.5.

[c] Assumes each employee would generate one incoming and one outgoing trip (e.g., 50 employees would generate 100 trips).

Note:

PCE = passenger car equivalent

Table 16-4 summarizes the projected peak hour trip generation for the CWP. It is assumed the each employee would generate one incoming trip during the morning peak hour and one outgoing trip during the afternoon peak hour. It is assumed that the truck trips would be scheduled to occur outside of peak hours. As a result, construction of the CWP would generate 110 trips during the morning peak hour and 110 trips during the afternoon peak hour.

TABLE 16-4
Peak Construction Daily and Peak Hour Trips[a]
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Trip Type	ADT	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
PCE Truck Trips (1.5)[b]	189	0	0	0	0	0	0
Workforce Trips	220	110	0	110	0	110	110
Total Daily and Peak Hour Construction Trips	**409**	**110**	**0**	**110**	**0**	**110**	**110**

[a] Assumes concurrent construction of two WWTP projects, two large pipeline projects, three small/medium pipeline projects, and two pump station projects.

[b] Truck trips were converted into a PCE at a rate of 1.5.

The City would identify a dedicated parking area for construction workers. If space is not available at the Detroit Drive parcel, the City would develop a temporary agreement for use of another site, such as the Anchor Road parking lot (see Figure 2-5 in Chapter 2), which is owned by City of San Mateo Parks and Recreation.

The City would also identify designated areas for temporary stockpiling of excavated soils and for equipment staging for CWP projects. These areas may include the existing WWTP, the Detroit Drive parcel, or other City-owned property.

Encroachment permits will be obtained prior to issuance of any City permits and prior to any work in the City's right-of-way. Street improvement plans for all work in public rights-of-way will be prepared by a licensed civil engineer and approved by the Public Works Department. Because of the project's anticipated truck traffic, some streets may need to be restored or reconstructed. Road repairs will be coordinated with and approved by the city engineer.

Impacts on transportation and traffic may occur if the CWP would result in the following:

- Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways, freeways, pedestrian and bicycle paths, and mass transit.
- Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways.
- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
- Result in inadequate emergency access.
- Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities or otherwise decrease the performance or safety of such facilities.

16.4 Environmental Impacts

This section discusses potential transportation and traffic impacts as a result of implementing the CWP. Table 16-5 summarizes the impacts and level of significance.

TABLE 16-5
Summary of Transportation and Traffic Impacts
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Impact	In-System Storage Program	Full Conveyance Program	New Headworks Project	Primary Clarifier Project
Impact 16-1. Construction of the CWP could conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways, freeways, pedestrian and bicycle paths, and mass transit.	Less than significant with mitigation	Less than significant with mitigation	Less than significant with mitigation	Less than significant with mitigation
Impact 16-2. Construction of the CWP could conflict with an applicable congestion management program including but not limited to LOS standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways.	Less than significant with mitigation	Less than significant with mitigation	Less than significant with mitigation	Less than significant with mitigation
Impact 16-3. Implementation of the CWP could substantially increase hazards due to a design feature (e.g., sharp curve or dangerous intersection) or incompatible uses.	Less than significant with mitigation	Less than significant with mitigation	Less than significant with mitigation	Less than significant with mitigation

TABLE 16-5
Summary of Transportation and Traffic Impacts
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Impact	In-System Storage Program	Full Conveyance Program	New Headworks Project	Primary Clarifier Project
Impact 16-4. Implementation of the CWP could result in inadequate emergency access.	Less than significant with mitigation	Less than significant with mitigation	Less than significant with mitigation	Less than significant with mitigation
Impact 16-5. Implementation of the CWP could conflict with adopted policies, plans, or programs regarding public transit, bicycle, and pedestrian facilities or otherwise decrease the performance or safety of such facilities.	Less than significant with mitigation	Less than significant with mitigation	Less than significant with mitigation	Less than significant with mitigation
Impact 16-6. Operation of the CWP would not result in a significant traffic increase in conflicts with local plans, policies, and ordinances.	Less than significant	Less than significant	Less than significant	Less than significant

Impact 16-1: Construction of the CWP could conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways, freeways, pedestrian and bicycle paths, and mass transit.

In-System Storage Program

In-System Storage Program construction activities would occur continuously for approximately 10 years, then intermittently for an additional 10 years until all projects are complete. Potential increases in vehicle trip generation as a result of implementing qualifying projects under the In-System Storage Program would vary based on the project type, location, schedule, equipment needs, and other factors. For the purposes of this analysis, the potential traffic-related impacts were evaluated based on the expectation that at any one time, up to two WWTP projects, two large pipeline projects, three small/medium pipeline projects, one pump station wet well expansion, and one in-system storage basin are under construction. The construction associated with these projects would generate vehicle trips associated with equipment and materials hauling and construction worker trips (employee travel to and from work sites). Construction-related traffic would be short term for each individual project but would be cumulatively long term given that construction would be ongoing for at least 10 years.

At a maximum, it is estimated that the concurrent construction described above would generate up to 409 daily trips and 110 peak hour trips.

The distribution of construction trips on the regional and local road network will also depend on the location of individual projects and the project staging areas. However, the majority of In-System Storage Program construction-related trips (vehicle and truck trips) would occur on US-101, SR-92, J. Hart Clinton Drive/3rd Avenue, Detroit Drive, Foster City Boulevard, Chess Drive, and Metro Center Boulevard. The additional trips (assumed to be a maximum of 409 daily trips) represent a 0.2 percent increase in ADT on US-101 and a 0.3 percent increase in ADT on SR-92. This is a minimal increase in traffic compared to the existing highway volumes, and no changes to the existing LOS are anticipated. Existing ADT are not available for other local roadways.

The J. Hart Clinton Drive/3rd Avenue/Norfolk Street intersection is currently operating at LOS E during the morning peak hour and the Foster City Boulevard/Chess Drive intersection is operating at LOS E during the afternoon peak hour (see Table 16-2). The City's LOS threshold (General Plan Policy C 2.1 and C 2.7) is mid-LOS D (45 seconds of delay) or less for signalized intersections. Construction activities could obstruct traffic

and degrade the LOS of these and other nearby intersections if traffic management during construction is not appropriately planned. However, with implementation of **Mitigation Measure 16-1 Prepare and implement a traffic management plan**, impacts could be minimized to less than significant. The traffic management plan (TMP identifies measures, such as scheduling deliveries of heavy equipment and construction materials during periods of minimum traffic flow, to avoid substantial LOS degradation.

Construction of projects associated with the In-System Storage Program would also require full or partial lane closures, depending on the type of project being constructed. Implementation of the TMP would minimize impacts on public transit and non-motorized travel by maintaining access to transit, bicycle, and pedestrian facilities along the project construction area or by providing an alternative route during full road closures. The TMP would include procedures for notifying and coordinating with all affected agencies, including transit operators, in advance of construction activities.

With implementation of **Mitigation Measure 16-1**, conflicts with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation, would be minimized to less than significant.

Full Conveyance Program

Full Conveyance Program construction activities would occur continuously for approximately 10 years, then intermittently for an additional 10 years until all projects are complete. Potential increases in vehicle trip generation as a result of implementing qualifying projects under the Full Conveyance Program would vary based on the project type, location, schedule, equipment needs, and other factors. For the purposes of this analysis, the potential traffic-related impacts were evaluated based on the expectation that at any one time, up to two WWTP projects, two large pipeline projects, three small/medium pipeline projects, and two pump station projects are under construction. The construction associated with these projects would generate vehicle trips associated with equipment and materials hauling and construction worker trips (employee travel to and from work sites). Construction-related traffic would be short term for each individual project but would be cumulatively long term given that construction would be ongoing for at least 10 years.

At a maximum, it is estimated that the concurrent construction described above would generate up to 409 daily trips and 110 peak hour trips. Therefore, impacts of the Full Conveyance Program would be the same as described for the In-System Storage Program, and impacts could be potentially significant. However, with implementation of **Mitigation Measure 16-1 Prepare and implement a traffic management plan**, impacts could be minimized to less than significant. The TMP identifies measures, such as scheduling deliveries of heavy equipment and construction materials during periods of minimum traffic flow, to avoid substantial LOS degradation.

Construction of projects associated with the In-System Storage Program would also require full or partial lane closures, depending on the type of project being constructed. During the construction of the expanded pump station the existing bus stop at the corner of Norfolk Street and Dale Avenue would be closed for several months and would need to be temporarily relocated. Implementation of the TMP would minimize impacts on public transit and non-motorized travel by maintaining access to transit, bicycle, and pedestrian facilities along the project construction area or by providing an alternative route during full road closures. The TMP would include procedures for notifying and coordinating with all affected agencies, including transit operators, in advance of construction activities.

With implementation of **Mitigation Measure 16-1**, conflicts with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation, would be minimized to less than significant.

New Headworks Project and Primary Clarifier Project

Vehicle trips that would occur during construction of the New Headworks Project and Primary Clarifier Project were included in the analysis of the In-System Storage Program impacts. Therefore, impacts could be

potentially significant. However, with implementation of **Mitigation Measure 16-1 Prepare and implement a traffic management plan**, impacts could be minimized to less than significant. The TMP identifies measures, such as scheduling deliveries of heavy equipment and construction materials during periods of minimum traffic flow, to avoid substantial LOS degradation.

Impact 16-2: Construction of the CWP could conflict with an applicable congestion management program including but not limited to LOS standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways.

In-System Storage Program

As described for Impact 16-1, construction of the In-System Storage Program would result in an increase in local traffic due to construction-related workforce traffic and material deliveries. Construction efforts could obstruct traffic and degrade the LOS at study intersections and nearby intersections if traffic management during construction is not appropriately planned. However, with implementation of **Mitigation Measure 16-1 Prepare and implement a traffic management plan**, impacts on LOS standards and other standards would be minimized to less than significant.

Full Conveyance Program

As described for Impact 16-1, construction of the Full Conveyance Program would result in an increase in local traffic due to construction-related workforce traffic and material deliveries. Construction efforts could obstruct traffic and degrade the LOS at study intersections and nearby intersections if traffic management during construction is not appropriately planned. However, with implementation of **Mitigation Measure 16-1 Prepare and implement a traffic management plan**, impacts on LOS standards and other standards would be minimized to less than significant.

New Headworks Project and Primary Clarifier Project

As described for Impact 16-1, construction of the New Headworks Project and Primary Clarifier Project would result in an increase in local traffic due to construction-related workforce traffic and material deliveries. Construction efforts could obstruct traffic and degrade the LOS at study intersections and nearby intersections if traffic management during construction is not appropriately planned. However, with implementation of **Mitigation Measure 16-1 Prepare and implement a traffic management plan**, impacts on LOS standards and other standards would be minimized to less than significant.

Impact 16-3: Implementation of the CWP could substantially increase hazards due to a design feature (e.g., sharp curve or dangerous intersection) or incompatible uses.

In-System Storage Program

Implementation of the In-System Storage Program has the potential to substantially increase hazards due to anticipated road or lane closures. Although the majority of In-System Storage Program construction would occur onsite and outside of public rights-of-way, construction of the collection system projects would require temporary, intermittent closure of lanes and the potential for full road closures along some roadways. These temporary closures would occur intermittently throughout the duration of construction. In some cases, traffic would need to be re-routed. However, implementation of **Mitigation Measure 16-1 Prepare and implement a traffic management plan** would minimize impacts to a less than significant level. No other design features are proposed that would substantially increase hazards.

A portion of Detroit Drive or other roads within the WWTP Site may ultimately be closed to public use and incorporated into the WWTP facility. This would be done as a safety measure to minimize conflicts on the roads as WWTP vehicles move among the different parcels that would comprise the final WWTP layout. This would provide a safety benefit. Emergency access to the WWTP on Detroit Drive and safe access to adjacent parcels, such as the storage business, would be maintained. The In-System Storage Program is not expected to result in any other permanent changes to roadways and would not create hazards due to permanent road design features.

Full Conveyance Program

The impacts of the Full Conveyance Program would be the same as described for the In-System Storage Program. Implementation of **Mitigation Measure 16-1 Prepare and implement a traffic management plan** would reduce impacts to a less than significant level.

New Headworks Project and Primary Clarifier Project

The impacts of the New Headworks Project and Primary Clarifier Project would be the same as described for the In-System Storage Program. Implementation of **Mitigation Measure 16-1 Prepare and implement a traffic management plan** would reduce impacts to a less than significant level.

Impact 16-4: Implementation of the CWP could result in inadequate emergency access.

In-System Storage Program

Implementation of the In-System Storage Program has the potential to result in inadequate emergency access due to road and lane closures. However, **Mitigation Measure 16-1 Prepare and implement a traffic management plan** would be implemented to minimize impacts on emergency access, including notifying emergency responders prior to construction and providing access for emergency vehicles to and around construction areas. All applicable local, state, and federal traffic control measures would be implemented for the safety of local traffic and construction traffic. With implementation of **Mitigation Measure 16-1**, impacts on emergency access would be less than significant.

Full Conveyance Program

Implementation of the Full Conveyance Program has the potential to result in inadequate emergency access due to road and lane closures. However, **Mitigation Measure 16-1 Prepare and implement a traffic management plan** would be implemented to minimize impacts on emergency access, including notifying emergency responders prior to construction and providing access for emergency vehicles to and around construction areas. All applicable local, state, and federal traffic control measures would be implemented for the safety of local traffic and construction traffic. With implementation of **Mitigation Measure 16-1**, impacts on emergency access would be less than significant.

New Headworks Project and Primary Clarifier Project

Implementation of the New Headworks Project and Primary Clarifier Project have the potential to result in inadequate emergency access due to road and lane closures. However, **Mitigation Measure 16-1 Prepare and implement a traffic management plan** would be implemented to minimize impacts on emergency access, including notifying emergency responders prior to construction and providing access for emergency vehicles to and around construction areas. All applicable local, state, and federal traffic control measures would be implemented to for the safety of local traffic and construction traffic. With implementation of **Mitigation Measure 16-1**, impacts on emergency access would be less than significant.

Impact 16-5: Implementation of the CWP could conflict with adopted policies, plans, or programs regarding public transit, bicycle, and pedestrian facilities or otherwise decrease the performance or safety of such facilities.

In-System Storage Program

Implementation of the In-System Storage Program has the potential to conflict with adopted policies, plans, or programs regarding public transit, bicycle, and pedestrian facilities or otherwise decrease the performance or safety of such facilities due to the anticipated lane and road closures. Sidewalks and bicycle facilities are located throughout the Program Area. Public transit also operates in the vicinity of the Program Area and could be affected by construction.

Implementation of **Mitigation Measure 16-1 Prepare and implement a traffic management plan** would minimize impacts on public transit and non-motorized travel by maintaining access to transit, bicycle, and

pedestrian facilities along the project construction area or by providing an alternative route during full road closures. The TMP would include procedures for notifying and coordinating with all affected agencies, including transit operators, in advance of construction activities. With implementation of **Mitigation Measure 16-1**, impacts on policies, plans, or programs supporting alternative transportation would be less than significant.

Full Conveyance Program

The impacts of the Full Conveyance Program would be the same as described for the In-System Storage Program. Public transit also operates in the vicinity of the Program Area and during construction of the new pump station, the existing bus stop at the corner of Norfolk Street and Dale Avenue would be closed for several months and would need to be temporarily relocated. With implementation of **Mitigation Measure 16-1 Prepare and implement a traffic management plan**, impacts on policies, plans, or programs supporting alternative transportation would be less than significant.

New Headworks Project and Primary Clarifier Project

The impacts of the New Headworks Project and Primary Clarifier Project would be the same as described for the In-System Storage Program. With implementation of **Mitigation Measure 16-1 Prepare and implement a traffic management plan**, impacts on policies, plans, or programs supporting alternative transportation would be less than significant.

Impact 16-6. Operation of the CWP would not result in a significant traffic increase in conflicts with local plans, policies, and ordinances.

In-System Storage Program

No major changes to WWTP or collection system operations would occur as a result of operation of the In-System Storage Program. When completed, pipelines and pump stations would be operated as currently done. Because of the resulting improvements in reliability, fewer worker trips would be required for maintenance and repairs. The current staff of approximately 25 permanent employees at the WWTP would be sufficient to operate the new treatment facilities, which would be more reliable than current facilities and may provide a higher degree of automation. There could be a minor increase in the number of trucks, up to one to two trips per day, for delivery of materials or hauling of biosolids due to the minor expected increase in average dry weather flows. No significant effects on traffic or circulation would occur.

Full Conveyance Program

The impacts of the Full Conveyance Program would be the same as described for the In-System Storage Program. Impacts would be less than significant.

New Headworks Project and Primary Clarifier Project

The impacts of the New Headworks Project and Primary Clarifier Project would be the same as described for the In-System Storage Program. Impacts would be less than significant.

16.5 Mitigation Measures

Mitigation Measure 16.1. Prepare and implement a traffic management plan.

Construction of some of the CWP projects would require temporary lane closures, traffic detours, and the use of oversized equipment. Implementation of the CWP shall include a TMP that would minimize impacts on through traffic as a result of construction activities. The TMP would be prepared in accordance with the *California Manual of Uniform Traffic Control Devices* (MUTCD) Caltrans, 2014b) and all applicable requirements of the San Mateo Department of Public Works Conditions of Approval. The TMP shall be approved by the City of San Mateo Department of Public Works prior to construction and implemented at all times during construction of the project. If construction requires use of or detours on the rights-of-way of

other communities, permits and approvals may be required from these local agencies. The City of San Mateo and its contractors shall cooperate with other communities to obtain the necessary approvals.

The TMP shall be prepared by a qualified transportation engineer and include recommendations for appropriately managing traffic during the construction period by implementing measures such as construction schedule restrictions, signage, and flaggers. Such measures would promote traffic movement during construction to avoid substantial LOS degradation (i.e., LOS levels that are less than the City's adopted LOS threshold).

The TMP would include but not be limited to the following measures:

- Temporarily close of travel lanes or disruptions to street segments and intersections during trenching activities within road rights-of-way or while utilities are being connected.
- Prepare temporary traffic control plans for each site location. In accordance with the San Mateo Public Works Department Conditions of Approval, prior to issuance of a permit, the contractor shall submit applicable pedestrian or traffic detour plans, to the satisfaction of the city engineer, for all lane or sidewalk closures. The detour plan shall comply with Part 6, Temporary Traffic Control, of the MUTCD, and standard construction practices. The temporary traffic control plans will identify the need for flaggers for directing traffic, temporary signage, lighting, traffic control devices, and other measures, if required.
- Identify oversize and overweight load haul routes. Transporters will comply with state and county regulations for transportation of oversized and overweight loads on all state and county roads. Such regulations typically include provisions for time of day, pilot cars, law enforcement escorts, speed limits, flaggers, and warning lights. In accordance with the San Mateo Public Works Department Conditions of Approval, for material delivery vehicles equal to or larger than two-axle, six-tire, single-unit truck size (as defined by Federal Highway Administration Standards), the contractor will submit a truck hauling route that conforms to City of San Mateo Municipal Code Section 11.28.040 for the approval of the city engineer. Contractors will be prohibited from using trucks with "compression release engine brakes" on residential streets. The contractor will submit a letter to and obtain approval from, the Department of Public Works confirming the intention to use the hauling route prior to the issuance of any City permits. All material hauling activities shall comply with applicable City ordinances and conditions of approval.
- Schedule deliveries of heavy equipment and construction materials during periods of minimum traffic flow. In accordance with the San Mateo Public Works Department Conditions of Approval, earth hauling and materials delivery to and from the site, including truck arrivals and departures to and from the site, will be prohibited (to the extent possible) between the weekday hours of 4:00 p.m. to 5:30 p.m. Signs outlining these restrictions will be posted at conspicuous locations on site.
- Limit construction activities (to the extent feasible) to the weekday between 7:00 a.m. and 7:00 p.m. and between 7:00 a.m. and 5:00 p.m. for work within City rights-of-way, in accordance with the San Mateo Public Works Department Conditions of Approval. During night work at the WWTP Site, the contractor will coordinate with the Public Works Department to obtain an exemption to perform construction activities outside of these times.
- Post the approved hours of construction activity at the construction site in a place and manner that can be easily viewed by any interested member of the public.
- Determine the need for construction work hours and arrival and departure times outside peak traffic periods.
- Determine the need for construction scheduling outside of legal holidays and special events to avoid affecting large fluxes in traffic volumes. In accordance with the San Mateo Public Works Department Conditions of Approval, within the vicinity of Hillsdale Mall and within the downtown area during the holiday season (November 20 to January 1), there shall be no construction activities within rights-of-way

that would create lane closures, eliminate parking, create pedestrian detours, or other activities that may create a major disturbance, as determined by the city engineer. Prohibition on El Camino Real will be along its entire length within the City limits. For Hillsdale Shopping Center, construction prohibition streets shall include Hillsdale Boulevard between US-101 and SR-92, 31st Avenue between El Camino Real and Hacienda Street, and Edison Street and Hacienda Street in the vicinity of the shopping center. The limits of the downtown area shall be defined as: between El Camino Real on the west and Delaware Street on the east, Tilton Avenue on the north, and Fifth Avenue on the south. The prohibition shall also include the 3rd and 4th Avenue corridors between Delaware Street and US-101.

- Identify vehicle safety procedures for entering and exiting site access roads.
- Notify and coordinate with emergency responders regarding potential road closures prior to construction.
- Provide access for emergency vehicles to and around the project site.
- Maintain access to adjacent properties. In accordance with the San Mateo Public Works Department Conditions of Approval the contractor will notify residential and commercial occupants of property adjacent to the construction site of the hours of construction activity which may impact the area. The notifications will be provided 3 days prior to the start of the extended construction activity.
- Notify and coordinate with transit operators regarding potential road closures prior to construction.
- Maintain access to transit, bicycle, and pedestrian facilities along project routes.
- Notify and coordinate with mail service and waste haulers regarding potential road closures prior to construction.
- Provide a construction-parking plan that minimizes the effect of construction worker parking in the neighborhood. Include an estimate of the number of workers that will be present on the site during the various phases of construction, indicate where sufficient off-street parking will be used, and identify all locations for offsite material deliveries. The plan will be approved by the city engineer prior to issuance of City permits and will be complied with at all times during construction.
- Implement a Transportation Demand Management Program using programs in compliance with the City/County Association of Governments of San Mateo County Guidelines for Trip Reduction. These programs, will be on-going throughout project construction. The plan may include those actions listed in the project trip reduction plan, including secure bicycle storage, shower changing facilities, guaranteed ride home program, information on transportation alternatives, carpool matching program, preferential parking for carpools/vanpools, employee transportation coordinator, TMA participation, parking reduction, carsharing, shuttle participation, flexible work hours/telecommuting, and an option to participate in the Caltrain GO Pass Program.

Signs would be provided to control traffic and assist with safety along CWP access routes and at designated road crossings. These signs will adhere to the MUTCD and will include regulatory signs (e.g., stop, speed limits, and yield) and warning signs and construction signs (e.g., temporary lane closures and flaggers). All signs will be maintained throughout CWP construction.

Public information will be distributed by using local news television and radio broadcasts, informational flyers and mailers, Web sites, and other outreach options. Signs would be installed and public notices would be distributed regarding construction work before disruptions occur; the notifications would identify detours to maintain access. In addition, flagmen or escort vehicles would control and direct traffic flow, and work would be scheduled during periods of minimum traffic flow.

16.6 References

Alta Planning + Design. 2011. *City of San Mateo Bicycle Master Plan*. October.

California Department of Transportation (Caltrans). 2002. *Guide for the Preparation of Traffic Impact Studies*. http://www.dot.ca.gov/hq/tpp/offices/ocp/igr_ceqa_files/tisguide.pdf. December.

_____. 2013 *All Traffic Volumes on CSHD*. Traffic Data Branch. http://traffic-counts.dot.ca.gov/2013all/. Accessed May 6, 2015.

_____. 2014a. *SR 92/SR 82 Interchange Project Report*. April. http://www.cityofsanmateo.org/DocumentCenter/View/46133. Accessed August 3, 2015.

_____. 2014b. *California Manual of Uniform Traffic Control Devices*. November.

City of San Mateo. 2009. *Draft Environmental Impact Report for the City of San Mateo General Plan Update*. July 27.

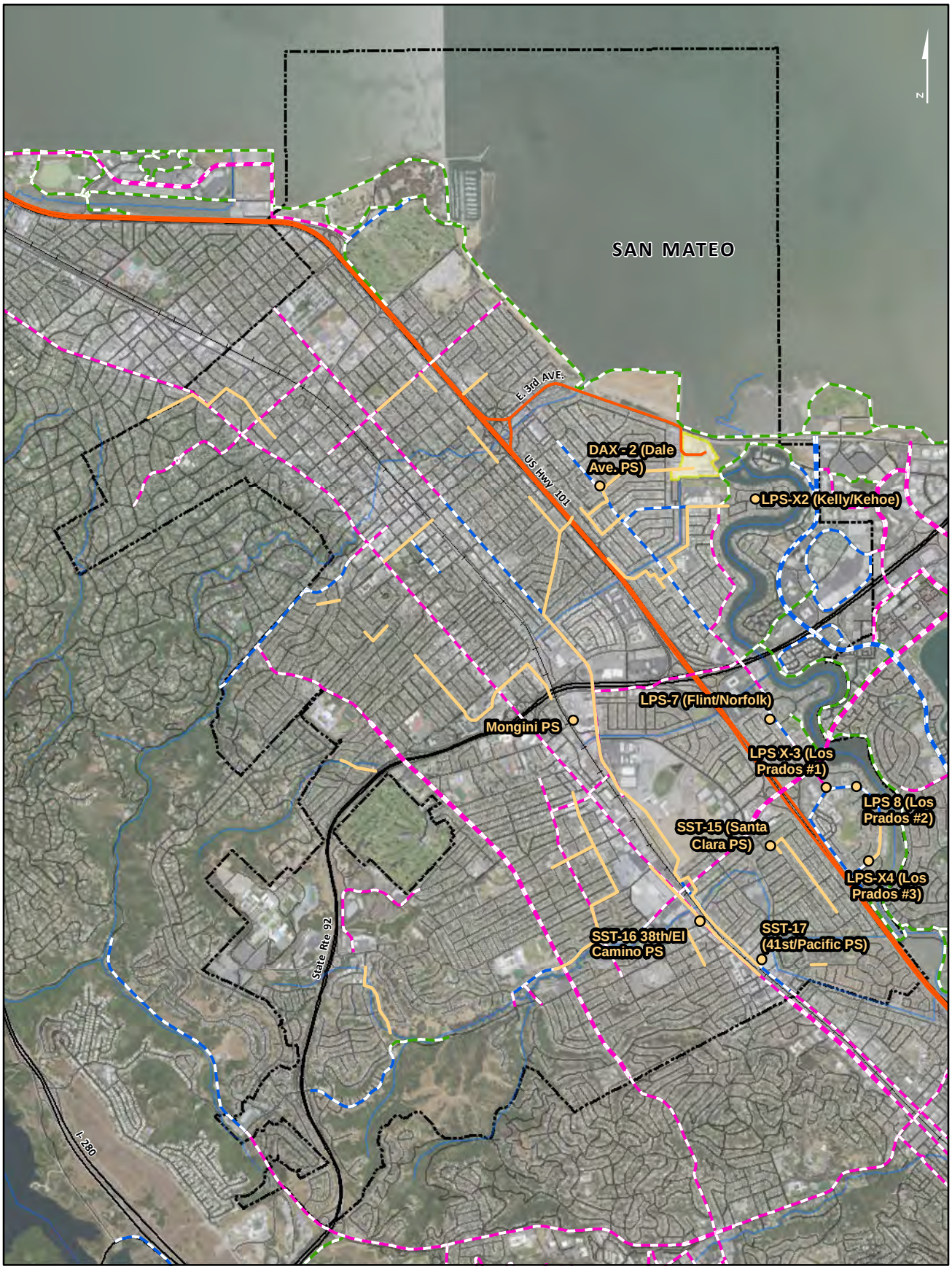
_____. 2010. *City of San Mateo General Plan – Vision 2030*. Resolution No. 134-2010. Adopted by the City Council on October 18.

Hexagon Transportation Consultants. 2013. *San Mateo Corporation Yard Draft Traffic Impact Analysis*. August 12.

SamTrans. 2015. SamTrans Web site. http://www.samtrans.com/. Accessed June 1, 2015.

Transportation Research Board. 2010. *Highway Capacity Manual*.

Urban Planning Partners, Inc. 2015. *The Lincoln Centre Life Sciences Research Campus Project Draft EIR*. April.



Bicycle Routes
- Class 1 - Multi Use Path
- Class 2 - Bicycel Lane
- Class 3 - Signed Bicycle Route

WWTP Site
Pump Station Project
Pipeline Project
Road
Designated Haul Route
Railroad
Watercourse
Program Area

0 0.25 0.5
Miles

Coordinate System: NAD 1983 UTM Zone 10N. Source: Esri Map Services, County of San Mateo, Metropolitan Transport Commission

Figure 16-1
Bicycle Network
Programmatic Environmental Impact Report
City of San Mateo Clean Water Program

CH2MHILL

Figure 16-2
Transportation and Highway Network
Programmatic Environmental Impact Report
City of San Mateo Clean Water Program

Coordinate System: NAD 1983 UTM Zone 10N. Source: Esri Map Services, County of San Mateo, Metropolitan Transport Commission

CH2MHILL

Chapter 17. Utilities

This chapter discusses potential impacts on utilities, including water, solid waste, wastewater, and electricity and gas. It includes descriptions of existing utilities, regulatory frameworks, and potential impacts on each utility resulting from implementation of the CWP.

17.1 Existing Setting

17.1.1 Water

San Mateo is supplied with water primarily by the CalWater, an investor-owned water utility. The City is located within Cal Water's Mid-Peninsula District, which includes the cities of San Mateo and San Carlos and adjacent unincorporated areas of San Mateo County. A small part of eastern San Mateo receives water service from the Estero Municipal Improvement District. These agencies procure water supply and own and maintain the delivery infrastructure, including potable water pipelines and pump stations.

17.1.2 Solid Waste

The South Bayside Waste Management Authority, also known as RethinkWaste, is a joint powers authority of 12 public agencies in southern and central San Mateo County that provide solid waste, waste reduction, and recycling services to member agencies.

Recology San Mateo County (Recology) is the franchise waste hauler for the City of San Mateo (RethinkWaste, 2015a). Recology provides recycling, compost, and garbage collection services to residences and businesses in the City. Garbage, recyclables, and compost are picked up once a week. South Bay Recycling (SBR) provides recycling services for materials collected in San Mateo (RethinkWaste, 2015b). SBR operates the Shoreway Environmental Center, a recycling and transfer station facility in San Carlos, under contract with Rethink Waste. Shoreway serves as a regional solid waste and recycling facility for the receipt, handling, and transfer of refuse, recyclables, and organic materials collected from the RethinkWaste service area, including the City of San Mateo. Residential and commercial solid waste recyclables and organic materials collected by Recology are taken to the Shoreway Environmental Center for consolidation by type and then loaded into large transfer trailers for shipment to either a landfill or recycling facilities (RethinkWaste, 2015c).

Solid waste for landfill disposal is sent to Ox Mountain Sanitary Landfill located off SR-92 in Half Moon Bay; this is the only active landfill in San Mateo County. Construction and demolition waste and other types of construction materials are sent to the Zanker Road recycling facility in San José. Compostable materials such as yard trimmings and food scraps are sent to the Newby Island and Grover composting facilities in San José and near Tracy, respectively (Rethink Waste, 2015c).

The City's WWTP generates biosolids as a by-product. Biosolids not used for land application are transported to either Ox Mountain Sanitary Landfill or to Potrero Hills Landfill in Suisun City. On average, the WWTP generates approximately 180 to 200 tons of biosolids per week that are loaded into approximately eight to nine 50-cubic-yard trailers for transfer.

The Ox Mountain Sanitary Landfill is operated by Republic Services. As of May 2011, the landfill had a remaining capacity of approximately 26.9 million cubic yards out of a permitted capacity of 60 million cubic yards (CalRecycle, 2015a). The remaining capacity is expected to last through 2018. The owner of the landfill has a permit for expansion of the landfill. When the existing permit expires in 2016, either the existing landfill will be expanded further or nearby Apanolio Canyon will be opened for fill (City of San Mateo, 2009).

As of January 2006, the remaining capacity of Potrero Hills Landfill was approximately 13.8 million cubic yards out of a permitted capacity of 83.1 million cubic yards (CalRecycle, 2015b).

17.1.3 Wastewater

Existing wastewater collection and treatment in San Mateo is provided by the WWTP, located at 2050 Detroit Drive near J. Hart Clinton Drive at Marina Lagoon. The WWTP is described further in Chapter 1.

17.1.4 Energy – Electricity and Natural Gas

Electrical and natural gas service in San Mateo is provided by PG&E. In 2012, PG&E's power mix consisted of non-emitting nuclear generation (21 percent), renewable resources including solar, wind, geothermal, biomass, and small hydroelectric (19 percent), large hydroelectric facilities (11 percent), natural gas/other (27 percent), and unspecified/untraceable (21 percent) (PG&E, 2015a). The total electricity generated and procured by PG&E in 2014 was 74,547 gigawatt-hours (PG&E, 2015b).

PG&E is continuing to add renewable energy to its power mix, with a goal of 33 percent renewables by the end of 2020 (PG&E, 2015a). PG&E can also purchase power from customers who install eligible renewable generation up to 1.5 megawatts in size. PG&E is also continuing to invest in conventional generation facilities such as combined cycle natural gas power plants.

17.2 Regulatory Framework

17.2.1 Federal Regulations

17.2.1.1 Clean Water Act Section 405

Section 405 of the Clean Water Act regulates the land application and land disposal of sludge, the solid, semisolid, or liquid untreated residue generated during treatment of domestic sewage in a treatment facility.

17.2.1.2 Title 40 Code of Federal Regulations Part 503

Provisions for sludge quality, application rates, and environmental conditions for permitting are provided in 40 CFR 503. The regulations also specify sludge management methods, monitoring, and record keeping requirements for disposal facilities and land application facilities. Sewage sludge can be disposed of in landfills and lagoons, it can be incinerated, or it can be applied to the land as a soil enhancer or fertilizer. Land application of sewage sludge is often done at parks, golf courses, abandoned mines, and during construction site restoration. It can also be applied to crops, including crops for human consumption.

17.2.2 State Regulations

17.2.2.1 California Water Code

The California Water Code requires all urban water suppliers that provide water for municipal purposes either directly or indirectly to more than 3,000 customers (or supply more than 3,000 acre-feet of water annually) to prepare urban water management plans at least every 5 years. The plans describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation, and demand management activities. Components of a plan may vary according to individual community or area characteristics and its capability to efficiently use and conserve water. The plans address measures for residential, commercial, governmental, and industrial water demand management.

17.2.2.2 California Integrated Waste Management Act

The California Integrated Waste Management Act, also known as Assembly Bill 939, required each jurisdiction in the state to divert 25 percent of its solid waste from landfill or transformation facilities by 1995 and 50 percent by 2000. Accepted diversion methods include source reduction, recycling, and composting activities. The act also required each county to prepare a Countywide integrated waste management plan, which is the main planning document for solid waste management in each county.

The Porter-Cologne Water Quality Control Act, which regulates wastewater discharges to surface waters, including San Francisco Bay, through the NPDES program. Wastewater generators must obtain a permit that contains specific requirements to limit the pollutants in their discharges and monitor their wastewater to

ensure that it meets all requirements. Wastewater dischargers must maintain their treatment facilities, and treatment plant operators must be certified and routinely inspected.

17.2.3 Local Regulations

Title 15 of the Municipal Code (City of San Mateo, 2015) provides requirements and procedures for applicants seeking a franchise for electric or gas transmission or distribution (City of San Mateo, 2015).

The San Mateo City Council passed an ordinance amending the Municipal Code to require that certain construction and demolition projects achieve waste diversion rates of up to 60 percent. The ordinance requires that a construction and demolition recycling and waste reduction plan and a security deposit be submitted as a condition of a building permit. The City provides a list of construction salvage and recycling centers to support construction waste diversion. The ordinance also requires that documentation of compliance with the required diversion rate be submitted upon completion of the final inspection as a condition of refunding the deposit. Specific diversion requirements include the following:

- A minimum recycling rate of 60 percent is required for all new construction and demolition projects.
- A minimum recycling rate of 50 percent is required for alteration projects covered by the ordinance.
- For all projects, at least 25 percent of diverted material shall come from waste that excludes soil, concrete, asphalt and other non-structural debris.

Several of the goals and policies in the General Plan (City of San Mateo, 2010) are applicable to the provision of utilities, including the following:

GOAL 4a: Facilities. Seek to provide a safe and predictable supply of water, and provide storm drainage, sewer and flood control facilities adequate to serve existing needs, the projected population and employment growth and to reduce the associated life safety and health risks to acceptable levels.

LU 4.4: Water Supply. Seek to ensure a safe and predictable water system for existing and future development by taking the following actions:

- As a high priority, work with California Water Company and Estero Municipal Improvement District and adjacent jurisdictions to develop supplemental water sources and conservation efforts.
- Strongly encourage water conservation by implementing pro-active water conservation methods, including requiring all new development to install low volume flush toilets, low-flow shower heads, and utilize drip irrigation while promoting high-efficiency washing machines and establishing an education program to improve water conservation practices.
- Investigate the feasibility of developing capacity to use recycled wastewater, stormwater runoff, graywater and ground water that will enable reuse of water for irrigation purposes, freeing comparable potable water supplies for other uses.

LU 4.28: Peakload Water Supply. Seek to ensure that the CalWater and the Estero Municipal Improvement District provide and maintain a water supply and distribution system which provides an adequate static pressure to deliver a minimum fire hydrant flow of 2,500 gallons per minute to all areas of the City, except where a lesser flow is acceptable as determined by the Fire Chief. Ensure that new development does not demand a fire flow in excess of that available.

LU 4.31: Solid Waste Disposal. Continue to support programs to reduce solid waste materials in landfill areas in accordance with State requirements.

LU 4.32: Recycling. Support programs to recycle solid waste in compliance with State requirements. Require provisions for on-site recycling for all new development.

PA 4.7: Wastewater Treatment Plant. Maintain the WWTP as designated in Policy LU-4.5.

LU 4.5: Wastewater Treatment Plant Expansion. Provide adequate waste water treatment for the projected 2030 service area population, employment and development. Require that any future expansion of the Waste Water Treatment Plant (WWTP) be designed to be compatible with the adjacent parks, school, and low-density residential areas by screening views of the WWTP with extensive and tall landscaping and reducing the height of all new structures to the maximum practicably feasible. Any future expansion of the WWTP shall take into account the possible rise in sea level.

LU 4.6: Inter-Agency Coordination. Coordinate future expansion or modification of the Wastewater Treatment Plant with the other users of the plant including the Estero Municipal Improvement District (Foster City), the Crystal Springs County Sanitation District, Hillsborough and Belmont.

LU 4.7: Sewer System. Provide a sewer system which safely and efficiently conveys sewage to the wastewater treatment plant. Implement the Sewer System Management Plan (SSMP) to ensure proper maintenance, operations and management all parts of the wastewater collection system.

1. Comprehensive Sewer System Study. As a high priority maintain the comprehensive sewer system study to assess the efficiency and integrity of the sewer lines and facilities, and develop a Capital Improvement Program to make any necessary improvements.
2. Sewer Requirements for New Development. Require new major multifamily and commercial developments to evaluate the main sewer lines in the project vicinity which will be utilized by the new development and make any improvements necessary to convey the additional sewage flows.

17.3 Assessment Methods and Thresholds of Significance

Thresholds of significance are based on Appendix F and Appendix G of the CEQA Guidelines. Impacts on utilities in the City may occur if the CWP would:

- Exceed wastewater treatment requirements of the RWQCB
- Require the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects
- Require the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects
- Have insufficient water supplies available to serve the CWP from existing entitlements and resources, or new or expanded entitlements needed
- Result in a determination by the wastewater treatment provider that serves or may serve the project that it does not have adequate capacity to serve the CWP's projected demand in addition to the provider's existing commitments
- Be served by a landfill with insufficient permitted capacity to accommodate CWP solid waste disposal needs
- Not comply with federal, state, and local statutes and regulations related to solid waste
- Result in wasteful, inefficient, or unnecessary consumption of energy

17.4 Environmental Impacts

Potential impacts of the CWP on cultural and paleontological resources are summarized in Table 17-1 and described in subsequent sections.

TABLE 17-1
Summary of Utilities Impacts
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Impact	In-System Storage Program	Full Conveyance Program	New Headworks Project	Primary Clarifier Project
Impact 17-1. Implementation of the CWP would not exceed wastewater treatment requirements of the Regional Water Quality Control Board.	Less than significant impact	Less than significant impact	Less than significant impact	Less than significant impact
Impact 17-2. Implementation of the CWP includes the construction of additional wastewater treatment facilities and the expansion of existing facilities.	Less than significant impact	Less than significant impact	Less than significant impact	Less than significant impact
Impact 17-3. Implementation of the CWP may require or result in the construction of new storm water drainage facilities or expansion of existing facilities.	Less than significant impact	Less than significant impact	Less than significant impact	Less than significant impact
Impact 17-4. Implementation of the CWP could affect water supplies.	Less than significant impact	Less than significant impact	Less than significant impact	Less than significant impact
Impact 17-5. Implementation of the CWP could affect wastewater treatment capacity.	Less than significant impact	Less than significant impact	Less than significant impact	Less than significant impact
Impact 17-6. Implementation of the CWP could affect solid waste disposal.	Less than significant impact	Less than significant impact	Less than significant impact	Less than significant impact
Impact 17-7. Implementation of the CWP would increase energy use.	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation

Impact 17-1. Implementation of the CWP would not exceed wastewater treatment requirements of the Regional Water Quality Control Board.

In-System Storage Program

One of the objectives of the In-System Storage Program is to upgrade the WWTP to meet regulatory requirements, including requirements of the RWQCB. The In-System Storage Program would improve the quality of discharged water and the reliability of the WWTP to meet discharge requirements. No significant impacts would occur.

Full Conveyance Program

One of the objectives of the Full Conveyance Program is to upgrade the WWTP to meet regulatory requirements, including requirements of the RWQCB. The Full Conveyance Program would improve the quality of discharged water and the reliability of the WWTP to meet discharge requirements. No significant impacts would occur.

New Headworks Project and Primary Clarifier Project

The New Headworks Project and Primary Clarifier Project are necessary projects of the WWTP upgrade. They would be part of the treatment train that would improve the quality of discharged water and the reliability of the WWTP to meet discharge requirements. No significant impacts would occur.

Impact 17-2. Implementation of the CWP includes the construction of additional wastewater treatment facilities and the expansion of existing facilities.

In-System Storage Program

Wasterwater treatment service for the entire Service Area would be maintained during construction of the In-System Storage Program. No additional wastewater treatment facilities would be required during construction to maintain service.

The current permitted capacity of the WWTP is 15.7 mgd; the permitted capacity would not change with implementation of the In-System Storage Program. The current ADWF is approximately 11 mgd, and is expected to increase to 13.9 mgd by 2035, based on the modest growth anticipated in the service area (Carollo Engineers, Inc., 2014). The In-System Storage Program would enable the WWTP to continue to serve the existing permitted average dry weather capacity. In addition, the In-System Storage Program would increase the flow capacity of the WWTP to address wet weather flows. The potential impacts of the In-System Storage Program are discussed throughout this Draft PEIR. No additional or expanded wastewater treatment facilities are expected to be needed after the In-System Storage Program is complete. No significant impacts would occur.

Full Conveyance Program

The impacts of the Full Conveyance Program would be the same as described for the In-System Storage Program. No significant impacts would occur.

New Headworks Project and Primary Clarifier Project

The impacts of the New Headworks Project and Primary Clarifier Project would be the same as described for the In-System Storage Program. The capacity of the New Headworks Project and Primary Clarifier Project would be sufficient to meet the permitted average dry weather capacity. No significant impacts would occur.

Impact 17-3. Implementation of the CWP may require or result in the construction of new storm water drainage facilities or expansion of existing facilities.

In-System Storage Program

Pipeline and pump station projects f In-System Storage Program would include belowground facilities; after construction, the ground surface would be returned to preconstruction conditions. For the In-System Storage Program, one or more in-system equalization storage basin would be constructed as belowground facilities, with a minor aboveground structure to provide access. Depending on the site(s) selected, portions of the ground surface above the basin(s) could be paved. This could result in an increase in impervious surface and stormwater runoff, depending on the condition of the site(s) prior to construction. However, the site(s) would encompass no more than approximately 2.4 acres, a minor change in the amount of pavement in the City. Existing stormwater collection systems would be adequate.

New WWTP facilities would be constructed on the Detroit Drive parcel. Currently, the majority of this parcel is vegetated. Construction of new WWTP facilities would result in conversion of vegetated land to impervious surfaces (pavement and facilities). This could increase stormwater runoff from the Detroit Drive parcel. However, the In-System Storage Program includes construction of stormwater infrastructure within the WWTP with appropriate capacity to collect and convey stormwater to the sewage treatment system. The impacts of the stormwater infrastructure are evaluated in this Draft PEIR. No new or expanded storm water facilities would be needed after implementation of the In-System Storage Program.

Full Conveyance Program

The impacts of the Full Conveyance Program would be the same as described for the In-System Storage Program. The site for the new Dale Avenue Pump Station is currently vegetated, and would remain so following construction. The impacts of the stormwater infrastructure are evaluated in this Draft PEIR. No

new or expanded storm water facilities would be needed after implementation of the Full Conveyance Program.

New Headworks Project and Primary Clarifier Project

The impacts of the New Headworks Project and Primary Clarifier Project would be the same as described for the In-System Storage Program. These projects would be constructed on the Detroit Drive parcel. Construction of stormwater infrastructure within the WWTP would have the appropriate capacity to collect and convey stormwater to the sewage treatment system. The impacts of the stormwater infrastructure are evaluated in this Draft PEIR. No new or expanded storm water facilities would be needed after implementation of the New Headworks Project and Primary Clarifier Project.

Impact 17-4. Implementation of the CWP could affect water supplies.

In-System Storage Program

Construction of the In-System Storage Program may require the use of water for dust control and for certain types of pipeline construction. However, the amount of water needed would be minor and would be met with existing water supplies. Construction impacts would be less than significant.

Operation of the In-System Storage Program, with the increased treatment levels, would create an opportunity for use of recycled water, which could offset the use of potable water and result in a net increase in potable supply. This would be a beneficial impact.

Full Conveyance Program

Construction of the Full Conveyance Program may require the use of water for dust control and for certain types of pipeline construction. However, the amount of water needed would be minor and would be met with existing water supplies. Construction impacts would be less than significant.

Operation of the Full Conveyance Program, with the increased treatment levels, would create an opportunity for use of recycled water, which could offset the use of potable water and result in a net increase in potable supply. This would be a beneficial impact.

New Headworks Project and Primary Clarifier Project

Construction of the New Headworks Project and Primary Clarifier Project may require the use of water for dust control. However, the amount of water needed would be minor and would be met with existing water supplies. Construction impacts would be less than significant.

Operation of the New Headworks Project and Primary Clarifier Project, with the increased treatment levels, would support creation of an opportunity for use of recycled water, which could offset the use of potable water and result in a net increase in potable supply. This would be a beneficial impact.

Impact 17-5. Implementation of the CWP could affect wastewater treatment capacity.

In-System Storage Program

One of the objectives of the In-System Storage Program is to increase the capacity of the collection and treatment system to handle expected wet weather flows. After implementation of the In-System Storage Program, the collection and treatment system would have adequate capacity to handle up to 98 mgd during wet weather flows, and would more reliably meet the treatment requirements for average dry weather flows.

Minor disruptions in sewage or treatment service may occur during construction. During pipeline construction, sewage service to specific locations may need to be suspended for up to a few hours when laterals are being disconnected and connected to a pipeline project. In addition, the existing WWTP may occasionally be shut down for a night when an existing treatment facility needs to be taken offline. These

service interruptions would be infrequent and short in duration (up to a few hours). No significant impacts would be expected.

Full Conveyance Program

The impacts of the Full Conveyance Program would be the same as described for the In-System Storage Program. No significant impacts would be expected.

New Headworks Project and Primary Clarifier Project

The impacts of the New Headworks Project and Primary Clarifier Project would be the same as described for the In-System Storage Program. The New Headworks Project and Primary Clarifier Project would be sized to support the appropriate wet weather flows. No significant impacts would be expected.

Impact 17-6. Implementation of the CWP could affect solid waste disposal.

In-System Storage Program

Implementation of the In-System Storage Program would result in the generation of construction and demolition waste, including concrete, asphalt, used sewage pipes, soil, and used equipment. Construction and demolition projects in San Mateo are required to achieve a minimum recycling rate of 60 percent. Several construction salvage and recycling centers are located around the Bay Area to support construction waste diversion (see Figure 2-3). Construction waste would go to landfills with sufficient permitted capacity. Hazardous materials generated during construction would be disposed of at an appropriate licensed facility (see Chapter 9).

Operation of the In-System Storage Program would continue to generate biosolids; the volume would increase slightly with the increasing capacity of the facility. Existing land application opportunities and landfill capacity are expected to be sufficient.

Full Conveyance Program

The impacts of the Full Conveyance Program would be the same as described for the In-System Storage Program. No significant impacts would be expected.

New Headworks Project and Primary Clarifier Project

The impacts of the New Headworks Project and Primary Clarifier Project would be the same as described for the In-System Storage Program. No significant impacts would be expected.

Impact 17-7. Implementation of the CWP would increase energy use.

In-System Storage Program

Implementation of the In-System Storage Program would result in the use of energy for construction, primarily the use of gasoline and diesel fuel to power construction equipment. Construction activities would occur over a 10 to 20 year period. As described in Chapter 16, at a maximum, it is estimated that concurrent construction activities would generate up to 409 daily trips and 110 peak hour trips. However, these peaks would not be continuous through the overall construction period. **Mitigation Measure 4-1 Implement BAAQMD construction emission control measures** includes measures such as reduced idling times, which would reduce energy use by construction equipment and conserve fuels. With implementation of **Mitigation Measure 4-1**, impacts of the use of energy during construction of the In-System Storage Program would be less than significant.

Implementation of the In-System Storage Program would result in the use of energy for operation, through electricity use for wastewater conveyance and treatment. Electricity use would increase approximately 12 percent compared to current use, primarily as a result of the increased level of treatment, as well as the modest increase in ADWF. However, the highly treated effluent would be available for recycled water use, potentially offsetting energy use to treat and pump water from potable sources. In addition, the In-System

Storage Program would include new equipment such as pumps and interior facility lighting that would be more energy efficient that existing equipment. The use of automation would also increase energy efficiencies. The new facilities and pipelines would significantly reduce the needed level of maintenance and repair and the associated energy use compared to current conditions.

PG&E is continuing to invest in renewable and conventional energy production and future energy supplies would be expected to be sufficient to meet the increased In-System Storage Program energy use. As shown in Table 8-4, the maximum energy use of the In-System Storage Program would be 14,382.49 megawatt hours per year, less than 0.00002 percent of PG&E's current generation and procurement. Impacts of the use of energy during operation of the In-System Storage Program would be less than significant.

The increased use of energy by the In-System Storage Program could require new or improved electric transmission infrastructure such as a new substation. Such infrastructure would be expected to be located primarily on the WWTP Site and would be incorporated in facility design.

Full Conveyance Program

The impacts of the Full Conveyance Program would be the same as described for the In-System Storage Program. With implementation of **Mitigation Measure 4-1 Implement BAAQMD construction emission control measures**, impacts of the use of energy during construction of the Full Conveyance Program would be less than significant. Impacts of the use of energy during operation of the Full Conveyance Program would be less than significant.

The increased use of energy by the Full Conveyance Program could require new or improved electric transmission infrastructure such as a new substation. Such infrastructure would be expected to be located primarily on the WWTP Site and would be incorporated in facility design.

New Headworks Project and Primary Clarifier Project

The impacts of the New Headworks Project and Primary Clarifier Project would be the same as described for the In-System Storage Program. With implementation of **Mitigation Measure 4-1 Implement BAAQMD construction emission control measures**, impacts of the use of energy during construction of the New Headworks Project and Primary Clarifier Project would be less than significant. Impacts of the use of energy during operation of the New Headworks Project and Primary Clarifier Project would be less than significant.

17.5 Mitigation Measures

Mitigation Measure 4-1 Implement BAAQMD construction emission control measures is described in Chapter 4.

17.6 References

California Environmental Protection Agency. 2015. *Wastewater*. http://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/wastewater.shtml. Accessed April 29, 2015.

California State Water Resources Control Board. 2015. *Porter-Cologne Water Quality Control Act (Cal. Water Code Division 7) Effective January 1, 2015*. http://www.swrcb.ca.gov/laws_regulations/docs/portercologne.pdf.

CalRecycle. 2015a. *Facility/Site Summary Details: Corinda Los Trancos Landfill (Ox Mtn) (41-AA-0002*). http://www.calrecycle.ca.gov/SWFacilities/Directory/41-AA-0002/Detail/. Accessed June 25, 2015.

_____. 2015b. *Facility/Site Summary Details: Potrero Hills Landfill (48-AA-0075)*. http://www.calrecycle.ca.gov/SWFacilities/Directory/48-AA-0075/Detail/. Accessed June 25, 2015.

Carollo Engineers, Inc. 2014. *City of San Mateo Integrated Wastewater Master Plan*. Prepared for City of San Mateo. October.

City of San Mateo. 2009. *Draft Environmental Impact Report for the City of San Mateo General Plan Update*. July 27.

_____. 2010. *City of San Mateo General Plan – Vision 2030*. Resolution No. 134-2010. Adopted by the City Council on October 18.

_____. 2015. *San Mateo City Charter and Municipal Code*. Available at http://qcode.us/codes/sanmateo/. Effective as of September 17.

Pacific Gas & Electric (PG&E). 2015a. Clean Energy Solutions Website http://www.pge.com/en/about/environment/pge/cleanenergy/index.page. Accessed October 11.

Pacific Gas & Electric (PG&E). 2015b. *PG&E Corporation and Pacific Gas and Electric Company 2014 Joint Annual Report to Shareholders*.

Rethink Waste. 2015a. *Recology San Mateo County*. http://www.rethinkwaste.org/about/service-providers/recology. Accessed June 24.

_____. 2015b. *South Bay Recycling*. http://www.rethinkwaste.org/about/service-providers/south-bay-recycling. Accessed June 24.

_____. 2015c. *Shoreway Environmental Center*. Brochure.

Chapter 18. Other Required California Environmental Quality Act Considerations

18.1 Cumulative Impacts

This section summarizes the cumulative impacts associated with Program implementation. Cumulative impacts would be the same for both the In-System Storage Program and the Full Conveyance Program because the impacts of the two CWP alternatives would be very similar in type, scale, location, and timing.

18.1.1 Introduction

Cumulative impact analysis is an important component of the environmental documentation and approval process, and is required by CEQA. Cumulative impacts could occur when the effects of the CWP are combined with other planned and foreseeable projects such that environmental impacts are more intense or longer in duration.

According to State CEQA Guidelines Section 15130(a), "an EIR shall discuss cumulative impacts of a project when the project's incremental effect is cumulatively considerable." "Cumulatively considerable" means that the incremental effects of an individual project are considerable when viewed in connection with the effects past projects, the effects of other current projects, and the effects of possible future projects. As stated in State CEQA Guidelines Section 15355, cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time. In addition, Section 15130(b) identifies that the following elements are necessary for an adequate cumulative analysis:

- Either:
  - A list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency; or,
  - A summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or area wide conditions contributing to the cumulative impact. Any such planning document shall be referenced and made available to the public at a location specified by the lead agency.
- A definition of the geographic scope of the area effected by the cumulative effect and a reasonable explanation of for the geographic limitation used;
- A summary of the expected environmental effects to be produced by those projects with specific reference to additional information stating where that information is available; and
- A reasonable analysis of the cumulative impacts of the relevant projects. An EIR shall examine reasonable, feasible options for mitigating or avoiding the project's contribution to any significant cumulative impacts.

Where a lead agency is examining a project with an incremental effect that is not cumulatively considerable, a lead agency need not consider that effect significant but shall briefly describe its basis for concluding that the incremental effect is not cumulatively considerable.

18.1.2 Cumulative Setting

The geographic scope of the area affected is the City of San Mateo WWTP service area, which encompasses the entirety of the collection system and the WWTP itself. All impacts of both CWP alternatives would occur at specific sites within the service area, and are mostly *construction* impacts that would occur at or near each individual project site. This analysis focuses on construction of CWP projects, because construction

impacts are the most common and widespread impacts expected to occur over the long CWP implementation period.

The cumulative impacts analysis focuses on the environmental resources analyzed in Chapters 3 through 17 of this document. Additional information about the setting for each of these resources can be found in each of the individual resource chapters. The cumulative setting conditions are based on the existing land uses within the service area, which exist as a result of past and present development activity. In addition, consideration was given to new development projects that may occur during the CWP implementation period. Although the exact nature and extent of these future projects is not known, the general character of foreseeable future development is expected to be consistent with approved land use plans that apply to the WWTP service area (primarily the City of San Mateo General Plan) and similar in nature to current development projects. In general, foreseeable future projects are expected to include the following.

- Continued buildout of the Bay Meadows Transit-Oriented Development, which is occurring on 83 acres of the former Bay Meadows racetrack. Most development permits were approved in 2008, and the community is partially built. At buildout, the community is expected to consist of over 1,000 residential units with integrated office and retail sites.
- Redevelopment and general intensification of land uses in the historic Downtown area, consistent with the San Mateo Downtown Area Plan. There are several current development projects that are representative of the types of projects that are reasonably foreseeable, including:
  - Demolition of an existing commercial building and construction of a new 12,500 square-foot building with 25 onsite parking spaces.
  - Construction of a new 52-unit multi-family residential unit with underground parking.
  - Demolition of two medical office buildings and construction of a new 33-unit, four story residential building with underground parking.
  - Demolition of two residential buildings and one commercial building and construction of a new 16-unit multi-family residential building with underground parking.
- Small suburban development projects that are likely to occur throughout the service area, such as new residential units and small neighborhoods, new office and light industrial buildings in existing office parks, freeway-oriented commercial developments (e.g., hotels) along the U.S. Highway 101 corridor.
- Transportation improvements north of Downtown San Mateo consistent with the North Central San Mateo Community-Based Transportation Plan, including capital projects to improve transit stops and pedestrian and bicycle amenities.

No other major, citywide utility repair or capital projects have been identified that compare in scale to the CWP. Consistent with typical utility operations, routine maintenance work and minor capital improvement projects are expected to occur throughout the City; for example, small water pipeline installations, storm drain repairs, and road resurfacing. Some of these activities may occur at the same time as construction of CWP projects; however, the scale of these individual projects would be small.

18.1.3 Cumulative Analysis

The cumulative impacts analysis is based on the analysis of environmental resources in Chapters 3 through 17 of this document, together with the potential effects from the projects discussed above.

18.1.4 Aesthetics

Visible CWP projects would be concentrated in the vicinity of the existing WWTP and Dale Avenue Pump Station. The extent of other potential development in this area is not expected to further degrade views from the KOPs identified in Section 3.2.2.1, as the San Mateo General Plan limits development to the existing office and light industrial business parks in the area. Therefore, there would be no cumulative

impact. Furthermore, all projects that include large, aboveground features would follow the City's processes for design review including the SPAR process. This process would help minimize the potential for aesthetic impacts through local review of architectural design, landscaping, lighting, surface painting, and similar architectural and landscape treatments.

18.1.5 Air Quality

In general, operation of the CWP as well as other potential development would be consistent with the ABAG growth projections used in the preparation of regional air plans (e.g., Bay Area 2010 Clean Air Plan). The extent of potential development in the vicinity of the WWTP and Dale Avenue Pump Station is not expected to further contribute to odor generation. There would be no cumulative impacts as a result of these activities.

Other development in the area may contribute to VOC emissions, but would be subject to BAAQMD permitting requirements for new sources. For all projects occurring throughout the WWTP service area, construction equipment would be required to be licensed for use in California pursuant to ARB emissions standards, and standard dust control measures would be implemented during construction pursuant to the BAAQMD CEQA guidelines. Therefore, the CWP's cumulative contribution to air quality impacts from VOCs and during construction would be reduced to a less than cumulatively considerable level.

18.1.6 Biological Resources

Development of CWP projects would occur in urbanized areas, with little potential for impacts to biological resources, and requires only pre-construction surveys with avoidance and minimization measures. Other potential development projects occurring in nearby areas also would have limited potential for biological resources impacts due to limited habitat present. Although the potential for habitat loss appears to be minimal, there is some potential for localized impacts from construction disturbance in a similar manner as construction of the CWP projects. For this reason, implementation of the CWP projects, in combination with cumulative development, would increase the potential to disturb sensitive biological resources. This is a potentially significant cumulative impact. Pre-construction surveys with avoidance and minimization measures are typically prescribed in these cases consistent with City policies, code provisions, and standard conditions of project approval. With implementation of these measures, the CWP's cumulative contribution to biological resources impacts would be reduced to a less than cumulatively considerable level.

18.1.7 Cultural Resources

Development of CWP projects would occur in urbanized areas that have been previously disturbed; however, previous cultural surveys indicate the likely presence of undisturbed subsurface archaeological deposits in some portions of the City. Implementation of the CWP projects, in combination with cumulative development, would increase the potential to disturb these undiscovered cultural resources. This is a potentially significant cumulative impact. Pre-construction surveys with avoidance and minimization measures are typically prescribed in these cases consistent with City policies, code provisions, and standard conditions of project approval. With implementation of these measures, the CWP's cumulative contribution to cultural resources impacts would be reduced to a less than cumulatively considerable level.

18.1.8 Geology and Soils

Geotechnical impacts related to expansive soils and seismic hazards are site specific rather than cumulative in nature. Like the CWP projects, all development would be subject to uniform site development and construction standards appropriate for regional geology and soil conditions. Therefore, there would be no cumulative impact. For an additional discussion of erosion and sediment control, see Hydrology and Water Quality below.

18.1.9 Greenhouse Gases

In general, operation of the CWP as well as other potential development would be consistent with the ABAG growth projections, and would use electricity from the California power grid. In this manner, all projects are

expected to comply with the RPS and AB 32 scoping plan requirements. There would be no cumulative impacts as a result of these activities.

For all projects occurring throughout the WWTP service area, construction equipment would be required to standard best management practices pursuant to the BAAQMD CEQA guidelines, including minimizing idling times and maintaining equipment in good condition. Therefore, the CWP's cumulative contribution to greenhouse gas impacts during construction would be reduced to a less than cumulatively considerable level.

18.1.10 Hazards and Hazardous Materials

Impacts from hazards and hazardous materials are site specific rather than cumulative in nature. Like the CWP projects, all projects that include the routine use, storage, transport, and disposal of hazardous construction materials would follow DTSC, EPA, OSHA, and San Mateo Fire Department requirements, including preparation of a hazardous communication program, hazardous materials business plan, and spill prevention and countermeasures plan. Therefore, there would be no cumulative impact.

18.1.11 Hydrology and Water Quality

CWP projects that could result in changes in surface runoff patterns would be concentrated in the vicinity of the existing WWTP and Dale Avenue Pump Station. The extent of other potential development in this area is not expected to worsen runoff conditions, as development would be limited to the existing office and light industrial business parks in the area. Therefore, there would be no cumulative impact. Furthermore, all projects that increase impervious surfaces would follow the City of San Mateo Municipal Code stormwater management and discharge requirements (Title 7, Chapter 39, Stormwater Management and Discharge Control).

Development of CWP projects could result in erosion and siltation, with subsequent water quality impacts. This is expected to occur primarily during construction, as almost all operations activities would be contained within the WWTP site where runoff is treated. For all projects occurring throughout the WWTP service area, similar water quality effects could occur during construction and additional effects could occur from rainfall onto developed sites after construction is finished. This is a potentially significant cumulative impact. All projects would follow the San Mateo Countywide Water Pollution Prevention Program, including provisions of its Stormwater Management Plan, including pollution reduction activities for construction sites. Each project would prepare a stormwater pollution prevention plan to address specific, onsite pollutant sources and controls during and after construction. Therefore, the CWP's cumulative contribution to water quality impacts during and after construction would be reduced to a less than cumulatively considerable level.

18.1.12 Land Use

CWP projects with potential land use impacts, including impacts to alternative transportation routes, would be concentrated in the vicinity of the existing WWTP and Dale Avenue Pump Station. The extent of other potential development in this area is not expected to result in land use impacts, as the San Mateo General Plan limits development to the existing office and light industrial business parks in the area. Individual projects, like the WWTP improvements, would be required to follow the City's processes for special use permit and/or design review including the SPAR process. This process would help minimize the potential for land use and community impacts through local review of architectural design, landscaping, lighting, surface painting, and similar architectural and landscape treatments. Therefore, there would be no cumulative impact.

18.1.13 Noise

CWP projects with potential noise impacts during operations would be concentrated in the vicinity of the existing WWTP and Dale Avenue Pump Station. The extent of other potential development in this area is not expected to result in noise impacts, as the area is primarily existing office and light industrial business parks,

which are not sensitive land uses. Individual projects, like the WWTP improvements, would be required to follow the City's processes for special use permit and/or design review, which is expected to include review for consistency with noise standards in Chapter 7.30 of the San Mateo Municipal Code.

CWP projects also include pipeline projects occurring throughout the WWTP service area, construction of which could result in significant and unavoidable noise impacts (see Impact 12-1). Other potential development projects occurring in nearby areas also could result in significant noise impacts. The additional contribution of these other projects occurring at the same time as CWP construction activities could further worsen noise levels and result in a significant cumulative impact. All projects would follow the construction noise restrictions in Chapter 7.30 of the Municipal Code, including weekday and weekend construction hour limits, but it is not clear that impacts could be reduced to a less than cumulatively considerable level. As part of City processes for special use permit and/or design review, the City should consider construction-phase mitigation measures similar to **Mitigation Measure 12-1**, including construction noise minimization measures, noise hotlines, and noise complaint resolution processes. However, these mitigation measures applied to other projects could not reduce the significant and unavoidable impact that results from construction of CWP projects; therefore, the cumulative impact would be significant and unavoidable.

18.1.14 Population and Housing

The CWP would not induce population and housing growth, and would not displace housing or people. Because the project would have no impact, it would not contribute to cumulative impacts.

18.1.15 Public Services

The CWP does not contain features that would increase demand for police, fire, hospital, school, or library service during operations. For example, the CWP would not induce population and housing growth. During construction, some public services could be disrupted from roadway construction (e.g., temporary rerouting of emergency access). However, service disruptions would typically be no more than a few days for a given project. All projects would implement standard measures to coordinate in advance with emergency service providers and other public services and utilities to establish signage and detours to maintain emergency access or otherwise minimize service interruptions. Therefore, there would be no cumulative impact.

18.1.16 Recreation

The CWP does not contain features that would increase demand for recreation facilities during operations. For example, the CWP would not induce population and housing growth. During construction, some recreation facilities could be disrupted from roadway construction and from utility work within parks (e.g., excavation of detention facilities). If an in-system storage basin is constructed under a park, mitigation would offset any loss of use at that park. These types of temporary impacts would be site specific rather than cumulative in nature. Like the CWP projects, all projects would implement standard measures to coordinate in advance with City parks services to ensure that park users are aware of the temporary disruptions. Therefore, there would be no cumulative impact.

18.1.17 Transportation and Traffic

The CWP does not contain features that would increase long-term demand for transportation services and facilities – there would be no population growth inducement and operations (e.g., staff levels) would be similar to existing levels. However, the CWP would increase vehicle use during construction activities, and also would require street and lane closures that would hinder full use of the local transportation system. For all projects occurring throughout the WWTP service area, similar types of transportation effects could occur during construction. This is a potentially significant cumulative impact. All projects would include general safety standards for traffic control, including measures to ensure traffic safety, bicycle and pedestrian access, and coordination with transit and emergency service providers. Therefore, the CWP's cumulative contribution to transportation impacts during construction would be reduced to a less than cumulatively considerable level.

18.1.18 Utilities

The CWP does not contain features that would increase demand for water, solid waste, or wastewater during operations. For example, the program would not induce population and housing growth. Although the CWP would increase electricity use during operation, this increase can be easily accommodated by existing and planned energy supplies. PG&E continues to invest in renewable and conventional energy production and future energy supplies to meet regional energy needs, including those of other potential projects. During construction, some utilities could be disrupted from roadway construction. These types of temporary impacts would be site specific rather than cumulative in nature. Like the CWP projects, all projects would implement standard measures to coordinate in advance with utility providers to avoid or minimize service interruptions. Therefore, there would be no cumulative impact.

18.2 Growth Inducing Impacts

CEQA Guidelines Section 15126.2(d) requires that an EIR identify the likelihood that a proposed project could "foster" or stimulate "…economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment." The City and its satellite collection systems are subject to Cease and Desist Order No. R2-2009-0020, which requires elimination of sanitary sewer overflows and upgraded sewer capacity. The CWP is necessary to comply with Cease and Desist Order No. R2-2009-0020.

The existing WWTP is permitted to treat an average dry weather flow (ADWF) of 15.7 mgd and currently has sufficient hydraulic capacity to support this flow. The actual current ADWF is approximately 11 mgd (Carollo Engineers Inc., 2014). Existing processes within the WWTP have a treatment capacity of over 15.7 mgd, except for the centrifuges for the biosolids, which have a dry weather capacity of 14.6 mgd (Carollo Engineers, Inc., 2014). Based on the modest population growth expected in the service area and planned for in the local government general plans, the 2035 ADWF is expected to be 13.9 mgd and expansion of the permitted capacity for dry conditions is not anticipated to be needed. Therefore, the permitted ADWF under the CWP would continue to be 15.7 mgd. The CWP would increase the capacity of the WWTP only to collect and treat peak wet weather flows (PWWF) to eliminate SSOs and comply with current and future regulations. Because the permitted ADWF would not change, the CWP is not expected to induce population growth or result in growth inducing impacts.

When fully implemented, the In-System Storage Program would produce water that could be used as recycled water. Recycled water use could offset the use of existing potable supplies and increase the overall availability of water resources, potentially inducing growth. However, the infrastructure does not currently exist to convey and use recycled water. Although there have been discussions with the local water supplier, California Water Service Company (Cal Water), regarding recycled water use, no plans have been prepared or approved by Cal Water to construct recycled water infrastructure. The availability of the treated wastewater is not expected to induce population growth.

18.3 Significant Irreversible Environmental Changes

CEQA Guidelines Section 15126.2(c) requires agencies to consider to the fullest extent possible irreversible and irretrievable commitments of resources that would be involved in the proposed action should it be implemented. Nonrenewable resources committed during CWP implementation might be irreversible, because commitments of such resources might permanently remove the resources from further use. CEQA requires an evaluation of irretrievable resources to assure that consumption is justified. For example, cultural resources are nonrenewable; therefore, any destruction or loss of those resources is irreplaceable.

Both CWP alternatives would result in use of construction materials that could not be restored (e.g., metal materials; excavation and/or importing of soils and rocks; and energy used to manufacture, transport, or install the new pipelines) and the use of nonrenewable resources (e.g., fuel) to operate construction equipment. In addition, operation of the facilities would result in use of energy resources (e.g., fossil fuels

and electricity) and chemicals. Consumption of these nonrenewable energy resources would be minimal and would not represent a significant impact on irreversible and irretrievable environmental commitments.

18.4 Significant and Unavoidable Impacts

CEQA Guidelines Section 15126.2(b) requires agencies to describe the significant environmental effects that cannot be avoided if the proposed project is implemented. Based on the analysis in Chapters 3 through 17, two environmental effects were identified as significant and unavoidable:

- Impact 12-1. Construction of the CWP could result in generation of noise levels in excess of standards. On occasion, individual equipment noise may exceed 90 dBA at the property plane, even with mitigation implemented. Impacts from construction would be significant and unavoidable, depending on the equipment type and location used, for the In-System Storage Program, Full Conveyance Program, New Headworks Project, and Primary Clarifier Project.
- Impact 12-3. Implementation of the CWP could generate perceptible offsite vibration. Depending on type, location, and duration of the construction activity including pile driving, vibration impacts may still exceed applicable criteria, even with mitigation implemented. Impacts from construction may be significant and unavoidable for the In-System Storage Program, Full Conveyance Program, New Headworks Project, and Primary Clarifier Project.

All other environmental effects would be mitigated to a less than significant level.

18.5 References

Carollo Engineers, Inc. 2014. *City of San Mateo Integrated Wastewater Master Plan*. Prepared for City of San Mateo. October.

Chapter 19. Alternatives

19.1 Introduction

CEQA requires that a lead agency evaluate the comparative effects of a range of reasonable alternatives to the proposed program that would feasibly attain most of the primary objectives of the program but would avoid or substantially lessen any of the significant effects of the program (CEQA Guidelines, Section 15126.6(a)). Section 15126.6 also states that an environmental impact report (EIR) is required to set forth only those alternatives necessary to permit a reasoned choice. Significant effects of the alternatives shall be discussed but in less detail than those of the program.

The EIR is required to assess the identified alternatives and determine which among the alternatives (including the proposed program) is the environmentally superior alternative. One of the alternatives assessed must be the "No Project" alternative. If the No Project alternative is identified as the environmentally superior alternative, then another of the remaining alternatives must be identified as the environmentally superior alternative.

The City of San Mateo, after extensive studies and analyses (e.g., Carollo Engineers, Inc., 2014), identified two feasible alternatives that meet all CWP objectives. These alternatives are the In-System Storage Program and Full Conveyance Program. This Draft PEIR evaluates these two CWP alternatives at an equal level of detail. Each of the alternatives includes potentially three wastewater treatment scenarios, any of which could be used with either alternative:

- Baseline treatment
- Conventional activated sludge (CAS)
- Membrane bioreactor (MBR)

In addition, the In-System Storage Program includes multiple potential locations for one or more in-system storage equalization basins. The wastewater treatment and equalization location options were not treated as independent alternatives for evaluation. Instead, given the programmatic review completed in this Draft PEIR, the range of wastewater treatment and in-system equalization location options and worst-case scenarios were evaluated for each of the two CWP alternatives.

Several other alternatives were considered. These alternatives are discussed in this chapter and include the following:

1. No Project alternative
2. Partial conveyance of wet weather flows
3. Conveyance system replacement program
4. Natural treatment system

19.2 No Project Alternative

If the CWP is not approved proposed construction activities and the resulting impacts at the WWTP Site and collection system project locations would not occur. These include temporary impacts on traffic, air quality, and noise and use of energy and materials during construction. Operations of the existing WWTP would continue, similar to current operations. Some construction impacts from repair or replacement of broken or blocked sewer pipes would occur, but at a lesser scale than for the CWP. No equalization storage in the system or at the WWTP would be constructed, and associated impacts would not occur. Impacts on the Detroit Drive parcel, including fill of wetlands and an increase in pervious pavement, would still occur if the parcel is used for the Corporation Yard as the City had proposed prior to the CWP.

However, if the CWP is not approved, wet-weather sanitary sewer overflows (SSOs) would continue to occur. The City of San Mateo and its partner agencies would continue to be in violation of the Cease and Desist Order related to the SSOs. The City would also not meet current and future regulatory requirements related to blending, nutrient loading pathogens. Stormwater quality and Bay water quality would be negatively affected. In addition, recycled water to support the City's sustainability goals would not be made available. Opportunities to increase energy efficiency in the WWTP would not occur. The CWP objectives would not be met. Although some impacts of the CWP would be avoided, the No Project alternative would result in potentially significant impacts that would not occur with the CWP.

19.3 Partial Conveyance of Wet Weather Flows

The *Integrated Wastewater Master Plan* (Carollo Engineers, Inc., 2014) included an evaluation of potential in-system storage sites. The evaluation included sites with less than 4 million gallons of storage capacity, which is the minimum storage required to avoid constructing a new Dale Avenue Pump Station. A feasible CWP alternative could include construction of a smaller in-system storage basin, less than 4 million gallons as proposed for the In-System Storage Program, and a new Dale Avenue Pump station, smaller than that included in the Full Conveyance Program. This alternative is called partial conveyance of wet weather flows for the purpose of this Draft PEIR. This alternative would convey more wet weather flows to the WWTP than the In-System Storage Program, requiring larger diameter pipelines, but less flow than the Full Conveyance Program. Impacts of this alternative would be similar in nature to but somewhat greater than either the Full Conveyance or the In-System Storage Program. Partial conveyance of wet weather flows would result in the impacts of both the in-system storage basin, the new Dale Avenue Pump Station. Partial conveyance of wet weather flows would meet most or all of the CWP objectives, but would still have the same significant and unavoidable construction noise and vibration impacts as the two CWP alternatives. Because it includes an in-system storage basin, the New Dale Avenue Pump Station, and larger-diameter pipelines and pump station upgrades, partial conveyance of wet weather flows could cost more than either the In-System Storage Program or the Full Conveyance Program. Therefore, this alternative was not further evaluated.

19.4 Conveyance System Replacement Program

Replacement of all pipelines in the conveyance system in the City was briefly evaluated as a strategy for addressing SSOs. The cost of such a program would be significantly greater than for either CWP alternative approximately $1.3 billion based on an informal estimate. In addition, replacement of the conveyance system would not address all SSOs and would not address aging infrastructure at the WWTP, meet current and future regulatory requirements, or support creation of opportunities for recycled water use. In addition, it would have similar construction impacts, including significant and unavoidable construction noise and vibration impacts, as the two CWP alternatives. For these reasons, this alternative was not further evaluated.

19.5 Natural Treatment System

A natural treatment system is a constructed ecosystem that uses biological, physical, and chemical processes to improve water quality. A constructed treatment wetland would be used for polishing water from the WWTP in lieu of advanced treatment. This may help the City meet current and future water quality regulatory requirements. Treatment wetlands would require construction in and impacts to existing saltwater marsh near the WWTP. This could result in significant and unavoidable loss of wetlands and impacts to special-status wildlife and fish. In addition, treated water would flow into the Bay and would not be available for re-use as recycled water. A natural treatment system could increase the overall cost compared to the In-System Storage Program or Full Conveyance Program, and would not meet all the CWP objectives. It would result in significant and unavoidable impacts to biological resources that would not occur with either the In-System Storage Program or Full Conveyance Program. For these reasons, this alternative was not further evaluated.

19.6 Comparison of Alternatives and Environmentally Superior Alternative

Table 19-1 provides a comparison of the alternatives.

TABLE 19-1
Comparison of Alternatives
Programmatic Environmental Impact Report, City of San Mateo Clean Water Program

Alternative	Major Characteristics	Significant Impacts	Meets CWP Objectives?
In-System Storage Program	One or more underground storage basins upstream of the Dale Avenue Pump Station to detain wastewater flows during peak wet weather events	• Significant and unavoidable construction noise and vibration impacts • All other impacts less than significant with mitigation	Yes
Full Conveyance Program	New pump station next to the existing Dale Avenue Pump Station and larger pipelines to deliver peak wet weather flows to WWTP.	• Significant and unavoidable construction noise and vibration impacts. • All other impacts less than significant with mitigation.	Yes
No Project Alternative	Operation of the existing WWTP and collection system continue, similar to current operations.	• CWP impacts, including construction noise and vibration impacts, avoided. • SSOs would continue to occur. • Violation of Cease and Desist Order related to the SSOs. • Stormwater quality and Bay water quality negatively affected.	No
Partial conveyance of wet weather flows	Includes both in-system storage for wet weather detention and new Dale Avenue Pump Station for wet weather conveyance. May cost more than either In-System Storage Program or Full Conveyance Program.	• Significant and unavoidable construction noise and vibration impacts.	Yes
Conveyance system replacement program	Replacement of all pipelines in City's conveyance system.	• Significant and unavoidable construction noise and vibration impacts. • Would not address all SSOs or aging infrastructure at WWTP. • Would not meet current or future regulatory requirements. • Would not support creation of opportunities for recycled water use.	No
Natural treatment system	Constructed treatment wetland used for polishing water from WWTP in lieu of advanced treatment.	• Significant and unavoidable loss of wetlands and impacts to special-status wildlife and fish. • Treated wastewater not available for recycled water use. • Significant and unavoidable construction noise and vibration impacts may occur.	No

Both the Full Conveyance Program and In-System Storage Program would meet all of the CWP objectives. Impacts of the two alternatives would be very similar.

- Both CWP alternatives would have similar collection system projects in the same locations. The projects would generally differ only in the diameter of the pipelines or the size of equipment in the pump stations. Construction and operation impacts would be similar in type and scale.

- Both CWP alternatives would have the same facilities constructed and operated at the WWTP. The Full Conveyance Program would have facilities with up to approximately 10 percent larger footprints compared to In-System Storage Program, and would have greater in-plant equalization storage. Construction and operation impacts would be similar in type and scale.
- The primary difference is the location of equalization storage and the Dale Avenue Pump Station. Construction of both the Dale Avenue Pump Station expansion and in-system storage basin would result in similar construction-related impacts in different locations. Both entail soil excavation and construction of underground basins and equipment, with minor appurtenances at the surface.
- Both of the CWP alternatives would use the same mitigation measures to reduce impacts to a less-than-significant level.
- Both of the CWP alternatives would result in significant and unavoidable construction noise and vibration impacts.

The No Project alternative is the only alternative to the In-System Storage Program or the Full Conveyance Program that would avoid or substantially lessen the significant and unavoidable construction noise and vibration impacts of the CWP. Therefore, the No Project alternative would be considered the environmentally superior alternative. However, it would not meet any CWP objectives, and would result in significant water quality impacts and conflict with regulatory requirements.

As shown in Table 19-1, of the remaining alternatives, only the In-System Storage Program or the Full Conveyance Program would meet all CWP objectives. In addition, other alternatives could result in the same or greater impacts. As described above, the In-System Storage Program and the Full Conveyance Program would have very similar impacts in type, scale, and location, and neither is environmentally superior to the other. Therefore, both the In-System Storage Program and the Full Conveyance Program are considered the environmentally superior alternatives.

19.7 References

Carollo Engineers, Inc. 2014. *City of San Mateo Integrated Wastewater Master Plan*. Prepared for City of San Mateo. October.

Chapter 20. Report Preparation

20.1 Lead Agency

CITY OF SAN MATEO
DEPARTMENT OF PUBLIC WORKS
330 W. 20th Avenue
San Mateo, CA 94403

20.2 Draft PEIR Authors

CH2M HILL
1737 N. 1st Street, Suite 300
San José, CA 95112

Andrea Gardner—Project Manager
Titi Ala—Permitting
Chris Archer—Senior Environmental Geospatial Professional
Mark Bastasch—Principal Acoustical Engineer
Doug Berschauer—Quality Manager
Jesse Chambers—Planner
Akima Cornell—Planner
John Deaton—Editor
Zeynep Erdal—Wastewater Engineer
Clarice Ericsson—Publications Technician
Matthew Franck—Senior Planner
Lisa Ho—Graphic Design Technician
Josh Hohn—Aesthetics
Clint Helton—Cultural Resources
Russell Huddleston—Wetland Scientist
Daniel O'Leary—Water Engineer
Kathy Rose—Geology and Soils
David Simi—Biologist
Stephen Smith—Geographic Information Systems
Giuseppe Tomasino—Water Engineer
Lisa Valdez—Transportation and Traffic
Jay Witherspoon—Odor
Ben Wright—Water Engineer
Hong Zhuang—Air Quality and Greenhouse Gases

20.3 Contributors

CITY OF SAN MATEO

Caio Arellano—Assistant City Attorney
Sheila Canzian—Director of Parks and Recreation
Dennis Chuck—Staff Engineer, Public Works
Gary DeJesus—Environmental Services Deputy Director, Public Works
Gary Heap—Engineering Manager, Public Works
Ronald Munekawa—Chief of Planning
Sarah Scheidt—Regulatory Compliance Manager, Public Works

Tracy Scramaglia—Senior Engineer, Public Works
Jonathon Strange—Management Analyst, Public Outreach, Public Works
Jimmy Vo—Assistant Engineer, Public Works
Stephen Wu—Assistant Engineer, Public Works
Cathi Zammit—Clean Water Program Manager

FOSTER CITY

Jeff Moneda—Public Works Director
Laura Galli—Associate Civil Engineer, Public Works

ATCHISON, BARISONE, CONDOTTI & KOVACEVICH
SANTA CRUZ, CA

Lauren Valk—Attorney (Counsel for City of San Mateo)

AARONSON, DICKERSON, COHN & LANZONE
SAN CARLOS, CA

Camas J. Steinmetz—Attorney (Counsel for Foster City)

Appendix A
Evaluation of In-System Storage Location Alternatives for the San Mateo Clean Water Program

Evaluation of In-System Storage Location Alternatives for the San Mateo Clean Water Program

PREPARED FOR:	Cathi Zammit/City of San Mateo
COPY TO:	Jay Witherspoon/CH2M HILL
PREPARED BY:	Dan O'Leary/CH2M HILL Andrea Gardner/CH2M HILL Ben Wright/CH2M HILL
DATE:	August 11, 2015

This memorandum describes the process for selecting, evaluating, and screening a list of potential feasible locations in the City of San Mateo's collection system for an in-system storage basin for the San Mateo Clean Water Program. The potentially feasible locations will be included in the Clean Water Program Draft Programmatic Environmental Impact Report.

Background

The City of San Mateo (City) is currently under a Regional Water Quality Control Board (RWQCB) Cease and Desist Order (CDO) requiring improvements to its collection system to eliminate sanitary sewer overflows (SSOs) that occur during peak wet weather flows. The City is considering two Clean Water Program alternatives to address peak wet weather flows:

- The Full Conveyance Program, which includes conveyance of peak wet weather flows to the WWTP. As a result, the WWTP would be sized to handle larger anticipated influent flows. This alternative would require a new Dale Avenue Pump Station as well as larger-capacity pipeline and pump station upgrades.
- The In-System Storage Program, which includes construction of one or more underground storage basins upstream of the Dale Avenue Pump Station. Detention of influent flows in the in-system storage basins would reduce the needed capacity and size of downstream pipeline and pump station improvements. To avoid the need for a new Dale Avenue Pump Station, a storage volume of approximately 4.2 million gallons (MG) is required. One or more feasible locations for the in-system storage basin would need to be identified.

Process to Identify Potential Storage Sites for Evaluation

Potential sites for an in-system storage basin for the In-System Storage Program were initially evaluated in the *City of San Mateo Integrated Wastewater Master Plan*, prepared by Carollo Engineers, Inc. in 2014 for the City of San Mateo.

The CH2M team started with the list of sites from the *Integrated Wastewater Master Plan,* which was based on several siting criteria. The team added potential sites for an in-system storage facility throughout the City of San Mateo that met any of the following criteria:

- City-owned properties, including parks and corporation yard
- County-owned properties
- School district-owned properties
- Private school properties with large playing fields
- Undeveloped properties

- Larger parking lots on private properties with existing commercial, industrial, or institutional uses (e.g. shopping centers, hospitals)
- Industrial or commercial properties currently proposed for redevelopment (as defined by an application for development submitted to the City of San Mateo)
- Properties with existing residential uses were not included.
- Properties owned by state or federal government were not included.

The resulting comprehensive list of potential sites is included in Attachment A1.

Evaluation Process

The sites were evaluated using the following criteria.

1. Potential storage capacity. Assuming an 8-ft depth and using the size available for storage, volumes were estimated for each site. Sites accommodating less than approximately 200,000 gallons were removed from selection.
2. Presence of bottlenecks or recent (2012 to 2014) historical wet-weather SSO data (see Figure 1) as well as SSOs predicted by the hydraulic model (see Figure 2), located downstream of the site that could be eliminated with the storage.
3. Site constraints and constructability issues, including:
    a. Highway and/or railroad crossings
    b. Presence of utilities
    c. Limited site access/accessibility issues (construction or operation)
    d. Traffic concerns (construction or operation)
    e. Known soils issues
4. Ownership, including easement, permits, or acquisition required.
5. Consistency with existing land use plans and with adjacent land uses, including land use conflicts during construction.
6. Proximity to existing conveyance facilities that would foster diversion of peak flows from the collection system. For example, the NSSC Pump Station improvement project included a new force main diverting flow off the South Delaware pipes and Dale Avenue Pump Station. This new force main is near the Fiesta Meadows site, a location under consideration for storage (see Figure 3), and could potentially be used to convey overflows to the storage.
7. Potential reduction of SSOs that could occur as a result of other proposed Clean Water Program pipeline and pump station projects. These are projects that will be designed to increase the conveyance capacity of the system and include the construction of new pipes, enlarging existing pipes, and increasing the pumping capacity of lift stations. These types of projects tend to require extensive design, cost, and construction impact to the public. As a result, placing a storage facility just upstream or near these types of areas may reduce the needed improvement project. Conversely, in-system storage near one of these projects could be redundant.

After applying these criteria, a shorter list of potential sites was further evaluated using hydraulic modeling, as described in the next section.

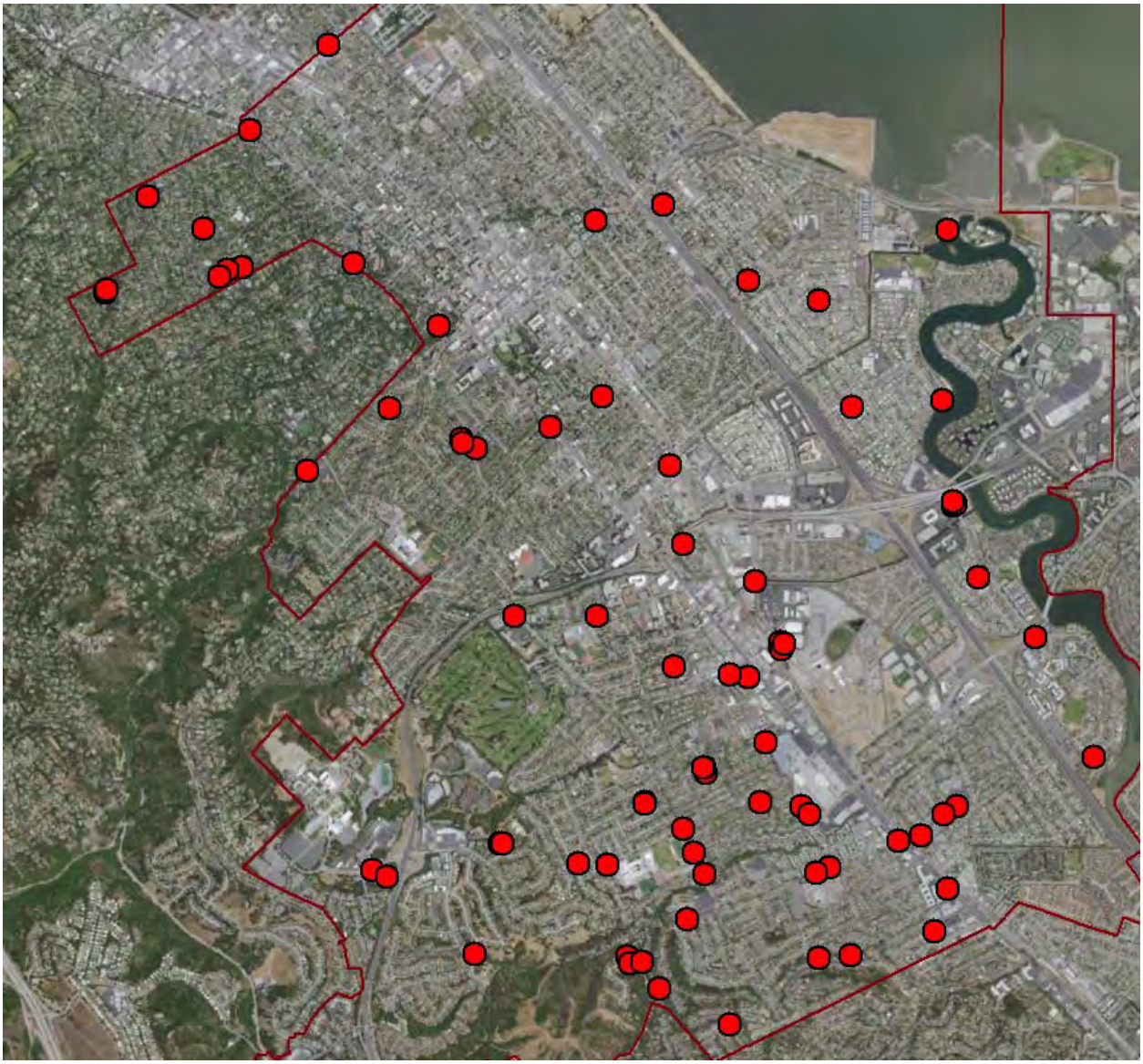


Figure 1. Recent Historical Wet Weather SSOs
Wet Weather SSOs 2012 - 2014

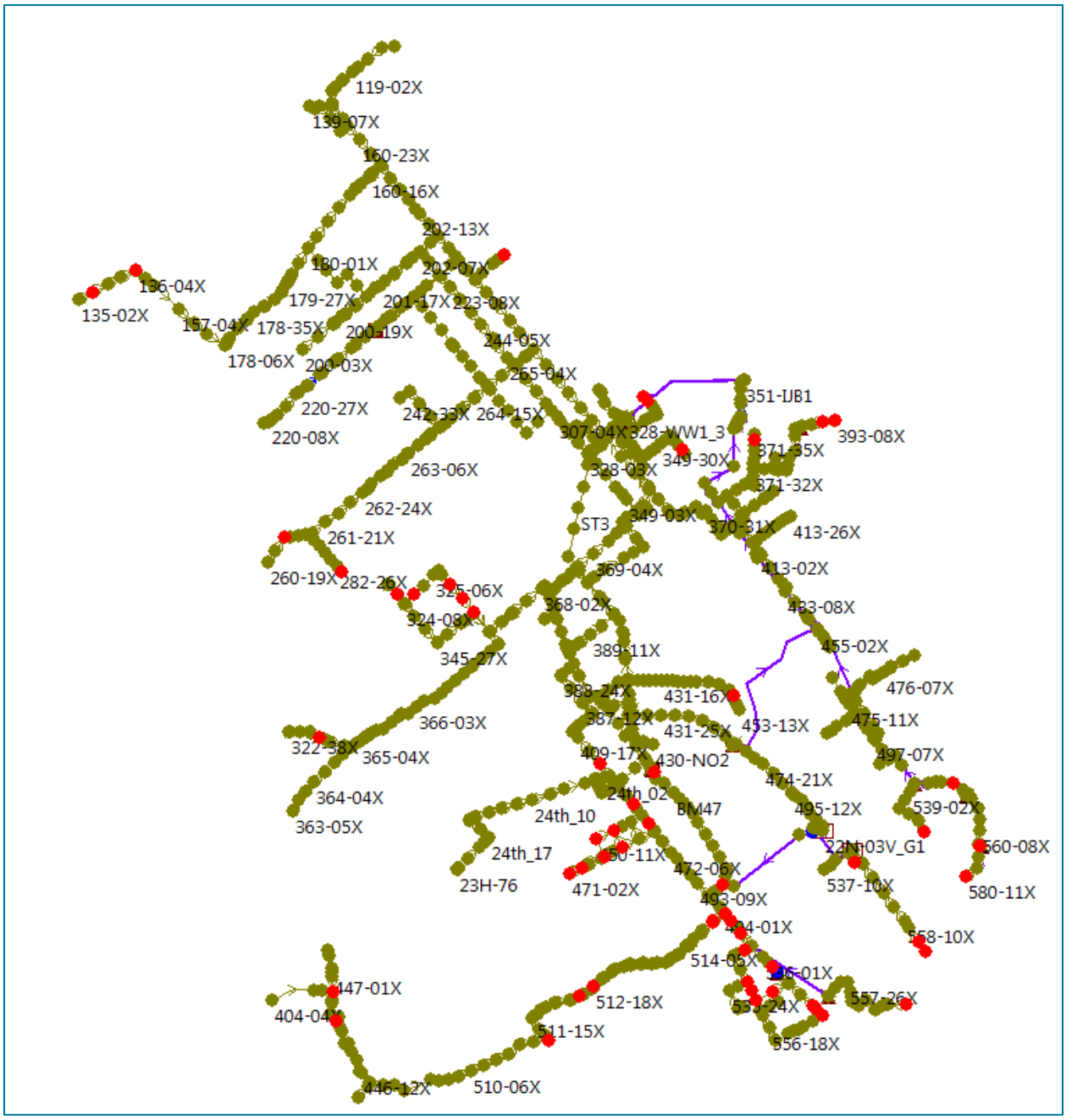


Figure 2. Model Simulated SSOs
Model predicted SSOs shown in red

Figure 3. Example--System Configurations Where Flow Can Be Diverted or Conveyed
NSSC Pump Station and Fiesta Meadows Site

Hydraulic Modeling

The San Mateo Clean Water Program included development and calibration a hydraulic model to support analyses of the system. A model is used to assess the hydraulic performance of the system finding areas with limited capacity and developing alternatives to address these areas of restriction. The San Mateo model is an InfoWorks CS v. 14.5.2 model most recently calibrated in 2013 and subsequently used to support planning projects, principally the Master Plan. It is an industry accepted dynamic model ideally suited for the types of flow conditions common to the San Mateo system---flow backups, flow diversions or splits, pressurized flow from lift stations, etc. For all analyses, the same wet weather design storm used in the Master Plan was also used to assess the potential sites, diversion points, and conveyance piping.

After screening potential sites and compiling the information listed above, the model was used to analyze the impact of the potential sites. General priority was placed on the following:

1. Sites where there would likely be a regional impact (not just a localized benefit).
2. Sites that could lessen the size, scope, or cost of multiple projects, particularly if the projects are located in close proximity.
3. Storage locations that would be replacing long, contiguous pipe improvement projects as opposed to shorter less cost effectives ones.
4. Proximity to prescreened, large sites that could potentially store large volumes (greater than 1 million gallons).
5. Sites where historical and simulated SSOs would be relieved.

At locations that met the general criteria, diversion points and conveyance pipes were added in the model to route flow away from the system during wet weather. A typical configuration in the model was inserting a weir at the crown (top) of the pipe directing excess flow into new conveyance piping that would be directed to the potential site. Total volume diverted and benefit to the system were determined using the model. Figure 4 shows a typical model configuration.

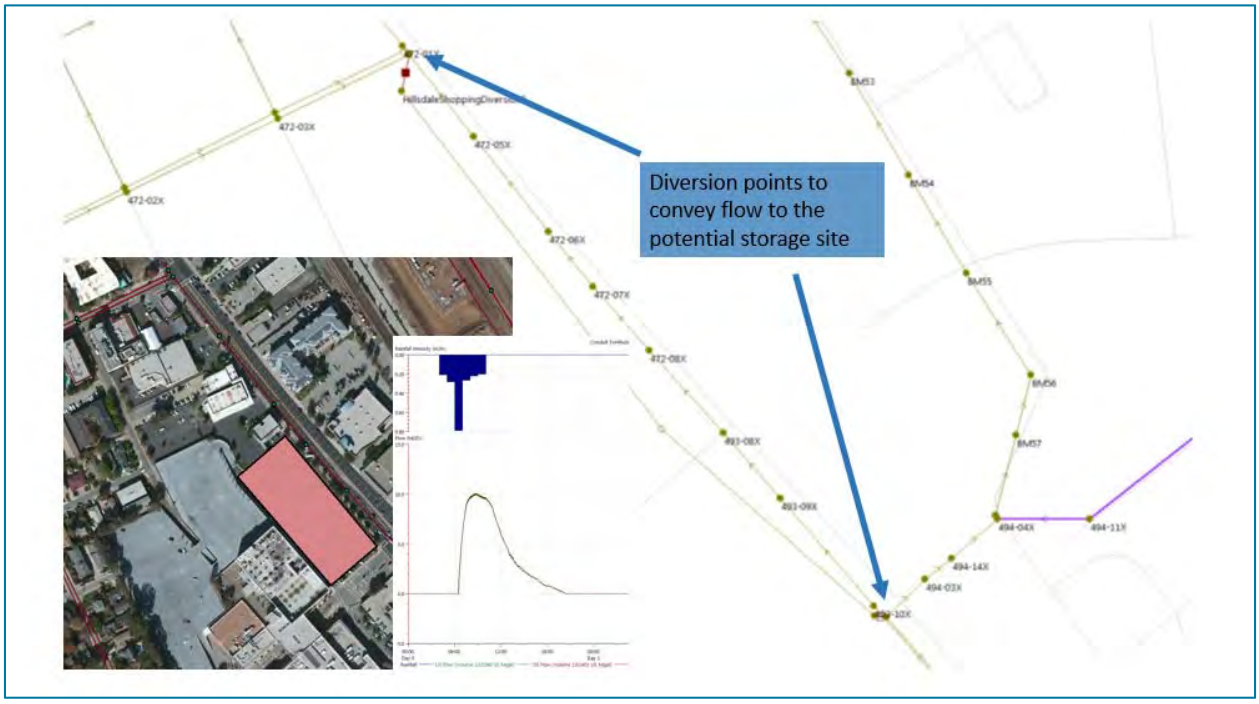


Figure 4. Model Configuration to Potential Storage Location
Diversion points from 15-inch pipe under S. El Camino Real to Hillsdale Site

It is expected final hydraulic solutions will be further evaluated with greater detail. For this phase, diversion points, predicted volumes, and impacts to the system were the primary focus of the analyses.

Figure 5 shows storage locations and the volumes determined in the model for some sites. Results are preliminary and additional analysis is needed to refine the appropriate balance of system upgrades. From the analysis, system storage should remain a key element to the overall strategy in addressing SSOs and increasing system conveyance. In subsequent design phases, more detailed analyses will refine the final solutions including storage size, control schemes, diversion points, conveyance piping, etc.

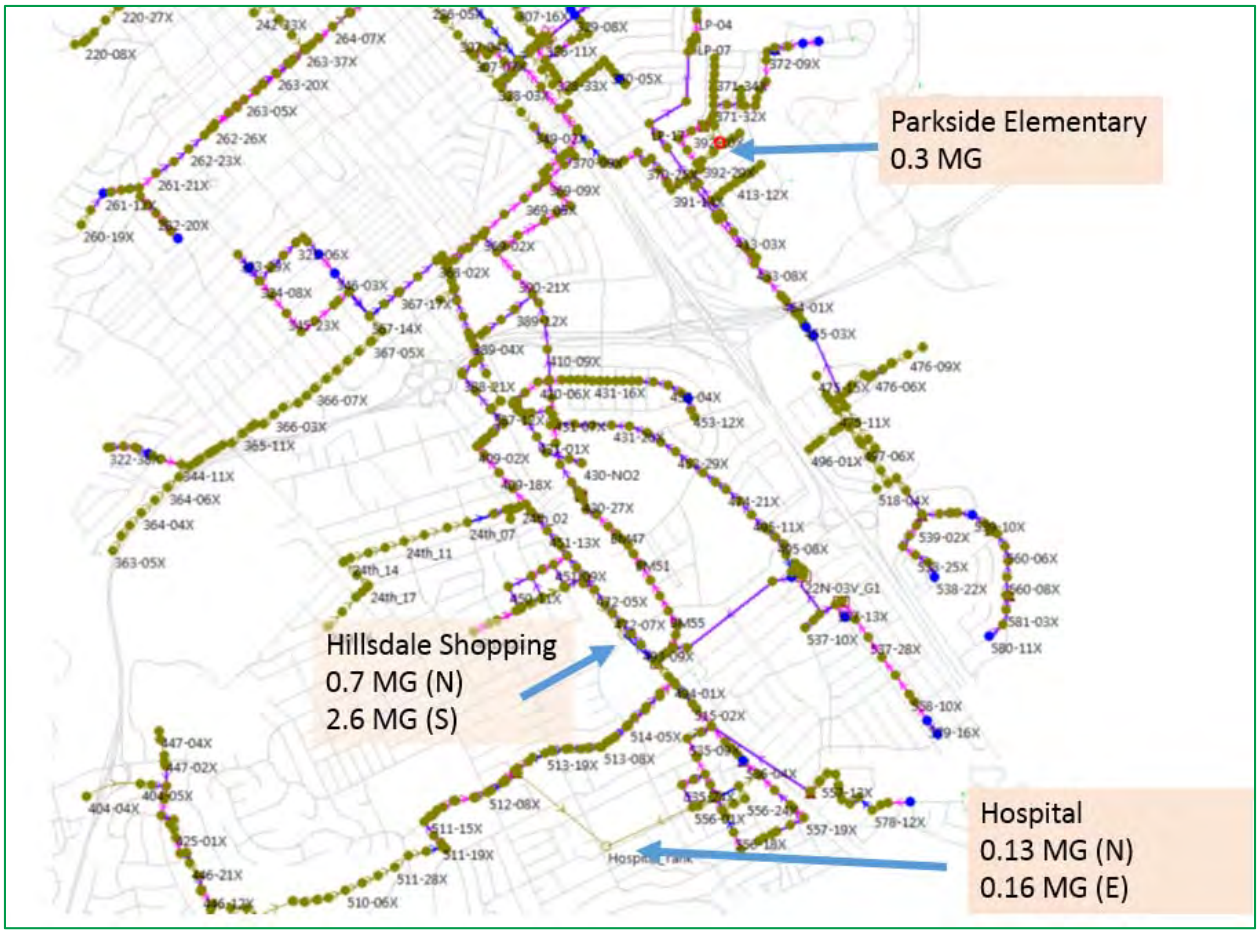


Figure 5. Storage Locations and Volumes
Storage volumes and locations predicted by the model

Bay Meadows site was modeled as part of the *Integrated Wastewater Master Plan*. No additional modeling was done to refine this site or configuration. Fiesta Meadows, although not modeled, remains a potential site for further review due to the new NSSC Pump Station force main that is near the site. This force main could be used to divert flow to and out of the storage basin.

Although not specifically modeled to determine storage volumes needed, model results of the existing system and historical SSO information was used to determine other potential sites where storage should be considered for further review. These sites are listed in Table 1 and shown in Figure 6.

TABLE 1
Storage Location Sites Recommended For Further Review

Location[1]	Potential to Mitigate Modeled SSOs in vicinity of MHs	*Integrated Wastewater Master Plan* Capital Improvement Projects	Additional Comments	Potential Storage Volume (MG)
Hillsdale High School	MHs 512-18X, 425-37X	SST-14	N/A	15.6
Abbott Middle School	MHs 512-18X, 425-37X	SST-14	N/A	7.5
San Mateo County Hospital	MHs 512-18X, 425-37X, 535-29X	SST-X1, SST-14, Pacific Blvd Projects	N/A	9.2

TABLE 1

Storage Location Sites Recommended For Further Review

Location[1]	Potential to Mitigate Modeled SSOs in vicinity of MHs	*Integrated Wastewater Master Plan* Capital Improvement Projects	Additional Comments	Potential Storage Volume (MG)
Hillsdale Shopping Center	MHs 451-17X, 494-04X, 451-14X	SST-5, South Delaware Trunk Projects	Midbasin storage with significant potential to mitigate multiple projects and SSOs	6.9
Bay Meadows Park	MHs 430-30X, 494-04X, 451-14X	South Delaware Trunk Projects	Midbasin storage with significant potential to mitigate multiple projects and SSOs	21.7
Trinta Park - Area 1	MHs 430-02X, 430-30X	SST-6	N/A	2.5
Station Park Green Development	MHs 346-09X, 430-02X, 430-30X	South Delaware Trunk Projects	N/A	9.5
Fiesta Meadows Park	MHs 453-07X	South Delaware Trunk Projects	NSSC Pump Station Upgrade (completed) Force Main is near site.	9.5
Central Park	TBD	TBD	TBD	TBD
Martin Luther King Park	TBD	TBD	TBD	TBD
California Water Company	TBD	TBD	TBD	TBD

[1]Basin would be proposed for fields, parks, parking lots, or other undeveloped areas at each location.

TBD: To be determined in future analysis

Figure 6. Sites Recommended For Further Analysis
Potential Storage Sites

Attachment A1. Full List, Potential In-System Storage Sites

	Location	Address	Land Ownership	Parcel Size (acres)	Acres Usable	Potential Storage (MG)
Sites from Integrated Wastewater Master Plan						
1	San Mateo County Expo Center	2495 South Delaware St	San Mateo County	24	3	4
2	San Mateo High School	506 N Delaware St	San Mateo Unified High School District (SMUHSD)	35.4	4.3	11.2
3	North Shoreview Elementary	1301 Cypress St	San Mateo Foster City School District (SMFCSD)	4.5	1.5	4
4	Aragon High School	900 Alameda de las Pulgas	SMUHSD	29.3	4.9 - 3 locations	12.8 total
5	Hillsdale High School	3115 Del Monte St	SMUHSD	33.6	7.3	19
6	Borel Middle School	425 Barneson Ave	SMFCSD	8.5	3.8	9
7	Borel Park	450 Borel Ave	City	1.5	0.6	1.6
8	Abbott Middle School	600 36th Ave	SMFCSD	9.9	2.8	7
9	Martin Luther King Jr Park	725 Monte Diablo Ave	City	6	2	5.2
10	Central Park	50 East 5th Ave	City	11.9	4 in 2 locations	10.5 total
11	Shoreview Park	950 Ocean View Ave	City	3.7	1.2	3.1
12	Fiesta Meadows Park	1141 Bermuda Dr	City	4.9	2.6	6.8
13	Beresford Park	2720 Alameda de las Pulgas	City	15.9	3.4 in 2 locations	8.8 total
14	Laurie Meadows Park	111 Laurie Meadows Dr	City	5.3	1.8	4.7
15	Joinville Park	2111 Kehoe Ave	City	13.7	1.9	5
16	Parkside Aquatic Park	100 Seal St	City	3.4	0.9	2.3
17	Trinta Park	150 19th Ave	City	1.8	0.9 in 2 locations	2.4 total
18	Corps Yard Parking	Pacific Blvd/S. Delaware St	City	7.7	0.4	1
19	Old Police HQ/Corps Yard	2018 S Delaware St	City	2	0.5	1.3
20	Lakeshore Park	1500 Marina Ct	City	4.3	1.3	3.4
21	East Hillsdale Park	123 31st Ave	City	2	0.5	1.3
22	George Hall Elementary School	130 San Miguel Way	SMFCSD	7.6	2	5.2
23	Gateway Park	800 East 3rd Ave	City	1.3	0.2	0.5
24	Saratoga Square Park (Bay Meadows Park West)	Yates Way & David Street	City	5.9	0.9	2
25	Bay Meadows Phase II Park	28th Ave (between Saratoga Ave and S. Delaware St)	City	7	7	18
26	S. Delaware St Empty Lot North	E. 25th Ave & S. Delaware St	Private	0.7	0.7	1.7
27	S. Delaware St Empty Lot South	E. 25th Ave & S. Delaware St	Private	0.5	0.5	1.3
28	San Mateo Commons Shopping Center Parking Lot	Concar Dr & S. Delaware St	Private	8	0.4 to 3.4 usable – 3 locations	1 to 9
29	Poplar Creek Golf Course	1700 Coyote Point Dr	City	105	0.5	1.3
30	PG&E Facility	East Poplar Ave	Pacific Gas & Electric (PG&E)	38	0.5	1.2
31	PG&E Empty Lot	Dore Ave	PG&E	38	2.5	6.5

Attachment A1. Full List, Potential In-System Storage Sites

	Location	Address	Land Ownership	Parcel Size (acres)	Acres Usable	Potential Storage (MG)
Additional Potential Sites						
32	College Park Elementary (open lot)	715 Indian Ave		2.5	1.7	4.5
33	California Water Services Co (Parking Lot)	341 N Delaware St		2.3	1.6	4.1
34	St. Timothy School (parking lot)	1515 Dolan Ave		2	0.4 to 0.5 usable - 3 locations	3.7 total
35	Parkside Elementary School (field)	1685 Eisenhower St		3.1	2.2	5.7
36	Shoreview Shopping Center (parking lot)	400 S Norfolk St		2.5	1.8	4.6
37	Sunnybrae Elementary School (blacktop/field)	1031 S Delaware St		2.6	1.9	4.8
38	San Mateo County Hospital (parking lot)	222 W 39th Ave		5	3.5	9.2
39	West Hillsdale Park	345 31st Ave		1.5	1	2.7
40	Hillsdale Shopping Center (north parking lot)	60 31st Ave		3.8	2.7	6.9
41	Los Prados Park	1837 Bahia St		7.8	5.5	14.2
42	Junipero Serra High School (field)	451 West 20th Ave		2.8	1.9	5.1
43	San Mateo Area Chamber of Commerce (Parking Lot)	S El Camino Real & Borel Ave		2.4	1.7	4.4
44	Bridgepointe Shopping Center	Bridgepointe Pkwy		17.2	5.6 to 6.4 usable - 2 locations	31.4 total
45	Future Caltrain Station - Station Park Green Development (replacing existing Hayward Park station)	S Delaware St & Concar Dr (across from Commons)		5.2	3.7	9.5
46	Delaware Street deep tunnel	Delaware Street		3.6	2.5	6.6
47	Parking lot, Caltrain San Mateo station	385 First Avenue		0.8	0.6	1.5
48	Hillsdale Caltrain station	3333 El Camino Real (current station address)		1.6	1.1	2.9
49	YMCA parking lot	1877 S Grant St		3.6	2.5	6.5
50	Salesforce.com/ Crossroads parking lot	900 Concar Dr		3.4	2.4	6.2
51	Marriott parking lot	1770 S Amphlett Blvd		4	2.8	7.3
52	The Bayside STEM Academy	2025 Kehoe Ave		8.5	6	15.5
53	Fish Market Restaurant parking lot	1855 South Norfolk Street		1.3	0.9	2.4
54	Parkside Plaza parking lot	1830-1860 S Norfolk St		2	1.4	3.6
55	Marina Food Market parking lot	2992 S Norfolk St		1.7	1.2	3.0

Appendix B
Air Emissions Calculations

TABLE B1: Emission Summary

Summary of Construction Emissions - Maximum Daily Emissions (2016)

	VOC	CO	NOx	SOx	PM_{10} Fugitive	PM_{10} Exhaust	$PM_{2.5}$ Fugitive Dust	$PM_{2.5}$ Exhaust
	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day
New WWTP Project-1	3.650	36.330	37.166	0.062	2.210	1.858	0.502	1.711
New WWTP Project-2	3.650	36.330	37.166	0.062	2.210	1.858	0.502	1.711
Large Pipeline Project-1	2.432	21.628	24.903	0.034	1.201	1.376	0.234	1.266
Large Pipeline Project-2	2.432	21.628	24.903	0.034	1.201	1.376	0.234	1.266
Average Pipeline Project-1	2.443	21.842	24.870	0.034	1.189	1.375	0.232	1.265
Average Pipeline Project-2	2.443	21.842	24.870	0.034	1.728	1.375	0.364	1.265
Average Pipeline Project-3	2.443	21.842	24.870	0.034	1.189	1.375	0.232	1.265
Large Pump Station-1	1.771	15.863	17.710	0.025	0.947	1.023	0.167	0.942
Large Pump Station-2	1.771	15.863	17.710	0.025	0.947	1.023	0.167	0.942
In-system Storage Bin	1.364	16.212	13.791	0.027	1.355	0.542	0.274	0.499
Total for Full Conveyance Alternative	23.036	213.168	234.167	0.344	12.821	12.639	2.633	11.633
Total for In-system Storage Alterantive	22.628	213.517	230.249	0.346	13.230	12.158	2.740	11.189

Note:

Construction emissions were modeled using CalEEMod. Assumed all construction activities would occur simultaneously during a worst-case day.

Full Conveyance Alternative would not include the In-system Storage Basin

In-System Storage

- 2 large pipelines
- 3 average pipelines
- 1 pump station wet well
- 1 in-system storage basin

Full Conveyance

- 2 large pipelines
- 3 average pipelines
- 2 pump station wet wells

TABLE B2: Emission Summary

Summary of Construction Emissions - Annual Emissions (2016)

	VOC	CO	NOx	SOx	PM_{10} Fugitive	PM_{10} Exhaust	$PM_{2.5}$ Fugitive Dust	$PM_{2.5}$ Exhaust
	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day
Total for Full Conveyance Alternative	23.04	213.17	234.17	0.34	12.82	12.64	2.63	11.63
Total for In-system Storage Alterantive	22.63	213.52	230.25	0.35	13.23	12.16	2.74	11.19
WWTP project	3.65	36.33	37.17	0.06	2.21	1.86	0.50	1.71
	ton/year	ton/year	ton/year	ton/year	ton/year	ton/year	ton/year	ton/year
Total for Full Conveyance Alternative	2.99	27.71	30.44	0.04	1.67	1.64	0.34	1.51
Total for In-system Storage Alterantive	2.94	27.76	29.93	0.04	1.72	1.58	0.36	1.45
WWTP project	0.47	4.72	4.83	0.01	0.29	0.24	0.07	0.22

Note:

Construction emissions were modeled using CalEEMod. Assumed all construction activities would occur simultaneously during a worst-case day.

Assumed 5 days per week, 52 week per year of construction.

TABLE B3: GHG Emission Summary

Summary of Construction Emissions - Maximum Daily Emissions (2016)

	CH4	N2O	CO2	CO2e	CO2e
	lb/day	lb/day	lb/day	lb/day	metric ton/year
New WWTP -1	0.943	0.000	6076.72	6096.53	719.0
New WWTP -2	0.943	0.000	6076.72	6096.53	719.0
Pipe Line -1 (Large Pipes)	0.690	0.000	3419.04	3433.52	404.9
Pipe Line -2 (Large Pipes)	0.690	0.000	3419.04	3433.52	404.9
Pipe Line -3 (Aveage Pipes)	0.690	0.000	3406.42	3420.89	403.4
Pipe Line -4 (Aveage Pipes)	0.690	0.000	3406.42	3420.89	403.4
Pipe Line -5 (Aveage Pipes)	0.690	0.000	3406.42	3420.89	403.4
Large Pump Station-1	0.481	0.000	2504.66	2514.75	296.6
Large Pump Station-2	0.481	0.000	2504.66	2514.75	296.6
In-system Storage Bin	0.296	0.000	2680.71	2686.93	316.9
Total for Full Conveyance Alternative	6.295	0.000	34,220.07	34,352.26	4,051.4
Total for In-system Storage Alternative	6.110	0.000	34,396.13	34,524.45	4,071.7

Note:
Construction emissions were modeled using CalEEMod. Assumed all construction activities would occur simultaneously during a worst-case day.

Summary of Operational Emissions - GHG from WWTP and Pump Station Electricity Use

GHG Emission Factors

	Emission Factor	
	CO2	CO2e
	lb/MWH	lb/MWH
	610.82	
Global Warming Potential	1	613.33

Note:
GHG emission factors were EPA eGRID 9th edition Version 1.0 Year 2010 GHG Annual Output Emission Rates, February, 2014.

Indirect GHG Emissions from Program Electricity Use

	Energy Usage	CO2e Emissions	CO2e Emission Increase
	MWH/yr	metric ton/year	metric ton/year
Existing Condition	6753.618	1,879	NA
Program Operation (maximum)	14382.49	4,001	2,122
Program Operation (minimum)	10558.18	2,937	1,058

Note:
1. Energy usage of existing condition was based on the historical data record of the WWTP and pump station operation.
2. Energy usage of Program operation were estimated using CH2M HILL's Emissions Inventory Calculator (EIC) tool. The tool is linked to the Facilities sizing and cost estimating tools CPES and CPES Lifecycle (LC).

Appendix C
Special-status Species Tables

Appendix C. Special-status Species in the Program Area and Potential to Occur

Scientific Name	Common Name	Status				Habitat	Potential for Occurrence
		Federal	State	CDFW	CNPS		
Plants							
Acanthomintha duttonii	San Mateo thorn-mint	E	E	-	1B.1	Chaparral, valley and foothill grassland, coastal scrub. Serpentine Soils.	No suitable habitat is present. Very rare species most commonly associated with serpentine grassland.
Allium peninsulare var. franciscanum	Franciscan onion	-	-	-	1B.2	Cismontane woodland, valley and foothill grassland. Clay soils; often on serpentine. Dry hillsides.	Not likley to occur, suitable habitat is very limited and highly disturbed.
Amsinckia lunaris	bent-flowered fiddleneck	-	-	-	1B.2	Cismontane woodland, valley and foothill grassland.	Not likley to occur, suitable habitat is very limited and highly disturbed.
*** Arctostaphylos andersonii*	Anderson's manzanita	-	-	-	1B.2	Broadleaved upland forest, chaparral, north coast coniferous forest. Open sites, redwood forest.	No suitable habitat is present.
*** Arctostaphylos franciscana*	Franciscan manzanita	-	-	-	1B.1	Serpentine outcrops in chaparral.	No suitable habitat is present.
*** Arctostaphylos imbricata*	San Bruno Mountain manzanita	-	E	-	1B.1	Chaparral, coastal scrub.	No suitable habitat is present.
*** Arctostaphylos montana ssp. ravenii*	Presidio manzanita	E	E	-	1B.1	Chaparral, coastal prairie, coastal scrub.	No suitable habitat is present.
*** Arctostaphylos montaraensis*	Montara Manzanita	-	-	-	1B.2	Chaparral, coastal scrub.	No suitable habitat is present.
*** Arctostaphylos pacifica*	Pacific manzanita	-	E	-	1B.2	Coastal scrub.	No suitable habitat is present.
*** Arctostaphylos regismontana*	Kings Mountain manzanita	-	-	-	1B.2	Broadleaved upland forest, chaparral, north coast coniferous forest. Granitic or sandstone outcrops.	No suitable habitat is present.
Astragalus pycnostachyus var. pycnostachyus	coastal marsh milk-vetch	-	-	-	1B.2	Coastal dunes, coastal salt marshes.	Not likely to occur. Observed in undisclosed area at Crystal Springs Reservoir, 5.10 miles SW of site in unknown year.
*** Astragalus tener var. tener*	alkali milk-vetch	-	-	-	1B.2	Alkali playa, valley and foothill grassland, vernal pools. Low ground, alkali flats, and flooded lands. In annual grassland or in playas or vernal pools.	Not likley to occur, suitable habitat is very limited and highly disturbed.
*** Centromadia parryi ssp. congdonii*	Congdon's tarplant	-	-	-	1B.2	Valley and foothill grassland. Alkaline soils, sometimes described as heavy white clay.	Not likley to occur, suitable habitat is very limited and highly disturbed.
*** Centromadia parryi* ssp. *Parryi*	pappose tarplant	-	-	-	1B.2	Coastal prairie, meadows and seeps, coastal salt marsh, valley and foothill grassland. Vernally mesic, often alkaline sites.	Not likley to occur, suitable habitat is very limited and highly disturbed.
Chloropyron maritimum ssp. palustre	Point Reyes salty bird's-beak	-	-	-	1B.2	Coastal salt marsh	Possibly extirpated from area.
Chorizanthe cuspidata var. cuspidata	San Francisco Bay spineflower	-	-	-	1B.2	Coastal bluff scrub, coastal dunes, coastal prairie, coastal scrub. Closely related to *C. pungens* . Sandy soil on terraces and slopes.	No suitable habitat is present.
*** Chorizanthe robusta var. robusta*	robust spineflower	E	-	-	1B.1	Cismontane woodland, coastal dunes, coastal scrub. Sandy terraces and bluffs or in loose sand.	No suitable habitat is present.
*** Cirsium andrewsii*	Franciscan thistle	-	-	-	1B.2	Coastal bluff scrub, broadleaved upland forest, coastal scrub.	No suitable habitat is present.
Cirsium fontinale var. fontinale	Crystal Springs fountain thistle	E	E	-	1B.1	Valley and foothill grassland, chaparral. Serpentine seeps and grassland	No suitable habitat is present.
*** Cirsium occidentale var. compactum*	compact cobwebby thistle	-	-	-	1B.2	Chaparral, coastal dunes, coastal prairie, coastal scrub.	No suitable habitat is present.
*** Cirsium praeteriens*	Lost thistle	-	-	-	1A	Little information exists on this plant; it was collected from the Palo Alto area at the turn of the 20th century.	Species is considered extinct in California
Collinsia multicolor	San Francisco collinsia	-	-	-	1B.2	Closed-cone coniferous forest, coastal scrub. On decomposed shale (mudstone) mixed with humus.	No suitable habitat is present.
Dirca occidentalis	western leatherwood	-	-	-	1B.2	Broadleafed upland forest, chaparral, closed-cone coniferous forest, cismontane woodland, north coast coniferous forest, riparian forest, riparian woodland.	No suitable habitat is present.
Eriophyllum latilobum	San Mateo woolly sunflower	E	E	-	1B.1	Cismontane woodland. Often on road cuts, found on and off of serpentine.	No suitable habitat is present.
*** Eryngium aristulatum var. hooveri*	Hoover's button-celery	-	-	-	1B.1	Vernal pools. Alkaline depressions, vernal pools, roadside ditches, and other wet places near the coast.	Not likely to occur, limited amount of highly disturbed habitat present.

Appendix C. Special-status Species in the Program Area and Potential to Occur

Scientific Name	Common Name	Status				Habitat	Potential for Occurrence
		Federal	State	CDFW	CNPS		
Fritillaria biflora var. ineziana	Hillsborough chocolate lily	-	-	-	1B.1	Cismontane woodland, valley and foothill grassland. Mostly on serpentine.	No suitable habitat is present.
** *Fritillaria lanceolata var. tristulis*	Marin checker lily	-	-	-	1B.1	Coastal bluff scrub, coastal prairie, coastal scrub	No suitable habitat is present.
Fritillaria liliacea	fragrant fritillary	-	-	-	1B.2	Coastal scrub, valley and foothill grassland, coastal prairie. Often on serpentine; various soils reported though usually clay, in grassland.	No suitable habitat is present.
** *Gilia capitata ssp. chamissonis*	blue coast gilia	-	-	-	1B.1	Coastal dunes, coastal scrub.	No suitable habitat is present.
** *Helianthella castanea*	Diablo helianthella	-	-	-	1B.2	Broadleaved upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, valley & foothill grassland. Usually in chaparral/oak woodland interface in rocky azonal soils. Often in partial shade.	Not likely to occur, limited amount of highly disturbed habitat present.
** *Hemizonia congesta ssp. congesta*	white seaside tarplant	-	-	-	1B.2	Coastal scrub, valley and foothill grassland. Grassy valleys and hills; often in fallow fields	Not likely to occur, limited amount of highly disturbed habitat present.
Hesperevax sparsiflora var. brevifolia	short-leaved evax	-	-	-	1B.2	Coastal bluff scrub, coastal dunes.	No suitable habitat is present.
Hesperolinon congestum	Marin western flax	T	T	-	1B.1	Chaparral, valley and foothill grassland.	Not likely to occur, limited amount of highly disturbed habitat present.
** *Heteranthera dubia*	Water star-grass	-	-	-	2B.2	Requires a pH of 7 or higher, usually in slightly eutrophic waters. Marshes and swamps (alkaline, still or slow-moving water).	No suitable habitat is present.
** *Horkelia cuneata ssp. sericea*	Kellogg's horkelia	-	-	-	1B.1	Closed-cone coniferous forest, coastal scrub, chaparral. Old dunes, coastal sandhills, openings	No suitable habitat is present.
** *Horkelia marinensis*	Point Reyes horkelia	-	-	-	1B.2	Coastal dunes, coastal prairie, coastal scrub. Sandy flats and dunes near coast; in grassland or scrub communities.	No suitable habitat is present.
** *Lasthenia conjugens*	Contra Costa goldfields	E	-	-	1B.1	Valley and foothill grasslands, vernal pools, woodlands. Extirpated from most of its range. Vernal pools, swales, low depressions, in open grassy areas. Blooms March to June.	Not likely to occur, limited amount of highly disturbed habitat present.
** *Leptosiphon croceus*	coast yellow leptosiphon	-	-	-	1B.1	Coastal bluff scrub, coastal prairie.	No suitable habitat is present.
** *Leptosiphon rosaceus*	rose leptosiphon	-	-	-	1B.1	Coastal bluff scrub.	No suitable habitat is present.
Lessingia arachnoidea	Crystal Springs lessingia	-	-	-	1B.2	Coastal sage scrub, valley and foothill grassland, cismontane woodland. Grassy slopes on serpentine, sometimes on roadsides.	Not likely to occur, limited amount of highly disturbed habitat present.
** *Lessingia germanorum*	San Francisco lessingia	E	E	-	1B.1	Coastal scrub.	No suitable habitat is present.
** *Lilium maritimum*	Coast lily	-	-	-	1B.1	Sometimes roadside, broadleafed upland forest, closed-cone coniferous forest, coastal prairie, coastal scrub, marshes and swamps (freshwater), North Coast coniferous forest	Not likely to occur, limited amount of highly disturbed habitat present.
** *Limnanthes douglasii ssp. ornduffii*	Ornduff's meadowfoam	-	-	-	1B.1	Agricultural fields, meadows and seeps.	Not likely to occur, limited amount of highly disturbed habitat present.
** *Malacothamnus aboriginum*	Indian Valley bush-mallow	-	-	-	1B.2	Cismontane woodland, chaparral, Granitic outcrops and sandy bare soil, often in disturbed soils.	No suitable habitat is present.
Malacothamnus arcuatus	arcuate bush-mallow	-	-	-	1B.2	Chaparral. Gravelly alluvium.	No suitable habitat is present.
Malacothamnus davidsonii	Davidson's bush-mallow	-	-	-	1B.2	Coastal scrub, riparian woodland, chaparral. Sandy washes.	No suitable habitat is present.
Malacothamnus hallii	Hall's bush-mallow	-	-	-	1B.2	Chaparral. Some populations on serpentine.	No suitable habitat is present.
** *Monardella sinuata ssp. nigrescens*	northern curly-leaved monardella	-	-	-	1B.2	Sandy, chaparral (SCR Co.), coastal dunes, coastal scrub, lower montane coniferous forest (SCR Co., ponderosa pine sandhills)	No suitable habitat is present.

Appendix C. Special-status Species in the Program Area and Potential to Occur

Scientific Name	Common Name	Status				Habitat	Potential for Occurrence
		Federal	State	CDFW	CNPS		
Monolopia gracilens	woodland woollythreads	-	-	-	1B.2	Chaparral, valley and foothill grasslands (serpentine), cismontane woodland, broadleafed upland forests, north coast coniferous forest; on grassy sites, sandy to rocky substrates.	No suitable habitat is present.
*** Navarretia myersii ssp. myersii*	pincushion navarretia	-	-	-	1B.1	Vernal pools. Clay soils within non-native grassland.	No suitable habitat is present.
*** Pedicularis dudleyi*	Dudley's lousewort	-	R	-	1B.2	Chaparral, north coast coniferous forest, valley and foothill grassland. Deep shady woods of older coast redwood forests; also in maritime chaparral.	No suitable habitat is present.
Pentachaeta bellidiflora	white-rayed pentachaeta	E	E	-	1B.1	Valley and foothill grassland.	Not likely to occur, limited amount of highly disturbed habitat present.
*** Plagiobothrys chorisianus var. chorisianus*	Choris' popcorn-flower	-	-	-	1B.2	Chaparral, coastal scrub, coastal prairie. Mesic sites.	No suitable habitat is present.
*** Polemonium carneum*	Oregon polemonium	-	-	-	2.2	Coastal prairie, coastal scrub, lower montane coniferous forest.	No suitable habitat is present.
*** Potentilla hickmanii*	Hickman's cinquefoil	E	E	-	1B.1	Coastal bluff scrub, closed-cone coniferous forest, meadows and seeps (vernally mesic), marshes and swamps (freshwater)	Not likely to occur, limited amount of highly disturbed habitat present.
*** Silene verecunda ssp. verecunda*	San Francisco campion	-	-	-	1B.2	Sandy, coastal bluff scrub, chaparral, coastal prairie, coastal scrub, valley and foothill grassland	Not likely to occur, limited amount of highly disturbed habitat present.
*** Streptanthus albidus ssp. peramoenus*	most beautiful jewel-flower	E	-	-	1B.2	Valley and foothill grassland. Serpentine outcrops on ridges and slopes	No suitable habitat is present.
*** Stuckenia filiformis ssp. alpina*	slender-leaved pondweed	-	-	-	2.2	Marshes and swamps. Shallow, clear water of lakes and drainage channels.	Low potential to occur in excavated channel north of Bayside Park
*** Suaeda californica*	California seablite	E	-	-	1B.1	Marshes and swamps. Margins of coastal salt marshes.	Not likely to occur, limited amount of highly disturbed habitat present.
*** Trifolium amoenum*	showy rancheria clover	E	-	-	1B.1	Valley and foothill grasslands, coastal bluff scrub. Sometimes on serpentine soil, open sunny sites, swales. Most recently sited on roadside and eroding cliff face.	Not likely to occur, limited amount of highly disturbed habitat present.
Trifolium hydrophilum	saline clover	-	-	-	1B.2	Occurs in marshes and swamps, vernal pools and valley and foothill grassland. Mesic, alkaline sites.	Not likely to occur, limited amount of highly disturbed habitat present.
Triphysaria floribunda	San Francisco owl's-clover	-	-	-	1B.2	Coastal prairie, valley and foothill grassland.	Extirpated from area.
*** Triquetrella californica*	coastal triquetrella	-	-	-	1B.2	Coastal bluff scrub, coastal scrub valley and foothill grasslands.	Not likely to occur, limited amount of highly disturbed habitat present.
*** Tropidocarpum capparideum*	caper-fruited tropidocarpum	-	-	-	1B.1	Valley and foothill grassland. Alkaline Clay.	Not likely to occur, limited amount of highly disturbed habitat present.
Invertebrates							
Calicina minor	Edgewood blind harvestman	-	-	-	-	Open grassland in areas of serpentine bedrock.	No suitable habitat is present.
*** Callophrys mossii bayensis*	San Bruno elfin butterfly	E	-	-	-	Coastal, mountainous areas with grassy ground cover, mainly in the vicinity of San Bruno mountain, San Mateo county. Colonies are located on steep, north-facing slopes within the fog belt. Larval host plant is *Sedium spathulifolium* .	No suitable habitat is present.

Appendix C. Special-status Species in the Program Area and Potential to Occur

Scientific Name	Common Name	Status				Habitat	Potential for Occurrence
		Federal	State	CDFW	CNPS		
Danaus plexippus	monarch butterfly	-	-	-	-	Winter roost sites extend along the coast from northern Mendocino to Baja California, Mexico. Roosts in wind-protected tree groves (Eucalyptus, Monterey Pine, Cypress) with nectar and water sources nearby.	No suitable habitat is present.
Euphydryas editha bayensis	Bay checkerspot butterfly	T	-	-	-	Native grasslands on outcrops of serpentine soil. *Plantago erecta* is the primary host plant; *Orthocarpus densiflorus* and *Orthocarpus purpurscens* are the secondary host plants.	No suitable habitat is present.
*Hydrochara ricksecker*i	Ricksecker's water scavenger beetle	-	-	-	-	Aquatic.	Not likely to occur, limited amount of highly disturbed habitat present.
Ischnura gemina	San Francisco forktail damselfly	-	-	-	-	Endemic to the San Francisco Bay Area.	Not likely to occur, limited amount of highly disturbed habitat present.
** Plebejus icarioides missionensis*	Mission blue butterfly	E	-	-	-	Inhabits grasslands of the San Francisco peninsula.	Not likely to occur, limited amount of highly disturbed habitat present.
Speyeria zerene myrtleae	Myrtle's silverspot butterfly	E	-	-	-	Restricted to the foggy, coastal dunes/hills of the Point Reyes peninsula; extirpated from coastal San Mateo county.	No suitable habitat is present. Extirpated from coastal San Mateo county.
Fish							
** Oncorhynchus mykiss irideus*	steelhead - central California coast DPS	T	-	SSC	-	From Russian River, south to Soquel Cr & to, but not including, Pajaro River. Also San Francisco & San Pablo Bay basins.	Although steelhead was not included in the CNDDB results, it is known to occur in San Mateo Creek and was included in the USFWS Species List. It is considered at high risk for extinction in San Mateo Creek (NOAA, 2011).
Spirinchus thaleichthys	longfin smelt	C	T	SSC	-	Euryhaline, nektonic & anadramous. Found in open waters of estuaries, mostly in middle or bottom of water column. Prefer salinities of 15-30ppt, but can be found in completely freshwater to almost pure seawater.	Not likely to occur due to lack of recent occurrences. 1995, South San Francisco Bay (South of Alameda).
Amphibians/Reptiles							
Emys marmorata	western pond turtle	-	-	SSC	-	A thoroughly aquatic turtle of ponds, marshes, rivers, streams & irrigation ditches, usually with aquatic vegetation. Need basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5km from water for egg laying.	Moderate potential to occur near creek crossings. 2006, three observations in Lower and Upper Crystal Springs Reservoir, roughly 4 miles west of SST-16 38th/El Camino PS.
Rana draytonii	California red-legged frog	T	-	SSC	-	Lowlands & foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11-20 weeks of permanent water for larval development. Must have access to estivation habitat.	Low potential to occur near creek crossings. 2005, Two adults observed in two different ponds adjacent to Skyline Blvd and north of HWY-92, on the east side of Crystal Springs Reservoir, west of San Mateo, 4 miles west of SST-16 38th/El Camino PS. 2006, East side of Upper Crystal Springs Reservoir, just north of HWY-92 and between HWY 35 & I-280, near San Mateo, 4 miles west of SST-16 38th/El Camino PS. 2007, Observed at Crystal Springs Dam, Lower Crystal Springs Reservoir, 4 miles west of SST-16 38th/El Camino PS.
Thamnophis sirtalis tetrataenia	San Francisco garter snake	E	E	CFP	-	Vicinity of freshwater marshes, ponds and slow moving streams in San Mateo county & extreme northern Santa Cruz county.	Low potential to occur near creek crossings. 2013, Upper Crystal Springs Reservoir and SE portion of Lower Crystal Springs Reservoir, 4 miles west of SST-16 38th/El Camino PS. 2006, East side of Crystal Springs Reservoir, about 0.4 miles west of Skyline Blvd at Golf Course Dr, roughly 4 miles west of Mongini PS.

Appendix C. Special-status Species in the Program Area and Potential to Occur

Scientific Name	Common Name	Status				Habitat	Potential for Occurrence
		Federal	State	CDFW	CNPS		
Birds							
Ardea herodias	great blue heron	-	-	-	-	Colonial nester in tall trees, cliff sides, and sequestered spots on marshes. Rookery sites in close proximity to foraging areas: Marshes, lake margins, tide-flats, rivers and streams, wet meadows.	Potential foraging and roosting at tidal marsh habitat.
Asio flammeus	short-eared owl	-	-	SSC	-	Found in swamp lands, both fresh and salt; lowland meadows; irrigated alfalfa fields.	Not likely to occur, limited amount of highly disturbed habitat present.
Athene cunicularia	burrowing owl	-	-	SSC	-	Open, dry annual or perennial grasslands with low-growing vegetation and on the margins of disturbed/developed habitats. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	Moderate potential to occur, limited amount of highly disturbed habitat present, but may have overwintering sites. 2005, 1.52 miles SE of Coyote Point, San Mateo, at the restored San Mateo Landfill in the San Mateo Shoreline Park, 0.4 miles west of DAX-2 (Dale Ave. PS).
* *Brachyramphus marmoratus*	Marbled Murrelet	T	E	-	-	Majority of their lives on the ocean, but come inland to nest. Generally nest in old-growth forests, characterized by large trees, multiple canopy layers, and moderate to high canopy closure. In California, nests are typically found in coastal redwood and Douglas-fir forests. These forests are located close enough to the marine environment for the birds to fly to and from nest sites.	Not likely to occur, limited amount of highly disturbed habitat present.
Charadrius alexandrinus nivosus	western snowy plover	T	-	SSC	-	Sandy beaches, salt pond levees & shores of large alkali lakes. Needs sandy, gravelly or friable soils for nesting.	Not likely to occur, limited amount of highly disturbed habitat present and lack of recent occurrences. Last observed in 1978 at Bair Island, 3.3 miles SE of LPS 8 Los Prados #2.
Circus cyaneus	Northern harrier	-	-	SSC	-	Coastal salt and fresh-water marshes, nesting and foraging habitats in grasslands and agricultural fields	Not likely to occur, limited amount of highly disturbed habitat present.
Falco peregrinus anatum	American peregrine falcon	D	D	-	-	Near wetlands, lakes, rivers, or other water; on cliffs, banks, dunes, mounds; also, human-made structures. Nest consists of a scrape or a depression or ledge in an open site.	Moderate potential to occur near structures at tidal marsh habitat.
Laterallus jamaicensis coturniculus	California black rail	-	T	CFP	-	Freshwater marshes, wet meadows, and shallow margins of saltwater marshes. Needs water depths of about 1 inch that does not fluctuate during the year and dense vegetation for nesting habitat.	Not likely to occur based on lack of recent occurrences in the area and low habitat potential, likely from high marsh. Last occurrence in the area was in 1977 in Belmont Slough, 1.6 miles east of LPS 8 Los Prados #2.
Melospiza melodia pusillula	Alameda song sparrow	-	-	SSC	-	Resident of salt marshes bordering south arm of San Francisco Bay. Inhabits *Salicornia* marshes; nests low in *Grindelia* bushes (high enough to escape high tides) and in *Salicornia* .	Not likely to occur, limited amount of highly disturbed habitat present.
Phalacrocorax auritus	double-crested cormorant	-	-	-	-	Colonial nester on coastal cliffs, offshore islands, & along lake margins in the interior of the state. Nests along coast on sequestered islets, usually on ground with sloping surface, or in tall trees along lake margins.	Not likely to occur, limited amount of highly disturbed habitat present.

Appendix C. Special-status Species in the Program Area and Potential to Occur

Scientific Name	Common Name	Status				Habitat	Potential for Occurrence
		Federal	State	CDFW	CNPS		
Rallus longirostris obsoletus	Ridgway's rail (formerly California clapper rail)	E	E	CFP	-	Salt water and brackish marshes with tidal sloughs. Associated with abundant growths of pickleweed, but feeds away from cover on invertebrates from mud-bottomed sloughs.	Moderate potential to occur at tidal marsh habitat. Last occurrence in 2006, 3.3 miles SE of LPS 8 Los Prados #2 at Bair Island, Corkscrew Slough, Steinberger Slough, and Redwood Creek. 1.1 miles SW of SST-17 41st/Pacific PS at Deepwater Slough. Also in 2006, observed at mouth of Seal Slough and the area to the east of the mouth, 0.3 miles east of DAX-2 (Dale Ave. PS). Also in 2006, observed in Coyote Point Area in a small marsh about 0.15 mi south of the Coyote Point Marina, roughly 1.75 miles NW of DAX-2 (Dale Ave. PS)
Sternula antillarum browni	California least tern	E	E	CFP	-	Nests along the coast from San Francisco Bay south to northern Baja California, Mexico on bare sparsely vegetated, flat substrates such as sand beaches, alkali flats, landfills, or paved areas.	Not likely to occur, limited amount of highly disturbed habitat present and lack of recent occurrences. Last observed in 1988 at Bair Island, 3.3 miles SE of LPS 8 Los Prados #2.
Mammals							
Antrozous pallidus	pallid bat	-	-	SSC	-	Deserts, grasslands, shrublands, woodlands & forests. Most common in open, dry habitats with rocky areas for roosting. Roosts must protect bats from high temperatures. Very sensitive to disturbance of roosting sites.	No suitable habitat is present.
Dipodomys venustus venustus	Santa Cruz kangaroo rat	-	-	-	-	Silverleaf manzanita mixed chaparral in the Zayante Sand Hills ecosystem of the Santa Cruz mountains.	No suitable habitat is present.
Lasiurus cinereus	hoary bat	-	-	-	-	Prefers open habitats or habitat mosaics, with access to trees for cover & open areas or habitat edges for feeding. Roosts in dense foliage of medium to large trees. Feeds primarily on moths. Requires water.	Not likely to occur, limited amount of highly disturbed habitat present.
Reithrodontomys raviventris	salt-marsh harvest mouse	E	E	-	-	Only found in the saline emergent wetlands of San Francisco Bay and its estuaries. Pickleweed is primary habitat. Does not burrow, builds loosely organized nests. Require higher areas for flood escape.	Low potential for occurrence due to lack of recent occurrences. Suitable habitat is present. Last CNDDB occurrence in 1992, 3.8 miles east of LPS 8 Los Prados #2 at Bair Island, between Steinberger Slough and Redwood Creek in Redwood City.
Sorex vagrans halicoetes	salt-marsh wandering shrew	-	-	SSC	-	Salt marshes of the south arm of San Francisco Bay.	Low potential for occurrence dude to lack of recent occurrences. Suitable habitat is present. Last CNDDB occurrence in 1985 at Bair Island.

*Status: Federal Designations:
(E) Federally Endangered, (T) Federally Threatened
State Designations:
(E) State Endangered, (T) State Threatened, (R) State Rare,
California Department of Fish and Game (CDFG) Designations:
(SSC) Species of Special Concern, (CFP) Fully Protected Species
California Native Plant Society (CNPS) California Rare Plant Rank:
(1A) Presumed extinct in California; (1B) Rare, threatened, or endangered in California and elsewhere; (2) Rare, threatened, or endangered in California, but more common elsewhere; (3) More information is needed; (4) Limited distribution, watch list
Threat Rank:
•0.1 Seriously threatened in California (more than 80% of occurrences threatened / high degree and immediacy of threat)
•0.2 Fairly threatened in California (20 to 80% occurrences threatened / moderate degree and immediacy of threat)
•0.3 Not very threatened in California (less than 20% of occurrences threatened / low degree and immediacy of threat or no current threats known)
* USFWS species list search Website http://ecos.fws.gov/ipac/project/2ZEOLYPJ4JGN3DFE76UJJVAECQ/resources {Accessed 24 August 2015}
** CNPS species list search Website http://www.rareplants.cnps.org [accessed 24 August 2015]

Appendix D
Wetlands Delineation Report

Delineation of Wetlands and Other Waters of the United States

City of San Mateo
Clean Water Program
Waste Water Treatment Plant Upgrade

San Mateo County, California

June 2015

Table of Contents

List of Abbreviations ..... **v**

Chapter 1 **Introduction** **1**

1.1 Project Description 1

1.2 Project Location 2

1.3 Environmental Setting 2

1.3.1 Regional Setting 2

1.3.2 Survey Area Setting 5

Chapter 2 **Methods** **7**

2.1 Pre-field Investigation 7

2.2 Wetland and Water Delineation Methods 7

2.2.1 Delineation of Wetlands-Waters of the United States 7

2.2.2 Vegetation 8

2.2.3 Soils 8

2.2.4 Hydrology 8

2.2.5 Wetland Boundary Determination and Mapping 8

2.3 Non-Wetland Waters 11

2.3.1 Classification 11

Chapter 3 **Results** **13**

3.1 Survey Conditions 13

3.1.1 Palustrine Emergent Wetland 13

3.1.2 Estuarine Wetland 14

Chapter 4 **References** **15**

List of Figures

Figure 1. Project Location and Vicinity 3

Figure 2. Wetland Delineation Survey Area 4

Figure 3. Wetlands and Waters 9

List of Appendices

Appendix A Soil Maps and Descriptions

Appendix B U.S. Geological Survey Topographic Maps

Appendix C National Hydrography Dataset and Watershed Map

Appendix D National Wetland Inventory Map

Appendix E Representative Site Photographs

Appendix F Wetland Determination Datasheet

Appendix G Plant Species Observed

List of Abbreviations

EPA	U.S. Environmental Protection Agency
E2SBNx	Estuarine Intertidal Streambed Regularly Exposed Excavated
°F	degrees Fahrenheit
GIS	Geographic Information System
GPS	global positioning system
NHD	National Hydrography Dataset
NRCS	Natural Resources Conservation Service
NWI	National Wetland Inventory
PEM1N	Palustrine Emergent Persistent Regularly Exposed
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WWTP	Waste Water Treatment Plant

Chapter 1 Introduction

The City of San Mateo is initiating the Clean Water Program, a series of projects to upgrade and increase the capacity of its wastewater treatment plant (WWTP) and sewer collection system. The Program is intended to reduce the frequency and volume of sanitary sewer overflows that occur during rain events, as well as upgrade WWTP to enable it to meet current and future regulatory requirements.

This report summarizes the results of a wetland delineation conducted in support of upgrades to the WWTP within the approximately 30-acre Wetland Delineation Survey Area (survey area), which is also the limits of the United States Army Corps of Engineers (USACE) verification boundary, in support of the City's Clean Water Program. The results of this delineation are preliminary pending verification by the USACE. A general description of the survey area and the environmental setting is provided in this chapter. Survey methods and results are provided in Chapters 2 and 3, respectively.

1.1 Project Description

Proposed improvements for the WWTP include replacement of the failing influent junction box and primary clarifiers, construction of a headworks with grit and screening, improvements to the secondary treatment facilities to meet permit requirements to eliminate blending, construction of an equalization storage basin, and rehabilitating other aging infrastructure.

The WWTP improvement projects would increase the peak wet weather capacity of the treatment plant to 78 million gallons per day. New WWTP facilities would be located on one of several sites:

- The existing WWTP property.
- The city-owned Detroit Drive site, located across Detroit Drive from the existing WWTP.
- Two privately-owned parcels, referred to as the Bayfront Parcels, northeast of the existing WWTP, currently used by a trucking business.
- The City-owned Dale Avenue Parcel west of the existing WWTP, currently unused.

- Roadways around WWTP. The City may incorporate portions of the public right-of-way into the WWTP.

1.2 Project Location

The WWTP is located immediately west of Seal Slough along the south shore of the San Francisco Bay approximately 1 mile north of the intersection of State Route 92 and U.S. Highway 101 in San Mateo County California (Figure 1). The survey area is located in Section 22 Township 04 south, Range 04 west on the San Mateo U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle. The center of the survey area is located at 37.56904 degrees north latitude and -122.29550 degrees west longitude; North American Datum 1983.

The 29.9-acre survey area is located approximately immediately south of East 3rd Avenue extending from Detroit Drive west to Seal Slough (Figure 2).

To get to the survey area from San Francisco take Highway 101 South to State Route 92. Merge onto State Route 92 heading east (towards Hayward) and then in approximately 1 mile take the Foster City Boulevard Exit. At the bottom of the offramp turn left onto Metro City Boulevard and then turn left onto Foster City Boulevard. Continue approximately 0.6 mile along Foster City Boulevard to East 3rd Avenue. Turn left onto East 3rd Avenue and continue west for approximately 1.2 miles and turn left onto Detroit Drive.

1.3 Environmental Setting

The following sections describe the regional environmental setting and provides a general description of survey area, including information on the vegetation, climate and soils.

1.3.1 Regional Setting

The WWTP is located on the eastern edge of the City of Sam Mateo, west of Foster City along the southern edge of the San Francisco Bay. The survey area is located in Bay Flats subsection of the Central California Coast ecological section (Miles and Goudey, 1997). This subsection includes the nearly level coastal plain and estuarine areas along the south end of the San Francisco Bay that are generally less than 10 feet above the mean tide line. The geology is primarily of Quaternary bay fill comprised mostly of silt and clay.

VICINITY MAP

Legend

Project Area

Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community Content may not reflect National Geographic's current map policy. Sources: National Geographic, Esri, DeLorme, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

N

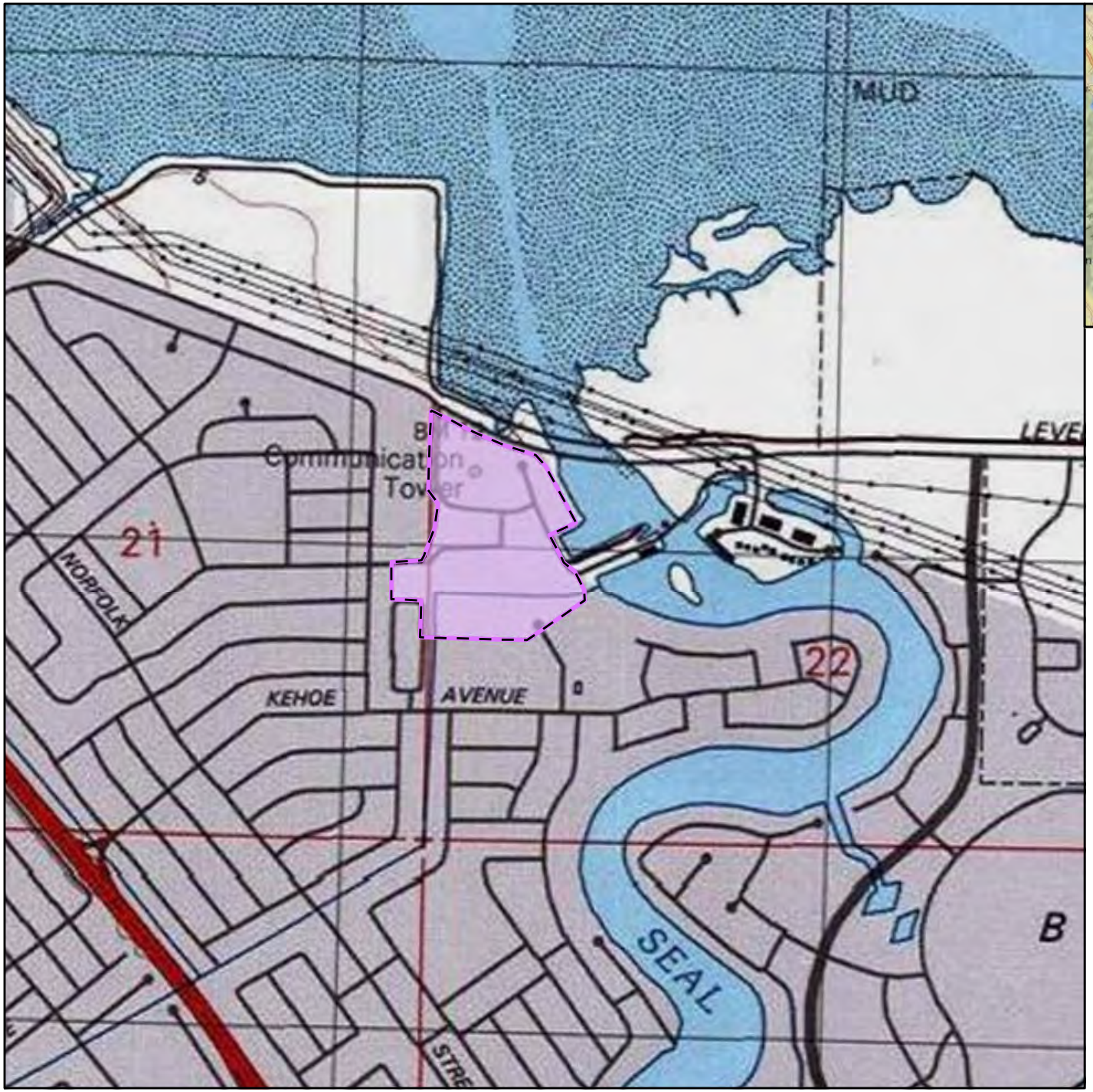
0 2,000 4,000

Feet

FIGURE 1
Project Location
City of San Mateo

CH2MHILL

VICINITY MAP



Legend

Wetland Delineation Survey Area (29.9 acres)

Service Layer Credits: Copyright:© 2013 National Geographic Society, i-cubed
Content may not reflect National Geographic's current map policy. Sources: National Geographic, Esri, DeLorme, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

N

0 1,000 2,000

Feet

FIGURE 2
Wetland Delineation Survey Area
City of San Mateo

CH2MHILL

1.3.2 Survey Area Setting

Most of the survey area consist of developed areas including the existing WWTP and ancillary facilities, a commercial trucking business, storage areas, an abandoned parking lot, and paved roadways. The southern part of the survey area includes portions of two city Parks: Bayside Park and Joinville Park. Only about 15 percent of the survey area consists of undeveloped land. Surrounding land use to the south and west of the survey area consists of urban development including a commercial self-storage facility, residential areas, and a school. The San Francisco Bay is located to the north and Seal Slough is located on the east side of the survey area.

This following sections provide a general description of the ecological setting of the Wetland Delineation Survey Area.

1.3.2.1 GENERAL VEGETATION

Vegetation in the undeveloped portions of the survey area is characterized by ruderal plant species typical of highly disturbed sites and includes species such as wild oat (*Avena barbata, A. fatua*), rip-gut brome (*Bromus diandrus*), Italian ryegrass (*festuca perennis*) foxtail barley (*Hordeum murinium*), pampas grass (*Cortidaria jubata*) fennel (*Foeniculum vulgare*), wild radish (*Raphanus sativa*) and bull mallow (*Malva nicaeensis*). Occasional coyote bush (*Baccharis pilularis*) shrubs are also present in some areas.

Vegetation associated with the developed areas includes a variety of landscape/cultivated trees and shrubs including Ngaio Tree (*Myoporum laetum*), blackwood acacia (*Acacia melanoxylon*), pine (*Pinus patula, P. densiflora*), Eucalyptus (*Eucalyptus sideroxylon, E. rudis, and E. citriodora*), Australian pine (*Casuarina cunninghamiana*), Siberian elm (*Ulmus pumilla*), swamp paperbark (*Melaleuca ericifolia*) and cotoneaster (*Cotoneaster* spp.).

Coastal saltmarsh vegetation was only observed outside of the survey area along the edges of Seal Slough. Characteristic species in these areas include pickleweed (*Salicornia),* Fleshy Jaumea (*Jaumea carnosa*) and saltgrass (*Distichlis spicata*).

1.3.2.2 CLIMATE AND HYDROLOGY

The climate is moderately influenced by marine air resulting in a temperate climate. Average temperatures range from a low of 42 degrees Fahrenheit (°F) in January and December to a high of 78°F in September. The average annual precipitation is 18.77 inches, most of which falls between November and March (Western Regional Climate Center 2015).

The survey area is located in the San Francisco Bay Estuaries Watershed (Hydrologic Unit Code 180500041001), which has a drainage areas of 98,501 acres.

1.3.2.3 SOILS

Information on soils was obtained from the San Mateo County Soil Survey (Natural Resources Conservation Service [NRCS], 2015). Soils throughout the entire survey area have been mapped as Urban land – Orthents, reclaimed complex, 0 to 2 percent slopes. Orthents are soils that consist of various man-made fill material and are found on coastal terraces, floodplains and tidal flats. Soil properties such as parent material, depth, texture, color, drainage, permeability, and ground water elevations are variable. A Soil Map and additional soils information is provided in Appendix A.

Chapter 2 Methods

A wetland delineation was conducted by wetland ecologists Russell Huddleston and Biologist Davis Simi on April 6, 2015. The survey methodology followed the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (USACE 2010). Detailed survey methods are described below.

2.1 Pre-field Investigation

Prior to the field survey, available and relevant information pertaining to site conditions, wetlands, and other water resources were reviewed. The following materials were included in this data review:

- Soil Maps and Descriptions (Appendix A)
- The USGS San Mateo topographic quadrangle map (Appendix B)
- United States Environmental Protection Agency (EPA) Watershed and National Hydrography Dataset (Appendix C) and;
- United States Fish and Wildlife Service (USFWS) National Wetlands Inventory(NWI) Maps (Appendix D).

2.2 Wetland and Water Delineation Methods

The April 6, 2015 field survey focused on the undeveloped areas within the survey area. The following sections describe the methods used to characterized and delineate this feature.

2.2.1 Delineation of Wetlands-Waters of the United States

Two sample points were established to characterize potential wetland and the adjacent upland location in the undeveloped area on the north side of the WWTP (Figure 3). At each sample location information on vegetation, soils, and hydrology was recorded on a wetland determination data sheets (Appendix E). Representative photographs are included in Appendix F. The following sections provide additional details on the field methods.

2.2.2 Vegetation

At each sample point all plant species were identified and the percent cover was visually estimated and recorded. Herbaceous vegetation was sampled in an approximately 5-foot radius area around each sample point and shrubs were sampled within an approximate 15-foot radius. Taxonomic designations used throughout this report follow The Jepson Manual: Vascular Plants of California (Baldwin et al. 2012). The wetland indicator status was determined using the National Wetland Plant List (Lichvar et al. 2014). Dominant species included the most abundant species whose cumulative cover accounted for at least 50 percent of the relative cover, and any single species that accounted for at least 20 percent of the relative vegetative cover. Strata with less than 5 percent absolute cover were not included in the dominance test. A list of plant species observed, with synonymy cross referenced to the National Wetland Plant List, is included in Appendix G.

2.2.3 Soils

Descriptions of soils were made by examining soil pits excavated to depths between 16 and 20 inches using a tile-spade shovel. At each sample point, soil morphological features such as texture, color, and redoximorphic features (if present) were noted. Soil texture was estimated in the field by feel (Thien 1979), and moist soil colors were determined using Munsell® color charts.

2.2.4 Hydrology

The presence wetland hydrology was determined based on field observations of shallow, tidally influenced ground water as well as well as tidal elevation data obtained from the tide gauge on the west side of the San Mateo Bridge. Seasonal rainfall conditions, site drainage, landscape position, and general site topography were also taken into consideration while making wetland hydrology determinations.

2.2.5 Wetland Boundary Determination and Mapping

Wetland boundaries were determined in the field based on observations of hydrophytic vegetation, wetland hydrology indicators, and site topography. A Trimble® Global positioning System (GPS) unit was used in the field to map the extent of the wetlands boundary.

Legend

- Wetland Delineation Survey Area (29.9 acres)
- Culvert Inlet
- Culvert Outlet
- Upland Sample Point
- Wetland Sample Point
- Wetland (0.142 acre)
- Open Water (1.215 acres)

Wetland Deliineation:
Russell Huddleston and Davis Simi April 6, 2015

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
Content may not reflect National Geographic's current map policy. Sources: National Geographic, Esri, DeLorme, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

N

0 175 350
Feet

FIGURE 3
Wetlands and Waters
City of San Mateo

2.3 Non-Wetland Waters

Non-wetland waters include features such as rivers, streams, lakes, and ponds that are identified based on the presence of an ordinary high water mark. The extent of Leslie Creek, located on the south side of the WWTP, was inaccessible at the time of the survey and therefore the extent of this feature was mapped using aerial imagery.

2.3.1 Classification

Classification of wetlands and other waters identified during the survey follow the Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al. 1979). This classification methodology was developed by the USFWS as part of the NWI program. The hierarchical classification for categorizing aquatic habitats includes systems, subsystems, and classes. Modifiers are used to denote specific water regimes or highly altered areas such as excavated or impounded wetlands.

Chapter 3 Results

A total of 0.142 acre of Palustrine Emergent Persistent Regularly Exposed (PEM1N) wetlands and 1.215 acres of Estuarine Intertidal Streambed Regularly Exposed Excavated (E2SBNx) Waters (Figure 3). The following sections describe the survey conditions, and provide a general description of the creek channel.

3.1 Survey Conditions

Total rainfall measured at the San Francisco International Airport (located approximately 6 miles northwest of the survey area, between November 1, 2014 and March 31, 2014 was 14.4 inches, which is 93 percent of the average of 15.5 inches for this time period. However, this is largely due to heavy storms in early December, that dropped over 10 inches of rain. No measureable rainfall was measured in January and February and March were both well below average in terms of total rainfall. The last rain event prior to the field survey was on March 24 and 25, 2015, when a total of 0.41 inch of rain was recorded at the San Francisco Airport.

There was no evidence of significant recent disturbance at the time of the survey and normal conditions appeared to be present.

3.1.1 Palustrine Emergent Wetland

A 0.14 acre wetland area was identified in the southern part of the undeveloped area on the north side of the WWTP (Figure 3). The wetland is situated in a topographic low area. At the time of the survey dense perennial ryegrass occurred throughout the wetland area with some robust bulrush (*Bolboschoenus robustus*), spearscale (*Atriplex prostrata*), annual beardgrass (*Polypogon monspilensis*) and curly dock (*Rumex crispus*) found in the lower parts of the wetland area. Creeping wildrye (*Elymus triticoides*) is also common and intermixed with the Italian Ryegrass in the narrow arm of the wetland on that extends to the west. Surface soils in this area had approximately 1.5 inches of organic material on the surface underlain by a dark grayish brown (10YR 4/2) clay loam with around 10 percent distinct dark brown (7.5YR 3/4) concentrations in the matrix and along the root channels to a depth of 16 inches. Wetland hydrology in this area appears to be driven by tidally influenced shallow ground water. At the time of the survey ground water and saturated soils were observed at a depth of 16 inches. The tide elevation at the time was 5.8 feet, where the mean high tide has an elevation of 7.3 feet in this area. David Simi reported that soils in this area were saturated to the surface on April 1, 2015 as noted during

the wildlife surveys during a high tide of 6.8 feet. This area also appears receive supplement inflows from a storm water drain along Detroit drive that conveys roadway runoff into a cement culvert that discharges in the southern part of the wetland feature.

3.1.2 Estuarine Wetland

Leslie Creek, a channelized tributary to Seal Slough, is present in the southern part of the survey area (Figure 3). Leslie Creek daylights just south of the Intersection of South Railroad Ave and East 16th Street in the City of San Mateo, approximately one mile southwest of the survey area. Within the survey area the channel runs along the southwest edge between a residential neighborhood and Bayside park for 285 feet where it then turns east and continues 1,075 feet along the southern edge of the WWTP to the tide gates at the confluence with Seal slough. Most of the channel within the survey area is characterized by cement lined side slopes with a muddy substrate. The channel width ranges from ranges from approximately 40 to 45 feet. No vegetation was evident in the channel and adjacent vegetation consists of mowed grasses and forbs along the west side and landscaped trees, primarily Australian pine, along the north side of Bayside Park.

Chapter 4 References

Baldwin, Bruce G., Douglas H. Goldman, David J. Keil, and Robert Patterson (eds.). 2012. The Jepson Manual: Vascular Plants of California. Berkeley: University of California Press.

Cowardin, L. M., V. Carter, F. C. Golet, and E. T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. USFWS/OBS-79/31. U.S. Fish and Wildlife Service, Biological Services Program.

Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual*. Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Miss. Online Version Available at: http://www.wetlands.com/regs/tlpge02e.htm.

Lichvar, R.W., M. Butterwick, N.C. Melvin, and W.N. Kirchner. 2014. *The National Wetland Plant List*: 2014 Update of Wetland Ratings. Phytoneuron 2014-41: 1-42.

Miles S. R. and Charles B. Goudey. 1997. *Ecological Subregions of California*. USDA, Forest Service, Pacific Southwest Region. Publication R5-EM-TP-005. San Francisco, CA.

Natural Resources Conservation Service (NRCS). 2015. Web Soil Survey 2.0 National Cooperative Soil Survey. Available online at: http://websoilsurvey.nrcs.usda.gov/app/. Accessed on: April 4,2015.

Thien, Steve. 1979. A Flow Diagram for Teaching Texture-by-Feel Analysis. *Journal of Agronomic Education*, Vol. 8 54-55.

U.S. Army Corps of Engineers (USACE). 2010. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys and Coast Region (Version 2.0)*. U.S. Army Corps of Engineers Engineer Research and Development Center, Vicksburg, Miss.

Western Region Climate Center. 2015. Climate summary for San Mateo, California. Available on line at: http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?casraf+sfo; Accessed June 1, 2015.

Appendix A Soil Maps and Detailed Series Descriptions

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for San Mateo County, Eastern Part, and San Francisco County, California

City of San Mateo WWTP

April 4, 2015

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means

for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

Preface.....2
How Soil Surveys Are Made.....5
Soil Map.....7
Soil Map.....8
Legend.....9
Map Unit Legend.....10
Map Unit Descriptions.....10
San Mateo County, Eastern Part, and San Francisco County, California.....12
134—Urban land-Orthents, reclaimed complex, 0 to 2 percent slopes.....12
W—Water.....13
References.....14

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Mateo County, Eastern Part, and San Francisco County, California
Survey Area Data: Version 11, Sep 26, 2014

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 26, 2010—Nov 28, 2013

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

San Mateo County, Eastern Part, and San Francisco County, California (CA689)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
134	Urban land-Orthents, reclaimed complex, 0 to 2 percent slopes	39.3	77.6%
W	Water	11.4	22.4%
Totals for Area of Interest		**50.7**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

San Mateo County, Eastern Part, and San Francisco County, California

134—Urban land-Orthents, reclaimed complex, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: h9hj
Elevation: 0 to 50 feet
Mean annual precipitation: 15 to 30 inches
Mean annual air temperature: 54 to 57 degrees F
Frost-free period: 275 to 350 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 65 percent
Orthents and similar soils: 30 percent
Minor components: 4 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Landform: Tidal flats

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s

Description of Orthents

Setting

Landform: Tidal flats
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

H1 - 0 to 40 inches: variable
H2 - 40 to 60 inches: silty clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Slightly saline to moderately saline (8.0 to 16.0 mmhos/cm)
Available water storage in profile: Very low (about 1.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8e
Hydrologic Soil Group: C

Minor Components

Novato
Percent of map unit: 2 percent
Landform: Salt marshes

Reyes
Percent of map unit: 1 percent
Landform: Salt marshes

Orthents, cut&fill
Percent of map unit: 1 percent

W—Water

Map Unit Composition
Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

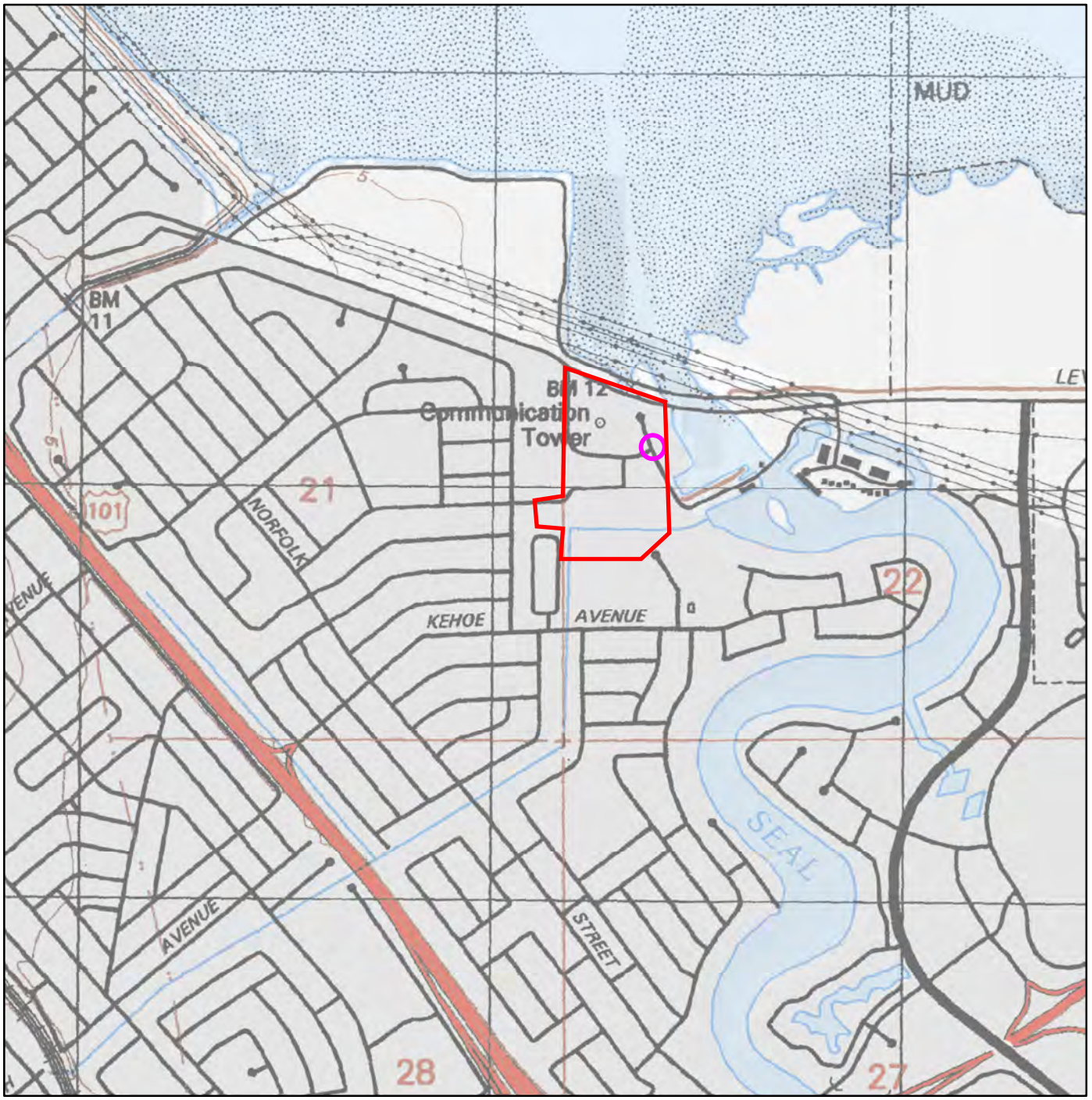
United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

Appendix B USGS Topographic Maps

City of San Mateo Water Treatment Facility

Figure B-1
U.S. Geological Survey
San Mateo 7.5 Minute Quadrangle
City of San Mateo



Section 22
Township 04S
Range 04W
37.56956 North
-122.29468 West

1:18,056
0 0.15 0.3 0.6 mi
0 0.25 0.5 1 km

June 1, 2015

Author: R. Huddleston
Printed from http://bios.dfg.ca.gov

Appendix C National Hydrography Dataset and Watershed Map

Source: EPA myWaters Mapper: http://watersgeo.epa.gov/mwm/

Figure C-1
National Hydrography Dataset
and Watershed Map
City of San Mateo

Appendix D National Wetland Inventory Map

U.S. Fish and Wildlife Service
National Wetlands Inventory

City of San Mateo

Jun 2, 2015

Wetlands

- Freshwater Emergent
- Freshwater Forested/Shrub
- Estuarine and Marine Deepwater
- Estuarine and Marine
- Freshwater Pond
- Lake
- Riverine
- Other

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

User Remarks:

Clean Water Program - WWTP Upgrade Project

Appendix E Wetland Determination Datasheets

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: WWTP - CORP. YARD City/County: SAN MATEO Sampling Date: 6 APR 2015

Applicant/Owner: CITY OF SAN MATEO State: CA Sampling Point: SP-01

Investigator(s): RUSSELL HUDDLESTON Section, Township, Range: 22 04S 04W (MDM)

Landform (hillslope, terrace, etc.): FILL TERRACE Local relief (concave, convex, none): CONCAVE Slope (%): < 2%

Subregion (LRR): C Lat: 37° 34' 10.590" Long: 122° 17' 44.934" Datum: WGS 84

Soil Map Unit Name: URBAN LAND - ORTHENTS NWI classification: NONE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	Is the Sampled Area within a Wetland? Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks: LOW DEPRESSIONAL AREA IN THE SOUTHWEST CORNER OF THE CORPORATION YARD - TIDAL

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
	– = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 FT)			
1. BACCHARIS PILULARIS	3%	NO	NL
2.			
3.			
4.			
5.			
	3% = Total Cover		
Herb Stratum (Plot size: 5 FT)			
1. LOLIUM PERENNE	95%	YES	FAC
2. BROMUS DIANDRUS	TR	NO	NL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	95% = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1. N/A			
2.			
	– = Total Cover		

% Bare Ground in Herb Stratum 5%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species 95	x 3 =	285
FACU species 3	x 4 =	12
UPL species	x 5 =	
Column Totals: 98 (A)		297 (B)

Prevalence Index = B/A = 3.03

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: HYDROPHYTIC VEGETATION MARGINAL - DOMINATED BY FAC SPECIES WITH SPARSE UPLAND PLANTS, HOWEVER THIS AREA IS NOTABLY DIFFERENT THAN SURROUNDING RUDERAL VEGETATION

SOIL

Sampling Point: SP-01

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1.5"	-	-	-	-	-	-	OM	ORGANIC MATERIAL
1.5-16"	10YR 4/2	90%	7.5YR 3/4	10%	C	M/PL	CL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: NONE

Depth (inches): -

Hydric Soil Present? Yes X No ___

Remarks: MANY DISTINCT DARK BROWN CONCENTRATIONS IN SOIL MATRIX AND ALONG ROOT CHANNELS

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes X No ___ Depth (inches): 16"

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 16"

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: GROUND WATER AT THIS LOCATION IS TIDALLY INFLUENCED TIDAL ELEVATION AT TIME OF SURVEY W 5.8 FT - HIGH TIDE 7.3 FT. - AREA SUBJECT TO TIDAL INFLUENCED HIGH GROUNDWATER

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: WWTP - CORP. YARD City/County: SAN MATEO Sampling Date: 6 APR 2015

Applicant/Owner: CITY OF SAN MATEO State: CA Sampling Point: SP-02

Investigator(s): RUSSELL HUDDLESTON Section, Township, Range: 22 04S 04W (MDM)

Landform (hillslope, terrace, etc.): FILL TERRACE Local relief (concave, convex, none): NONE Slope (%): 22%

Subregion (LRR): C Lat: 37° 34' 10.908" Long: 122° 17' 44.864" Datum: WGS 84

Soil Map Unit Name: URBAN LAND - ORTHENTS NWI classification: NONE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No X	Is the Sampled Area within a Wetland? Yes _____ No X
Hydric Soil Present?	Yes _____ No _____	
Wetland Hydrology Present?	Yes _____ No _____	

Remarks: ADJACENT TO LOW AREA IN SW CORNER OF CORPORATION YARD

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1. N/A			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 FT)			
1. BACCHARIS PILULARIS	10%	YES	NL
2.			
3.			
4.			
5.			
	10% = Total Cover		
Herb Stratum (Plot size: 5 FT)			
1. LOLIUM PERENNE	60%	YES	FAC
2. BROMUS DIANDRUS	30%	YES	NL
3. PLANTAGO CORONOPUS	10%	NO	FACW
4. RAPHANUS SATIVUS	TR	NO	NL
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100% = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1. N/A			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species 10	x 2 =	20
FAC species 60	x 3 =	180
FACU species	x 4 =	
UPL species 40	x 5 =	200
Column Totals: 110 (A)		400 (B)

Prevalence Index = B/A = 3.6

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

__ 2 - Dominance Test is >50%

__ 3 - Prevalence Index is ≤3.0[1]

__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ 5 - Wetland Non-Vascular Plants[1]

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks: VEGETATION SIMILAR TO ADJACENT LOW AREA WITH HIGHER COVER OF UPLAND PLANTS NOTED IN THIS LOCATION

SOIL

Sampling Point: SP-02

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1.5	-	-	-	-	-	-	OM	ORGANIC LAYER
1.5-11"	10YR 3/3	95%	7.5YR 3/4	5%	C	M	LOAM	
11"-20"	10YR 4/2	98%	7.5YR 3/4	2%	C	M/PL	CL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks: FAINT CONCENTRATIONS IN UPPER PART - DO NOT MEET ANY HYDRIC SOIL INDICATOR.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches) _____

Water Table Present? Yes _____ No X Depth (inches) 7 20"

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches) 7 20"

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: SHALLOW GROUND WATER IS LIKELY PRESENT DURING HIGH TIDES, BUT DOES NOT APPEAR TO BE COMMON IN THE UPPER 12 INCHES.

Appendix F Representative Site Photographs

Seasonal Wetland on north side of WWTP, looking east; April 6, 2015

Sample Point SP-01; seasonl wetland on north side of WWTP; April 6, 2015

Soils from Sample Point SP-01; seasonl wetland on north side of WWTP; April 6, 2015

Shallow ground water observed at Sample Point SP-01; seasonl wetland on north side of WWTP; April 6, 2015

Culvert that conveys roadside run-off from Detroit Ave into wetalnd area on north side ot the WWTP: April 6, 2015

Sample Point SP-02; adjacent to seasonl wetland on north side of WWTP; April 6, 2015

Leslie Creek – Looking east at channel just north west of Bayside park; April 6, 2014

Appendix G Plant Species Observed

Table G-1. Plant Species Observed at the City of San Mateo Waste Water Treatment Upgrade Project Site

Scientific name[1]	Common name	Status	Indicator[2]
GYMNOSPERMS			
PINACEAE			
Pinus densiflora	Japanese red pine	landscape	N/L
Pinus patula	Mexican weeping pine	landscape	N/L
ANGIOSPERMS			
AIZOACEAE			
Carpobrotus edulis	iceplant	naturalized	N/L
APIACEAE			
Foeniculum vulgare	fennel	naturalized	N/L
APOCYNACEAE			
Nerium oleander	oleander	landscape	N/L
ARALIACEAE			
Hedera helix	English ivy	naturalized	FACU
ASTERACEAE			
Baccharis pilularis	coyote bush	native	N/L
Bellis perennis	English daisy	naturalized	N/L
Carduus pycnocephalus	Italian plumeless thistle	naturalized	N/L
Cirsium vulgare	bull thistle	naturalized	FACU
Cota tinctoria	golden Marguerite	naturalized	N/L
Cotula australis	Australian cotula	naturalized	FAC
Delairea oderata	cape ivy	naturalized	N/L
Helminthotheca echioides	bristly ox-tongue	naturalized	FAC
Jaumea carnosa	Fleshy juamea	native	OBL
Lactuca serriola	prickly lettuce	naturalized	FACU
Lasthenia glabrata	yellowray goldfields	native	FACW
Layia glandulosa	whitedaisy tidytips	native	N/L
Pseudognaphalium luteoalbum	Jersey cudweed	naturalized	FACW
Pseudognaphalium microcephalum	Wright's cudweed	native	N/L
Senecio vulgaris	common groundsel	naturalized	FACU
Sonchus asper	spiny-leaved sow-thistle	naturalized	FACU
Sonchus oleraceus	common sow-thistle	naturalized	UPL
Taraxacum officinale	common dandelion	naturalized	FACU
Tragopogon porrifolius	purple salsify	naturalized	N/L

Table G-1. Plant Species Observed at the City of San Mateo Waste Water Treatment Upgrade Project Site

Scientific name[1]	Common name	Status	Indicator[2]
BRASSICACEAE			
Capsella bursa-pastoris	shepherd's purse	naturalized	FACU
Lepidium didymum	lesser swine cress	naturalized	N/L
Raphanus sativus	wild radish	naturalized	N/L
CARYOPHYLLACEAE			
Cerastium glomeratum	mouse eared chickweed	naturalized	FACU
Spergularia rubra	red sand-spurrey	naturalized	FAC
Stellaria media	common chickweed	naturalized	FACU
CASUARINACEAE			
Casuarina cunninghamiana	Australian pine	landscape	N/L
CHENOPODIACEAE			
Atriplex prostrata	fat-hen	naturalized	FAC
Dysphania ambrosioides	Mexican tea	naturalized	FAC
Chenopodium album	lamb's quarters	naturalized	FACU
Salicornia pacifica	pickleweed	native	N/L
Salsola soda	oppositeleaf Russian thistle	naturalized	FACW
CONVOLVULACEAE			
Cuscuta salina	salt dodder	native	N/L
EUPHORBIACEAE			
Euphorbia serpens	matted sandmat	naturalized	FAC
FABACEAE			
Acacia melanoxylon	Blckwood acacia	Landscape	N/L
Acacia saligna	golden wreath wattle	landscape	N/L
Genista monspessulana	French broom	naturalized	N/L
Medicago polymorpha	bur clover	naturalized	FACU
Melilotus indicus	annual yellow sweetclover	naturalized	FACU
Trifolium dubium	little hop clover	naturalized	FACU
Trifolium repens	white clover	naturalized	FAC
Vicia sativa ssp. *nigra*	narrow leaved vetch	naturalized	UPL

Table G-1. Plant Species Observed at the City of San Mateo Waste Water Treatment Upgrade Project Site

Scientific name[1]	Common name	Status	Indicator[2]
FAGACEAE			
Quercus agrifolia	Coast live oak	Native	N/L
GERANIACEAE			
Erodium botrys	broad leaf filaree	naturalized	FACU
Erodium cicutarium	redstem filaree	naturalized	N/L
Erodium moschatum	white stemmed filaree	naturalized	N/L
Geranium dissectum	cutleaf geranium	naturalized	N/L
LYTHRACEAE			
Lythrum hyssopifolia	hyssop loosestrife	naturalized	OBL
MALVACEAE			
Malva nicaeensis	bull mallow	naturalized	N/L
Malva parviflora	cheeseweed	naturalized	N/L
MYRTACEAE			
Eucalyptus citriodora	lemon-scented gum	landscape	N/L
Eucapyptus rudis	floodedgum	landscape	N/L
Eucalyptus sideroxylon	Red iron-bark	landscape	N/L
Melaleuca ericifolia	swamp paperbark	landscape	N/L
MYRSINACEAE			
Anagallis arvensis	scarlet pimpernel	naturalized	N/L
ONAGRACEAE			
Clarkia rhomboidea	diamond clarkia	native	N/L
OXALIDACEAE			
Oxalis corniculata	creeping woodsorrel	naturalized	FACU
Oxalis pes-caprae	Bermuda buttercup	naturalized	N/L
PAPAVERACEAE			
Eschscholzia californica	California poppy	native	N/L
Fumaria parviflora	fineleaf fumitory	naturalized	N/L
PLANTAGINACEAE			
Plantago coronopus	buckhorn plantain	naturalized	FACW

Table G-1. Plant Species Observed at the City of San Mateo Waste Water Treatment Upgrade Project Site

Scientific name[1]	Common name	Status	Indicator[2]
Veronica arvensis	corn speedwell	naturalized	FACU
POLYGONACEAE			
Polygonum aviculare	knotweed	naturalized	FAC
Rumex crispus	curly dock	naturalized	FAC
PORTULACACEAE			
Portulaca oleracea	purslane	naturalized	FAC
RHAMNACEAE			
Ceanothus thyrsiflorus	blueblossom	landscape	N/L
ROSACEAE			
Cotoneaster spp.	Cotoneaster	landscape	N/L
Photinia sp.	Chokeberry	landscape	N/L
Rubus armeniacus	Himalayan blackberry	naturalized	FACU
SCROPHULARIACEAE			
Collinsia heterophylla	purple Chinese houses	native	N/L
Myoporum laetum	ngaio tree	landscape	UPL
SOLANACEAE			
Solanum nigrum	black nightshade	naturalized	FACU
ULMACEAE			
Ulmus pumila	Siberian elm	landscape	UPL
CYPERACEAE			
Bolboschoenus robustus	seacoast bulrush	native	N/L
Cyperus eragrostis	tall flatsedge	native	FACW
JUNCAGINACEAE			
Triglochin maritima	common arrowgrass	native	OBL
POACEAE			
Avena barbata	slender wild oat	naturalized	N/L
Avena fatua	wild oat	naturalized	N/L
Bromus diandrus	Rip-gut brome	naturalized	N/L

Table G-1. Plant Species Observed at the City of San Mateo Waste Water Treatment Upgrade Project Site

Scientific name[1]	Common name	Status	Indicator[2]
Bromus hordeaceus	soft chess	naturalized	FACU
Cortaderia selloana	pampas grass	naturalized	FACU
Distichlis spicata	saltgrass	native	FACW
Ehrharta erecta	panic veldt grass	naturalized	N/L
Elymus triticoides	creeping wild rye	native	FAC
Festuca bromoides	brome fescue	naturalized	N/L
Festuca myuros	rattail fescue	naturalized	N/L
Festuca perennis	Italian ryegrass	naturalized	N/L
Hordeum murinum ssp. *leporinum*	foxtail barley	naturalized	N/L
Phalaris aquatica	Harding grass	naturalized	FACU
Poa annua	annual bluegrass	naturalized	FAC
Polypogon monspeliensis	annual beardgrass	naturalized	FACW

Notes:

[1]Taxonomy follows *The Jespon Manual, Second Edition* (Baldwin et al. 2012)

[2]Lichvar, R.W., N.C. Butterwick, N.C. Melvin and W.N. Kirchner. 2014. *The National Wetland Plant List: 2014 Update of Wetland Ratings: Western Mountains and Coast Regional Wetland Plant List.* Phytoneuron 2014-41: 1-42.

Indicator Status
N/L – Not Listed (assumed to be an upland plant)
FACU – Usually occurs in non-wetlands but may occur in wetlands
FAC – Occur in wetlands and non-wetlands
FACW – Usually occur in wetlands but may occur in non-wetlands
OBL – Almost always occur in wetlands

Appendix E
Geologic Units

Appendix E. Geologic Unit Descriptions. Geologic descriptions are from E.E. Brabb et al. (1998). Seismic and soil interpretations are from City of San Mateo (2009).

Geologic Unit	Description	Seismically Induced Ground Shaking	Liquefaction	Ground subsidence and settlement	Erosion	Corresponding soil map units
af	Artificial fill (Historic)--Loose to very well consolidated gravel, sand, silt, clay, rock fragments, organic matter, and man-made debris in various combinations. Thickness is variable and may exceed 30 m in places. Some is compacted and quite firm, but fill made before 1965 is nearly everywhere not compacted and consists simply of dumped materials	Very strong to extremely strong for 8.3 magnitude earthquake on San Andreas Fault	No hazard in engineered fills. Possible hazard in uncontrolled fill on Bay mud. Hazard somewhat greater in areas on or near filled tidal channels.	No hazard in properly engineered and constructed fills. Common hazard in poorly constructed or uncontrolled fills. Somewhat greater hazard in areas of filled tidal channels.	Slope protection generally required on fill slopes	134
alf	Artificial levee fill (Historic)--Man-made deposit of various materials and ages, forming artificial levees as much as 6.5 m high. Some are compacted and quite firm, but fills made before 1965 are almost everywhere not compacted and consist simply of dumped materials. The distribution of levee fill conforms to levees shown on the most recent U.S. Geological Survey 7.5-minute quadrangle maps	Very strong to extremely strong for 8.3 magnitude earthquake on San Andreas Fault	No hazard in engineered fills. Possible hazard in uncontrolled fill on Bay mud. Hazard somewhat greater in areas on or near filled tidal channels.	No hazard in properly engineered and constructed fills. Common hazard in poorly constructed or uncontrolled fills. Somewhat greater hazard in areas of filled tidal channels.	Slope protection generally required on fill slopes	134
Qhsc	Stream channel deposits (Holocene)--Poorly to well-sorted sand, silt, silty sand, or sandy gravel with minor cobbles. Cobbles are more common in the mountainous valleys. Many stream channels are presently lined with concrete or rip rap. Engineering works such as diversion dams, drop structures, energy dissipaters and percolation ponds also modify the original channel. Many stream channels have been straightened, and these are labeled Qhasc. This straightening is especially prevalent in the lower reaches of streams entering the estuary. The mapped distribution of stream channel deposits is controlled by the depiction of major creeks on the most recent U.S. Geological Survey 7.5-minute quadrangles. Only those deposits related to major creeks are mapped. In some places these deposits are under shallow water for some or all of the year, as a result of reservoir release and annual variation in rainfall.	Very strong to extremely strong for 8.5 magnitude earthquake on San Andreas Fault	Generally low	Unlikely	Generally low, but locally high along active stream channels; may rill in cuts	134
Qhbm	Bay mud (Holocene)-- Water-saturated estuarine mud, predominantly gray, green and blue clay and silty clay underlying marshlands and tidal mud flats of San Francisco Bay, Pescadero, and Pacifica. The upper surface is covered with cordgrass (Spartina sp.) and pickleweed (Salicornia sp.). The mud also contains a few lenses of well-sorted, fine sand and silt, a few shelly layers (oysters), and peat. The mud interfingers with and grades into fine-grained deposits at the distal edge of Holocene fans, and was deposited during the post-Wisconsin rise in sea-level, about 12 ka to present. Mud varies in thickness from zero, at landward edge, to as much as 40 m near north County line	Extremely strong for 8.5 magnitude earthquake on San Andreas	Generally moderate; locally high where shallow, clean sand beds exist	Likely where drained; differential settlement from compaction of loose or soft sediment possible under surcharge of fill.	Generally low.	134
Qhb	Basin deposits (Holocene)--Very fine silty clay to clay deposits occupying flat-floored basins at the distal edge of alluvial fans adjacent to the bay mud (Qhbm). Also contains unconsolidated, locally organic, plastic silt and silty clay deposited in very flat valley floors	Fair to good stability. Landslides along creek banks possible; unlikely on flat ground.	Generally low; potential liquefiable where shallow, well sorted silt or sand beds occur and are saturated.	Unlikely	Generally low, but locally high along active stream channels.	121, 131
Qhaf	Alluvial fan and fluvial deposits (Holocene)--Alluvial fan deposits are brown or tan, medium dense to dense, gravely sand or sandy gravel that generally grades upward to sandy or silty clay. Near the distal fan edges, the fluvial deposits are typically brown, never reddish, medium dense sand that fines upward to sandy or silty clay	Extremely strong for 8.5 magnitude earthquake on San Andreas	Generally low; potential liquefiable where shallow, well sorted silt or sand beds occur and are saturated.	Unlikely	Generally low, but locally high along active stream channels; may rill in cuts	132, 121
Qcl	Colluvium (Holocene)--Loose to firm, friable, unsorted sand, silt, clay, gravel, rock debris, and organic material in varying proportions	Very strong to extremely strong 8.5 magnitude earthquake on San Andreas	Generally low, but liquefiable when saturated	Unlikely unless seismically induced or loaded; will compact slowly over long periods of time if undisturbed.	Generally moderate; but locally severe gullying may occur in cuts.	
Qpaf	Alluvial fan and fluvial deposits (Pleistocene)--Brown dense gravely and clayey sand or clayey gravel that fines upward to sandy clay. These deposits display variable sorting and are located along most stream channels in the county. All Qpaf deposits can be related to modern stream courses. They are distinguished from younger alluvial fans and fluvial deposits by higher topographic position, greater degree of dissection, and stronger soil profile development. They are less permeable than Holocene deposits, and locally contain fresh water mollusks and extinct late Pleistocene vertebrate fossils. They are overlain by Holocene deposits on lower parts of the alluvial plain, and incised by channels that are partly filled with Holocene alluvium on higher parts of the alluvial plain. Maximum thickness is unknown but at least 50 m.	Extremely strong for 8.5 magnitude on San Andreas; ground amplification possible during earthquake.	Generally low; potentially liquefiable where shallow, well sorted silt and sand beds occur.	Unlikely	Generally low.	

Appendix E. Geologic Unit Descriptions. Geologic descriptions are from E.E. Brabb et al. (1998). Seismic and soil interpretations are from City of San Mateo (2009).

Geologic Unit	Description	Seismically Induced Ground Shaking	Liquefaction	Ground subsidence and settlement	Erosion	Corresponding soil map units
QTsc	Santa Clara Formation (lower Pleistocene and upper Pliocene)--Gray to red-brown poorly indurated conglomerate, sandstone, and mudstone in irregular and lenticular beds. Conglomerate consists mainly of subangular to subrounded cobbles in a sandy matrix but locally includes pebbles and boulders. Cobbles and pebbles are mainly chert, greenstone, and graywacke with some schist, serpentinite, and limestone. On Coal Mine Ridge, south of Portola Valley, conglomerate contains boulders of an older conglomerate as long as one meter. Gray to buff claystone and siltstone beds on Coal Mine Ridge contain carbonized wood fragments as large as 60 cm in diameter. Included in Santa Clara Formation are similar coarse-grained clastic deposits near Burlingame. Thickness of Santa Clara Formation is variable but reaches a maximum of about 500 m along Coal Mine Ridge	Strong to extremely strong for 8.3 magnitude earthquake on San Andreas	No hazard.	Unlikely	Generally low; locally moderate to where natural surface disturbed or removed, particularly where highly fractured or weathered.	
QTm	Merced Formation (lower Pleistocene and upper Pliocene)--Medium-gray to yellowish gray and yellowish orange, medium- to very fine-grained, poorly indurated to friable sandstone, siltstone, and claystone, with some conglomerate lenses and a few friable beds of white volcanic ash. In many places sandstone is silty, clayey, or conglomeratic. Some of the conglomerate, especially where fossiliferous, is well cemented. Volcanic ash is in beds as much as 2 m thick and consists largely of glass shards. In type section of Merced Formation, the ash was originally reported by Sarna-Wojcicki (1976) to be 1.5+0.8 m.y. old, but more recent work by Sarna-Wojcicki and others (1991) indicates that the formation contains both the 738+3 ka Bishop ash and the 435 ka Rockland ash (Sarna-Wojcicki, oral comm., 1997). Merced Formation is about 1525 m thick in the sea cliffs north of Mussel Rock	Strong to extremely strong for 8.3 magnitude earthquake on San Andreas	No hazard.	Unlikely	Generally low; locally moderate to where natural surface disturbed or removed, particularly where highly fractured or weathered.	
fs	Sandstone--Greenish-gray to buff, fine- to coarse-grained sandstone (graywacke), with interbedded siltstone and shale. Siltstone and shale interbeds constitute less than 20 percent of unit, but in places form sequences as much as several tens of meters thick. In many places, shearing has obscured bedding relations; rock in which shale has been sheared to gouge constitutes about 10 percent of unit. Gouge is concentrated in zones that are commonly less than 30 m wide but in places may be as much as 150 m wide. Total thickness of unit is unknown but is probably at least many hundreds of meters	Strong to extremely strong for 8.3 magnitude earthquake on San Andreas	No hazard.	Unlikely	Generally low; locally moderate to where natural surface disturbed or removed, particularly where highly fractured or weathered.	
fg	Greenstone--Dark-green to red altered basaltic rocks, including flows, pillow lavas, breccias, tuff breccias, tuffs, and minor related intrusive rocks, in unknown proportions. Unit includes some Franciscan chert and limestone bodies that are too small to show on map. Greenstone crops out in lenticular bodies varying in thickness from a few meters to many hundreds of meters		No hazard.	Unlikely	Generally low; locally moderate to where natural surface disturbed or removed, particularly where highly fractured or weathered.	
fc	Chert--White, green, red, and orange chert, in places interbedded with reddish-brown shale. Chert and shale commonly are rhythmically banded in thin layers, but chert also crops out in very thick layers. In San Carlos, chert has been altered along faults to tan- to buff-colored clay. Chert and shale crop out in lenticular bodies as much as 75 m thick; chert bodies are commonly associated with Franciscan greenstone.		No hazard.	Unlikely	Generally low; locally moderate to where natural surface disturbed or removed, particularly where highly fractured or weathered.	
fsr	Sheared rock (melange)--Predominantly graywacke, siltstone, and shale, substantial portions of which have been sheared, but includes hard blocks of all other Franciscan rock types. Total thickness of unit is unknown, but is probably at least several tens of meters		No hazard.	Unlikely	Generally low; locally moderate to where natural surface disturbed or removed, particularly where highly fractured or weathered.	
sp	Serpentinite		No hazard.	Unlikely	Generally low; locally moderate to where natural surface disturbed or removed, particularly where highly fractured or weathered.	