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

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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).

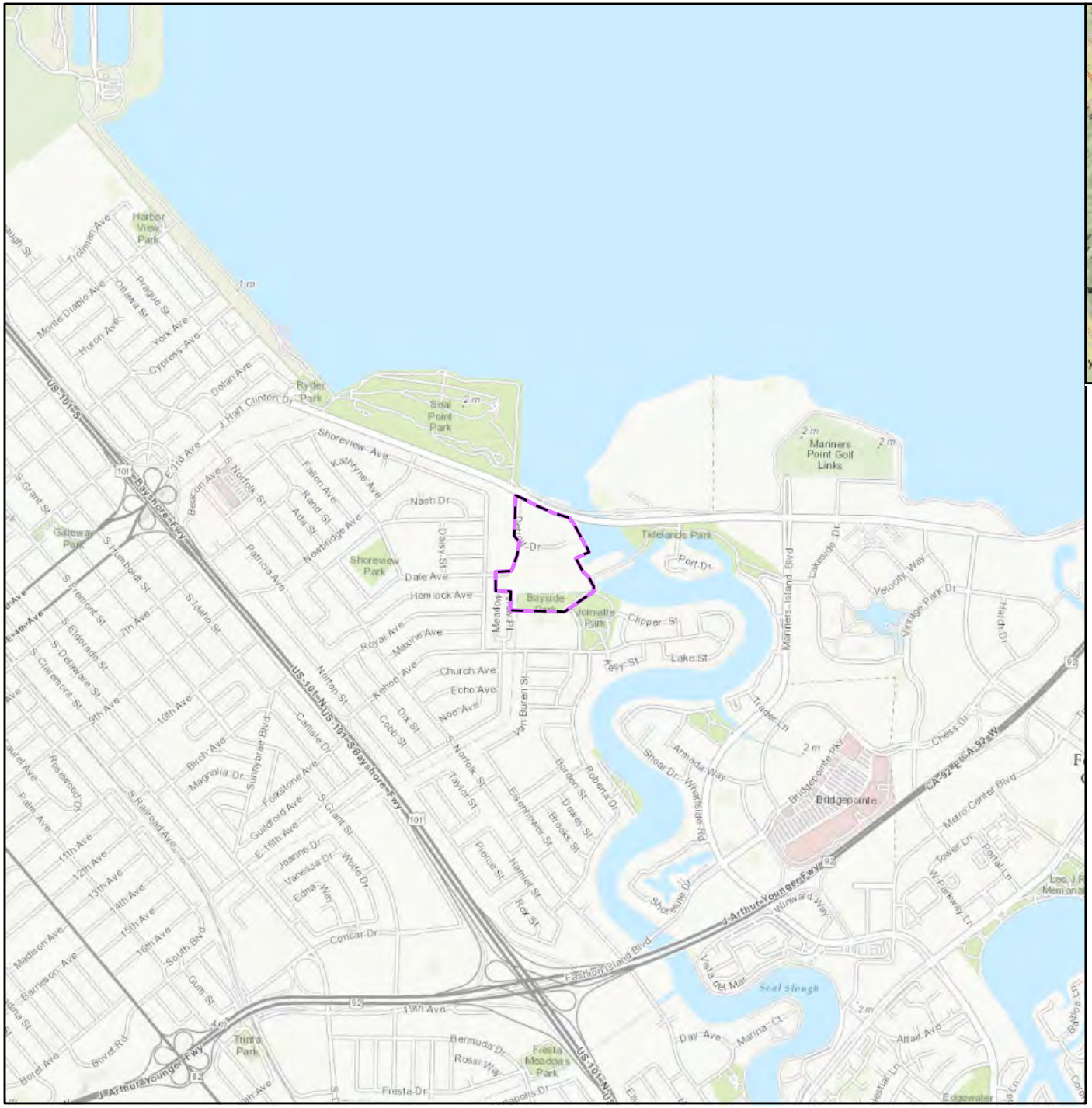
To get to the survey area from San Francisco take Highway 101 South to State Route 92. Merge onto State Route 92 heading east (towards Hayward) and then in approximately 1 mile take the Foster City Boulevard Exit. At the bottom of the offramp turn left onto Metro City Boulevard and then turn left onto 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.

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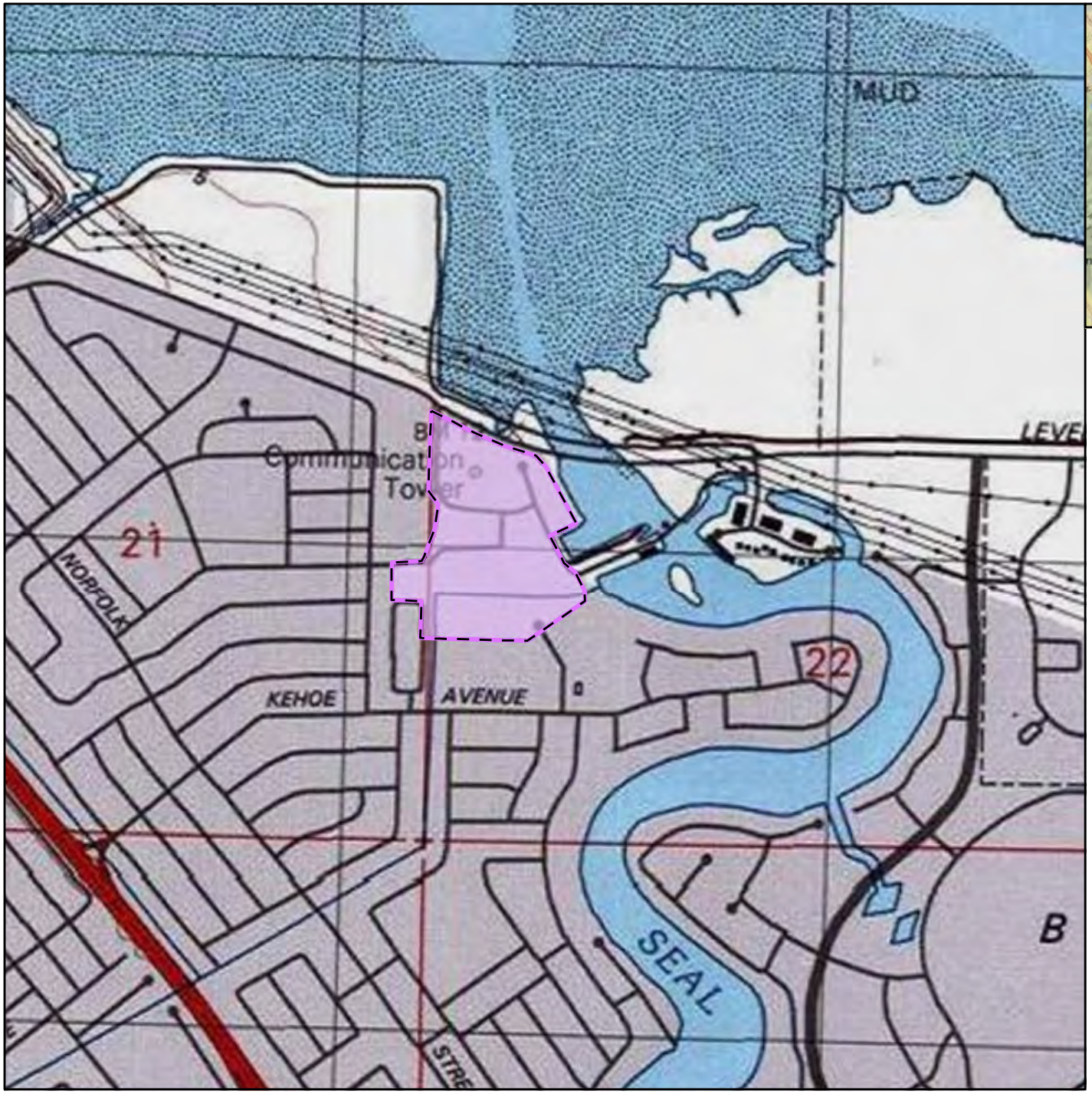
FIGURE 1
Project Location
City of San Mateo

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.

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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

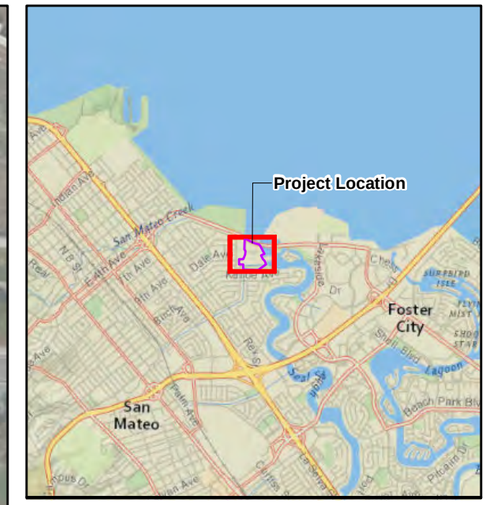
Descriptions of soils were made by examining soil pits excavated to depths between 16 and 20 inches using a tile-spade shovel. At each sample point, soil morphological features such as texture, color, and redoximorphic features (if present) were noted. Soil texture was estimated in the field by feel (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
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N

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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

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Appendix A Soil Maps and Detailed Series Descriptions

United States Department of Agriculture

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

Contents

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.

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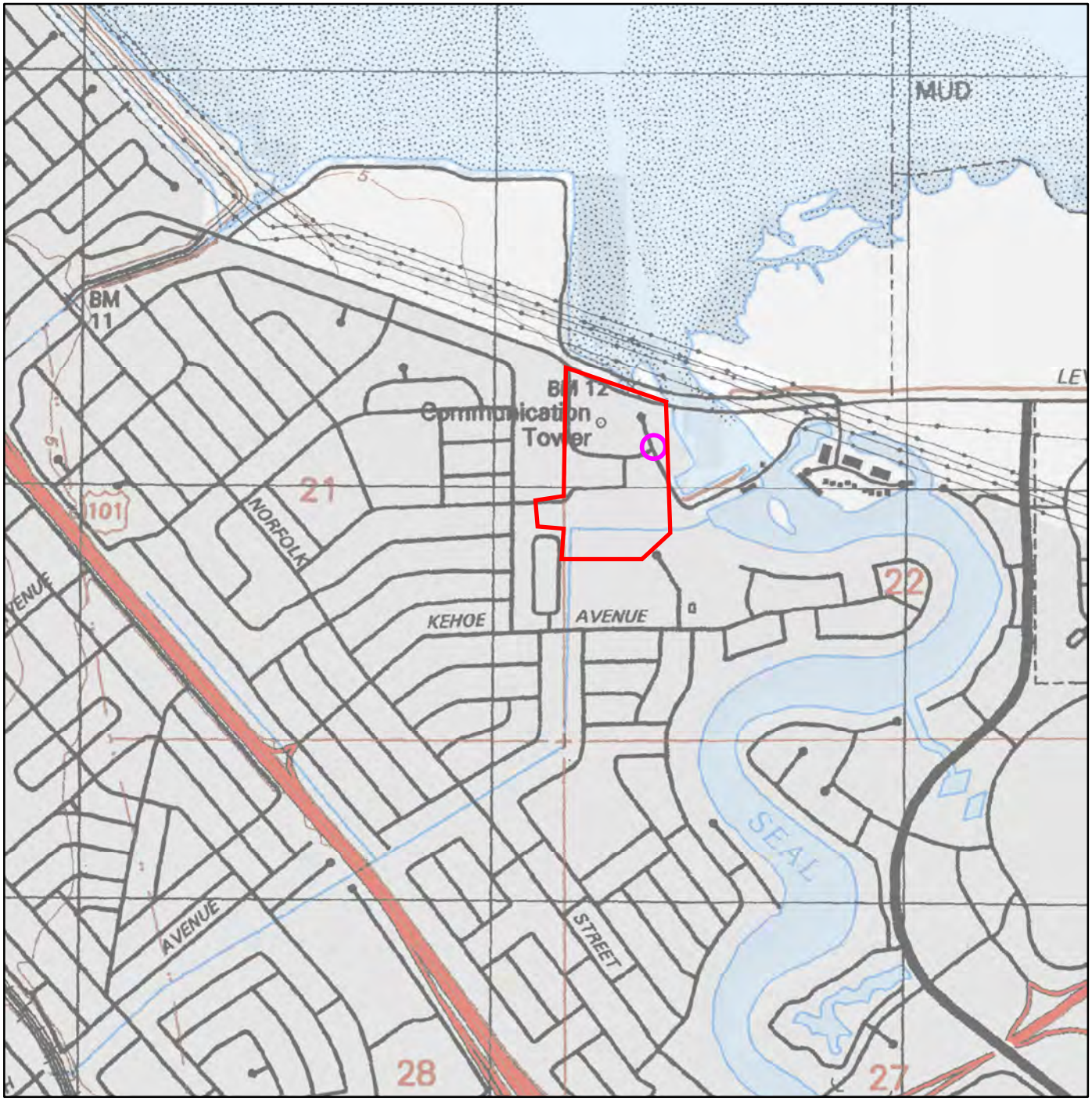
Appendix B USGS Topographic Maps

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

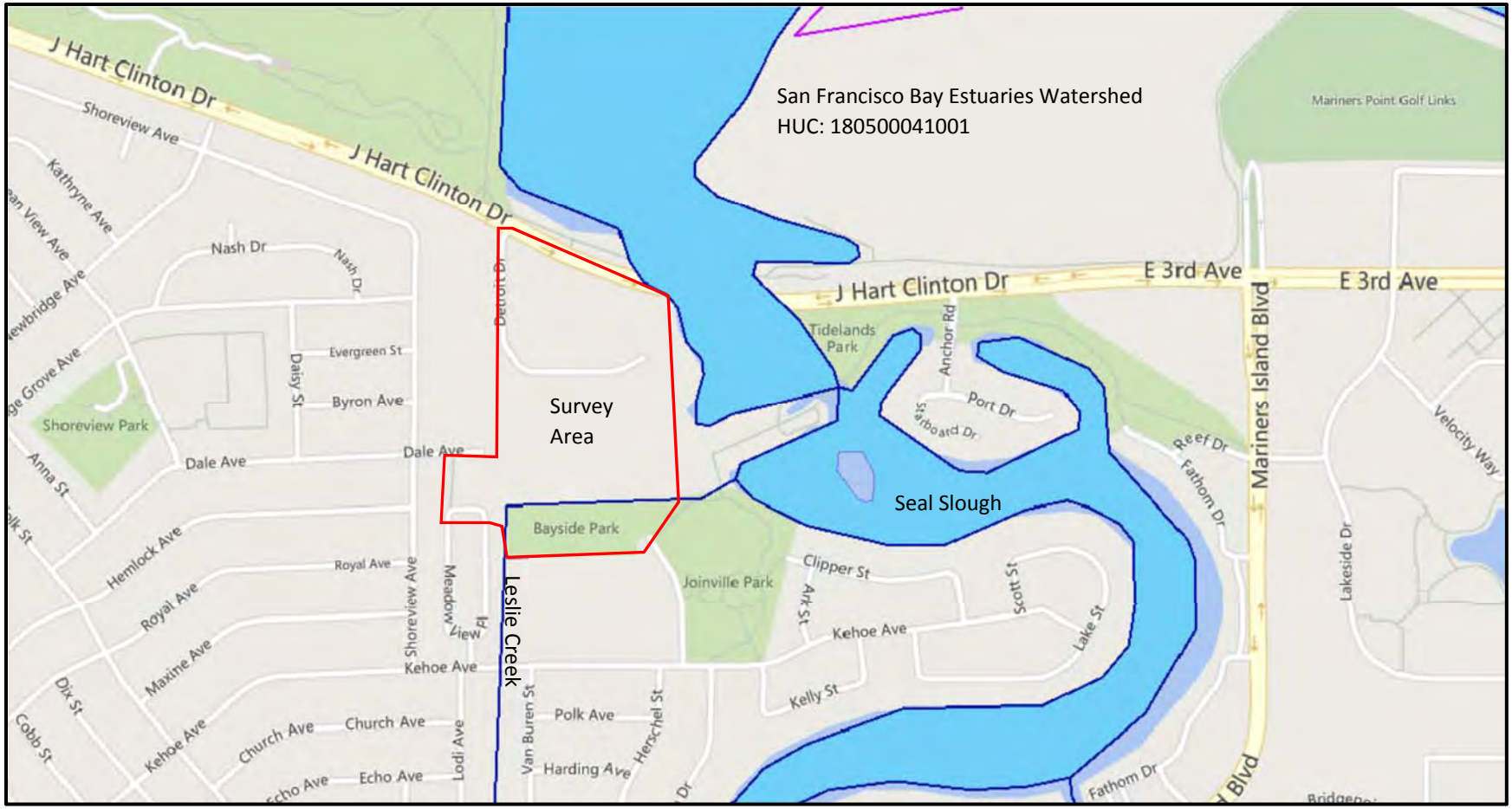
0 0.15 0.3 0.6 mi

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)	Matrix %	Redox Features Color (moist)	Redox %	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 ~ 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 (%): <2%

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.

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	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)	Matrix %	Redox Features Color (moist)	Redox %	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) >20"

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches) >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 tincturia	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

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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