

APPENDIX G-3
Preliminary Jurisdictional Wetland Delineation Report

Hercules Intermodal Transit Center
Preliminary Jurisdictional Delineation



City of Hercules
Contra Costa County

May 2010

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PRELIMINARY JURISDICTIONAL DELINEATION OF WATERS OF THE U.S. FOR THE HERCULES INTERMODAL TRANSIT CENTER

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1.0 INTRODUCTION

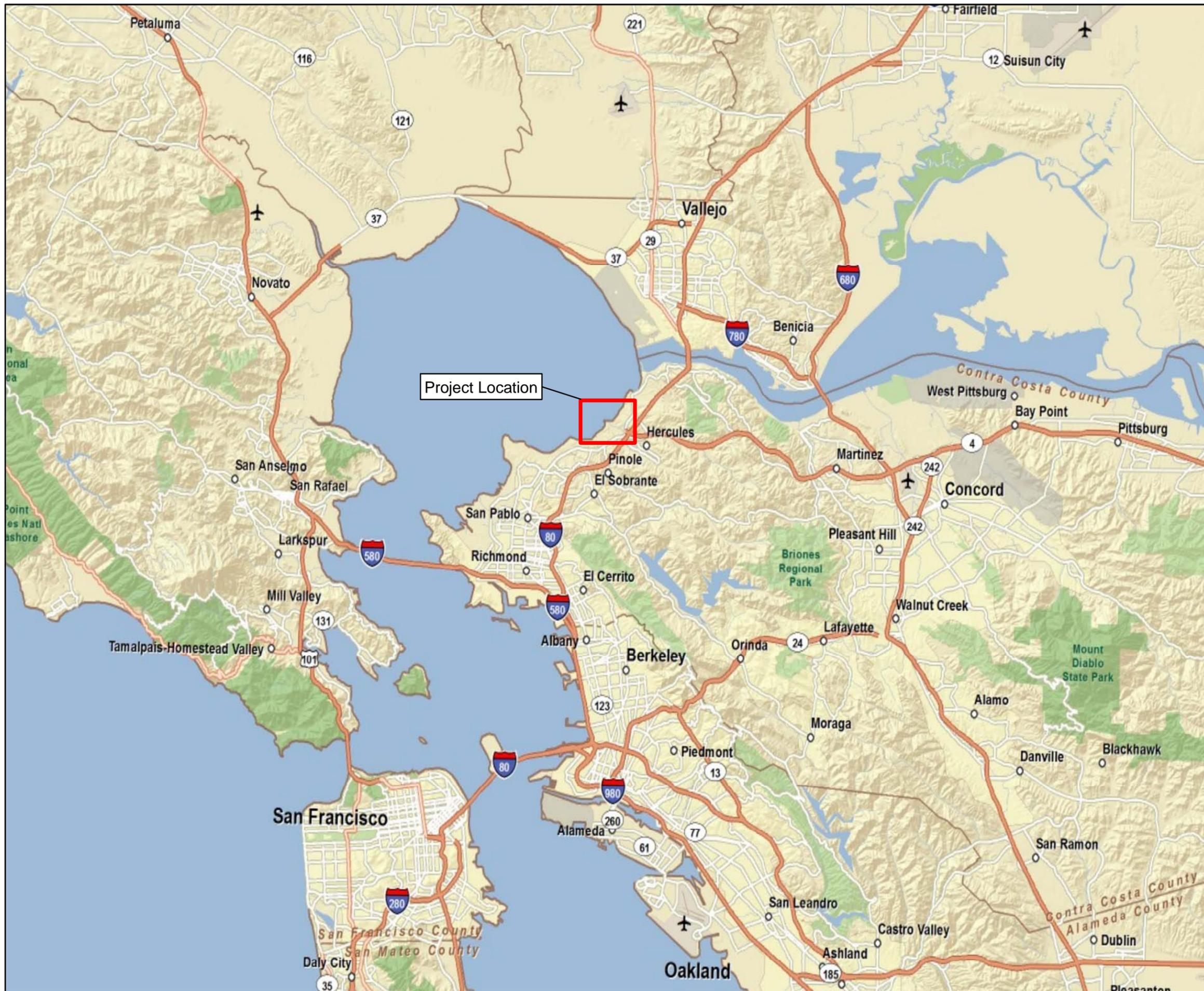
1.1 PURPOSE OF ASSESSMENT

On behalf of the City of Hercules (City), HDR Engineering Inc. (HDR) has prepared a preliminary jurisdictional delineation of waters of the U.S., including wetlands, for the proposed Hercules Intermodal Transit Center (Hercules ITC). The purpose of the preliminary jurisdictional delineation is to identify potential waters of the U.S., including wetlands, occurring within the project site. The project site for the proposed project includes the project footprint, the area that would be directly impacted by construction of the proposed project, plus a buffer deemed to be of sufficient width to incorporate any indirect impacts to biological resources outside of the project footprint. The results of the jurisdictional delineation are preliminary until verified by the U.S. Army Corps of Engineers (USACE).

1.2 PROJECT DESCRIPTION AND LOCATION

The City proposes to develop an intermodal transit center, including train and bus facilities, on the San Pablo Bay shoreline in Hercules. The City is cooperating with the Federal Transit Administration (FTA) due to the anticipated use of federal funding. In compliance with the National Environmental Policy Act (NEPA), a joint Environmental Impact Report/Environmental Impact Statement (EIR/EIS) is being prepared for this project. The City is preparing the EIR/EIS in coordination with FTA the lead agency in compliance with NEPA. The purpose of the proposed project is to improve and increase local and regional mobility and transportation options by providing new and expanded transit services with intermodal connections that will encourage use of public transit. The project would provide bus-to-train connections, in addition to providing car commuters with access to new transit options that would divert traffic from Interstate 80 (I-80), the most congested corridor in the Bay Area.

The approximately 47-acre project site is located in the City of Hercules, Contra Costa County. The project site is located on the San Pablo Bay shoreline north of Bayfront Boulevard, approximately one mile northwest of I-80. The Union Pacific Railroad (UPRR) rail line passes through the site, parallel to the shoreline. A regional map showing the project location is included as **Figure 1**. The project is located within Township 2 North, Range 4 West, in an unsectioned portion of the “Mare Island, California” U.S. Geological Survey (USGS) 7.5 minute topographic quadrangle (quad). A site and vicinity map showing the location of the project site is included as **Figure 2**. An aerial photograph showing the boundary of the project site is included as **Figure 3**.



**Preliminary
Subject to Change**

1 in = 500 ft (at tabloid layout)

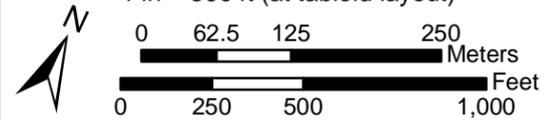


Figure 1: Regional Vicinity Map

City of Hercules
Hercules Intermodal Transit Center
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources. No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey. Data is State Plane Feet, NAD83 Zone 3.

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Folsom, CA 95630-8709





Legend

— EIR/EIS Boundary

**Preliminary
Subject to Change**

1 in = 2,500 ft (at tabloid layout)

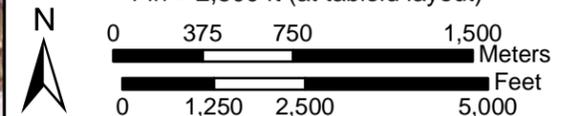


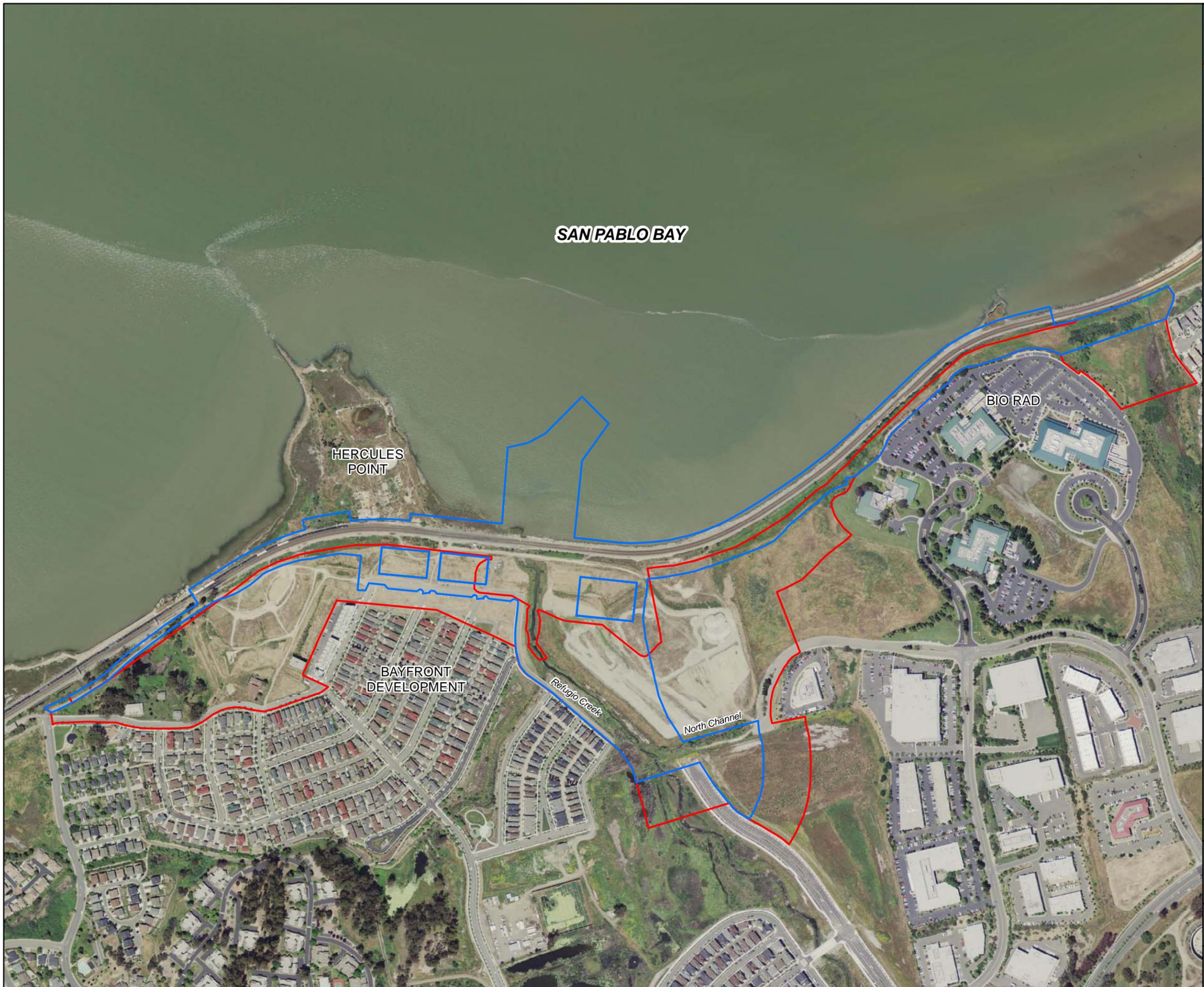
Figure 2: Site and Vicinity Map

City of Hercules
Hercules Intermodal Transit Center
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources. No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey. Data is State Plane Feet, NAD83 Zone 3

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Legend

- Project Boundary
- Delineation Area

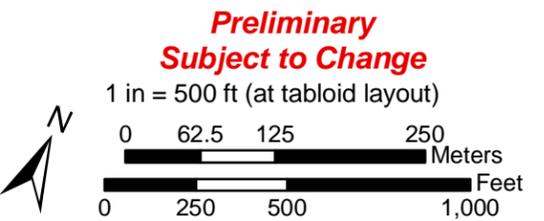


Figure 3: Aerial Photograph

City of Hercules
Hercules Intermodal Transit Center
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources. No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey. Data is State Plane Feet, NAD83 Zone 3

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Folsom, CA 95630-8709



1.3 DRIVING DIRECTIONS

From San Francisco

The project site can be reached from downtown San Francisco via I-80 east toward Sacramento for approximately 23 miles and taking the Hercules exit (exit 23). Follow signs for Sycamore Ave and merge onto Willow Ave and then turn right at Sycamore Ave. Afterwards turn right onto Railroad Avenue, which then turns into Bayfront Boulevard and parallels the San Pablo Bay. The project site is located just north and east of the terminus of Bayfront Boulevard.

From Sacramento

The project site can be reached from Sacramento via I-80 west toward San Francisco for approximately 58 miles and taking the Hercules exit (exit 23). Merge onto State Route (SR-4) west toward Hercules, turn left at San Pablo Ave., and then turn right to Sycamore Ave. Afterwards turn right onto Railroad Avenue which turns into Bayfront Boulevard and parallels the San Pablo Bay. The project site is located just north and east of the terminus of Bayfront Boulevard.

1.4 CONTACT INFORMATION

Project sponsor:

City of Hercules

111 Civic Drive,

Hercules, CA 94547

510-799-8200

1.5 REGULATORY SETTING

Any person, firm, or agency planning to alter or work in “waters of the U.S.,” including the discharge of dredged or fill material, must first obtain authorization from the USACE under Section 404 of the Clean Water Act (CWA; 33 USC 1344). Permits, licenses, variances, or similar authorization may also be required by other federal, state, and local statutes. Section 10 of the Rivers and Harbors Act of 1899 prohibits the obstruction or alteration of navigable waters of the U.S. without a permit from USACE (33 USC 403). The California Department of Fish and Game (CDFG) requires notification prior to commencement, and possibly a Streambed Alteration Agreement (SAA) pursuant to California Fish and Game Code Subsection 1601-1603, 5650F, if a proposed project would result in the alteration or degradation of a stream, river, or lake in California. The Regional Water Quality Control Board (RWQCB) may require State Water Quality

Certification (CWA Section 401 permit) prior to the alteration of or discharge to waters of the U.S. and the state.

Waters of the U.S. are defined as: all waters that are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters that are subject to the ebb and flow of the tide; all interstate waters including interstate wetlands; all other waters such as intrastate lakes, rivers, streams (including intermittent and ephemeral streams), mudflats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes or natural ponds, where the use, degradation, or destruction of which could affect interstate commerce; impoundments of these waters; tributaries of these waters; or wetlands adjacent to these waters (33 CFR Part 328). With non-tidal waters, in the absence of adjacent wetlands, the extent of USACE jurisdiction extends to the ordinary high water mark (OHWM) – the line on the shore established by fluctuations of water and indicated by a clear, natural line impressed on the bank, shelving, changes in soil character, destruction of terrestrial vegetation, and/or the presence of litter and debris.

Wetlands are defined as those areas that are inundated or saturated by surface or ground water at a frequency and duration to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

In accordance with the USACE Jurisdictional Determination Form Instructional Guidebook (2007 Guidance) issued jointly by the USACE and the U.S. Environmental Protection Agency (EPA), “navigable waters” or “waters of the United States” subject to jurisdiction under the Clean Water Act include (1) traditional navigable waters (TNW), (2), wetlands adjacent to TNW, (3) non-navigable tributaries of TNW that are relatively permanent where the tributaries typically flow year around or have continuous flow at least seasonally (e.g., typically three months), and (4) wetlands that abut such tributaries. A “significant nexus” determination will be made for non-navigable tributaries that are not relatively permanent and their adjacent wetlands. Such features that are determined to have a “significant nexus” to a TNW will also be subject to CWA jurisdiction. A significant nexus requires that there be “more than an insubstantial or speculative effect on the chemical, physical, and/or biological integrity of a TNW” (USACE/EPA, 2007). The 2007 Guidance also states the following features will generally not be subject to CWA jurisdiction: swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent or short duration flow) and ditches (including roadside ditches) excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water.

Federal and State regulations pertaining to Waters of the U.S., including wetlands, are discussed below.

Clean Water Act (33 U.S.C. 1251-1376). The CWA provides guidance for the restoration and maintenance of the chemical, physical, and biological integrity of the nation's waters.

- **Section 401** requires that an applicant for a federal license or permit that allows activities resulting in a discharge to waters of the U.S., must obtain a state certification that the discharge complies with other provisions of CWA. The Regional Water Quality Boards administer the certification program in California.
- **Section 402** establishes a permitting system for the discharge of any pollutant (except dredge or fill material) into waters of the U.S.
- **Section 404** establishes a permit program administered by USACE regulating the discharge of dredged or fill material into waters of the U.S. (including wetlands). Implementing regulations by USACE are found at 33 CFR Parts 320-330. Guidelines for implementation are referred to as the Section 404 (b)(1) Guidelines and were developed by the EPA in conjunction with USACE (40 CFR Parts 230). The Guidelines allow the discharge of dredged or fill material into the aquatic system only if there is no practicable alternative that would have less adverse impacts.

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

Fish and Wildlife Coordination Act (16 U.S.C. 661-666). This act applies to any federal project where the waters of any stream or other body of water are impounded, diverted, deepened, or otherwise modified. Project proponents are required to consult with the U.S. Fish and Wildlife Service (USFWS) and the appropriate state wildlife agency. These agencies prepare reports and recommendations that document project effects on wildlife and identify measures that may be adopted to prevent loss or damage

to wildlife resources. The term "wildlife" includes both animals and plants. Provisions of this Act are implemented through the NEPA process and Section 404 permit process.

National Wild and Scenic Rivers Act (16 U.S.C. 1271-1287). This act is administered by a variety of state and federal agencies. Designated river segments flowing through federally managed lands are administered by the land managing agency (e.g., U. S. Forest Service, Bureau of Land Management, and the National Park Service). River segments flowing through private lands are administered by the resources agency in conjunction with local government agencies. This Act prohibits federal agencies from activities that would adversely affect the values for which the river was designated.

Executive Order 11990 Protection of Wetlands (May 24, 1977). This order establishes a national policy to avoid adverse impacts on wetlands whenever there is a practicable alternative. The U. S. Department of Transportation (DOT) promulgated DOT Order 5660.1A in 1978 to comply with this direction. On federally funded projects, impacts on wetlands must be identified in the environmental document. Alternatives that avoid wetlands must be considered. If wetland impacts cannot be avoided, then all practicable measures to minimize harm must be included. This must be documented in a specific "Wetlands Only Practicable Alternative Finding" in the final environmental document. An additional requirement is to provide early public involvement in projects affecting wetlands. The Federal Highway Administration (FHWA) provides technical assistance in meeting these criteria (FHWA Technical Advisory 6640.8A) and reviews environmental documents for compliance.

Section 1600 of the Fish and Game Code. Under this section of the Fish and Game Code, agencies are required to notify CDFG prior to any project that would divert, obstruct or change the natural flow, bed, channel, or bank of any river, stream, or lake. Preliminary notification and project review generally occur during the environmental process. When an existing fish or wildlife resource may be substantially adversely affected, DFG is required to propose reasonable project changes to protect the resource. These modifications are formalized in a Streambed Alteration Agreement (Section 1600) that becomes part of the plans, specifications and bid documents for the project.

The McAteer-Petris Act (California Government Code 66600-66682). The McAteer-Petris Act created the San Francisco Bay Conservation and Development Commission (BCDC) in 1965. BCDC's mission is the preservation of San Francisco Bay from indiscriminate filling. BCDC's first task was compilation of a comprehensive study of the Bay and determining how future development of the Bay should occur. This effort

resulted in the San Francisco Bay Plan in 1968. In 1969 the findings and policies of the Bay Plan were incorporated into the McAteer-Petris Act which was amended to make BCDC a permanent state agency. The Bay Plan continues to evolve and remains the guiding document for BCDC's actions. Section 66610 of the McAteer-Petris Act establishes the boundaries of San Francisco Bay in relation to BCDC's jurisdiction. Essentially, all areas below the mean high tide line and an area within a shoreline band that extends landward for 100 feet from the mean high tide line are subject to their jurisdiction. Section 66632 of the McAteer-Petris Act establishes the permitting process for projects which would place fill in, on, or over any part of BCDC's jurisdiction as defined in Section 66610. Portions of the project within 100 feet of the mean high tide line are subject to BCDC's jurisdiction.

2.0 ENVIRONMENTAL SETTING

The project site is located in northwestern Contra Costa County. The project site is bordered to the northwest by the San Pablo Bay. The Carquinez Strait is approximately 2.5 miles to the northeast of the project site. The project site is characterized by urban development and construction disturbance south of the Union Pacific Railroad tracks that run through the site and by the Bay and the ruderal habitat of Hercules Peninsula north of the railroad tracks. The project site ranges in elevation from sea level to approximately 25 feet above mean sea level (amsl). Land use in the area is primarily residential and commercial.

The project site is located mostly in the Refugio Creek watershed. The Refugio Creek Watershed is one of a series of roughly parallel, northwest trending valleys and ridges in west Contra Costa County. The upper watershed is bordered by large, open space areas including the Muir Heritage Land Trust's Fernandez Ranch, East Bay Municipal Utility District's watershed lands, and open space owned by local homeowners associations. The lower watershed is bordered by the San Pablo Bay. Prevalent habitats in the watershed include ruderal, eucalyptus, mixed oak/bay woodland, annual grassland, mixed riparian forest, and freshwater marsh (City of Hercules 2009).

2.1 EXISTING FIELD CONDITIONS

The average rainfall for the Hercules area is approximately 23 inches per year and the average rainfall for the month of December is 3.30 inches. The City received approximately 0.34 inches of rain in the month of November and approximately 0.22 inches of rain in the first week of December. The weather during the December 8, 2009 survey was mostly sunny with a high of 50 degrees Fahrenheit (°F) and a low of 31 °F (Weather Channel 2009).

2.2 INTERSTATE OR FOREIGN COMMERCE CONNECTION

Refugio Creek and wetland and drainage features within the project site are not directly connected to interstate or foreign commerce and are not used for the transportation of goods. However, adjacent San Pablo Bay is used by cargo ships and vessels for the transportation of goods intended for interstate and/or foreign commerce.

3.0 METHODOLOGY

3.1 PRELIMINARY DATA GATHERING AND SYNTHESIS

Prior to conducting fieldwork for the jurisdictional delineation the following information sources were reviewed:

- USGS “Mare Island, California” 7.5 minute topographic quadrangle and eight surrounding quadrangles;
- Aerial photography of the project area taken June 2009 downloaded from DigitalGlobe ®;
- Natural Resources Conservation Service’s web soil survey (NRCS 2009a);
- U.S. Fish and Wildlife Service Wetland Online Mapper (NRCS 2009b); and
- Findings from other wetland delineations and biological studies conducted for the project area (WWR 2007a and b; Wetland Wildlife Resources 2007; Vollmar 2007 and 2008; HDR in prep.).

3.2 DELINEATION BOUNDARIES

All areas within the 46.76-acre project area, excluding the area previously delineated by Vollmar Consulting (2008) and verified by the USACE, was included in the delineation. Additionally, undeveloped areas within the proposed Bayfront development were included to be able to address cumulative effects; and undeveloped areas within approximately 250 feet inland of the project and Bayfront development areas were included. A total of 66.89 acres are considered in this delineation and is hereafter considered the delineation area. Figures 2 and 3 depict delineation boundaries. Those areas within the project area that were previously delineated by Vollmar Consulting and verified by the USACE are addressed within the attached report: *Delineation of Potential Jurisdictional Waters of the United States, June 2008. Hercules Intermodal Transit Facility (Appendix C)*.

3.3 DETERMINATION PROCEDURES

The fieldwork for the jurisdictional determination was conducted by HDR biologists Sean Marquis and Mark Ashenfelter on December 8, 2009; by Sean Marquis and Stephen Stringer on December 29, 2009; and by Stephen Stringer and LaTisha Burnaugh on March 31, 2010. The jurisdictional determination was conducted in accordance with the 1987 *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory, 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Version 2.0) (USACE, 2008). USACE regulations were used to determine the presence of jurisdictional waters of the U.S. other than wetlands.

The entire study area was assessed in such a manner as to view all areas to the degree necessary to determine the presence or absence of jurisdictional features. Data collection points were chosen in the field at representative locations and detailed information on vegetation, soils, and hydrologic characteristics were taken for each data point. Plant nomenclature follows *The Jepson Manual; Higher Plants of California* (Hickman, 1993). The *1988 National List of Plants That Occur in Wetlands* (USFWS, 1988) was used to determine the wetland indicator status of observed plants. A list of observed plant species, including their indicator status, is provided in **Appendix A**. A standard Munsell[®] soil color chart was used to determine soil matrix and mottle colors.

Datasheets that document the basis for determining whether an area qualifies as a jurisdictional wetland were completed for representative locations and are included as **Appendix B**. Potential wetlands and other waters of the U.S. occurring in the project site were mapped in the field using a Trimble GeoXT[®] sub-meter accurate global positioning system (GPS). These data were exported into ArcMap 9.2[®] and used to produce the map of waters of the U.S. including wetlands, including the calculation of lengths and widths of channels and acreages of wetland features in the project site.

In order for an area to qualify as a wetland, it must meet a three parameter test and contain: a) a predominance of hydrophytic vegetation; b) hydric soil; and, c) wetland hydrology. Wetland boundaries are considered to be a line across which the vegetation, soil, and hydrologic characteristics began/ceased to meet wetland criteria. Hydrophytic vegetation indicators include prevalence of hydrophytic vegetation (majority of dominant plant species that are facultative or obligate wetland plants as listed in the *1988 National List of Plants That Occur in Wetlands* (USFWS, 1988)) and morphological or physiological adaptations to saturated soil conditions. Hydric soil indicators include organic soils (histosols), mineral soils saturated and rich in organics (histic epipedon), sulfidic odor, low dissolved oxygen concentration (aquic moisture regime) and reducing

conditions, gleyed and/or low chroma soils, soils listed on national, state, or local hydric soils lists, and iron and manganese concretions. Wetland hydrology indicators include visual observations of inundation or soil saturation, watermarks and water-stained leaves, drift lines, sediment deposits, and drainage patterns.

4.0 RESULTS

4.1 PLANT COMMUNITIES/HABITAT TYPES IN THE PROJECT SITE

Plant communities/habitat types within the project site include California cordgrass tidal marsh, pickleweed tidal marsh, intertidal mudflat, brackish stream, pickleweed brackish marsh, willow riparian forest, freshwater wetland swale, cattail marsh, seasonal wetland, freshwater intermittent drainage, and unvegetated ponded depressions. Potentially jurisdictional aquatic habitat types occurring within the delineation area are discussed in further detail in **Section 4.5**.

Terrestrial Habitat Types

Four types of terrestrial habitat types occur within the project site: ruderal, railroad, rip-rap, and willow riparian forest. The majority of the project site is ruderal, both on Hercules Point and inland of the railroad tracks. The railroad bisects the project site and is unvegetated. Riprap includes areas where the coastline has been stabilized with rip-rap or rubble, and spans most of the project site's shoreline. Willow riparian forest occurs in three patches on the project site.

Ruderal

Ruderal habitats are those that occur in areas of human disturbance, such as roadsides, parking lots, or fallowed agricultural fields. Such habitats are typically dominated by nonnative annual grasses and forbs. The vast majority of the project site has been altered by development. The site was used for explosives manufacturing from the 1880's to 1960's; and fertilizer and other chemical manufacturing from the 1960's to around 1977. Tests in the 1980's identified hazardous levels of heavy metals and chemicals remaining in the soil from previous manufacturing operations. Remediation, consisting of excavation and off-site removal of contaminated sediments, was conducted on much of the project site through about 1997.

Currently, residential and commercial developments are adjacent to the project area. The project site is traversed by an active railroad. A portion of the project site is currently being prepared for development, with large unvegetated stockpiles of dirt in place to

compact the ground. The areas that are not currently developed, but have been altered or disturbed by development, are considered ruderal.

The vegetated portion of the ruderal habitat in the project site is dominated primarily by nonnative grasses and forbs. Dominant plant species include non-native grasses, such as ripgut brome (*Bromus diandrus*), Italian ryegrass (*Lolium multiflorum*), and wild oats (*Avena fatua*, *A. barbata*), and non-native forbs, such as bristly ox-tongue (*Picris echioides*), black mustard (*Brassica nigra*), wild radish (*Raphanus sativus*), redstem filaree (*Erodium cicutarium*), cutleaf geranium (*Geranium dissectum*), hairy vetch (*Vicia villosa*), poison hemlock (*Conium maculatum*), and rose clover (*Trifolium hirtum*). Coyote brush (*Baccharis pilularis*), a native shrub often found in disturbed areas, is scattered in the ruderal habitat. Also scattered are cultivated varieties of trees, such as blue gum eucalyptus (*Eucalyptus globulus*), blackwood acacia (*Acacia melanoxylon*), black walnut (*Juglans californica*), and palm trees.

The western portion of the ruderal habitat has been highly disturbed by stockpiling of dirt, previous road and trail-building, on-going railroad operation, and on- and off-trail foot traffic. Vegetation in this part of the project site is low-growing and, on the stopckpiles, non-existent.

The eastern portion of the project site follows a slope that connects a bluff to the San Pablo Bay coastline. A strip of ruderal habitat, less than 200 feet wide, follows the slope. Vegetation is not frequently disturbed in this strip.

A portion of ruderal habitat flanks Refugio Creek and its associated wetlands. The ruderal habitat surrounding Refugio Creek is in part dominated by horticultural plantings, and in part dominated by nonnative annual grasses and forbs with scattered shrubs.

Railroad

An active railroad crosses the project site immediately adjacent to the San Pablo Bay shore. The railroad right-of-way consists of ballast rock and highly compacted dirt, and is mostly unvegetated.

Riprap

Where the railroad right-of-way passes immediately adjacent to the San Pablo Bay shore, a riprap revetment is in place to stabilize the shore. Additionally, cement and other rubble, presumably from the Hercules powder plant, line much of the shore of Hercules Point.

Willow Riparian Forest

Three patches of habitats with willow riparian forest characteristics occur in the project site: one within the railroad right-of-way, one in the northeastern extent of the project site, and one on the Northern Channel of Refugio Creek. All patches are linear features. They are isolated patches and not part of a larger forest. The dominant trees in the patches are red willow (*Salix laevigata*) and arroyo willow (*Salix lasiolepis*). These areas contain brackish marsh or freshwater wetland swale features with willow riparian forest characteristics. The wetland features contained within them are discussed in detail in **Section 4.5** below.

Aquatic Habitat Types

Aquatic habitat types/vegetation communities in the project site include California cordgrass tidal marsh, pickleweed tidal marsh, intertidal mudflat, pickleweed brackish marsh, brackish stream including Refugio Creek and its Northern Channel, cattail marsh, seasonal wetland, freshwater intermittent drainage, and unvegetated ponded depression. The California cordgrass tidal marsh and pickleweed tidal marsh are located on the perimeter of Hercules Point, with California cordgrass tidal marsh at slightly lower elevation than pickleweed tidal marsh. Refugio Creek is a perennial stream with some adjacent wetlands. Cattail marshes and freshwater intermittent drainages occur adjacent to Refugio Creek and within willow riparian forest habitats. Seasonal wetlands and unvegetated ponded depressions occur within the railroad right-of-way and other ruderal habitats.

California Cordgrass Tidal Marsh

California cordgrass tidal marsh grows in limited patches along the perimeter of Hercules Point. As is typical, it is the habitat type growing closest to the open water of the San Pablo Bay. California cordgrass (*Spartina foliosa*) dominates the habitat type, growing in dense homogenous stands. Based on size and structure, all of the cordgrass at the project site appears to be the native California cordgrass.

Pickleweed Tidal Marsh

Pickleweed tidal marsh grows in patches along the perimeter of Hercules Point, in the mid-tidal zone. It grows immediately inland of California cordgrass tidal marsh. Pickleweed (*Sarcocornia pacifica*) dominates the pickleweed tidal marsh. Several other plants are dominant in places, along with pickleweed. These plants include alkali bulrush (*Bolboshoenus maritimus*), fleshy jaumea (*Jaumea carnosa*), saltgrass (*Distichlis spicata*), and marsh gumplant (*Grindelia stricta* var. *angustifolia*).

Intertidal Mudflat

Intertidal mudflats occur within the offshore portions of the project site. These sparsely vegetated intertidal areas occur from approximately mean lower low water (MLLW) to mean tide level (MTL).

Brackish Stream

Brackish streams have salinity levels between freshwater and saltwater. The project site contains two brackish streams: Refugio Creek and an unnamed stream to the east. These brackish streams are tidally influenced and contain salt-tolerant vegetation, such as pickleweed, saltgrass, or alkali bulrush. These features are all within the delineation area and are discussed in detail in **Section 4.5** below.

Pickleweed Brackish Marsh

Pickleweed brackish marsh habitat primarily occurs adjacent to the brackish stream habitats within the project site. These marsh habitat types are typically created during periods of high flow and/or high tide in their respective creeks. Some pickleweed brackish marshes in the project site may have been created/enhanced by wicking from adjacent surcharge activity (loading large amounts of fill onto an area in order to force water out of the dirt and prepare it for development). Pickleweed brackish marsh contains salt-tolerant vegetation, such as pickleweed, saltgrass, or alkali bulrush. These features are all within the delineation area and are discussed in detail in **Section 4.5** below.

Cattail Marsh

Several cattail marsh features occur within the delineation area, primarily in the vicinity of Refugio Creek and on the eastern edge of the site. They are dominated by dense stands of cattails and generally have little other vegetation. These wetland areas are likely permanently or semi permanently saturated. These features are discussed in detail in **Section 4.5** below.

Seasonal Wetland

Several non-tidal freshwater seasonal wetlands occur in shallow depressions throughout upland portions of the project site. The depressions are located on Hercules Point, near Refugio Creek, and along the eastern portion of the railroad right-of-way. Many of the depressions are the result of human activities. In shallower depressions, vegetation is dominated by bristly ox-tongue, Italian ryegrass, and curly dock (*Rumex crispus*). Deeper depressions, often bounded by soil deposit berms, support more hydrophytic

species, such as rabbitsfoot grass (*Polypogon monspeliensis*) and rough cocklebur (*Xanthium strumarium*).

Freshwater Wetland Swale

One freshwater wetland swale occurs within the delineation area, in the northeastern portion of the project site. The swale runs through a patch of willow riparian forest. Vegetation includes willow trees and understory herbaceous vegetation such as tall flatsedge (*Cyperus eragrostis*) and creeping wildrye (*Leymus triticoides*). The feature is discussed in detail in **Section 4.5** below.

Freshwater Intermittent Drainage

Four freshwater intermittent drainage features occur on the site. One drains into Refugio Creek. Refugio Creek's Northern Channel flows through the project site, supporting a willow riparian forest and, in its downstream reach, supporting salt-tolerant plants such as pickleweed, saltgrass, and alkali bulrush. Another is between the willow riparian and brackish stream habitat, and another between the cattail marsh and the same brackish stream on the eastern portion of the project site. These features are within the delineation area and are discussed in detail in **Section 4.5** below.

Unvegetated Ponded Depression

Approximately forty five unvegetated ponded depressions, or "puddles", occur within the railroad right-of-way. The puddles occur within depressions in compacted dirt and gravel. They are generally devoid of vascular vegetation. The puddles reach a maximum depth of six inches in the winter, with most pools not exceeding three inches in depth. The puddles do not meet the USACE three-parameter test to qualify as wetlands and are not considered jurisdictional under the existing USACE delineation verified in December 2008 (**Appendix C**).

The puddles provide poor to marginal habitat for aquatic wildlife but are being surveyed for potentially occurring listed species of fairy shrimp. Puddles in the eastern portion of the project site have been previously surveyed by Vollmar Consulting in 2007; and puddles in the west were surveyed by Condor Country Consulting in 2003. The puddles provide habitat for short life-cycle aquatic invertebrates, such as versatile fairy shrimp (*Branchinecta lindahli*), daphnia (Cladocera), seed shrimp (Ostracoda), water boatmen (Corixidae), midge larvae (Chironomidae), and mosquito larvae (Culicidae). To date, surveys have not detected any listed invertebrates. Tree frog egg masses and larvae were identified in one puddle.

Approximately seven puddles occur within the delineation area. They are being surveyed for listed fairy shrimp and are mapped in HDR's fairy shrimp survey report (HDR in prep.). Four of the puddles contain aquatic invertebrates, such as versatile fairy shrimp, daphnia, and seed shrimp. All of these puddles are located in dirt roads or excavations and appear to be man-made. The puddles are primarily unvegetated. The puddles do not meet soil or vegetation parameters necessary to be considered wetlands.

4.2 SOIL TYPES

A soil map of the project site and vicinity is shown as **Figure 4**. Soil descriptions are included below. Soil descriptions were modified from the Soil Resource Report for Contra Costa County (NRCS 2009a). Soil types were compared to the hydric soil list for Contra Costa County (NRCS 2009b).



Legend

Soil Unit and Description

	Cc, CLEAR LAKE CLAY
	Ja, JOICE MUCK
	LcE, LODO CLAY LOAM, 9 TO 30 PERCENT SLOPES
	MeF, MILLSHOLM LOAM, 30 TO 50 PERCENT SLOPES
	TaD, TIERRA LOAM, 9 TO 15 PERCENT SLOPES
	TaE, TIERRA LOAM, 15 TO 30 PERCENT SLOPES

**Preliminary
Subject to Change**

1 in = 500 ft (at tabloid layout)

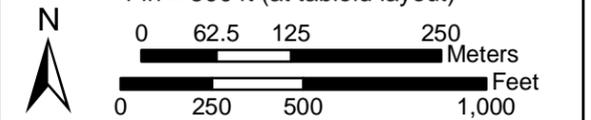


Figure 4: Soils Map

City of Hercules
Hercules Intermodal Transit Center
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources. No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey. Data is State Plane Feet, NAD83 Zone 3.

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Clear Lake Clay (Cc)

Clear Lake soils are found in basins and swales of drainage ways at elevations between 25 and 2,000 feet amsl. Clear Lake soils are very deep, poorly drained soils that formed in fine textured alluvium derived from sandstone and shale. A typical profile of Clear Lake soil is dark grey clay from 0 to 19 inches in depth, dark grey clay with concretions from 19 to 45 inches, and grayish brown clay with light yellowish brown masses of iron accumulations from 45 to 60 inches. The typical water table depth is between 4 and 10 feet in late summer and may be very near the surface during winter months. Clear Lake soils have negligible to high runoff and slow to very slow permeability. This soil series is classified as a hydric soil when the water table is at less than or equal to one foot from the surface during the growing season if permeability is equal to or greater than six inches per hour in all layers within 20 inches.

Joice Muck (Ja)

Joice soils are typically found in flat salt water marshes, near sea level. Joice soils are very poorly drained soils formed from hydrophytic plant remains and mixed alluvium. Joice soils have upper layers that are strongly acidic, black muck mixed with light grey silts and clays and lower layers that are fibrous, moderately alkaline, black clayey muck. A typical soil profile of Joice soil is black sapric material from 0 to 20 inches in depth and very dark grey, hard, sapric material with yellowish brown mottles from 20 to 60 inches. The typical water table depth is approximately 30 inches below the surface in mid-summer and on or near the surface during the winter. Joice soils have very slow runoff and rapid permeability. This soil series is classified as a hydric soil when it is all Histels except Folistels and Histosols except Folists, when the water table is at less than or equal to one foot from the surface during the growing season if permeability is equal to or greater than six inches per hour in all layers within 20 inches, and/or when the soil is frequently flooded for long duration or very long duration during the growing season.

Tierra Loam, 15 to 30 percent slopes (TaE)

Tierra soils are found in dissected terraces and low hills at elevations between 100 and 1,200 feet amsl. Tierra soils are deep, moderately well drained soils formed in alluvial materials from sedimentary rock. A typical profile of Tierra soil is grayish brown loam from 0 to 7 inches in depth, gray loam from 7 to 11 inches, very dark grayish brown clay from 12 to 16 inches, dark brown clay loam from 16 to 25 inches, light brownish grey heavy clay loam with reddish brown and yellowish brown mottles from 25 to 43 inches, and pale brown clay loam with reddish brown and yellowish brown mottles from 43 to 62

inches. Tierra loam soils have slow to rapid runoff and very slow permeability. This soil series is not classified as a hydric soil.

4.3 HYDROLOGY

Hydrology through the project area originates from direct rainfall, sheet flow, and urban runoff within the Refugio Creek watershed. Water from the Refugio Creek watershed collects in Refugio Creek and its tributaries and flows through the project site to San Pablo Bay. Additionally, part of the project site is under tidal influence. At high tide, some streams and adjacent wetlands receive inflow from San Pablo Bay.

The project site lies along the eastern boundary of San Pablo Bay, a major subembayment positioned between the heavily marine influenced Central Bay, and Suisun Bay, which lies just west of the confluence of California's largest rivers. The San Pablo Bay watershed, approximately 900 square miles in area, includes those lands in the northern reaches of the San Francisco Bay area whose streams flow into San Pablo Bay; the watershed is a major drainage basin for Marin, Sonoma, Solano, and Contra Costa counties (USACE, 1999).

Freshwater flow to San Pablo Bay is entirely dependent on precipitation, with peak flows occurring during winter storms and spring snow melt from the Sierra Nevada range, followed by a long period of dry weather with almost no freshwater input excluding human disturbances such as dams and water export. The major freshwater sources for the Bay include Novato Creek in Marin County, Petaluma River and Sonoma Creek in Sonoma County, Napa River in Napa County and San Pablo Creek in Contra Costa County (WWR, 2007b).

4.4 USFWS WETLAND ONLINE MAPPER

The USFWS Wetlands Online Mapper was used to determine if there are any wetlands or other waters of the U.S. known to occur on the project site. The USFWS Wetlands Online Mapper for the project site is included as **Figure 5**. There are no wetlands shown on the Wetlands Online Mapper within the project site.

4.5 JURISDICTIONAL WETLANDS AND OTHER WATERS OF THE U.S.

Below are brief descriptions of wetlands and other waters of the U.S. within the delineation boundary. All of these wetlands and other waters are believed to be jurisdictional pending USACE verification. The features are shown on the Delineation Map (**Figures 6, 6-A through 6-C**). Representative photographs of each feature are

included in **Figures 7-A and 7-B**. Acreages of potentially jurisdictional features in the delineation area are included in **Table 1** at the end of this section.



Legend

- EIR/EIS Boundary
- Cowardin Class, Wetland Name**
- E1UBL;** *Estuarine, Subtidal, Unconsolidated Bottom, Subtidal*
- E2USM;** *Estuarine, Intertidal, Unconsolidated Shore, Irregularly Exposed*
- E2USN;** *Estuarine, Intertidal, Unconsolidated Shore, Regularly Flooded*
- E2EMPh;** *Estuarine, Intertidal, Emergent, Irregularly Flooded, Diked/Impounded*
- E2EM/USN;** *Estuarine, Intertidal, Emergent, Unconsolidated Shore, Regularly Flooded*
- E2EMN;** *Estuarine, Intertidal, Emergent, Regularly Flooded*
- E2EMP;** *Estuarine, Intertidal, Emergent, Irregularly Flooded*
- PUBFh;** *Palustrine, Unconsolidated Bottom, Semipermanently Flooded, Diked/Impounded*
- PEMC;** *Palustrine, Emergent, Seasonally Flooded*
- PUBHh;** *Palustrine, Unconsolidated Bottom, Permanently Flooded, Diked/Impounded*
- PUBKx;** *Palustrine, Unconsolidated Bottom, Artificially Flooded, Excavated*
- PUBHx;** *Palustrine, Unconsolidated Bottom, Permanently Flooded, Excavated*
- PSSCh;** *Palustrine, Scrub-Shrub, Seasonally Flooded, Diked/Impounded*

Preliminary
Subject to Change

1 in = 500 ft (at tabloid layout)

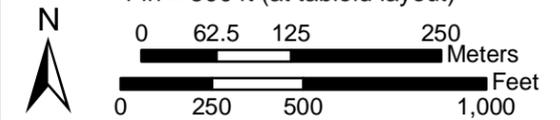


Figure 5: National Wetland Inventory

City of Hercules
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Data Sources: Map information was compiled from the best available sources. No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey. Data is State Plane Feet, NAD83 Zone 3





- Legend**
- BCDC Assumed Jurisdictional Limit
 - Project Boundary
 - Delineation Area
 - Previously Verified Delineation (Vollmar 2008, File # 2008-00382S)
 - Figure 6-A, 6-B, and 6-C Map Extents

**Preliminary
Subject to Change**

1 in = 500 ft (at tabloid layout)

0 62.5 125 250 Meters

0 250 500 1,000 Feet

Figure 6: Delineation Map

City of Hercules
Hercules Intermodal Transit Center
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources. No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey. Data is State Plane Feet, NAD83 Zone 3.

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Feature	Length (ft)	Ave Width (ft)	*Area (acres)/ Square Feet	**BCDC Jurisdictional (Yes,No/acres)
Wetland Features				
Cattail Marsh 1	N/A	N/A	0.62/26,929	No
Cattail Marsh 2	N/A	N/A	0.02/866	No
Cattail Marsh 3	N/A	N/A	0.34/14,745	No
Cattail Marsh 4	N/A	N/A	0.45/19,488	No
Cattail Marsh 5	N/A	N/A	0.007/284	No
Cattail Marsh 6	N/A	N/A	0.07/3,121	No
Cattail Marsh 7	N/A	N/A	0.49/21,344	No
Cattail Marsh 8	N/A	N/A	0.10/4,408	No
Cattail Marsh 9	N/A	N/A	0.07/2,894	No
Cattail Marsh 10	N/A	N/A	0.85/36,856	No
Seasonal Wetland 1	N/A	N/A	0.01/475	No
Seasonal Wetland 2	N/A	N/A	0.03/1,222	No
Seasonal Wetland 3	N/A	N/A	0.05/2,375	No
Freshwater Wetland Swale 1	N/A	N/A	0.32/13,760	No
Pickleweed Brackish Marsh 1	N/A	N/A	0.44/19,199	Yes/0.011
Pickleweed Brackish Marsh 2	N/A	N/A	0.046/2,005	No
Pickleweed Brackish Marsh 3	N/A	N/A	0.11/4,942	No
Pickleweed Brackish Marsh 4	N/A	N/A	0.031/1,349	Yes/0.006
<i>Wetland Feature Subtotal</i>	N/A	N/A	4.01/176,264	0.017
Other Waters of the U.S.				
Refugio Creek (Brackish Stream 1)	1,186	~14	0.476/20,748	Yes/0.008
Brackish Stream 2	130	2	0.006/274	Yes/0.001
Freshwater Intermittent Drainage 1	68	1	0.002/68	No
Northern Channel (Freshwater Intermittent Drainage 2)	506	~5	0.058/2,535	No
Freshwater Intermittent Drainage 3	18	3	0.001/18	No
Freshwater Intermittent Drainage 4	440	2	0.02/869	No
<i>Other Waters of the U.S. Subtotal</i>	2,348	N/A	0.563/24,512	0.009
Other Waters of the U.S. in the Delineation Area			4.613/200,926	0.026



Verified Delineation Boundaries Extending Into Bay Are Not Shown

Cattail Marsh 1



Legend

- Data Points
- Freshwater Intermittent Drainage
- - - BCDC 100ft Buffer Line
- Project Boundary
- Delineation Area
- Brackish Stream
- Seasonal Wetland
- - - Freshwater Wetland Swale
- Pickleweed Brackish Marsh
- Cattail Marsh
- ▨ Previously Verified Delineation (Vollmar 2008, File # 2008-00382S)

Preliminary Subject to Change

1 in = 200 ft (at tabloid layout)

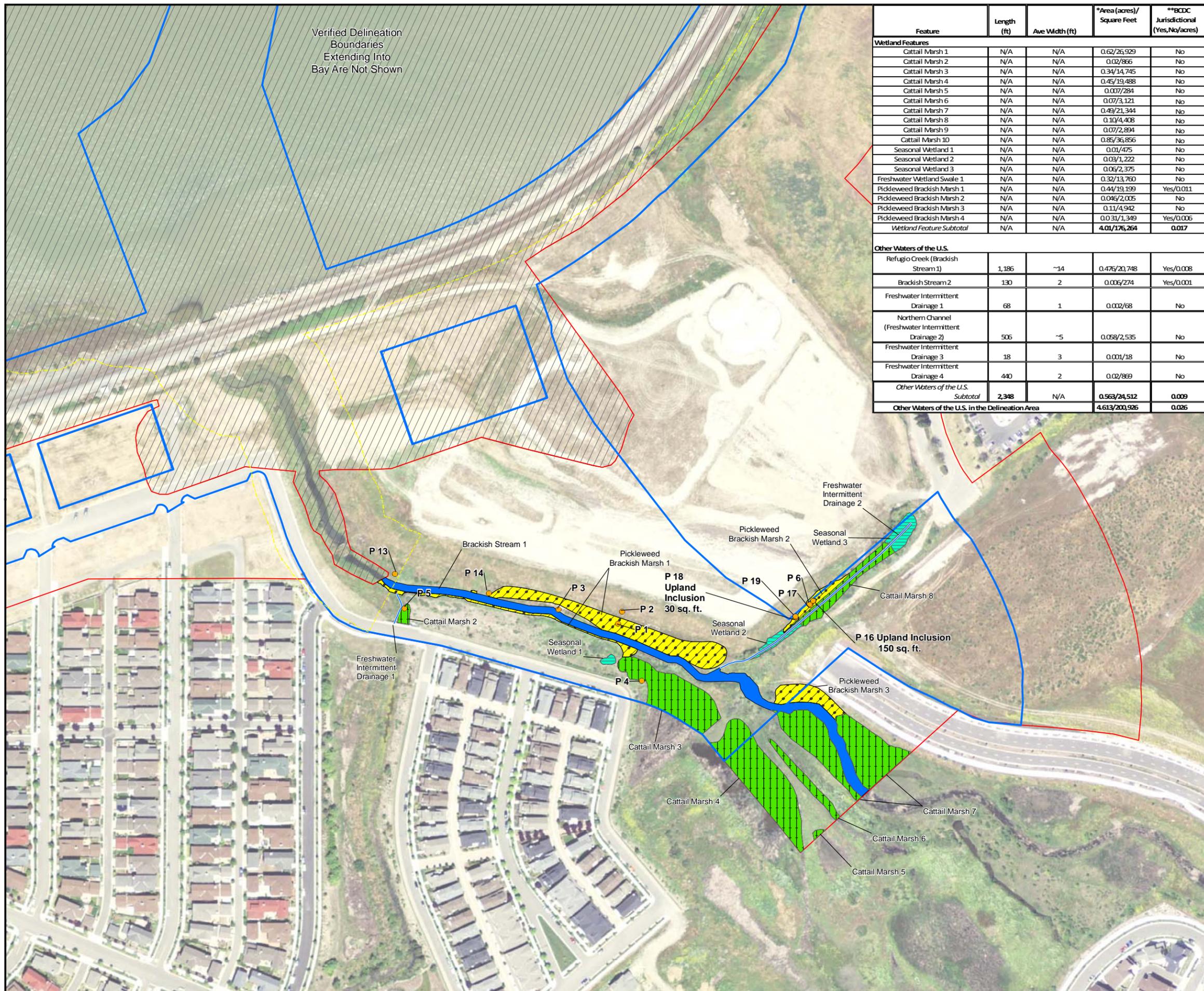
0 20 40 80 Meters

0 100 200 400 Feet

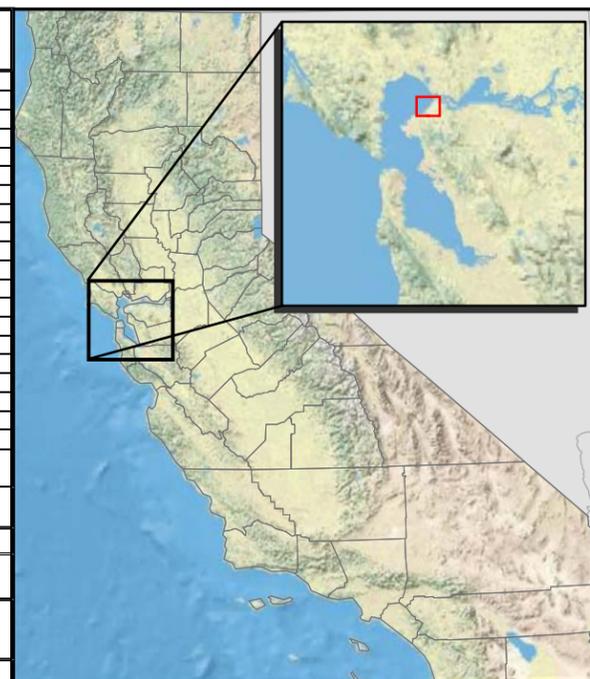
Figure 6-A: Delineation Map

City of Hercules
Hercules Intermodal Transit Center
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources. No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey. Data is State Plane Feet, NAD83 Zone 3.



Feature	Length (ft)	Ave Width (ft)	*Area (acres)/ Square Feet	**BCDC Jurisdictional (Yes,No/acres)
Wetland Features				
Cattail Marsh 1	N/A	N/A	0.62/26,929	No
Cattail Marsh 2	N/A	N/A	0.02/866	No
Cattail Marsh 3	N/A	N/A	0.34/14,745	No
Cattail Marsh 4	N/A	N/A	0.45/19,488	No
Cattail Marsh 5	N/A	N/A	0.007/284	No
Cattail Marsh 6	N/A	N/A	0.07/3,121	No
Cattail Marsh 7	N/A	N/A	0.49/21,344	No
Cattail Marsh 8	N/A	N/A	0.10/4,408	No
Cattail Marsh 9	N/A	N/A	0.07/2,894	No
Cattail Marsh 10	N/A	N/A	0.85/36,856	No
Seasonal Wetland 1	N/A	N/A	0.01/475	No
Seasonal Wetland 2	N/A	N/A	0.03/1,222	No
Seasonal Wetland 3	N/A	N/A	0.05/2,375	No
Freshwater Wetland Swale 1	N/A	N/A	0.32/13,760	No
Pickleweed Brackish Marsh 1	N/A	N/A	0.44/19,199	Yes/0.011
Pickleweed Brackish Marsh 2	N/A	N/A	0.046/2,005	No
Pickleweed Brackish Marsh 3	N/A	N/A	0.11/4,942	No
Pickleweed Brackish Marsh 4	N/A	N/A	0.031/1,349	Yes/0.006
Wetland Feature Subtotal	N/A	N/A	4.01/176,264	0.017
Other Waters of the U.S.				
Refugio Creek (Brackish Stream 1)	1,186	~14	0.476/20,748	Yes/0.008
Brackish Stream 2	130	2	0.006/274	Yes/0.001
Freshwater Intermittent Drainage 1	68	1	0.002/68	No
Northern Channel (Freshwater Intermittent Drainage 2)	506	~5	0.058/2,535	No
Freshwater Intermittent Drainage 3	18	3	0.001/18	No
Freshwater Intermittent Drainage 4	440	2	0.02/869	No
Other Waters of the U.S. Subtotal	2,348	N/A	0.563/24,512	0.009
Other Waters of the U.S. in the Delineation Area			4.613/200,926	0.026



Legend

- Data Points
- Freshwater Intermittent Drainage
- BCDC 100ft Buffer Line
- Project Boundary
- Delineation Area
- █ Brackish Stream
- █ Seasonal Wetland
- █ Freshwater Wetland Swale
- █ Pickleweed Brackish Marsh
- █ Cattail Marsh
- ▨ Previously Verified Delineation (Vollmar 2008, File # 2008-00382S)

**Preliminary
Subject to Change**

1 in = 200 ft (at tabloid layout)

Figure 6-B: Delineation Map

City of Hercules
Hercules Intermodal Transit Center
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources. No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey. Data is State Plane Feet, NAD83 Zone 3.

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Legend

- Data Points
- Freshwater Intermittent Drainage
- - - BCDC 100ft Buffer Line
- ▭ Project Boundary
- ▭ Delineation Area
- ▭ Brackish Stream
- ▭ Seasonal Wetland
- ▭ Freshwater Wetland Swale
- ▭ Pickleweed Brackish Marsh
- ▭ Cattail Marsh
- ▭ Previously Verified Delineation (Vollmar 2008, File # 2008-00382S)

Feature	Length (ft)	Ave Width (ft)	*Area (acres)/ Square Feet	**BCDC Jurisdictional (Yes,No/acres)
Wetland Features				
Cattail Marsh 1	N/A	N/A	0.62/26,929	No
Cattail Marsh 2	N/A	N/A	0.02/866	No
Cattail Marsh 3	N/A	N/A	0.34/14,745	No
Cattail Marsh 4	N/A	N/A	0.45/19,488	No
Cattail Marsh 5	N/A	N/A	0.007/284	No
Cattail Marsh 6	N/A	N/A	0.07/3,121	No
Cattail Marsh 7	N/A	N/A	0.49/21,344	No
Cattail Marsh 8	N/A	N/A	0.10/4,408	No
Cattail Marsh 9	N/A	N/A	0.07/2,894	No
Cattail Marsh 10	N/A	N/A	0.85/36,856	No
Seasonal Wetland 1	N/A	N/A	0.01/475	No
Seasonal Wetland 2	N/A	N/A	0.03/1,222	No
Seasonal Wetland 3	N/A	N/A	0.05/2,375	No
Freshwater Wetland Swale 1	N/A	N/A	0.32/13,760	No
Pickleweed Brackish Marsh 1	N/A	N/A	0.44/19,199	Yes/0.011
Pickleweed Brackish Marsh 2	N/A	N/A	0.046/2,005	No
Pickleweed Brackish Marsh 3	N/A	N/A	0.11/4,942	No
Pickleweed Brackish Marsh 4	N/A	N/A	0.031/1,349	Yes/0.006
Wetland Feature Subtotal	N/A	N/A	4.01/176,264	0.017
Other Waters of the U.S.				
Refugio Creek (Brackish Stream 1)	1,186	~14	0.476/20,748	Yes/0.008
Brackish Stream 2	130	2	0.006/274	Yes/0.001
Freshwater Intermittent Drainage 1	68	1	0.002/68	No
Northern Channel (Freshwater Intermittent Drainage 2)	506	~5	0.058/2,535	No
Freshwater Intermittent Drainage 3	18	3	0.001/18	No
Freshwater Intermittent Drainage 4	440	2	0.02/899	No
Other Waters of the U.S. Subtotal	2,348	N/A	0.563/24,512	0.009
Other Waters of the U.S. in the Delineation Area			4.613/200,926	0.026

**Preliminary
Subject to Change**

1 in = 200 ft (at tabloid layout)

Figure 6-C: Delineation Map

City of Hercules
Hercules Intermodal Transit Center
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources. No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey. Data is State Plane Feet, NAD83 Zone 3

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Photo 1. View looking upstream along Refugio Creek (Brackish Stream 1) (11/10/09).



Photo 2. View looking east along the northern border of Brackish Marsh 1, taken near data point P1. Tree in background is associated with Brackish Marsh 2 (21/08/09).



Photo 3. View looking southwest at Northern Channel. Photo taken near southwest end of Northern Channel (11/10/09).



Photo 4. View looking east along Brackish Stream 2 and Brackish Marsh 4. Photo taken near western project site boundary (12/08/09).

Figure 7-A
Site Photographs



Photo 5. View of Seasonal Wetland 1 looking east (12/08/09).



Photo 6. View of Seasonal Wetland looking south. Photo taken near data point P4 (12/08/09).



Photo 7. View of Seasonal Wetland 3 looking southwest (12/08/09).



Photo 8. View of Freshwater Intermittent Drainage 1 looking southeast (upstream) (12/08/09).

Figure 7-B
Site Photographs

4.5.1 Wetlands

Cattail Marsh 1

Cattail Marsh 1 (CM 1) is a large wetland feature located in a depression adjacent to the existing Bay Trail, railroad, and San Pablo Bay (Figure 6-A). Vegetation within this feature consists primarily of broadleaf cattail (*Typha latifolia*), with saltgrass and a small amount of creeping wildrye around its perimeter. This feature was inundated at the time of the field visit. Hydrology for this feature likely comes from rainfall and urban runoff from an adjacent residential area. This feature is adjacent to the San Pablo Bay (a traditionally navigable water; TNW). The feature was mapped by the National Wetlands Inventory as PEMC (Palustrine, Emergent, Seasonally Flooded; Figure 5). This feature is likely jurisdictional.

Cattail Marsh 2

Cattail Marsh 2 (CM 2) is a small wetland feature located adjacent to Refugio Creek (Figure 6-B). Vegetation within this feature consists primarily of broadleaf cattail, with a small amount of perennial pepperweed (*Lepidium latifolium*). Soils within this feature appeared to be hydric and the soil was saturated at the surface at the time of the field visit. This feature is adjacent to and drains to Refugio Creek (a relatively permanent water; RPW), which is immediately tributary to the San Pablo Bay (a traditionally navigable water; TNW). This feature is likely jurisdictional.

Cattail Marsh 3

Cattail Marsh 3 (CM 3) is a large wetland feature located adjacent to Refugio Creek, at the southern end of the delineation area (Figure 6-B). This feature was inundated, up to approximately six inches deep at the time of the field visit. Hydrology for this feature likely comes from rainfall, urban runoff from an adjacent residential area, and from seepage from Refugio Creek. Vegetation within this feature consists primarily of broadleaf cattail, with a small amount of curly doc (*Rumex crispus*). Soil within this feature demonstrated a loamy mucky mineral texture and showed evidence of prolonged saturation. This feature is adjacent to and drains to Refugio Creek (a RPW), which is immediately tributary to the San Pablo Bay (a TNW). This feature is likely jurisdictional.

Cattail Marshes 4, 5, 6, and 7

Cattail Marshes 4, 5, 6, and 7 (CM 4, 5, 6, and 7) are large wetland features located near Refugio Creek, at the southern end of the delineation area (Figure 6-B). These features

are in an area that has been restored to wetland in an effort to realign and restore Refugio Creek. Hydrology for these features likely comes from rainfall, urban runoff from an adjacent residential area, and from overflow or seepage from Refugio Creek. Vegetation within these features consists primarily of broadleaf cattail. These features are adjacent to Refugio Creek (a RPW), which is immediately tributary to the San Pablo Bay (a TNW). These features are likely jurisdictional.

Cattail Marsh 8

Cattail Marsh 8 (CM 8) is a wetland feature located adjacent to the Northern Channel (Figure 6-B). It receives hydrology from the Northern Channel. Its hydrology may be augmented by wicking from adjacent surcharge activity. Vegetation within this feature is dominated by broadleaf cattail and alkali bulrush, with saltgrass near its perimeter, and with partial overstory of willow trees. Soil within this feature demonstrated redox dark surface. Oxidized rhizospheres were evident within this feature at the time of the field visit. This feature is directly adjacent to the Northern Channel (a RPW), with flows into Refugio Creek (a RPW), which flows immediately into San Pablo Bay (a TNW). This feature is likely jurisdictional.

Cattail Marsh 9

Cattail Marsh 9 (CM 9) is at the top of a bluff adjacent to a landscaped business park (Figure 6-C). Vegetation within this feature is dominated by broadleaf cattail. Hydrology likely comes from rainfall and runoff from excess landscape-irrigation water. Overflow from this feature likely drains to wetlands along the railroad, which are adjacent to San Pablo Bay. This feature is likely jurisdictional.

Cattail Marsh 10

Cattail Marsh 10 (CM 10) is a large wetland feature located in a widened reach of Freshwater Intermittent Drainage 4 (FID 4). It is located between the BioRad facility and Victoria-by-the-Bay housing development (Figure 6-C). Vegetation within this feature is dominated by broadleaf cattail and alkali bulrush. Hydrology likely comes from rainfall and runoff from adjacent and upstream development. A data point was not taken within this feature as direct access into the feature was difficult and the feature was inundated at the time of the field surveys. This feature is adjacent to FID 4 (a RPW), which is immediately tributary to the San Pablo Bay (a TNW). These features are likely jurisdictional.

Seasonal Wetland 1

Seasonal Wetland 1 (SW 1) is in a landscaped area near Refugio Creek (Figure 6-B). Vegetation within this feature is dominated by rabbitsfoot grass (*Polypogon monspeliensis*) and Italian ryegrass (*Lolium multiflorum*). This feature is likely jurisdictional.

Seasonal Wetlands 2 and 3

Seasonal Wetlands 2 and 3 (SW 2, 3) are wetland features located adjacent to the Northern Channel (Figure 6-B). These two seasonal wetlands receive hydrology from the Northern Channel. The hydrology of SW 2 may be augmented by wicking from adjacent surcharge activity. Vegetation within these features is dominated by Himalaya blackberry (*Rubus armeniacus*) and Italian ryegrass, with an overstory of Arroyo willow trees. These features are directly adjacent to the Northern Channel (a RPW), which flows into Refugio Creek (a RPW), which flows immediately into San Pablo Bay (a TNW). These seasonal wetlands are likely jurisdictional.

Freshwater Wetland Swale 1

Freshwater Wetland Swale 1 (FWS 1) is near the railroad tracks and San Pablo Bay (Figure 6-C). This feature has willow riparian habitat characteristics. Vegetation within this feature includes Arroyo willow (*Salix lasiolepis*), Himalaya blackberry, sedge (*Cyperus eragrostis*), and creeping wildrye. Soil within this feature was depleted below a dark surface and was saturated at three inches below the surface. In addition, drainage patterns were observed within the feature. An approximately three-foot culvert appears to supply runoff from adjacent corporate parks. This is likely the primary source of water. This feature drains to a short freshwater intermittent drainage feature, which drains to a brackish stream (an RPW), that immediately empties into San Pablo Bay (a TNW) through a three foot culvert. This feature is likely jurisdictional.

Pickleweed Brackish Marsh 1

Pickleweed Brackish Marsh (PBM 1) is a marsh feature that receives hydrology from Refugio Creek during high flow and/or high tide. Its hydrology may be augmented by wicking from adjacent surcharge activity. Vegetation within this feature includes pickleweed, Italian ryegrass (*Lolium multiflorum*), and Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*). Soil within the PBM 1 demonstrated redox dark surface characteristics and drift deposits and drainage patterns were evident within this feature at

the time of the field visit. This feature is directly adjacent to Refugio Creek (a RPW), which flows immediately into San Pablo Bay (a TNW) (Figure 6-B). This feature is likely jurisdictional.

Portions of this brackish feature also occur within BCDC jurisdiction within the delineation area. Portions of this feature within 100 feet of the shoreline are within BCDC jurisdiction.

Pickleweed Brackish Marsh 2

Pickleweed Brackish Marsh 2 (PBM 2) is a marsh feature that receives hydrology from the Northern Channel. Its hydrology may be augmented by wicking from adjacent surcharge activity. While this feature contains brackish vegetation, it has a partial overstory of willow trees as well. Vegetation within this feature includes saltgrass, pickleweed, alkali bulrush, and Arroyo willow. Soil within this feature demonstrated redox dark surface. Oxidized rhizospheres were evident within this feature at the time of the field visit. This feature is directly adjacent to the Northern Channel (a RPW), with flows into Refugio Creek (a RPW), which flows immediately into San Pablo Bay (a TNW) (Figure 6-B). This feature is likely jurisdictional.

Pickleweed Brackish Marsh 3

Pickleweed Brackish Marsh 3 (PBM 3) is a marsh feature that receives hydrology from Refugio Creek during high flow and/or high tide. It is in an area that has been restored to wetland in an effort to realign and restore Refugio Creek. Vegetation within this feature consists primarily of pickleweed. This feature is directly adjacent to Refugio Creek (a RPW), which flows immediately into San Pablo Bay (a TNW) (Figure 6-B). This feature is likely jurisdictional.

Pickleweed Brackish Marsh 4

Pickleweed Brackish Marsh 4 (PBM 4) is a brackish marsh that runs along a small brackish stream (BS 2), located on the eastern end of the project site (Figure 6-C). Vegetation within this feature includes pickleweed, saltgrass, alkali bulrush, and creeping wildrye. Soil within this feature demonstrated a depleted matrix and was saturated at seven inches below the surface, with water filling a soil pit to thirteen inches below the surface, at the time of the field visit. South and east of data point P8, the feature is contained within a concrete lining. This feature is adjacent to an RPW that flows

immediately into San Pablo Bay through a three foot culvert. This feature is likely jurisdictional.

Portions of this brackish feature also occur within BCDC jurisdiction within the delineation area. Portions of this feature within 100 feet of the shoreline are within BCDC jurisdiction.

4.5.2 Other Waters of the U.S. (Drainage Features)

Refugio Creek (Brackish Stream 1)

Refugio Creek is a tidally influenced perennial stream that flows directly into San Pablo Bay (Figure 6-B). It was altered in the early 1900s from a natural channel into a straightened, deepened, channeled waterway. At its downstream end, Refugio Creek flows through culverts under a railroad bridge. During high flows, the creek backs up from the culverts. The stream's downstream end is characterized by salt-tolerant plants, such as pickleweed and saltgrass. Its upstream end is characterized by less salt-tolerant plants, such as cattails and common tule (*Schoenoplectus acutus*). Regular tidal influence appears to extend upstream near the confluence with the Northern Channel. Within the project site, the main channel of Refugio Creek ranges from ten to fifteen feet in width. Fluctuation in creek depth from tidal influence creates brackish stream/marsh areas along the banks and flats adjacent to Refugio Creek. Refugio Creek is a RPW that flows directly into San Pablo Bay (a TNW). Refugio Creek is jurisdictional.

Portions of Refugio Creek occur within BCDC jurisdiction. Within the delineation area, approximately 25 linear feet of Refugio Creek are within BCDC jurisdiction.

Brackish Stream 2

Brackish Stream 2 (BS 2) is a brackish stream located on the eastern end of the project site (Figure 6-C). This feature has brackish marsh habitat on both sides. Vegetation within this feature includes pickleweed, saltgrass, alkali bulrush, and creeping wildrye. This feature is approximately two feet wide and had a low flow at the time of the field visit. This feature receives hydrology primarily from rainfall and urban runoff and receives hydrology from FID4 and FWS 1. South and east of data point P8, the feature is contained within a concrete lining. This feature is a small RPW that flows immediately into San Pablo Bay through a three foot culvert. This feature is likely jurisdictional.

Portions of Brackish Stream 2 occur within BCDC jurisdiction. Within the delineation area, approximately 40 linear feet of the feature are within BCDC jurisdiction.

Central Channel (Freshwater Intermittent Drainage 1)

The Central Channel of Refugio Creek is a short feature that drains water from areas south of the project site and flow into Refugio Creek (Figure 6-B). It also appears to provide water for CM 2. This feature is approximately one to two feet in width and contained water at the time of the field survey. Vegetation associated with this feature consists primarily of broadleaf cattail. This drainage feature is a small RPW that flows into Refugio Creek (a RPW), which flows directly into San Pablo Bay (a TNW). This feature is likely jurisdictional.

Northern Channel (Freshwater Intermittent Drainage 2)

The Northern Channel of Refugio Creek is a stream that conveys water from a culvert from the east and flows into Refugio Creek (Figure 6-B). It collects rainfall and runoff from nearby development. During high flows or exceptionally high tides, Refugio Creek may back up into the Northern Channel depositing brackish water into the lower reach of the channel. Vegetation in the Northern Channel supports a mix of brackish plants, such as alkali bulrush; and less-salt-tolerant plants upstream, such as cattails and red willow (*Salix laevigata*). The Northern Channel supports some willow riparian habitat vegetation. It did not have surface flow at the time of the field visit. The Northern Channel is a RPW that flows into Refugio Creek (a RPW), which flows directly into San Pablo Bay (a TNW). Northern Channel is likely jurisdictional.

Freshwater Intermittent Drainage 3

Freshwater Intermittent Drainage (FID 3) is a short feature that connects FWS 1 to BS 2 (Figure 6-C). This feature is approximately 45 feet in length and has a defined bed and bank. This feature does not exhibit brackish vegetation, but has vegetation more consistent with that of FPW 3. This feature is approximately three feet in width and did not contain water at the time of the field visit. This drainage feature is a non-relatively permanent feature that flows into BS 2 (likely a RPW), which flows into San Pablo Bay (a TNW). This feature is likely jurisdictional.

Freshwater Intermittent Drainage 4

Freshwater Intermittent Drainage (FID 4) is a feature that runs through Cattail Marsh 10 (Figure 6-C). It drains rainfall and runoff from adjacent and upstream development. In its downstream reach, it becomes tidally influenced. The tidally influenced reach is designated as Brackish Stream 2. This drainage feature is a RPW that, through Brackish Stream 2, flows into San Pablo Bay (a TNW). This feature is likely jurisdictional.

5.0 SUMMARY

HDR has conducted a jurisdictional determination of all potential waters of the U.S. including wetlands occurring within the Hercules ITC project area, excluding those areas previously delineated and verified. All areas within the delineation area were assessed to the degree necessary to determine the presence or absence of jurisdictional wetlands and other waters of the U.S. per the guidelines established by the USACE. All wetlands and other waters detected within the delineation area and discussed in Section 4.5 of this report are believed to be jurisdictional. These jurisdictional features occupy a total of 4.94 acres in the delineation area. The results of this jurisdictional determination are preliminary until verified by the USACE.

Table 1. Acreages of Potentially Jurisdictional Wetlands and Other Waters of the U.S. in the Delineation Area

Feature	Length (ft)	Ave Width (ft)	*Area (acres)/ Square Feet	**BCDC Jurisdictional (Yes,No/acres)
Wetland Features				
Cattail Marsh 1	N/A	N/A	0.62/27,007	No
Cattail Marsh 2	N/A	N/A	0.02/871	No
Cattail Marsh 3	N/A	N/A	0.34/14,810	No
Cattail Marsh 4	N/A	N/A	0.45/19,602	No
Cattail Marsh 5	N/A	N/A	0.01/305	No
Cattail Marsh 6	N/A	N/A	0.07/3,049	No
Cattail Marsh 7	N/A	N/A	0.49/21,344	No
Cattail Marsh 8	N/A	N/A	0.10/4,356	No
Cattail Marsh 9	N/A	N/A	0.07/3,049	No
Cattail Marsh 10	N/A	N/A	0.85/367,026	No
Seasonal Wetland 1	N/A	N/A	0.01/436	No
Seasonal Wetland 2	N/A	N/A	0.03/1,307	No
Seasonal Wetland 3	N/A	N/A	0.06/2,614	No
Freshwater Wetland Swale 1	N/A	N/A	0.32/13,939	No
Pickleweed Brackish Marsh 1	N/A	N/A	0.44/19,166	Yes/0.011
Pickleweed Brackish Marsh 2	N/A	N/A	0.05/2,178	No
Pickleweed Brackish Marsh 3	N/A	N/A	0.11/4,792	No
Pickleweed Brackish Marsh 4	N/A	N/A	0.03/1,307	Yes/0.006
<i>Wetland Feature Subtotal</i>	N/A	N/A	4.07/177,159	0.017
Other Waters of the U.S.				
Refugio Creek (Brackish Stream 1)	1,186	~14	0.48/20,909	Yes/0.008
Brackish Stream 2	130	2	0.01/261	Yes/0.001
Freshwater Intermittent Drainage 1	68	1	0.00/87	No
Northern Channel (Freshwater Intermittent Drainage 2)	506	~5	0.06/2,614	No
Freshwater Intermittent Drainage 3	18	3	0.00/44	No
Freshwater Intermittent Drainage 4	440	2	0.02/871	No

<i>Other Waters of the U.S. Subtotal</i>	2,348	N/A	0.57/24,786	0.009
Total Acreage of Potentially Jurisdictional Wetlands and Other Waters of the U.S. in the Delineation Area			4.64/201,945	0.026

* Acreage calculations were rounded to the nearest hundredth of an acre.

** All BCDC jurisdictional areas were also Corps jurisdictional. Acreage figures are included in Corps jurisdictional acreages. For example, Pickleweed Brackish Marsh 1 totals 0.44 acres, 0.011 of which are BCDC jurisdictional.

6.0 REFERENCES

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APPENDIX A

Indicator Status of Plant Species Observed at Data Points

Scientific Name	Common Name	Indicator Status
<i>Avena fatua</i>	wild oat	NI
<i>Baccharis pilularis</i>	coyote brush	NI
<i>Bolboschoenus maritimus</i>	alkali bulrush	OBL
<i>Brassica nigra</i>	black mustard	NI
<i>Bromus diandrus</i>	rip gut brome	NI
<i>Bromus hordeaceus</i>	soft chess	FACU-
<i>Carduus pycnocephalus</i>	Italian thistle	NI
<i>Cyperus eragrostis</i>	tall flatsedge	FACW
<i>Conium maculatum</i>	poison hemlock	FACW
<i>Distichlis spicata</i>	Saltgrass	FACW
<i>Geranium molle</i>	geranium	NI
<i>Frankenia salina</i>	alkali heath	FACW+
<i>Holcus lanatus</i>	common velvetgrass	FAC
<i>Hordeum marinum ssp. guessoneanum</i>	Mediterranean barley	FAC
<i>Juncus balticus</i>	Baltic rush	OBL
<i>Lemna minor</i>	common duckweed	OBL
<i>Lepidium latifolium</i>	broadleaved pepperweed	FACW
<i>Leymus triticoides</i>	creeping wildrye	FAC+
<i>Lolium multiflorum</i>	Italian rye grass	FAC
<i>Picris echioides</i>	bristly oxtongue	FAC
<i>Raphanus sativus</i>	radish	NI
<i>Rubus armeniacus</i>	Himalaya blackberry	FACW
<i>Rumex crispus</i>	curly dock	FACW-
<i>Salix laevigata</i>	red willow	FACW
<i>Salix lasiolepis</i>	arroyo willow	FACW
<i>Sarcocornia pacifica</i>	pickleweed	OBL
<i>Trifolium hirtum</i>	rose clover	NI
<i>Typha latifolia</i>	broadleaf cattail	OBL
<i>Vicia villosa</i>	vetch	FACU

APPENDIX B

Data Sheets

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Hercules Intermodal Transit Center City/County: Hercules, Contra Costa County Sampling Date: 12/08/2009
 Applicant/Owner: City of Hercules State: CA Sampling Point: P1
 Investigator(s): Sean Marquis, Mark Ashenfelter Section, Township, Range:
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave Slope (%): <5%
 Subregion (LRR): LRRRC Lat: 38° 01' 10.30" N Long: 122° 16' 56.21" W Datum: WGS 84
 Soil Map Unit Name: Clear Lake Clay NWI classification: U
 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 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 <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampling Area within a Wetland?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Remarks:					

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:		
1.				Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
2.				Total Number of Dominant Species Across All Strata:	1	(B)
3.				Percent of Dominant Species That Are OBL, FACW, or FAC:	100	(A/B)
4.			= Total Cover			
<u>Sapling/Shrub Stratum</u>				Prevalence Index worksheet:		
1.				<u>Total %Cover of :</u>	<u>Multiply by:</u>	
2.				OBL species	x1 =	
3.				FACW species	x2 =	
4.				FAC species	x3 =	
5.				FACU species	x4 =	
			= Total Cover	UPL species	x5 =	
<u>Herb Stratum</u>				Column Totals:	(A)	(B)
1. Sarcocornia pacifica	35	Yes	OBL	Prevalence Index = B/A =		
2. Hordeum marinum ssp. gussoneanum	4	No	FAC			
3. Lolium multiflorum	2	No	FAC			
4.						
5.						
6.						
7.						
8.						
	41		= Total Cover			
<u>Woody Vine Stratum</u>				Hydrophytic Vegetation Indicators:		
1.				X Dominance Test is >50%		
2.				Prevalence Index is ≤3.0 ¹		
				Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)		
				Problematic Hydrophytic Vegetation ¹ (Explain)		
¹ Indicators of hydric soil and wetland hydrology must be present.						
% Bare Ground in Herb Stratum 59 % Cover of Biotic Crust				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Remarks:						

SOIL

Sampling Point: P1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type ¹	Loc ²		
0-13	10 YR 3/1	97	5 YR 4/6	3	C	RC	Silty Clay	

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) **(LRR C)**
- 1 cm Muck (A9) **(LRR D)**
- 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)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Vernal Pools (F9)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) **(LRR C)**
- 2 cm Muck (A10) **(LRR B)**
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (Inches):

Remarks:

Hydric Soils Present?

Yes No

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1) **(Nonriverine)**
- Sediment Deposits (B2) **(Nonriverine)**
- Drift Deposits (B3) **(Nonriverine)**
- Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Salt Crust (B11)
- Biotic Crust (B12)
- 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)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Water Marks (B1) **(Riverine)**
- Sediment Deposits (B2) **(Riverine)**
- Drift Deposits (B3) **(Riverine)**
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Thin Muck Surface (C7)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes No Depth (inches):

Water Table Present? Yes No Depth (inches):

Saturation Present? (includes capillary fringe) Yes No Depth (inches):

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Hercules Intermodal Transit Center City/County: Hercules, Contra Costa County Sampling Date: 12/08/2009
 Applicant/Owner: City of Hercules State: CA Sampling Point: P2
 Investigator(s): Sean Marquis, Mark Ashenfelter Section, Township, Range:
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 5%
 Subregion (LRR): LRRRC Lat: 38° 01' 10.55" N Long: 122° 16' 56.11" W Datum: WGS 84
 Soil Map Unit Name: Clear Lake Clay NWI classification: U
 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 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 <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Is the Sampling Area within a Wetland?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Remarks:					

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:			
5.				Number of Dominant Species That Are OBL, FACW, or FAC:	1 (A)		
6.				Total Number of Dominant Species Across All Strata:	3 (B)		
7.				Percent of Dominant Species That Are OBL, FACW, or FAC:	33 (A/B)		
8.			= Total Cover				
<u>Sapling/Shrub Stratum</u>				Prevalence Index worksheet:			
6.				<u>Total %Cover of :</u>	<u>Multiply by:</u>		
7.				OBL species	x1 =		
8.				FACW species	x2 =		
9.				FAC species	22 x3 = 66		
10.				FACU species	x4 =		
			= Total Cover	UPL species	56 x5 = 280		
<u>Herb Stratum</u>				Column Totals:	78 (A) 346 (B)		
9. Avena fatua	30	Yes	NI	Prevalence Index = B/A = 4.4			
10. Lolium multiflorum	20	Yes	FAC	Hydrophytic Vegetation Indicators: Dominance Test is >50% Prevalence Index is ≤3.0 ¹ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present.			
11. Bromus diandrus	16	Yes	NI				
12. Trifolium hirtum	5	No	NI				
13. Geranium molle	3	No	NI				
14. Hordeum marinum ssp. gussoneanum	2	No	FAC				
15. Brassica nigra	2	No	NI				
16.							
	78		= Total Cover				
<u>Woody Vine Stratum</u>				Hydrophytic Vegetation Present?			
3.						Yes	<input type="checkbox"/>
4.							
	78		= Total Cover				
% Bare Ground in Herb Stratum	25	% Cover of Biotic Crust					
Remarks:							

SOIL

Sampling Point: P2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type ¹	Loc ²		
0-14	10 YR 4/3	95					Silty Clay	
0-14	10 YR 2/1	3					Silty Clay	
0-14	10 YR 5/6	2					Sand	

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) **(LRR C)**
- 1 cm Muck (A9) **(LRR D)**
- 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)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Vernal Pools (F9)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) **(LRR C)**
- 2 cm Muck (A10) **(LRR B)**
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (Inches):

Remarks: Appears to be some fill added to soil.

Hydric Soils Present?

Yes No

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1) **(Nonriverine)**
- Sediment Deposits (B2) **(Nonriverine)**
- Drift Deposits (B3) **(Nonriverine)**
- Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)

- Salt Crust (B11)
- Biotic Crust (B12)
- 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)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Water Marks (B1) **(Riverine)**
- Sediment Deposits (B2) **(Riverine)**
- Drift Deposits (B3) **(Riverine)**
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Thin Muck Surface (C7)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes No Depth (inches):

Water Table Present? Yes No Depth (inches):

Saturation Present? (includes capillary fringe) Yes No Depth (inches):

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Hercules Intermodal Transit Center City/County: Hercules, Contra Costa County Sampling Date: 12/08/2009
 Applicant/Owner: City of Hercules State: CA Sampling Point: P3
 Investigator(s): Sean Marquis, Mark Ashenfelter Section, Township, Range:
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Convex Slope (%): <5%
 Subregion (LRR): LRRRC Lat: 38° 01' 10.57" N Long: 122° 16' 57.79" W Datum: WGS 84
 Soil Map Unit Name: Clear Lake Clay NWI classification: U
 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 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 <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Is the Sampling Area within a Wetland?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Remarks:					

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:					
9.				Number of Dominant Species That Are OBL, FACW, or FAC:	0 (A)				
10.				Total Number of Dominant Species Across All Strata:	2 (B)				
11.				Percent of Dominant Species That Are OBL, FACW, or FAC:	0 (A/B)				
12.				= Total Cover					
<u>Sapling/Shrub Stratum</u>				Prevalence Index worksheet:					
11. <i>Baccharis pilularis</i>	4	Yes	NI	<u>Total %Cover of :</u>	<u>Multiply by:</u>				
12.				OBL species	3 x1 = 3				
13.				FACW species	x2 =				
14.				FAC species	1 x3 = 3				
15.				FACU species	x4 =				
	4	= Total Cover		UPL species	29 x5 = 145				
<u>Herb Stratum</u>				Column Totals:	33 (A) 151 (B)				
17. <i>Avena fatua</i>	20	Yes	NI	Prevalence Index = B/A = 4.6					
18. <i>Carduus pycnocephalus</i>	2	No	NI	Hydrophytic Vegetation Indicators: Dominance Test is >50% Prevalence Index is ≤3.0 ¹ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present.					
19. <i>Juncus balticus</i>	3	No	OBL						
20. <i>Holcus lanatus</i>	1	No	FAC						
21. <i>Raphanus sativus</i>	1	No	NI						
22. <i>Bromus diandrus</i>	1	No	NI						
23. <i>Geranium molle</i>	1	No	NI						
24.									
	29	= Total Cover							
<u>Woody Vine Stratum</u>				Hydrophytic Vegetation Present?					
5.						Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
6.									
% Bare Ground in Herb Stratum		70	% Cover of Biotic Crust						
Remarks:									

SOIL

Sampling Point: P3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type ¹	Loc ²		
0-12	10 YR 3/2	70						
12-14	2.5 Y 5/2	30						

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils³:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)			

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present): Type: Depth (Inches):	Hydric Soils Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Soil appears to be fill.	

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (any one indicator is sufficient)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water Marks (B1) (Riverine)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Biotic Crust (B12)	
<input type="checkbox"/> Aquatic Invertebrates (B13)	
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	
<input type="checkbox"/> Other (Explain in Remarks)	

Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches):	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

SOIL

Sampling Point: P4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type ¹	Loc ²		
0-2	10 YR 4/1	100					Mucky	

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) **(LRR C)**
- 1 cm Muck (A9) **(LRR D)**
- 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)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Vernal Pools (F9)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) **(LRR C)**
- 2 cm Muck (A10) **(LRR B)**
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present?

Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1) **(Nonriverine)**
- Sediment Deposits (B2) **(Nonriverine)**
- Drift Deposits (B3) **(Nonriverine)**
- Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Salt Crust (B11)
- Biotic Crust (B12)
- 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)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Water Marks (B1) **(Riverine)**
- Sediment Deposits (B2) **(Riverine)**
- Drift Deposits (B3) **(Riverine)**
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Thin Muck Surface (C7)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes No Depth (inches): 6

Water Table Present? Yes No Depth (inches):

Saturation Present? (includes capillary fringe) Yes No Depth (inches):

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Hercules Intermodal Transit Center City/County: Hercules, Contra Costa County Sampling Date: 12/08/2009
 Applicant/Owner: City of Hercules State: CA Sampling Point: P5
 Investigator(s): Sean Marquis, Mark Ashenfelter Section, Township, Range:
 Landform (hillslope, terrace, etc.): Lowland Local relief (concave, convex, none): Concave Slope (%): <5%
 Subregion (LRR): LRRRC Lat: 38° 01' 10.56" N Long: 122° 17' 01.43" W Datum: WGS 84
 Soil Map Unit Name: Clear Lake Clay NWI classification: U
 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 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 <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampling Area within a Wetland?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>			
Remarks:					

VEGETATION

<u>Tree Stratum</u> (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:		
17.				Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
18.				Total Number of Dominant Species Across All Strata:	1	(B)
19.				Percent of Dominant Species That Are OBL, FACW, or FAC:	100	(A/B)
20.			= Total Cover			
<u>Sapling/Shrub Stratum</u>				Prevalence Index worksheet:		
21.				<u>Total %Cover of :</u>	<u>Multiply by:</u>	
22.				OBL species	x1 =	
23.				FACW species	x2 =	
24.				FAC species	x3 =	
25.				FACU species	x4 =	
			= Total Cover	UPL species	x5 =	
<u>Herb Stratum</u>				Column Totals:	(A)	(B)
33. Typha latifolia	55	Yes	OBL	Prevalence Index = B/A =		
34. Lepidium latifolium	2	No	FACW			
35.				Hydrophytic Vegetation Indicators:		
36.				X Dominance Test is >50%		
37.				Prevalence Index is ≤3.0 ¹		
38.				Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)		
39.				Problematic Hydrophytic Vegetation ¹ (Explain)		
40.						
			= Total Cover			
<u>Woody Vine Stratum</u>						
9.				¹ Indicators of hydric soil and wetland hydrology must be present.		
10.						
57			= Total Cover			
% Bare Ground in Herb Stratum	43	% Cover of Biotic Crust		Hydrophytic Vegetation Present?	Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks:						

SOIL

Sampling Point: P5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type ¹	Loc ²		

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) **(LRR C)**
- 1 cm Muck (A9) **(LRR D)**
- 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)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Vernal Pools (F9)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) **(LRR C)**
- 2 cm Muck (A10) **(LRR B)**
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present?

Yes No

Remarks: Based on similarity to vegetation and hydrology at P4, hydric soils are assumed

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1) **(Nonriverine)**
- Sediment Deposits (B2) **(Nonriverine)**
- Drift Deposits (B3) **(Nonriverine)**
- Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)

- Salt Crust (B11)
- Biotic Crust (B12)
- 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)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Water Marks (B1) **(Riverine)**
- Sediment Deposits (B2) **(Riverine)**
- Drift Deposits (B3) **(Riverine)**
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Thin Muck Surface (C7)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes No Depth (inches):
 Water Table Present? Yes No Depth (inches): 0
 Saturation Present? (includes capillary fringe) Yes No Depth (inches): 0

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Soil saturated to surface.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Hercules Intermodal Transit Center City/County: Hercules, Contra Costa County Sampling Date: 12/08/2009
 Applicant/Owner: City of Hercules State: CA Sampling Point: P6
 Investigator(s): Sean Marquis, Mark Ashenfelter Section, Township, Range:
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Convex Slope (%): <5%
 Subregion (LRR): LRRRC Lat: 38° 01' 10.83" N Long: 122° 16' 51.16" W Datum: WGS 84
 Soil Map Unit Name: Clear Lake Clay NWI classification: U
 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 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 <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampling Area within a Wetland?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>			
Remarks:					

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:																			
21. <i>Salix laevigata</i>	7	Yes	FACW	Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)																	
22.				Total Number of Dominant Species Across All Strata:	1	(B)																	
23.				Percent of Dominant Species That Are OBL, FACW, or FAC:	100	(A/B)																	
24.				Prevalence Index worksheet: <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;"><u>Total %Cover of :</u></td> <td style="text-align: center;"><u>Multiply by:</u></td> </tr> <tr> <td>OBL species</td> <td style="text-align: center;">x1 =</td> </tr> <tr> <td>FACW species</td> <td style="text-align: center;">x2 =</td> </tr> <tr> <td>FAC species</td> <td style="text-align: center;">x3 =</td> </tr> <tr> <td>FACU species</td> <td style="text-align: center;">x4 =</td> </tr> <tr> <td>UPL species</td> <td style="text-align: center;">x5 =</td> </tr> <tr> <td>Column Totals:</td> <td style="text-align: center;">(A)</td> <td style="text-align: center;">(B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A =</td> </tr> </table>			<u>Total %Cover of :</u>	<u>Multiply by:</u>	OBL species	x1 =	FACW species	x2 =	FAC species	x3 =	FACU species	x4 =	UPL species	x5 =	Column Totals:	(A)	(B)	Prevalence Index = B/A =	
<u>Total %Cover of :</u>	<u>Multiply by:</u>																						
OBL species	x1 =																						
FACW species	x2 =																						
FAC species	x3 =																						
FACU species	x4 =																						
UPL species	x5 =																						
Column Totals:	(A)	(B)																					
Prevalence Index = B/A =																							
= Total Cover																							
<u>Sapling/Shrub Stratum</u>																							
26.																							
27.																							
28.																							
29.																							
30.																							
= Total Cover																							
<u>Herb Stratum</u>																							
41. <i>Distichlis spicata</i>	60	Yes	FACW																				
42. <i>Bolboschoenus maritimus</i>	15	No	OBL																				
43. <i>Typha latifolia</i>	5	No	OBL																				
44. <i>Lolium multiflorum</i>	3	No	FAC																				
45. <i>Bromus diandrus</i>	1	No	NI																				
46. <i>Geranium molle</i>	1	No	NI																				
47.																							
48.																							
85 = Total Cover																							
<u>Woody Vine Stratum</u>																							
11.																							
12.																							
= Total Cover																							
% Bare Ground in Herb Stratum	15	% Cover of Biotic Crust		Hydrophytic Vegetation Present? Yes <input type="checkbox"/> <input checked="" type="checkbox"/> No <input type="checkbox"/>																			
Remarks:																							

SOIL

Sampling Point: P6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type ¹	Loc ²		
0-4	10 YR 3/1	98	7.5 YR 4/6	2	C	RC	Clay	
4-15	10 YR 5/3	52	7.5 YR 4/6	7	C	PL	Clay	
4-15	10 YR 3/1	40					Loamy Clay	
4-15	Gley1 4/5G	1						

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) **(LRR C)**
- 1 cm Muck (A9) **(LRR D)**
- 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)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Vernal Pools (F9)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) **(LRR C)**
- 2 cm Muck (A10) **(LRR B)**
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present?

Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1) **(Nonriverine)**
- Sediment Deposits (B2) **(Nonriverine)**
- Drift Deposits (B3) **(Nonriverine)**
- Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Salt Crust (B11)
- Biotic Crust (B12)
- 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)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Water Marks (B1) **(Riverine)**
- Sediment Deposits (B2) **(Riverine)**
- Drift Deposits (B3) **(Riverine)**
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Thin Muck Surface (C7)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes No Depth (inches):

Water Table Present? Yes No Depth (inches):

Saturation Present? (includes capillary fringe) Yes No Depth (inches):

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Hercules Intermodal Transit Center City/County: Hercules, Contra Costa County Sampling Date: 12/08/2009
 Applicant/Owner: City of Hercules State: CA Sampling Point: P7
 Investigator(s): Sean Marquis, Mark Ashenfelter Section, Township, Range:
 Landform (hillslope, terrace, etc.): Lowland Local relief (concave, convex, none): Concave Slope (%): 5%
 Subregion (LRR): LRRRC Lat: 38° 01' 41.42" N Long: 122° 16' 36.92" W Datum: WGS 84
 Soil Map Unit Name: Clear Lake Clay NWI classification: U
 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 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 <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampling Area within a Wetland?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>			
Remarks:					

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:		
25.				Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
26.				Total Number of Dominant Species Across All Strata:	2	(B)
27.				Percent of Dominant Species That Are OBL, FACW, or FAC:	100	(A/B)
28.			= Total Cover			
<u>Sapling/Shrub Stratum</u>				Prevalence Index worksheet:		
31.				<u>Total %Cover of :</u>	<u>Multiply by:</u>	
32.				OBL species	x1 =	
33.				FACW species	x2 =	
34.				FAC species	x3 =	
35.				FACU species	x4 =	
			= Total Cover	UPL species	x5 =	
<u>Herb Stratum</u>				Column Totals:	(A)	(B)
49. <i>Sarcocornia pacifica</i>	20	Yes	OBL	Prevalence Index = B/A =		
50. <i>Distichlis spicata</i>	20	Yes	FACW			
51. <i>Bolboschoenus maritimus</i>	10	No	OBL			
52. <i>Leymus triticoides</i>	7	No	FAC			
53.				Hydrophytic Vegetation Indicators:		
54.				X Dominance Test is >50%		
55.				Prevalence Index is ≤3.0 ¹		
56.				Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)		
			57	Problematic Hydrophytic Vegetation ¹ (Explain)		
			= Total Cover	¹ Indicators of hydric soil and wetland hydrology must be present.		
<u>Woody Vine Stratum</u>				Hydrophytic Vegetation Present?		
13.						
14.				<input type="checkbox"/>		
57 = Total Cover						
% Bare Ground in Herb Stratum	43	% Cover of Biotic Crust				
Remarks:						

SOIL

Sampling Point: P7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type ¹	Loc ²		
0-3	10 YR 4/2	100					Loamy clay	
3-11	Gley1 2.5/N	99					Loamy clay	
3-11	Gley1 4/5GY	1					Loamy clay	

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) **(LRR C)**
- 1 cm Muck (A9) **(LRR D)**
- 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)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Vernal Pools (F9)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) **(LRR C)**
- 2 cm Muck (A10) **(LRR B)**
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present?

Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1) **(Nonriverine)**
- Sediment Deposits (B2) **(Nonriverine)**
- Drift Deposits (B3) **(Nonriverine)**
- Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Salt Crust (B11)
- Biotic Crust (B12)
- 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)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Water Marks (B1) **(Riverine)**
- Sediment Deposits (B2) **(Riverine)**
- Drift Deposits (B3) **(Riverine)**
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Thin Muck Surface (C7)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes No Depth (inches):
 Water Table Present? Yes No Depth (inches): 13
 Saturation Present? (includes capillary fringe) Yes No Depth (inches): 7

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Hercules Intermodal Transit Center City/County: Hercules, Contra Costa County Sampling Date: 12/08/2009
 Applicant/Owner: City of Hercules State: CA Sampling Point: P8
 Investigator(s): Sean Marquis, Mark Ashenfelter Section, Township, Range:
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 5%
 Subregion (LRR): LRRRC Lat: 38° 01' 41.29" N Long: 122° 16' 36.67" W Datum: WGS 84
 Soil Map Unit Name: Clear Lake Clay NWI classification: U
 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 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 <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Is the Sampling Area within a Wetland?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input type="checkbox"/>		Yes <input type="checkbox"/>	No <input type="checkbox"/>
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input type="checkbox"/>		Yes <input type="checkbox"/>	No <input type="checkbox"/>
Remarks:					

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
29.				Number of Dominant Species That Are OBL, FACW, or FAC:	0 (A)
30.				Total Number of Dominant Species Across All Strata:	2 (B)
31.				Percent of Dominant Species That Are OBL, FACW, or FAC:	0 (A/B)
32.				= Total Cover	
<u>Sapling/Shrub Stratum</u>				Prevalence Index worksheet:	
36. Baccharis pilularis	2	Yes	NI	<u>Total %Cover of :</u>	<u>Multiply by:</u>
37.				OBL species	x1 =
38.				FACW species	x2 = 8
39.				FAC species	x3 = 27
40.				FACU species	x4 =
= Total Cover				UPL species	x5 = 115
<u>Herb Stratum</u>				Column Totals:	36 (A) 150 (B)
57. Bromus diandrus	18	Yes	NI	Prevalence Index = B/A = 4.2	
58. Lolium multiflorum	5	No	FAC	Hydrophytic Vegetation Indicators:	
59. Leymus triticoides	4	No	FAC	Dominance Test is >50%	
60. Frankenia salina	4	No	FACW	Prevalence Index is ≤3.0 ¹	
61. Carduus pycnocephalus	3	No	NI	Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
62.				Problematic Hydrophytic Vegetation ¹ (Explain)	
63.				¹ Indicators of hydric soil and wetland hydrology must be present.	
64.					
= Total Cover					
<u>Woody Vine Stratum</u>				Hydrophytic Vegetation Present?	
15.					
16.				No	<input checked="" type="checkbox"/>
= Total Cover					
% Bare Ground in Herb Stratum	64	% Cover of Biotic Crust			
Remarks:					

SOIL

Sampling Point: P8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type ¹	Loc ²		
0-12	10 YR 4/3	100					Sand	

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)			

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present): Type: Depth (Inches):	Hydric Soils Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (any one indicator is sufficient)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water Marks (B1) (Riverine)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Biotic Crust (B12)	
<input type="checkbox"/> Aquatic Invertebrates (B13)	
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	
<input type="checkbox"/> Other (Explain in Remarks)	

Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): Water Table Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches):	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Hercules Intermodal Transit Center City/County: Hercules, Contra Costa County Sampling Date: 12/08/2009
 Applicant/Owner: City of Hercules State: CA Sampling Point: P9
 Investigator(s): Sean Marquis, Mark Ashenfelter Section, Township, Range:
 Landform (hillslope, terrace, etc.): Lowland Local relief (concave, convex, none): Concave Slope (%): <5%
 Subregion (LRR): LRRRC Lat: 38° 01' 40.68" N Long: 122° 16' 37.23" W Datum: WGS 84
 Soil Map Unit Name: Clear Lake Clay NWI classification: U
 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 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 <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampling Area within a Wetland?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>			
Remarks:					

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
33. Salix lasiolepis	30	Yes	FACW	Number of Dominant Species That Are OBL, FACW, or FAC:	3 (A)
34.				Total Number of Dominant Species Across All Strata:	3 (B)
35.				Percent of Dominant Species That Are OBL, FACW, or FAC:	100 (A/B)
36.					
= Total Cover					
Sapling/Shrub Stratum				Prevalence Index worksheet:	
41.				<u>Total %Cover of :</u>	<u>Multiply by:</u>
42.				OBL species	x1 =
43.				FACW species	x2 =
44.				FAC species	x3 =
45.				FACU species	x4 =
= Total Cover				UPL species	x5 =
Herb Stratum				Column Totals:	(A) (B)
65. Leymus triticoides	10	Yes	FAC	Prevalence Index = B/A =	
66. Cyperus eragrostis	2	No	FACW		
67. Avena fatua	1	No	NI		
68.					
69.					
70.					
71.					
72.					
= Total Cover					
Woody Vine Stratum				Hydrophytic Vegetation Indicators: X Dominance Test is >50% Prevalence Index is ≤3.0 ¹ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation ¹ (Explain)	
17. Rubus armeniacus	2	Yes	FACW		
18.					
= Total Cover					
% Bare Ground in Herb Stratum 87		% Cover of Biotic Crust		Hydrophytic Vegetation Present?	
				Yes	<input checked="" type="checkbox"/>
				No	<input type="checkbox"/>
Remarks:					

SOIL

Sampling Point: P9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type ¹	Loc ²		
0-3	10 YR 2/1	100					Loam	
3-12	2.5 Y 4/2	97	7.5 YR 4/6	3	C	PL	Sandy clay	

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils³:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)		
<input checked="" type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)			

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present): Type: Depth (Inches):	Hydric Soils Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (any one indicator is sufficient)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water Marks (B1) (Riverine)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input checked="" type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Salt Crust (B11)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Biotic Crust (B12)	
<input type="checkbox"/> Aquatic Invertebrates (B13)	
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	
<input type="checkbox"/> Other (Explain in Remarks)	

Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): 3 Saturation Present? (includes capillary fringe) Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): 3	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Hercules Intermodal Transit Center City/County: Hercules, Contra Costa County Sampling Date: 12/08/2009
 Applicant/Owner: City of Hercules State: CA Sampling Point: P10
 Investigator(s): Sean Marquis, Mark Ashenfelter Section, Township, Range:
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): <5%
 Subregion (LRR): LRRRC Lat: 38° 01' 40.72" N Long: 122° 16' 37.33" W Datum: WGS 84
 Soil Map Unit Name: Clear Lake Clay NWI classification: U
 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 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 <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Is the Sampling Area within a Wetland?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Remarks:					

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:					
37. Salix lasiolepis	8	Yes	FACW	Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)			
38.				Total Number of Dominant Species Across All Strata:	4	(B)			
39.				Percent of Dominant Species That Are OBL, FACW, or FAC:	50	(A/B)			
40.	8	= Total Cover							
<u>Sapling/Shrub Stratum</u>				Prevalence Index worksheet:					
46. Baccharis pilularis	15	Yes	NI	<u>Total %Cover of :</u>		<u>Multiply by:</u>			
47.				OBL species	x1 =				
48.				FACW species	8	x2 = 16			
49.				FAC species	16	x3 = 48			
50.				FACU species	3	x4 = 12			
	15	= Total Cover		UPL species	38	x5 = 190			
<u>Herb Stratum</u>				Column Totals:	65 (A)	266 (B)			
73. Leymus triticoides	15	Yes	FAC	Prevalence Index = B/A = 4.1					
74. Avena fatua	10	Yes	NI	Hydrophytic Vegetation Indicators:					
75. Bromus diandrus	5	No	NI	Dominance Test is >50%					
76. Vicia villosa	5	No	NI	Prevalence Index is ≤3.0 ¹					
77. Bromus hordeaceus	3	No	FACU	Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)					
78. Geranium molle	3	No	NI	Problematic Hydrophytic Vegetation ¹ (Explain)					
79. Lolium multiflorum	1	No	FAC						
80.									
	42	= Total Cover							
<u>Woody Vine Stratum</u>				¹ Indicators of hydric soil and wetland hydrology must be present.					
19.									
20.				Hydrophytic Vegetation Present?					
							Yes	<input type="checkbox"/>	No
= Total Cover				<input checked="" type="checkbox"/>					
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%; border-right: 1px solid black;">% Bare Ground in Herb Stratum</td> <td style="width: 30%; border-right: 1px solid black;">% Cover of Biotic Crust</td> <td style="width: 40%;"></td> </tr> </table>				% Bare Ground in Herb Stratum	% Cover of Biotic Crust				
% Bare Ground in Herb Stratum	% Cover of Biotic Crust								
Remarks:									

SOIL

Sampling Point: P10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type ¹	Loc ²		
0-13	2.5 Y 5/3	90	10 YR 4/6	1	C	PL	Loamy clay	
0-13	10 YR 2/1	9					Loamy clay	

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) **(LRR C)**
- 1 cm Muck (A9) **(LRR D)**
- 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)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Vernal Pools (F9)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) **(LRR C)**
- 2 cm Muck (A10) **(LRR B)**
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present?

Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1) **(Nonriverine)**
- Sediment Deposits (B2) **(Nonriverine)**
- Drift Deposits (B3) **(Nonriverine)**
- Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)

- Salt Crust (B11)
- Biotic Crust (B12)
- 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)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Water Marks (B1) **(Riverine)**
- Sediment Deposits (B2) **(Riverine)**
- Drift Deposits (B3) **(Riverine)**
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Thin Muck Surface (C7)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes No Depth (inches):

Water Table Present? Yes No Depth (inches):

Saturation Present? (includes capillary fringe) Yes No Depth (inches):

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Hercules Intermodal Transit Center City/County: Hercules, Contra Costa County Sampling Date: 12/08/2009
 Applicant/Owner: City of Hercules State: CA Sampling Point: P11
 Investigator(s): Sean Marquis, Mark Ashenfelter Section, Township, Range:
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 5%
 Subregion (LRR): LRRC Lat: 38° 01' 37.85" N Long: 122° 16' 40.39" W Datum: WGS 84
 Soil Map Unit Name: Tierra Loam, 10-30% Slopes NWI classification: U
 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 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 <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampling Area within a Wetland?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Remarks:					

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:																
41.				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)																
42.																				
43.																				
44.			= Total Cover																	
<u>Sapling/Shrub Stratum</u>				Prevalence Index worksheet: <table style="width: 100%; border: none;"> <tr> <td style="text-align: center;"><u>Total %Cover of :</u></td> <td style="text-align: center;"><u>Multiply by:</u></td> </tr> <tr> <td>OBL species</td> <td>x1 =</td> </tr> <tr> <td>FACW species</td> <td>x2 =</td> </tr> <tr> <td>FAC species</td> <td>x3 =</td> </tr> <tr> <td>FACU species</td> <td>x4 =</td> </tr> <tr> <td>UPL species</td> <td>x5 =</td> </tr> <tr> <td>Column Totals:</td> <td style="text-align: right;">(A) (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A =</td> </tr> </table>	<u>Total %Cover of :</u>	<u>Multiply by:</u>	OBL species	x1 =	FACW species	x2 =	FAC species	x3 =	FACU species	x4 =	UPL species	x5 =	Column Totals:	(A) (B)	Prevalence Index = B/A =	
<u>Total %Cover of :</u>	<u>Multiply by:</u>																			
OBL species	x1 =																			
FACW species	x2 =																			
FAC species	x3 =																			
FACU species	x4 =																			
UPL species	x5 =																			
Column Totals:	(A) (B)																			
Prevalence Index = B/A =																				
51.																				
52.																				
53.																				
54.																				
55.			= Total Cover																	
<u>Herb Stratum</u>				Hydrophytic Vegetation Indicators: X Dominance Test is >50% Prevalence Index is ≤3.0 ¹ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present.																
81. Leymus triticoides	60	Yes	FAC																	
82. Avena fatua	7	No	NI																	
83. Vicia villosa	5	No	NI																	
84. Geranium molle	4	No	NI																	
85.																				
86.																				
87.																				
88.																				
	76		= Total Cover																	
<u>Woody Vine Stratum</u>																				
21.																				
22.																				
			= Total Cover																	
% Bare Ground in Herb Stratum		% Cover of Biotic Crust		Hydrophytic Vegetation Present? <table style="width: 100%; border: none;"> <tr> <td style="width: 25%;">Yes</td> <td style="width: 25%; text-align: center;"><input checked="" type="checkbox"/></td> <td style="width: 25%;">No</td> <td style="width: 25%; text-align: center;"><input type="checkbox"/></td> </tr> </table>	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>												
Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>																	
Remarks: 25																				

SOIL

Sampling Point: P11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type ¹	Loc ²		
0-4	10 YR 3/2	100					Clay loam	
4-7	2.5 Y 4/2	99	7.5 YR 4/6	1	C	PL	Clay loam	
7-14	10 YR 2/1	100					Clay loam	

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) **(LRR C)**
- 1 cm Muck (A9) **(LRR D)**
- 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)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Vernal Pools (F9)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) **(LRR C)**
- 2 cm Muck (A10) **(LRR B)**
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present?

Yes No

Remarks: Dark soil color typical of soil series (Tierra Loam), indicating dark parent material, rather than depleted matrix

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1) **(Nonriverine)**
- Sediment Deposits (B2) **(Nonriverine)**
- Drift Deposits (B3) **(Nonriverine)**
- Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)

- Salt Crust (B11)
- Biotic Crust (B12)
- 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)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Water Marks (B1) **(Riverine)**
- Sediment Deposits (B2) **(Riverine)**
- Drift Deposits (B3) **(Riverine)**
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Thin Muck Surface (C7)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes No Depth (inches):

Water Table Present? Yes No Depth (inches):

Saturation Present? (includes capillary fringe) Yes No Depth (inches):

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Hercules Intermodal Transit Center City/County: Hercules, Contra Costa County Sampling Date: 12/08/2009
 Applicant/Owner: City of Hercules State: CA Sampling Point: P12
 Investigator(s): Sean Marquis, Mark Ashenfelter Section, Township, Range:
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): <5%
 Subregion (LRR): LRRC Lat: 38° 01' 37.89" N Long: 122° 16' 40.93" W Datum: WGS 84
 Soil Map Unit Name: Tierra Loam, 10-30% Slopes NWI classification: U
 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 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 <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Is the Sampling Area within a Wetland?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Remarks:					

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
45.				Number of Dominant Species That Are OBL, FACW, or FAC:	1 (A)
46.				Total Number of Dominant Species Across All Strata:	2 (B)
47.				Percent of Dominant Species That Are OBL, FACW, or FAC:	50 (A/B)
48.			= Total Cover		
<u>Sapling/Shrub Stratum</u>				Prevalence Index worksheet:	
56.				<u>Total %Cover of :</u>	<u>Multiply by:</u>
57.				OBL species	x1 =
58.				FACW species	x2 =
59.				FAC species	x3 = 60
60.			= Total Cover	FACU species	x4 =
<u>Herb Stratum</u>				UPL species	x5 = 270
89. Avena fatua	40	Yes	NI	Column Totals:	74 (A) 330 (B)
90. Lolium multiflorum	20	Yes	FAC	Prevalence Index = B/A = 4.5	
91. Vicia villosa	10	No	NI	Hydrophytic Vegetation Indicators:	
92. Geranium molle	4	No	NI		
93.					
94.					
95.					
96.					
	74		= Total Cover		
<u>Woody Vine Stratum</u>				¹ Indicators of hydric soil and wetland hydrology must be present.	
23.					
24.			= Total Cover		
% Bare Ground in Herb Stratum	30	% Cover of Biotic Crust		Hydrophytic Vegetation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks:					

SOIL

Sampling Point: P12

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type ¹	Loc ²		
0-5	10 YR 3/3	100					Loam	
5-13	10 YR 4/3	65					Silty sand	
5-13	10 YR 4/6	35					Silty sand	

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)				Indicators for Problematic Hydric Soils³:	
<input type="checkbox"/>	Histosol (A1)	<input type="checkbox"/>	Sandy Redox (S5)	<input type="checkbox"/>	1 cm Muck (A9) (LRR C)
<input type="checkbox"/>	Histic Epipedon (A2)	<input type="checkbox"/>	Stripped Matrix (S6)	<input type="checkbox"/>	2 cm Muck (A10) (LRR B)
<input type="checkbox"/>	Black Histic (A3)	<input type="checkbox"/>	Loamy Mucky Mineral (F1)	<input type="checkbox"/>	Reduced Vertic (F18)
<input type="checkbox"/>	Hydrogen Sulfide (A4)	<input type="checkbox"/>	Loamy Gleyed Matrix (F2)	<input type="checkbox"/>	Red Parent Material (TF2)
<input type="checkbox"/>	Stratified Layers (A5) (LRR C)	<input type="checkbox"/>	Depleted Matrix (F3)	<input type="checkbox"/>	Other (Explain in Remarks)
<input type="checkbox"/>	1 cm Muck (A9) (LRR D)	<input type="checkbox"/>	Redox Dark Surface (F6)		
<input type="checkbox"/>	Depleted Below Dark Surface (A11)	<input type="checkbox"/>	Depleted Dark Surface (F7)		
<input type="checkbox"/>	Thick Dark Surface (A12)	<input type="checkbox"/>	Redox Depressions (F8)		
<input type="checkbox"/>	Sandy Mucky Mineral (S1)	<input type="checkbox"/>	Vernal Pools (F9)		
<input type="checkbox"/>	Sandy Gleyed Matrix (S4)				

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present): Type: Depth (Inches):	Hydric Soils Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (any one indicator is sufficient)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water Marks (B1) (Riverine)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Biotic Crust (B12)	
<input type="checkbox"/> Aquatic Invertebrates (B13)	
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	
<input type="checkbox"/> Other (Explain in Remarks)	

Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): Water Table Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches):	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Hercules Intermodal Transit Center City/County: Hercules, Contra Costa County Sampling Date: 12/29/2009
 Applicant/Owner: City of Hercules State: CA Sampling Point: P13
 Investigator(s): Sean Marquis, Stephen Stringer Section, Township, Range:
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): None Slope (%): <1%
 Subregion (LRR): LRRRC Lat: 38.01979° N Long: 122.28392° W Datum: WGS 84
 Soil Map Unit Name: Clear Lake Clay NWI classification: U
 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 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 <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampling Area within a Wetland?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Remarks:					

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
49.				Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A) Total Number of Dominant Species Across All Strata: 2 (B) Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)
50.				
51.				
52.				
= Total Cover				Prevalence Index worksheet: <u>Total %Cover of :</u> <u>Multiply by:</u> OBL species x1 = FACW species x2 = FAC species x3 = FACU species x4 = UPL species x5 = Column Totals: (A) (B) Prevalence Index = B/A =
<u>Sapling/Shrub Stratum</u>				
61.				
62.				
63.				
64.				
65.				
= Total Cover				
<u>Herb Stratum</u>				Hydrophytic Vegetation Indicators: X Dominance Test is >50% Prevalence Index is ≤3.0 ¹ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation ¹ (Explain)
97. Conium maculatum	25	Yes	FACW	
98. Lepidium latifolium	12	Yes	FACW	
99. Avena fatua	3	No	NI	
100. Lolium multiflorum	2	No	FAC	
101. Picris echioides	1	No	FAC	
102.				
103.				
104.				
43 = Total Cover				
<u>Woody Vine Stratum</u>				
25.				
26.				
= Total Cover				
% Bare Ground in Herb Stratum	60	% Cover of Biotic Crust		Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks:				

SOIL

Sampling Point: P13

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type ¹	Loc ²		
1-12	10 YR 4/2	73	7.5 YR 4/6	1	C	M	Loamy Clay	
	10 YR 2/1	20					Loamy Clay	
	2.5 Y 5/2	6					Loamy Clay	

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)				Indicators for Problematic Hydric Soils³:	
<input type="checkbox"/>	Histosol (A1)	<input type="checkbox"/>	Sandy Redox (S5)	<input type="checkbox"/>	1 cm Muck (A9) (LRR C)
<input type="checkbox"/>	Histic Epipedon (A2)	<input type="checkbox"/>	Stripped Matrix (S6)	<input type="checkbox"/>	2 cm Muck (A10) (LRR B)
<input type="checkbox"/>	Black Histic (A3)	<input type="checkbox"/>	Loamy Mucky Mineral (F1)	<input type="checkbox"/>	Reduced Vertic (F18)
<input type="checkbox"/>	Hydrogen Sulfide (A4)	<input type="checkbox"/>	Loamy Gleyed Matrix (F2)	<input type="checkbox"/>	Red Parent Material (TF2)
<input type="checkbox"/>	Stratified Layers (A5) (LRR C)	<input type="checkbox"/>	Depleted Matrix (F3)	<input type="checkbox"/>	Other (Explain in Remarks)
<input type="checkbox"/>	1 cm Muck (A9) (LRR D)	<input type="checkbox"/>	Redox Dark Surface (F6)		
<input type="checkbox"/>	Depleted Below Dark Surface (A11)	<input type="checkbox"/>	Depleted Dark Surface (F7)		
<input type="checkbox"/>	Thick Dark Surface (A12)	<input type="checkbox"/>	Redox Depressions (F8)		
<input type="checkbox"/>	Sandy Mucky Mineral (S1)	<input type="checkbox"/>	Vernal Pools (F9)		
<input type="checkbox"/>	Sandy Gleyed Matrix (S4)				

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):		Hydric Soils Present?	
Type:		Yes	<input type="checkbox"/>
Depth (Inches):		No	<input checked="" type="checkbox"/>
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (any one indicator is sufficient)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water Marks (B1) (Riverine)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Salt Crust (B11)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Biotic Crust (B12)	
<input type="checkbox"/> Aquatic Invertebrates (B13)	
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	
<input type="checkbox"/> Other (Explain in Remarks)	

Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	No	<input checked="" type="checkbox"/>
Saturation Present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Hercules Intermodal Transit Center City/County: Hercules, Contra Costa County Sampling Date: 12/29/2009
 Applicant/Owner: City of Hercules State: CA Sampling Point: P14
 Investigator(s): Sean Marquis, Stephen Stringer Section, Township, Range:
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): flat Slope (%): <1%
 Subregion (LRR): LRRRC Lat: 38.01969° N Long: 122.28323° W Datum: WGS 84
 Soil Map Unit Name: Clear Lake Clay NWI classification: U
 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 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 <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampling Area within a Wetland?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Remarks:					

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
53.				Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A) Total Number of Dominant Species Across All Strata: 2 (B) Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)
54.				
55.				
56.				
= Total Cover				Prevalence Index worksheet: <u>Total %Cover of :</u> <u>Multiply by:</u> OBL species x1 = FACW species x2 = FAC species x3 = FACU species x4 = UPL species x5 = Column Totals: (A) (B) Prevalence Index = B/A =
<u>Sapling/Shrub Stratum</u>				
66.				
67.				
68.				
69.				
70.				
= Total Cover				
<u>Herb Stratum</u>				Hydrophytic Vegetation Indicators: X Dominance Test is >50% Prevalence Index is ≤3.0 ¹ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present.
105.	70	Yes	FACW	
106.	20	Yes	FAC	
107.	7	No	NI	
108.	2	No	FAC	
109.				
110.				
111.				
112.				
99 = Total Cover				
<u>Woody Vine Stratum</u>				
27.				
28.				
= Total Cover				
% Bare Ground in Herb Stratum	10	% Cover of Biotic Crust		Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks:				

SOIL

Sampling Point: P14

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type ¹	Loc ²		
0-3	10 YR 3/2	94	2.5 Y 4/3	5	C	M	Clay loam	
			7.5 YR 5/8	1	C	M		
3-7	5 Y 8/1	98	5 Y 8/8	2	C	M	Sandy clay loam	Fill
7-11	2.5 Y 5/4	100					Sandy loam	Fill
11-14	10 YR 3/1	99	7.5 YR 4/6	1	C	M	Silty Clay	

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils³:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)			

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present): Type: Depth (Inches):	Hydric Soils Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (any one indicator is sufficient)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Water Marks (B1) (Riverine)
	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
	<input type="checkbox"/> Drainage Patterns (B10)
	<input type="checkbox"/> Dry-Season Water Table (C2)
	<input type="checkbox"/> Thin Muck Surface (C7)
	<input type="checkbox"/> Crayfish Burrows (C8)
	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
	<input type="checkbox"/> Shallow Aquitard (D3)
	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)

Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches):	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Hercules Intermodal Transit Center City/County: Hercules, Contra Costa County Sampling Date: 12/29/2009
 Applicant/Owner: City of Hercules State: CA Sampling Point: P15
 Investigator(s): Sean Marquis, Stephen Stringer Section, Township, Range:
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): <5%
 Subregion (LRR): LRRRC Lat: 38.02350° N Long: 122.2808° W Datum: WGS 84
 Soil Map Unit Name: Tierra Loam, 15 to 30 Percent Slopes NWI classification: U
 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 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 <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampling Area within a Wetland?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>			
Remarks:					

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:							
57.				Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)					
58.				Total Number of Dominant Species Across All Strata:	2	(B)					
59.				Percent of Dominant Species That Are OBL, FACW, or FAC:	100	(A/B)					
60.		= Total Cover									
<u>Sapling/Shrub Stratum</u>				Prevalence Index worksheet:							
71.				<u>Total %Cover of :</u>	<u>Multiply by:</u>						
72.				OBL species	x1 =						
73.				FACW species	x2 =						
74.				FAC species	x3 =						
75.				FACU species	x4 =						
		= Total Cover		UPL species	x5 =						
<u>Herb Stratum</u>				Column Totals:	(A)	(B)					
113. Typha latifolia	40	Yes	OBL	Prevalence Index = B/A =							
114. Lemna minor	15	Yes	OBL								
115. Rumex crispus	1	No	FACW								
116.				Hydrophytic Vegetation Indicators:							
117.				X Dominance Test is >50%							
118.				Prevalence Index is ≤3.0 ¹							
119.				Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)							
120.				Problematic Hydrophytic Vegetation ¹ (Explain)							
	56	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present.							
<u>Woody Vine Stratum</u>				<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Hydrophytic Vegetation Present?</td> <td style="width: 10%;">Yes</td> <td style="width: 10%;">No</td> <td style="width: 10%;"><input checked="" type="checkbox"/></td> <td style="width: 10%;"><input type="checkbox"/></td> </tr> </table>			Hydrophytic Vegetation Present?	Yes	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Hydrophytic Vegetation Present?	Yes	No	<input checked="" type="checkbox"/>				<input type="checkbox"/>				
29.											
30.											
% Bare Ground in Herb Stratum	55	% Cover of Biotic Crust									
Remarks:											

SOIL

Sampling Point: P15

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type ¹	Loc ²		

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) **(LRR C)**
- 1 cm Muck (A9) **(LRR D)**
- 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)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Vernal Pools (F9)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) **(LRR C)**
- 2 cm Muck (A10) **(LRR B)**
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present?

Yes No

Remarks: Based on similarity to P4, hydric soils are assumed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1) **(Nonriverine)**
- Sediment Deposits (B2) **(Nonriverine)**
- Drift Deposits (B3) **(Nonriverine)**
- Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Salt Crust (B11)
- Biotic Crust (B12)
- 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)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Water Marks (B1) **(Riverine)**
- Sediment Deposits (B2) **(Riverine)**
- Drift Deposits (B3) **(Riverine)**
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Thin Muck Surface (C7)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes No Depth (inches): <1
 Water Table Present? Yes No Depth (inches): 0
 Saturation Present? (includes capillary fringe) Yes No Depth (inches): 0

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Hercules Intermodal Transit Center City/County: Hercules, Contra Costa County Sampling Date: 3/31/2010
 Applicant/Owner: City of Hercules State: CA Sampling Point: 16
 Investigator(s): LaTisha Burnaugh, Stephen Stringer Section, Township, Range:
 Landform (hillslope, terrace, etc.): Small mound Local relief (concave, convex, none): concave Slope (%): <5%
 Subregion (LRR): LRRRC Lat: 38° 01' 10.30" N Long: 122° 16' 56.21" W Datum: WGS 84
 Soil Map Unit Name: Clear Lake Clay NWI classification: U
 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 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 <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Is the Sampling Area within a Wetland?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		Yes <input type="checkbox"/>	No <input type="checkbox"/>
Remarks: Adjacent surcharge pile likely affecting hydrology due to wicking activity causing discharge of groundwater into the area. Soil was previously disturbed in this area during past site restoration/remediation activities.					

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:																
61. none				Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A) Total Number of Dominant Species Across All Strata: 3 (B) Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)																
62.																				
63.																				
64.			= Total Cover																	
<u>Sapling/Shrub Stratum</u>				Prevalence Index worksheet: <table style="width: 100%; border: none;"> <tr> <td style="text-align: center;"><u>Total %Cover of :</u></td> <td style="text-align: center;"><u>Multiply by:</u></td> </tr> <tr> <td>OBL species</td> <td>x1 =</td> </tr> <tr> <td>FACW species</td> <td>x2 =</td> </tr> <tr> <td>FAC species</td> <td>x3 =</td> </tr> <tr> <td>FACU species</td> <td>x4 =</td> </tr> <tr> <td>UPL species</td> <td>x5 =</td> </tr> <tr> <td>Column Totals:</td> <td>(A) (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A =</td> </tr> </table>	<u>Total %Cover of :</u>	<u>Multiply by:</u>	OBL species	x1 =	FACW species	x2 =	FAC species	x3 =	FACU species	x4 =	UPL species	x5 =	Column Totals:	(A) (B)	Prevalence Index = B/A =	
<u>Total %Cover of :</u>	<u>Multiply by:</u>																			
OBL species	x1 =																			
FACW species	x2 =																			
FAC species	x3 =																			
FACU species	x4 =																			
UPL species	x5 =																			
Column Totals:	(A) (B)																			
Prevalence Index = B/A =																				
76. none																				
77.																				
78.																				
79.																				
80.			= Total Cover																	
<u>Herb Stratum</u>				Hydrophytic Vegetation Indicators: Dominance Test is >50% Prevalence Index is ≤3.0 ¹ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present.																
121. Bromus diandrus	30	Y	NI																	
122. Avena fatua	30	Y	NI																	
123. Bromus hordeaceus	30	Y	FACU																	
124. Geranium dissectum	5	N	NI																	
125.																				
126.																				
127.																				
128.																				
	95		= Total Cover																	
<u>Woody Vine Stratum</u>																				
31.																				
32.																				
			= Total Cover																	
% Bare Ground in Herb Stratum	5	% Cover of Biotic Crust	0																	
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Hydrophytic Vegetation Present?</td> <td style="width: 10%;">Yes</td> <td style="width: 10%;">No</td> <td style="width: 10%;">Yes</td> <td style="width: 10%;">No</td> <td style="width: 10%;">Yes</td> <td style="width: 10%;">No</td> </tr> <tr> <td></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> </table>				Hydrophytic Vegetation Present?	Yes	No	Yes	No	Yes	No		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
Hydrophytic Vegetation Present?	Yes	No	Yes	No	Yes	No														
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>														
Remarks: Area of high ground adjacent to the North Channel																				

SOIL

Sampling Point:

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type ¹	Loc ²		
0-7	7.5YR2.5/1	75	5YR5/6	5	C	M	Clay loam	
	7.5YR2.5/2	20					Clay loam	
7-16	7.5YR2.5/1	50	5YR5/6	5	C	M	Clay loam	
	10YR6/2	45					Clay loam	

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present?

Yes

No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

Secondary Indicators (2 or more required)

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Water Marks (B1) (Riverine)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Shallow Aquitard (D3)
		<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes No Depth (inches):

Water Table Present? Yes No Depth (inches):

Saturation Present? (includes capillary fringe) Yes No Depth (inches):

Wetland Hydrology Present?

Yes

No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Hercules Intermodal Transit Center City/County: Hercules, Contra Costa County Sampling Date: 03/31/2010
 Applicant/Owner: City of Hercules State: CA Sampling Point: 17
 Investigator(s): LaTisha Burnaugh, Stephen Stringer Section, Township, Range:
 Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): concave Slope (%): <5%
 Subregion (LRR): LRRRC Lat: Long: Datum: WGS 84
 Soil Map Unit Name: Clear Lake Clay NWI classification: U
 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 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 <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampling Area within a Wetland?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>			
Remarks: Adjacent surcharge pile likely affecting hydrology due to wicking activity causing discharge of groundwater into the area. Soil was previously disturbed in this area during past site restoration/remediation activities.					

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:																
65.				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)																
66.																				
67.																				
68.			= Total Cover																	
<u>Sapling/Shrub Stratum</u>				Prevalence Index worksheet: <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;"><u>Total %Cover of :</u></td> <td style="text-align: center;"><u>Multiply by:</u></td> </tr> <tr> <td>OBL species</td> <td style="text-align: right;">x1 =</td> </tr> <tr> <td>FACW species</td> <td style="text-align: right;">x2 =</td> </tr> <tr> <td>FAC species</td> <td style="text-align: right;">x3 =</td> </tr> <tr> <td>FACU species</td> <td style="text-align: right;">x4 =</td> </tr> <tr> <td>UPL species</td> <td style="text-align: right;">x5 =</td> </tr> <tr> <td>Column Totals:</td> <td style="text-align: right;">(A) (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A =</td> </tr> </table>	<u>Total %Cover of :</u>	<u>Multiply by:</u>	OBL species	x1 =	FACW species	x2 =	FAC species	x3 =	FACU species	x4 =	UPL species	x5 =	Column Totals:	(A) (B)	Prevalence Index = B/A =	
<u>Total %Cover of :</u>	<u>Multiply by:</u>																			
OBL species	x1 =																			
FACW species	x2 =																			
FAC species	x3 =																			
FACU species	x4 =																			
UPL species	x5 =																			
Column Totals:	(A) (B)																			
Prevalence Index = B/A =																				
81.																				
82.																				
83.																				
84.																				
85.			= Total Cover																	
<u>Herb Stratum</u>				Hydrophytic Vegetation Indicators: Dominance Test is >50% Prevalence Index is ≤3.0 ¹ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present.																
129.	95	Y	FACW																	
130.	2	N	NI																	
131.	1	N	NI																	
132.																				
133.																				
134.																				
135.																				
136.																				
	98		= Total Cover																	
<u>Woody Vine Stratum</u>																				
33.																				
34.																				
			= Total Cover																	
% Bare Ground in Herb Stratum	2	% Cover of Biotic Crust																		
Remarks:				Hydrophytic Vegetation Present? Yes <input type="checkbox"/> <input checked="" type="checkbox"/> No <input type="checkbox"/>																

SOIL

Sampling Point: P17

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type ¹	Loc ²		
0-16	7.5YR2.5/1	70	5YR5/6	10	C	M	Clay loam	
	10YR6/2	20					Clay loam	

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)				Indicators for Problematic Hydric Soils³:	
<input type="checkbox"/>	Histosol (A1)	<input type="checkbox"/>	Sandy Redox (S5)	<input type="checkbox"/>	1 cm Muck (A9) (LRR C)
<input type="checkbox"/>	Histic Epipedon (A2)	<input type="checkbox"/>	Stripped Matrix (S6)	<input type="checkbox"/>	2 cm Muck (A10) (LRR B)
<input type="checkbox"/>	Black Histic (A3)	<input type="checkbox"/>	Loamy Mucky Mineral (F1)	<input type="checkbox"/>	Reduced Vertic (F18)
<input checked="" type="checkbox"/>	Hydrogen Sulfide (A4)	<input type="checkbox"/>	Loamy Gleyed Matrix (F2)	<input type="checkbox"/>	Red Parent Material (TF2)
<input type="checkbox"/>	Stratified Layers (A5) (LRR C)	<input type="checkbox"/>	Depleted Matrix (F3)	<input type="checkbox"/>	Other (Explain in Remarks)
<input type="checkbox"/>	1 cm Muck (A9) (LRR D)	<input type="checkbox"/>	Redox Dark Surface (F6)		
<input type="checkbox"/>	Depleted Below Dark Surface (A11)	<input type="checkbox"/>	Depleted Dark Surface (F7)		
<input type="checkbox"/>	Thick Dark Surface (A12)	<input type="checkbox"/>	Redox Depressions (F8)		
<input type="checkbox"/>	Sandy Mucky Mineral (S1)	<input type="checkbox"/>	Vernal Pools (F9)		
<input type="checkbox"/>	Sandy Gleyed Matrix (S4)				

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):		Hydric Soils Present?	
Type:		Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/>
Depth (Inches):			
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (any one indicator is sufficient)		Secondary Indicators (2 or more required)	
<input type="checkbox"/>	Surface Water (A1)	<input type="checkbox"/>	Water Marks (B1) (Riverine)
<input checked="" type="checkbox"/>	High Water Table (A2)	<input type="checkbox"/>	Sediment Deposits (B2) (Riverine)
<input checked="" type="checkbox"/>	Saturation (A3)	<input type="checkbox"/>	Drift Deposits (B3) (Riverine)
<input type="checkbox"/>	Water Marks (B1) (Nonriverine)	<input checked="" type="checkbox"/>	Hydrogen Sulfide Odor (C1)
<input type="checkbox"/>	Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/>	Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/>	Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/>	Presence of Reduced Iron (C4)
<input type="checkbox"/>	Surface Soil Cracks (B6)	<input type="checkbox"/>	Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/>	Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/>	Other (Explain in Remarks)
<input type="checkbox"/>	Water-Stained Leaves (B9)		
		<input type="checkbox"/>	Drainage Patterns (B10)
		<input type="checkbox"/>	Dry-Season Water Table (C2)
		<input type="checkbox"/>	Thin Muck Surface (C7)
		<input type="checkbox"/>	Crayfish Burrows (C8)
		<input type="checkbox"/>	Saturation Visible on Aerial Imagery (C9)
		<input type="checkbox"/>	Shallow Aquitard (D3)
		<input type="checkbox"/>	FAC-Neutral Test (D5)

Field Observations:			
Surface Water Present?	Yes <input type="checkbox"/> No <input type="checkbox"/>	Depth (inches):	
Water Table Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):	14
Saturation Present? (includes capillary fringe)	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):	12
Wetland Hydrology Present?		Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Hercules Intermodal Transit Center City/County: Hercules, Contra Costa County Sampling Date: 03/31/2010
 Applicant/Owner: City of Hercules State: CA Sampling Point: 18
 Investigator(s): LaTisha Burnaugh, Stephen Stringer Section, Township, Range: T2N, R4W, unsectionalized
 Landform (hillslope, terrace, etc.): Small mound Local relief (concave, convex, none): Concave Slope (%): <5%
 Subregion (LRR): LRRRC Lat: Long: Datum: WGS 84
 Soil Map Unit Name: Clear Lake Clay NWI classification: U
 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 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 <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Is the Sampling Area within a Wetland?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>			
Remarks: Adjacent surcharge pile likely affecting hydrology due to wicking activity causing discharge of groundwater into the area. Soil was previously disturbed in this area during past site restoration/remediation activities.					

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:																
69.				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: 0 (A/B)																
70.																				
71.																				
72.			= Total Cover																	
<u>Sapling/Shrub Stratum</u>				Prevalence Index worksheet: <table style="width: 100%; border: none;"> <tr> <td style="text-align: center;"><u>Total %Cover of :</u></td> <td style="text-align: center;"><u>Multiply by:</u></td> </tr> <tr> <td>OBL species</td> <td>x1 =</td> </tr> <tr> <td>FACW species</td> <td>x2 =</td> </tr> <tr> <td>FAC species</td> <td>x3 =</td> </tr> <tr> <td>FACU species</td> <td>x4 =</td> </tr> <tr> <td>UPL species</td> <td>x5 =</td> </tr> <tr> <td>Column Totals:</td> <td style="text-align: right;">(A) (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A =</td> </tr> </table>	<u>Total %Cover of :</u>	<u>Multiply by:</u>	OBL species	x1 =	FACW species	x2 =	FAC species	x3 =	FACU species	x4 =	UPL species	x5 =	Column Totals:	(A) (B)	Prevalence Index = B/A =	
<u>Total %Cover of :</u>	<u>Multiply by:</u>																			
OBL species	x1 =																			
FACW species	x2 =																			
FAC species	x3 =																			
FACU species	x4 =																			
UPL species	x5 =																			
Column Totals:	(A) (B)																			
Prevalence Index = B/A =																				
86.																				
87.																				
88.																				
89.																				
90.			= Total Cover																	
<u>Herb Stratum</u>				Hydrophytic Vegetation Indicators: Dominance Test is >50% Prevalence Index is ≤3.0 ¹ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present.																
137.	Bromus hordeaceus	80	Y FACU																	
138.	Geranium dissectum	3	N NI																	
139.	Picris echioides	3	N FAC																	
140.	Lepidium latifolium	3	N FACW																	
141.	Frankenia salina	3	N FACW																	
142.																				
143.																				
144.																				
		72	= Total Cover																	
<u>Woody Vine Stratum</u>																				
35.																				
36.																				
			= Total Cover																	
% Bare Ground in Herb Stratum 28		% Cover of Biotic Crust		Hydrophytic Vegetation Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>														
Remarks:																				

SOIL

Sampling Point: P18

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type ¹	Loc ²		
0-16	10YR2/1	40					Clay loam	
	7.5YR2.5/1	60					Clay loam	

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)				Indicators for Problematic Hydric Soils³:	
<input type="checkbox"/>	Histosol (A1)	<input type="checkbox"/>	Sandy Redox (S5)	<input type="checkbox"/>	1 cm Muck (A9) (LRR C)
<input type="checkbox"/>	Histic Epipedon (A2)	<input type="checkbox"/>	Stripped Matrix (S6)	<input type="checkbox"/>	2 cm Muck (A10) (LRR B)
<input type="checkbox"/>	Black Histic (A3)	<input type="checkbox"/>	Loamy Mucky Mineral (F1)	<input type="checkbox"/>	Reduced Vertic (F18)
<input checked="" type="checkbox"/>	Hydrogen Sulfide (A4)	<input type="checkbox"/>	Loamy Gleyed Matrix (F2)	<input type="checkbox"/>	Red Parent Material (TF2)
<input type="checkbox"/>	Stratified Layers (A5) (LRR C)	<input type="checkbox"/>	Depleted Matrix (F3)	<input type="checkbox"/>	Other (Explain in Remarks)
<input type="checkbox"/>	1 cm Muck (A9) (LRR D)	<input type="checkbox"/>	Redox Dark Surface (F6)		
<input type="checkbox"/>	Depleted Below Dark Surface (A11)	<input type="checkbox"/>	Depleted Dark Surface (F7)		
<input type="checkbox"/>	Thick Dark Surface (A12)	<input type="checkbox"/>	Redox Depressions (F8)		
<input type="checkbox"/>	Sandy Mucky Mineral (S1)	<input type="checkbox"/>	Vernal Pools (F9)		
<input type="checkbox"/>	Sandy Gleyed Matrix (S4)				

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):		Hydric Soils Present?	
Type:		Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/>
Depth (Inches):			
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (any one indicator is sufficient)		Secondary Indicators (2 or more required)	
<input type="checkbox"/>	Surface Water (A1)	<input type="checkbox"/>	Water Marks (B1) (Riverine)
<input checked="" type="checkbox"/>	High Water Table (A2)	<input type="checkbox"/>	Sediment Deposits (B2) (Riverine)
<input checked="" type="checkbox"/>	Saturation (A3)	<input type="checkbox"/>	Drift Deposits (B3) (Riverine)
<input type="checkbox"/>	Water Marks (B1) (Nonriverine)	<input checked="" type="checkbox"/>	Hydrogen Sulfide Odor (C1)
<input type="checkbox"/>	Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/>	Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/>	Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/>	Presence of Reduced Iron (C4)
<input type="checkbox"/>	Surface Soil Cracks (B6)	<input type="checkbox"/>	Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/>	Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/>	Other (Explain in Remarks)
<input type="checkbox"/>	Water-Stained Leaves (B9)		
		<input type="checkbox"/>	Drainage Patterns (B10)
		<input type="checkbox"/>	Dry-Season Water Table (C2)
		<input type="checkbox"/>	Thin Muck Surface (C7)
		<input type="checkbox"/>	Crayfish Burrows (C8)
		<input type="checkbox"/>	Saturation Visible on Aerial Imagery (C9)
		<input type="checkbox"/>	Shallow Aquitard (D3)
		<input type="checkbox"/>	FAC-Neutral Test (D5)

Field Observations:			
Surface Water Present?	Yes <input type="checkbox"/> No <input type="checkbox"/>	Depth (inches):	
Water Table Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):	6
Saturation Present? (includes capillary fringe)	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):	5
Wetland Hydrology Present?			Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Hercules Intermodal Transit Center City/County: Hercules, Contra Costa County Sampling Date: 03/31/2010
 Applicant/Owner: City of Hercules State: CA Sampling Point: 19
 Investigator(s): LaTisha Burnaugh, Stephen Stringer Section, Township, Range: T2N, R4W, unsectionalized
 Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%): <5%
 Subregion (LRR): LRRRC Lat: Long: Datum: WGS 84
 Soil Map Unit Name: Clear Lake Clay NWI classification: U
 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 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 <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampling Area within a Wetland?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Remarks: Adjacent surcharge pile likely affecting hydrology due to wicking activity causing discharge of groundwater into the area. Soil was previously disturbed in this area during past site restoration/remediation activities.					

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
73.				Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A) Total Number of Dominant Species Across All Strata: 2 (B) Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)	
74.					
75.					
76.					
= Total Cover				Prevalence Index worksheet: <u>Total %Cover of :</u> <u>Multiply by:</u> OBL species x1 = FACW species x2 = FAC species x3 = FACU species x4 = UPL species x5 = Column Totals: (A) (B) Prevalence Index = B/A =	
<u>Sapling/Shrub Stratum</u>					
91.					
92.					
93.					
94.					
95.					
= Total Cover					
<u>Herb Stratum</u>				Hydrophytic Vegetation Indicators: Dominance Test is >50% Prevalence Index is ≤3.0 ¹ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation ¹ (Explain)	
145.	Sarcocornia pacifica	35	Y		OBL
146.	Cotula coronopifolia	15	Y		FACW
147.	Frankenia salina	5	N		FACW
148.	Bromus diandrus	5	N		FACU
149.	Polypogon sp.	5	N		NI
150.	Lepidium latifolium	5	N		FACW
151.					
152.					
70 = Total Cover					
<u>Woody Vine Stratum</u>				¹ Indicators of hydric soil and wetland hydrology must be present.	
37.					
38.					
= Total Cover					
% Bare Ground in Herb Stratum 30 % Cover of Biotic Crust				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Remarks:					

SOIL

Sampling Point: P19

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type ¹	Loc ²		
0-6	7.5YR2.5/1	60	5YR4/6	5	C	M	Clay loam	
	10YR7/6	30					Clay loam	
	10YR2/1	10					Clay loam	
6-14	10YR2/1	80					Clay loam	
	7.5YR2.5/1	20					Clay loam	

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- | | | |
|--|---|---|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> 1 cm Muck (A9) (LRR C) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> 2 cm Muck (A10) (LRR B) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) | <input type="checkbox"/> Reduced Vertic (F18) |
| <input checked="" type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Stratified Layers (A5) (LRR C) | <input type="checkbox"/> Depleted Matrix (F3) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR D) | <input type="checkbox"/> Redox Dark Surface (F6) | |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Dark Surface (F7) | |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Depressions (F8) | |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Vernal Pools (F9) | |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | | |

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present?

Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

Secondary Indicators (2 or more required)

- | | | |
|--|--|---|
| <input checked="" type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Salt Crust (B11) | <input type="checkbox"/> Water Marks (B1) (Riverine) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Biotic Crust (B12) | <input type="checkbox"/> Sediment Deposits (B2) (Riverine) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) | <input type="checkbox"/> Drift Deposits (B3) (Riverine) |
| <input type="checkbox"/> Water Marks (B1) (Nonriverine) | <input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) | <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Drift Deposits (B3) (Nonriverine) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input type="checkbox"/> Thin Muck Surface (C7) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) | <input type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Water-Stained Leaves (B9) | | <input type="checkbox"/> Shallow Aquitard (D3) |
| | | <input type="checkbox"/> FAC-Neutral Test (D5) |

Field Observations:

Surface Water Present? Yes No Depth (inches): 2

Water Table Present? Yes No Depth (inches):

Saturation Present? (includes capillary fringe) Yes No Depth (inches):

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Appendix C

Delineation of Potential Jurisdictional Waters of the United States, June 2008. Hercules
Intermodal Transit Facility by Vollmar Consulting



Bay Area Office
1055 Creston Rd
Berkeley, CA 94708
(510) 559-9603 | 559-9605 (fax)
<http://www.vollmarconsulting.com>

DELINEATION OF POTENTIAL JURISDICTIONAL WATERS OF THE UNITED STATES, JUNE 2008

HERCULES INTERMODAL TRANSIT FACILITY Northwest Contra Costa County, California

Prepared For:
Impact Sciences, Inc.
1 Kaiser Plaza, Suite 1520
Oakland, CA 94612
Contact: Elizabeth Purl
(510) 267-0494

Prepared By:
Vollmar Consulting
1055 Creston Road
Berkeley, CA 94708
Contacts: J. Vollmar & J. Schweitzer
(510) 559-9603

June 2008

J-124



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1.0 INTRODUCTION

This report summarizes the methods and results of the delineation of potential jurisdictional waters of the United States on the proposed Hercules Intermodal Transit Facility project site in Hercules, Contra Costa County, California. The project includes the construction of a new ferry terminal and associated structures, as well as a railroad re-alignment and new rail station platform. The project also involves the re-alignment of Refugio Creek, which drains to San Pablo Bay.

The delineation was conducted to identify and delineate wetlands, navigable waters, and ‘other waters’ of the United States within the project site that are potentially under the jurisdiction of the U.S. Army Corps of Engineers (COE) through Section 404 of the Clean Water Act (CWA). The delineation was conducted following the ‘Arid West Region’ delineation methods published by the COE in December 2006. The results of this delineation are preliminary and must be reviewed and verified in writing by the COE to be considered an official delineation.

2.0 PROJECT BACKGROUND INFORMATION

2.1 Project Site Location

The Hercules Intermodal Transit Facility project site (project site) lies along the eastern boundary of San Pablo Bay, a major subembayment positioned between the heavily marine influenced San Francisco Bay and Suisun Bay (**Figure 1**). The project site is located in the City of Hercules, in western Contra Costa County, on the Mare Island USGS 7.5’ quadrangle map. The center of the project site is approximately: 122° 17’ 4” W, 38° 1’ 17.5 N. Landward elevation on the site ranges from approximately sea level to 15 feet above sea level (**Figure 2**).

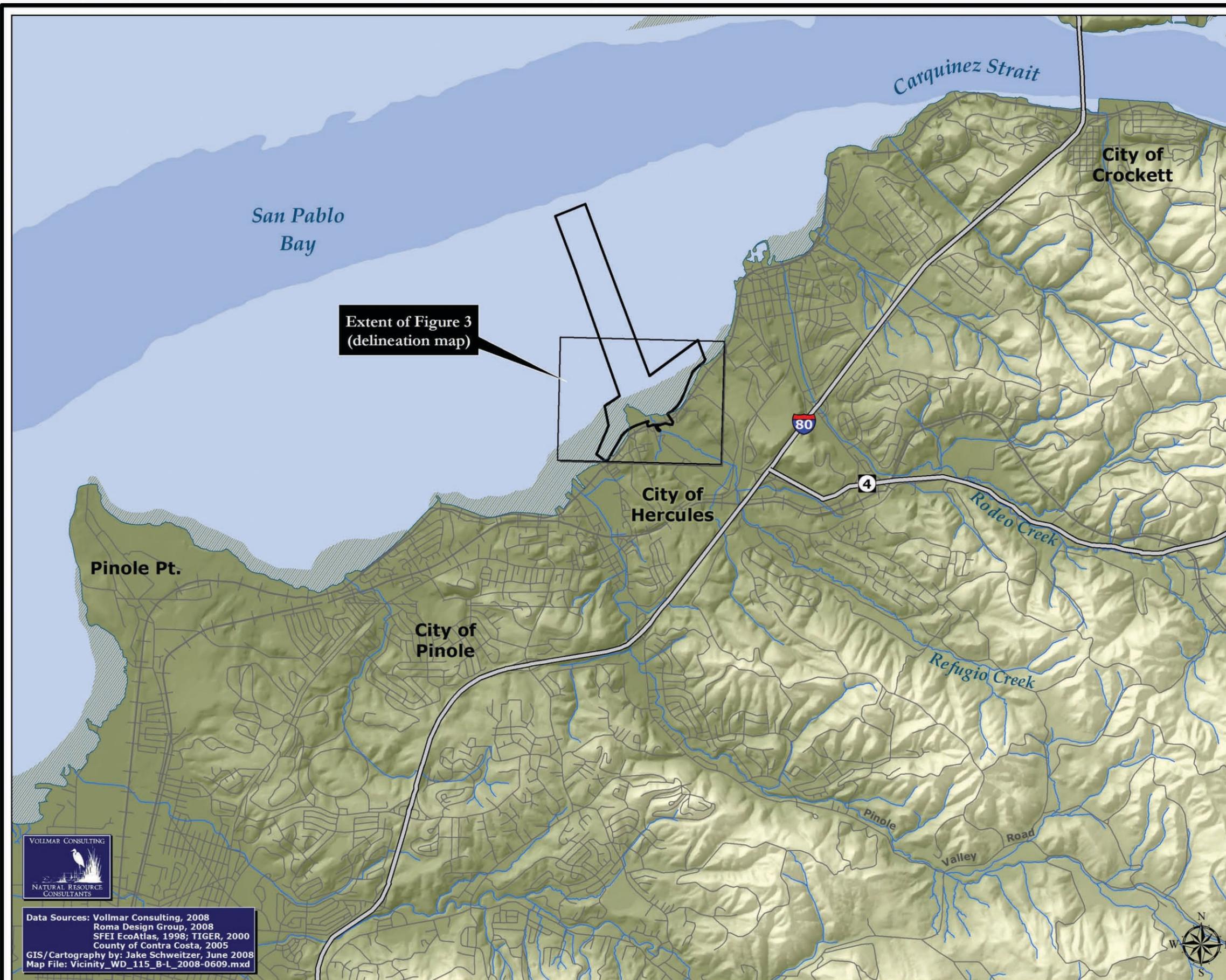
2.2 Description of Proposed Project

For the purposes of this report, the ‘project site’ is defined by the area including and surrounding the project footprint where construction or construction-related activities could occur as part of two currently proposed project alternatives. Both alternatives include the construction of a railroad station platform and the addition of a third track-line within the railroad right-of-way, dredging of a shipping channel through bay mud within shallow waters, and the realignment of the lower portion of Refugio Creek. Under Alternative 1, the ferry terminal would be located immediately to the east of Hercules Point and north of the proposed transit station, just west of the point where Refugio Creek enters San Pablo Bay. Under this alternative, the proposed transit terminal would be located on Bayfront Boulevard, west of Refugio Creek (**Figure 3**). Under Alternative 2, the ferry terminal would be located immediately to the east of Refugio Creek, near the north end of the proposed rail platform. Under this alternative, the transit terminal would be located east of Refugio Creek on the planned John Muir Parkway extension near its intersection with Bayfront Boulevard (**Figure 3**).

2.3 Extent and General Setting of Delineated Areas

The area delineated for this project includes approximately 31 acres of land above mean high water, as well as over 372 acres of tidal marsh and open navigable waters along Refugio Creek and within the San Pablo Bay (**Figure 3**). Most of the upland portions of project site have been altered by past industrial activities and are in a highly disturbed condition. The portion of

FIGURE 1
Regional Vicinity Map
 Hercules Intermodal Transit Facility
 Contra Costa County, California



Legend

- Project Area
- Reference Features**
- Highway
- Road
- Railroad
- Creek
- Tidal Baylands (from EcoAtlas)**
- Deep Bay
- Shallow Bay
- Fully Tidal Bayland



Data Sources: Vollmar Consulting, 2008
 Roma Design Group, 2008
 SFEI EcoAtlas, 1998; TIGER, 2000
 County of Contra Costa, 2005
 GIS/Cartography by: Jake Schweitzer, June 2008
 Map File: Vicinity_WD_115_B-L_2008-0609.mxd

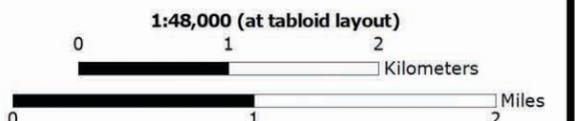
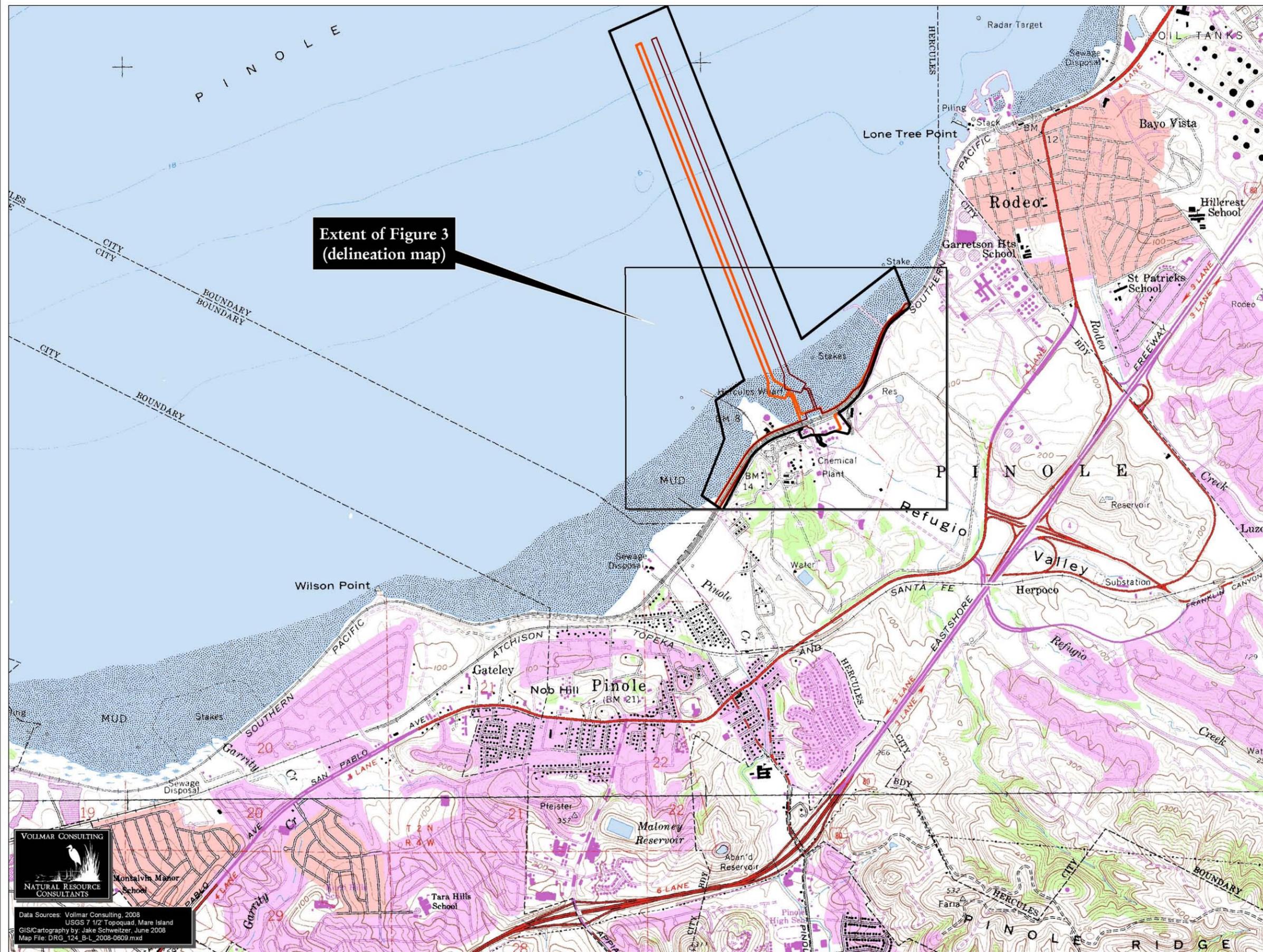


FIGURE 2
USGS Topographic Map
 Hercules Intermodal Transit Facility
 Contra Costa County, California



Extent of Figure 3
 (delineation map)

- Legend**
-  Project Area
 -  Alternative 2 Project Impact Area
 -  Alternative 1 Project Impact Area



Data Sources: Vollmar Consulting, 2008
 USGS 7 1/2 Topoquad, Mare Island
 GIS/Cartography by: Jake Schweitzer, June 2008
 Map File: DRG_124_B-L_2008-0609.mxd

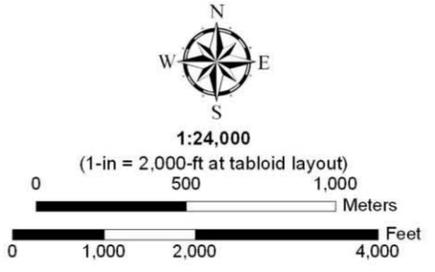


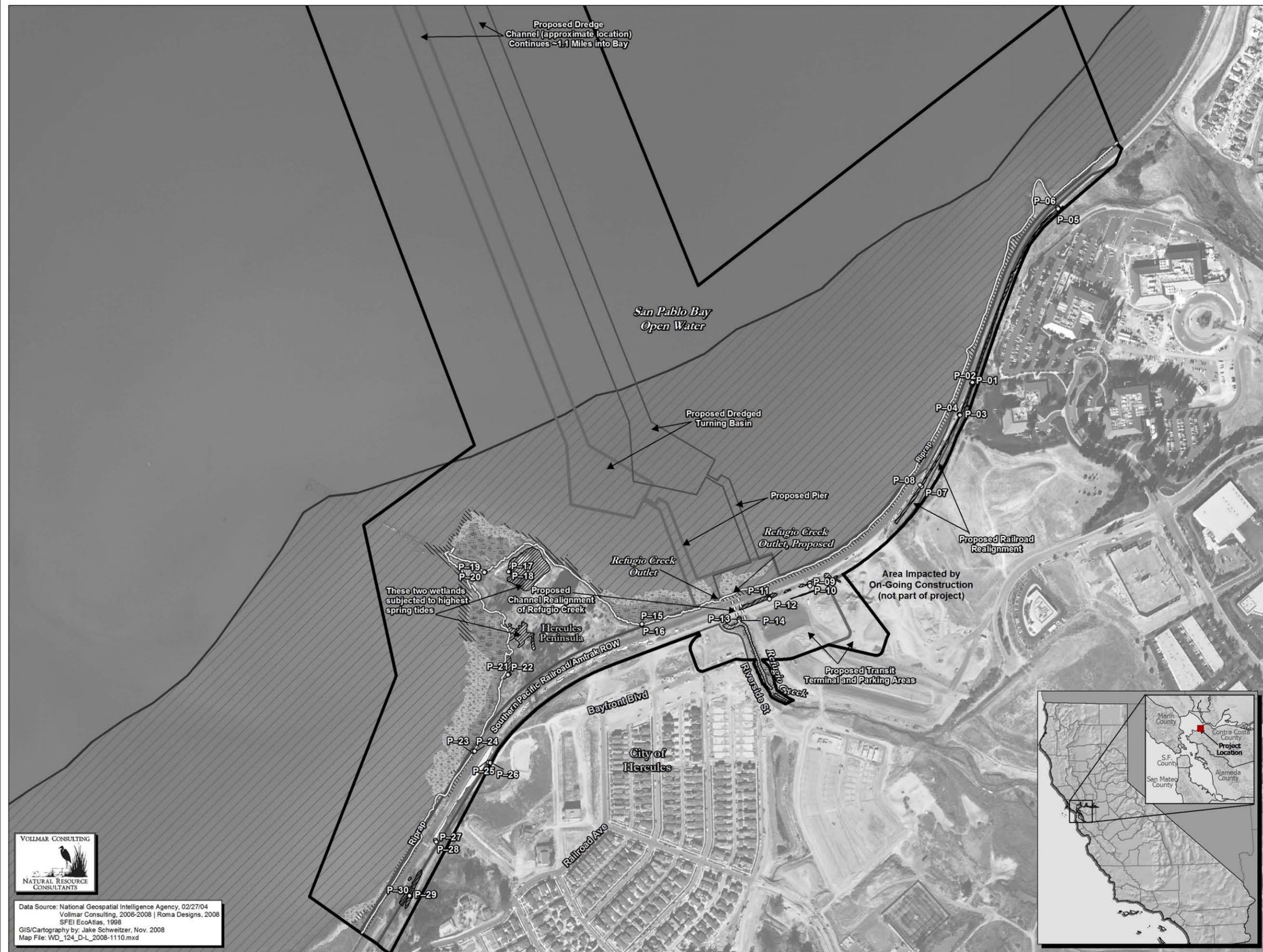
FIGURE 3
Jurisdictional
Waters of the U.S. 2007-2008
 Hercules Intermodal Transit Facility
 Contra Costa County, California

- Legend**
- Wetland Delineation Point (with ID #)¹
 - Mean High Water²
 - ▭ Project Area (402 acres as mapped)
 - ▨ California Cordgrass Tidal Marsh (4.152 ac.)
 - ▨ Pickleweed Tidal Marsh (5.230 ac.)
 - ▨ Freshwater Wetland (1.780 ac.)
 - ▭ Bay Open Waters (approx 263.216 ac.)
 - ▭ Other Waters (0.455 ac.)³
 - ▭ Refugio Creek Open Water (0.191 ac.)⁴
 - ▨ Intertidal Mudflats (EcoAtlas) (97.731 ac.)
 - ▨ Anthropogenic Rocky Shoreline
 - ▭ Alternative 1 Impact Area (approx. 42.5 acres)
 - ▭ Alternative 2 Impact Area (approx. 42.5 acres)

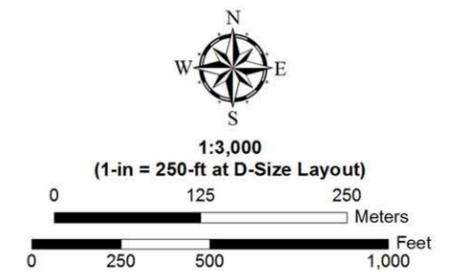
Note: All acreages represent areas within project area

- 1 Odd number = wetland point
- 2 Bay margin; does not include navigable waters of Refugio Creek.
- 3 Un-vegetated seasonal wetlands along RR track
- 4 Refugio Creek is subject to Section 10 as well as Section 404 jurisdiction

Total navigable waters (bayward of mean high water line plus open waters and tidal marsh of Refugio Creek): 371.915 ac.



Data Source: National Geospatial Intelligence Agency, 02/27/04
 Vollmar Consulting, 2006-2008 | Roma Designs, 2008
 SFEI EcoAtlas, 1998
 GIS/Cartography by: Jake Schweitzer, Nov. 2008
 Map File: WD_124_D-L_2008-1110.mxd



the project site within the railroad right-of-way is characterized by compacted dirt and gravel and contains ruderal plant species along portions of its southern and eastern edge. The railroad right-of-way is generally bordered to the north and west by a rocky (man-made) shoreline. Other upland portions of the project site have been graded or otherwise altered, but a limited extent of habitat in a more natural condition is also present. Wetland/aquatic habitats are present on the project site, including tidal wetlands, freshwater seasonal and perennial wetlands, and un-vegetated “other waters.”

Six plant communities occur on the project site including ruderal, pickleweed tidal marsh, California cordgrass tidal marsh, seasonal and perennial freshwater marsh, and several small stands of mixed willow riparian forest. Additionally, one land use type (railroad right-of-way) occurs on the project site, as well as rocky shoreline and open waters of San Pablo Bay and Refugio Creek.

2.4 Project Personnel

All work for this wetland delineation was conducted by staff members from Vollmar Consulting. John Vollmar, senior wetland ecologist, served as the project manager, collecting delineation field data, conducting wetland mapping and reviewing the report. Jake Schweitzer, staff biologist and GIS specialist, collected delineation field data, conducted wetland mapping, loaded and processed all GPS field files, prepared all field and report maps, and prepared this report.

3.0 REGULATORY BACKGROUND

3.1 Definition of Waters of the United States

The federal government, through Section 404 of the Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act, has jurisdiction over all Waters of the United States. Waters of the United States are divided into three subsets – ‘wetlands’, ‘navigable waters’, and ‘other waters’ - and are defined as follows:

‘Wetlands’ are defined in the federal regulations as “those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas” (Environmental Laboratory 1987). Wetlands are also considered to be “special aquatic sites” under 404(b)(1) Guidelines (40 CFR Part 230). In general, wetlands must exhibit positive indicators of wetland vegetation, wetland hydrology and hydric soils to be considered jurisdictional (Environmental Laboratory 1987).

‘Navigable waters’ of the United States are defined as “those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce” (33 CFR Part 329.4). According to the regulations, navigable waters include the open ocean, tidal bays, salt marshes and some large rivers and lakes. The jurisdictional limit over navigable waters extends laterally to the entire water surface and bed of the water body. For non-tidal rivers or lakes, which have been designated by the COE to be navigable waters, the limit of jurisdiction along the shoreline is defined by the ordinary high water mark (OHWM). The up-stream limit of a navigable river is the head of navigation (this limit is designated by the COE) (33 CFR Part 329.4). ‘Other waters’

refers to waters of the United States other than navigable waters or wetlands. Generally, these are open watercourses or water bodies such as streams and ponds that are distinguished by the presence of an OHWM and/or an eroded bed and bank. 'Other waters' can be perennial or intermittent water bodies and waterways. The COE regulates 'other waters' to the outward limit of the OHWM (33 CFR Part 328.4[c][1]). The OHWM on a non-tidal water is the "line on shore established by the fluctuations of water and indicated by physical characteristics such as a clear natural line impressed on the bank; shelving; changes in the character of soil; destruction of terrestrial vegetation; the presence of litter and debris; or other appropriate means that consider the characteristics of the surrounding areas" (33 CFR Part 328.3[e]). Streams should exhibit a defined channel, bed, and banks to be delineated as 'other waters'.

3.2 Regulatory Authority

The Federal Clean Water Act (CWA) is the principal law providing regulation of all waters of the United States. The CWA (previously the Federal Water Pollution Control Act) was passed as a water pollution control statute that sought to "restore and maintain the chemical, physical, and biological integrity of the nation's waters". Initially, its scope was limited to only navigable waters. This scope has been expanded, primarily through judicial review, to encompass all waters of the United States including wetlands. A recent ruling by the U.S. Supreme Court (SWANCC Decision) eliminated federal jurisdiction over 'isolated waters' such as isolated ponds that have no hydrologic connection to tributary waters serving an interstate function. The ruling concluded that such waters are to be regulated by the individual state in which the isolated water occurs rather than the federal government.

Section 404 of the CWA regulates the discharge of dredged or fill material into waters of the United States. The CWA grants dual regulatory authority of Section 404 to the U.S. Environmental Protection Agency (EPA) and the COE. The COE is responsible for issuing and enforcing permits for activities in waters of the United States in conjunction with prior permitting authorities in navigable waters under the Rivers and Harbors Act of 1899. The EPA is responsible for providing oversight of the permit program. In this capacity, the EPA has developed guidelines for permit review (Section 404 [b][1] Guidelines) and has the authority to veto permits by designating certain sites as non-fill areas (Section 404[c] of the CWA). The EPA also has enforcement authority under Section 404.

Section 10 of the Rivers and Harbors Act of 1899 regulates any work in or over navigable waters of the U.S. It regulates all types of activities including excavations, depositions, constructions, or any obstruction or alteration in a navigable water. This law was initially intended to protect navigation and the navigable capacity of waters but in 1968 the policy for review of permits was revised to include a consideration of fish and wildlife values, conservation, pollution, aesthetics and other factors in the general public interest. This type of review is identified as a "Public Interest Review".

The COE generally extends its jurisdiction to all areas meeting the criteria for Waters of the United States. However, the COE jurisdiction over wetlands created by artificial means is decided on a case-by-case basis. The COE generally does not assume jurisdiction over areas that are (1) artificially irrigated and would revert to upland habitat if the irrigation ceased; or, (2) artificial lakes and ponds created by excavating and/or diking of dry land to collect and retain

water, used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing. Other areas that are not considered jurisdictional waters of the United States include waste treatment ponds, ponds formed by construction activities including borrow pits until abandoned, and ponds created for aesthetic reasons such as reflecting or ornamental ponds (33 CFR Part 328.3).

3.3 U.S. Army Corps of Engineers Permits

Projects which propose activities that fall under the jurisdiction of Section 404 of the CWA and/or Section 10 of the Rivers and Harbors Act must obtain approval from the COE through the individual or nationwide permit (NWP) process. Individual permits entail a full public interest review that includes consultation with other federal and state agencies. NWPs are designed to regulate certain activities deemed to have minimal impact and are issued in order to authorize these activities with little, if any delay or paperwork. A proposed activity may be authorized under a NWP only if it meets all the terms and conditions specified in the NWP program, found in the Section 404/Section 10 regulations (33 CFR Part 330). Some examples of commonly applied NWPs include No. 12 (utility line activities), No. 14 (linear transportation crossings), No. 27 (stream and wetland restoration activities), No. 39 (residential, commercial, and institutional developments), and No. 42 (recreational facilities). A Section 404 permit provides a federal nexus for consultation with the U.S. Fish and Wildlife Service regarding potential impacts to federally-listed species through Section 7 of the Federal Endangered Species Act.

4.0 METHODS

4.1 Preliminary Review

Prior to conducting the field delineation, Mr. Vollmar and Mr. Schweitzer reviewed site maps and aerial photographs of the work areas. This information was used to help characterize the site, identify any potential Waters of the United States on a preliminary basis, and help target the on-site survey. The site aerial photograph served as the base map for the delineation.

4.2 Field Surveys

Mr. Vollmar and Mr. Schweitzer conducted formal delineation of the potential jurisdictional waters on the project site in January and March of 2007. The project site area was expanded in 2008, so a third round of delineation field work was conducted in April of 2008. During the course of the surveys, the biologists walked the entire project site, noting habitat conditions, recording plant species observed, establishing delineation data points, and taking photographs of representative site features. At delineation data points, data were collected on plants, hydrology, and soils following the Routine Wetland Determination Method developed by the COE. Potential jurisdictional wetlands were identified and their boundaries delineated using the routine wetland determination method described in the 1987 COE Wetlands Delineation Manual (Environmental Laboratory 1987) and the Interim regional supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (USACE 2006). The specific methods for collecting data on vegetation, hydrology, and soils are described below.

4.2.1 Vegetation

At each delineation data point, all plant species within a five-foot radius of the sampling point were identified and a visual estimate of percent coverage for each species was recorded. The

indicator status of each species was checked in the *National List of Plant Species that Occur In Wetlands: California (Region 0)* (Reed 1996) and recorded. Indicator status categories are as follows:

OBL = obligate wetland; >99% probability of occurring in a wetland

FACW = facultative wetland; 67%-99% probability of occurring in a wetland

FAC = facultative; 33%-67% probability of occurring in a wetland

FACU = facultative upland; 1%-33% probability of occurring in a wetland

UPL = obligate upland; <1% probability of occurring in a wetland

NI = no indicator, insufficient information available to determine indicator status

NL = not listed (plants not listed in Reed (1988) are assumed to be upland (UPL))

The wetland vegetation criterion is met when the vegetation passes the dominance test: greater than 50 percent of the dominant plants have OBL, FACW, or FAC wetland indicators. The COE defines dominant plant species as those that, when included in descending order of their percent cover, together sum up to 50 percent of the total cover in their stratum (tree, sapling/shrub, herb, or woody vine). In addition, all species with at least 20 percent coverage of the total canopy within a stratum are always counted as dominants. All scientific and common plant names correspond to Hickman (1993) and/or Reed (1996).

If the dominance test is not passed, vegetation can be considered hydrophytic if it meets the requirements of the prevalence index, morphological adaptations, or problematic wetland situations (USACE 2006).

4.2.2 Hydrology

Indicators of wetland hydrology were noted such as the presence of surface water, occurrence of groundwater or soil saturation, springs, surface scour marks, vegetation and debris drift lines, sediment deposits, watermarks, water-stained leaves, surface soil cracks, oxidized rhizospheres along living roots, and drainage patterns (evidence of water flow across the ground surface). Additionally, some wetlands in the Arid West region periodically lack indicators of wetland hydrology. If the site is in a geomorphic position where a wetland could occur but the site visit was during the dry season, followed a period of 2-3 months of below-normal rainfall, or was during a year of an unusually low winter snowpack, indicators of wetland hydrology might not be present. According to the Arid West Supplement, “under these conditions, a site that contains hydric soils and hydrophytic vegetation and no evidence of hydrologic manipulation should be considered a wetland” (USACE 2006).

4.2.3 Soils

Soil profiles were taken at each data point using a tile spade shovel. Soil pit depths were at least 12 inches at all points. Soils were examined for positive hydric soil indicators such as low matrix chromas, high chroma mottles, gleys, and iron and manganese concretions. The color and texture of the soil layers encountered were recorded. Soil color was identified using a Munsell soil color chart (Kollmorgen 2000). All soil samples were moistened before determining the color. Soil map units at each sample point were identified from the Soil Survey of Contra Costa County (USDA 1977). Soil map units were cross-referenced with the California hydric soils list (SCS 1993) and the national hydric soils list (SCS 1991). Determinations of whether or not the hydric soil criterion was met were based upon the criteria specified by the National Technical

Committee for Hydric Soils (SCS 1991) and the Arid West Supplement (USACE 2006). In most cases, soils with a matrix chroma of 1, and mottled soils with a matrix chroma of 2 or less are considered to meet the hydric soil criteria. Soils that do not have low matrix chromas but are inundated or saturated within 12 inches of the surface are considered to be hydric when those conditions persist for at least 5 percent of the growing season (usually 7-14 consecutive days).

5.0 RESULTS

5.1 Overview

The delineation identified 11.162 acres of potential jurisdictional wetlands within the mapped project area consisting of 5.230 acres of pickleweed tidal marsh, 4.152 acres of California cordgrass tidal marsh, and 1.780 acres of freshwater seasonal wetlands (**Figure 3** and **Appendix C**). In addition, the delineation identified 0.455 acres of potential jurisdictional ‘other waters’ consisting of un-vegetated seasonal pools in low areas along the railroad tracks. The open water within Refugio Creek, as well as the entire portion of the project site below mean high water along the San Pablo Bay shoreline and extending into the open water of the Bay are considered jurisdictional ‘navigable waters’. A total of 371.915 acres are mapped as navigable waters.

Table 1 provides a summary of the delineated waters. **Figure 3** is a tabloid-size map showing the extent of potential jurisdictional waters delineated within the project site. **Appendix C** is the same map in D-size. In addition to the delineated wetlands, the map shows locations of delineation data points. A total of 30 data points were established and are identified on the delineation map as P-01 through P-30. Copies of all delineation data forms are provided in **Appendix A**. Representative photographs of site features are provided in **Appendix B**. The vegetation, hydrology, and soils characteristic of the different types of wetlands delineated on the site are described in detail below.

Table 1. Summary of Potential Jurisdictional Waters Delineated on the Hercules Intermodal Transit Facility Project Site, Contra Costa County, California.

WATERS TYPE	ACREAGE	ASSOCIATED DATA POINTS
Wetlands		
Pickleweed Tidal Marsh	5.230	P13-16, P19-24
California Cordgrass Tidal Marsh	4.152	No data points
Freshwater Seasonal Wetlands	1.780	P01-12, P17, P18, P25-26, P29-30
Total Wetlands	11.162	
Other Waters		
Unvegetated Seasonal Pools	0.455	P27-28
Total Other Waters	0.455	
Navigable Waters		
Areas Bayward of Mean High Water	371.333	
Refugio Creek Open Water and Tidal Marsh	0.582	
Total Navigable Waters	371.915	

5.2 Potential Jurisdictional Wetlands

The delineation identified 11.162 acres of potential jurisdictional wetlands within the project area, consisting of 5.230 acres of pickleweed tidal marsh, 4.152 acres of California cordgrass tidal marsh and 1.780 acres of freshwater seasonal wetlands (**Figure 3** and **Appendix C**).

5.2.1 Pickleweed Tidal Marsh

The project site encompasses saline to brackish tidal marsh, best classified as pickleweed tidal marsh, along the margin of San Pablo Bay as well as the final stretch of Refugio Creek that bisects the project site and discharges into the bay. A man-made bend of almost 90 degrees in the creek just south of the railroad tracks reduces the speed of flow within the channel. The project includes a proposal to straighten the channel.

Delineation points P-13 and P-14 mark the boundary of wetland vegetation along the banks of Refugio Creek, and points P-15 and P-16 and P-19 through P-24 mark the boundary between upland and the marsh fringing San Pablo Bay.

Vegetation

The dominant plant species are all hydrophytic and include pickleweed (*Sarcocornia pacifica*) [OBL], saltgrass (*Distichlis spicata*) [FACW], and prairie bulrush (*Bolboschoenus maritimus*) [OBL]. Other common species along the marsh margins include plantain (*Plantago major*) [FACW] and wild celery (*Apium graveolens*) [FACW].

Hydrology

Wetland hydrology indicators include saturation, non-riverine drift deposits and water marks, oxidized rhizospheres along living roots, sediment deposits, and wetland drainage patterns.

Soils

Typical soils in the marsh are 5YR silty clays with chroma of 3/2 to a depth of 12 inches, and 3/1 at depths greater than 12 inches. Ten percent mottles of 5YR5/8 occur in both strata.

5.2.2 California Cordgrass Tidal Marsh

Bayward of the pickleweed-dominated marsh lies a moderately dense band of California cordgrass (*Spartina foliosa*) [OBL]. This plant community, which is de-watered only at low tide (and remains saturated), is comprised almost exclusively of its namesake plant species. No data points were taken since this wetland is assumed to have positive indicators of wetland plants, hydrology and soils.

5.2.3 Freshwater Seasonal Wetlands

The delineated freshwater seasonal wetlands support non-tidal freshwater seasonal and perennial wetland vegetation. These wetlands occur within shallow depressions throughout upland portions of the project site as well as within a shallow ditch located along the eastern edge of portions of the railroad right-of-way. Many of these depressions are the result of human activities in the area and support ruderal FAC and FACW wetland indicator plant species. Perennial wetland vegetation, including cattails (*Typha latifolia*) and willows (*Salix lasiolepis*) occurs in a few areas due to the presence of permanent sub-surface soil saturation.

Delineation data points P-01 through P-12, P-25 - P-26, and P-29 - P-30 delineate the boundaries of freshwater wetland features.

Vegetation

Dominant vegetation along southern portions of the drainage ditch includes bristly ox-tongue (*Picris echioides*) [FAC], Italian ryegrass (*Lolium multiflorum*) [FAC] and curly dock (*Rumex crispus*) [FACW], both of which are hydrophytic species. Some portions of the ditch to the north are saturated year-round, as evidenced by perennial wetland vegetation such as cattails (*Typha latifolia*) [OBL] and tall nutsedge (*Cyperus eragrostis*) [FACW].

Shallower depressions throughout other portions of the site are dominated by the marginal wetland plants Italian ryegrass [FAC] and Mediterranean barley (*Hordeum marinum ssp. gussoneanum*) [FAC], while deeper depressions—often bounded by soil deposit berms—support more hydrophytic species such as rabbitsfoot grass (*Polypogon monspeliensis*) [FACW+] and rough cocklebur (*Xanthium strumarium*) [FAC+].

Hydrology

Hydrologic indicators within the freshwater wetlands include saturation, inundation, oxidized rhizospheres along living roots, wetland drainage patterns, and non-riverine drift deposits and water marks. Wetlands within the drainage ditch often include water-stained leaves from the overhanging willow canopy.

Soils

Soils in the delineated seasonal freshwater wetlands are most commonly 2.5Y with hues/chromas of 4/2, or 3/2. Mottles (present in most seasonal wetland soils) are most commonly 7.5YR5/8 or 5YR5/8. Textures are typically silty clay. Soils within freshwater wetlands that remain inundated longer are typically 10YR with chromas of 3/2 or 3/1 and mottles of 10YR5/4. The textures are typically silt.

5.3 Potential Jurisdictional Other Waters

The delineated ‘other waters’ consist of 0.455 acres of unvegetated seasonal pools along the railroad track right of way.

5.3.1 Unvegetated Seasonal Pools

Forty five seasonal pools (or ‘puddles’) were mapped within the railroad right-of-way. These pools occur within depressions in compacted dirt and gravel areas and are generally devoid of vascular vegetation. These pools reach a maximum depth of six inches in the winter, with most pools not exceeding three inches in depth, and hold water for up to several consecutive weeks.

5.4 Potential Jurisdictional Navigable Waters

All waters within the project site subject to the ebb and flow of the tides are delineated as potential navigable waters. This includes portions of Refugio Creek within the project site, as well as those portions of the project site below mean high tide elevation, including the pickleweed tidal marsh, California cordgrass tidal marsh, intertidal mudflats, man-made shoreline, and San Pablo Bay open waters (**Figure 3** and **Appendix C**). There is a total of approximately 371.915 acres of potential navigable waters delineated within the project site.

6.0 CONCLUSIONS

All three subsets of “waters of the United States” were delineated on the Hercules Intermodal Transit Facility project site: wetlands, navigable waters, and other waters. Delineated wetlands meet the technical definition of wetlands by having positive indicators of wetland vegetation, hydrology, and soils. Areas bayward of the mean high water mark along the edge of San Pablo Bay and along with the lower reaches of Refugio Creek within the project site represent the delineated edge of navigable waters. Delineated ‘other waters’ occur within unvegetated seasonal pools along the railroad tracks.

The remainder of the project site consists of uplands which do not meet the technical criteria of jurisdictional wetlands, ‘other water’ or navigable waters.

The results of this delineation are preliminary and must be reviewed and verified in writing by the COE to be considered an official delineation.

7.0 REFERENCES

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APPENDIX A
WETLAND DELINEATION DATA FORMS

Data Forms Available Upon Request

APPENDIX B

REPRESENTATIVE PROJECT SITE PHOTOGRAPHS

**APPENDIX B. Representative Photography of Hercules Intermodal
Transit Facility Project Area Wetlands, 2006-2008.
Contra Costa County, California.**



**Photo 1: Tidal Marsh Along East Side of Peninsula, Looking East.
September, 2007.**



**Photo 2: Wetland Ditch at Northeastern Edge of Project Site.
April, 2008.**

**APPENDIX B. Representative Photography of Hercules Intermodal Transit Facility Project Area Wetlands, 2006-2008.
Contra Costa County, California.**



**Photo 3: Bend in Refugio Creek, Central Portion of Project Site.
April, 2008.**



**Photo 4: Seasonal Wetland at Southwestern Edge of Project Site.
April, 2008.**

APPENDIX B. Representative Photography of Hercules Intermodal Transit Facility Project Area Wetlands, 2006-2008. Contra Costa County, California.



Photo 5: Un-vegetated "Other Waters" at NE Edge of Project Site. February, 2007.

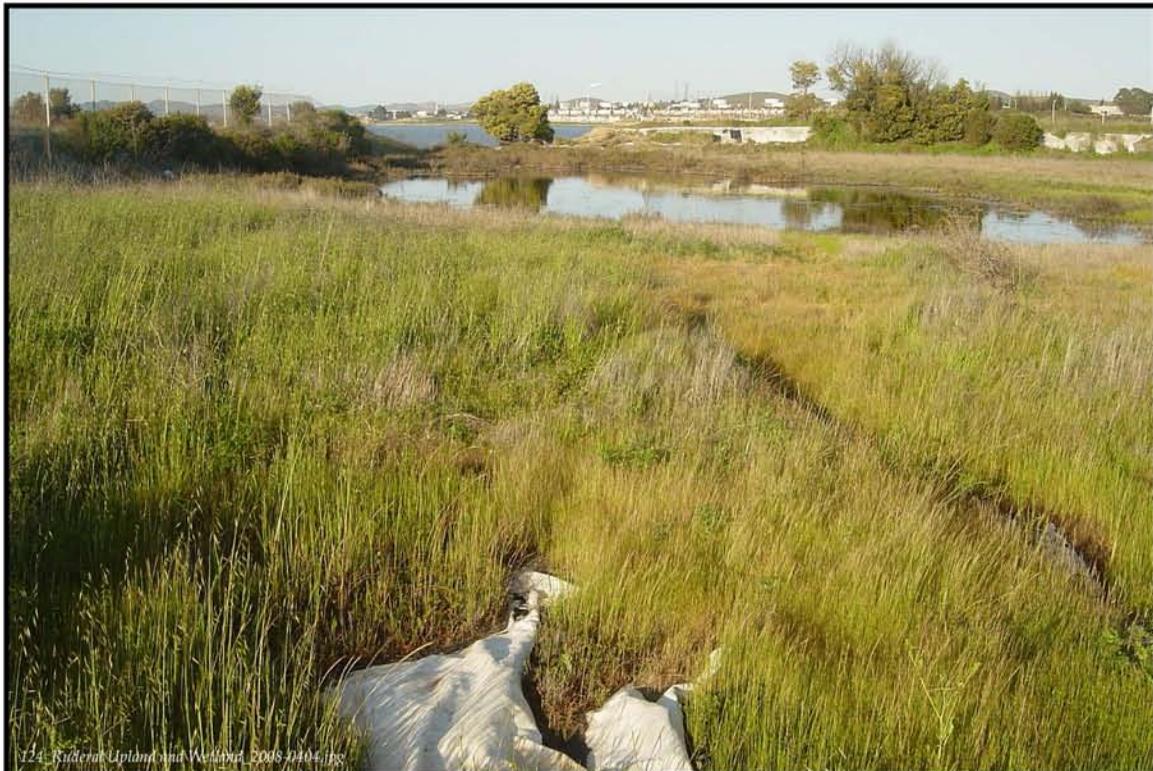


Photo 6: Ruderal Upland and Wetland at Center of Project Area. April, 2007.

APPENDIX C

MAP OF JURISDICTIONAL WATERS OF THE U.S. (D-SIZE)

FIGURE 3
Jurisdictional
Waters of the U.S. 2007-2008
 Hercules Intermodal Transit Facility
 Contra Costa County, California

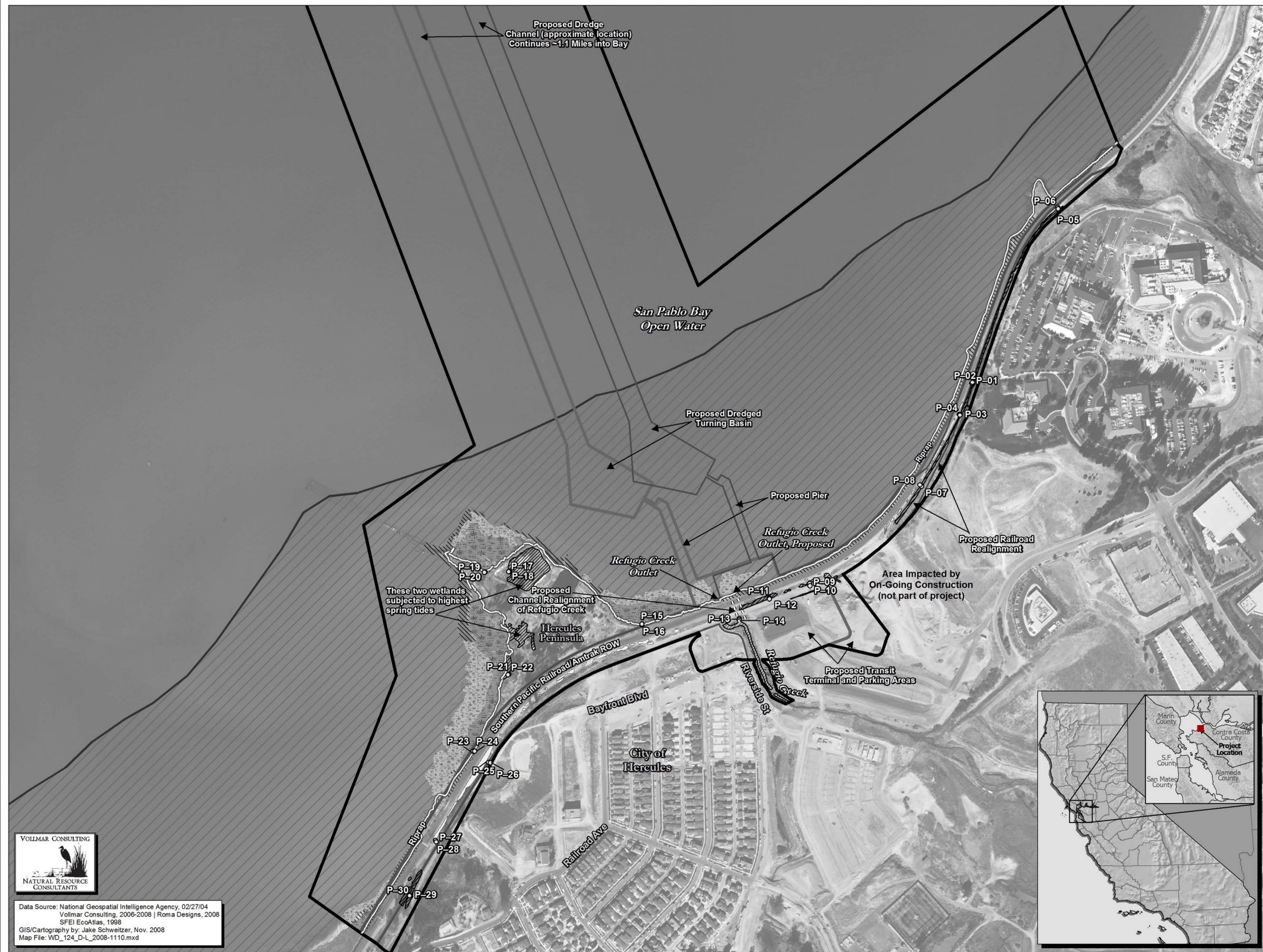
Legend

- Wetland Delineation Point (with ID #)¹
- Mean High Water²
- ▭ Project Area (402 acres as mapped)
- ▨ California Cordgrass Tidal Marsh (4.152 ac.)
- ▨ Pickleweed Tidal Marsh (5.230 ac.)
- ▨ Freshwater Wetland (1.780 ac.)
- ▭ Bay Open Waters (approx 263.216 ac.)
- ▭ Other Waters (0.455 ac.)³
- ▭ Refugio Creek Open Water (0.191 ac.)⁴
- ▨ Intertidal Mudflats (EcoAtlas) (97.731 ac.)
- ▨ Anthropogenic Rocky Shoreline
- ▭ Alternative 1 Impact Area (approx. 42.5 acres)
- ▭ Alternative 2 Impact Area (approx. 42.5 acres)

Note: All acreages represent areas within project area

- 1 Odd number = wetland point
- 2 Bay margin; does not include navigable waters of Refugio Creek.
- 3 Un-vegetated seasonal wetlands along RR track
- 4 Refugio Creek is subject to Section 10 as well as Section 404 jurisdiction

Total navigable waters (bayward of mean high water line plus open waters and tidal marsh of Refugio Creek): 371.915 ac.



Data Source: National Geospatial Intelligence Agency, 02/27/04
 Vollmar Consulting, 2006-2008 | Roma Designs, 2008
 SFEI EcoAtlas, 1998
 GIS/Cartography by: Jake Schweitzer, Nov. 2008
 Map File: WD_124_D-L_2008-1110.mxd

