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# Delineation of Potential Jurisdictional Waters of the U.S. under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act

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INDIA BASIN SHORELINE PARK AND 900 INNES AVENUE  
CITY AND COUNTY OF SAN FRANCISCO, CALIFORNIA

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## **LIST OF ACRONYMS AND ABBREVIATIONS**

CDFW	California Department of Fish and Wildlife
Corps	U.S. Army Corps of Engineers
CWA	Clean Water Act
EPA	Environmental Protection Agency
FAC	Facultative, commonly occurs as either a hydrophyte or non-hydrophyte
FACU	Facultative Upland, occasionally is a hydrophyte but usually occurs in uplands
FACW	Facultative Wetland, usually is a hydrophyte but occasionally found in uplands
HTL	High Tide Line
MHW	Mean High Water
NAVD	North American Vertical Datum
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resource Conservation Service
NWI	National Wetland Inventory
NWPL	National Wetland Plant List
OBL	Obligate, almost always is a hydrophyte, rarely in uplands
RHA	Rivers and Harbors Act
UPL/NL	Upland/Not Listed, rarely is a hydrophyte, almost always in uplands

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- Appendix A - Preliminary Section 404 Jurisdictional Map
- Appendix B - Wetland Delineation Data Sheets
- Appendix C - Representative Photographs of the Study Area
- Appendix D - Plant Species Observed in the Study Area

## **1.0 INTRODUCTION**

### **1.1 Study Background**

The Study Area consists of approximately 11.42 acres near the intersection of Innes Avenue and Griffin Street in the Hunter's Point/Bayview neighborhood in the City and County San Francisco, California (Figure 1). The Study Area includes the India Basin Shoreline Park and the property at 900 Innes Avenue. Currently, the site is bordered by industrial, commercial, and residential uses to the west and south on Hunters Point Boulevard and Innes Avenue, the former Hunters Point Power Plant and Heron's Head Park to the north, and India Basin (San Francisco Bay) to the northeast.

On March 11, 2015, WRA, Inc. conducted a routine wetland delineation in the Study Area to determine the presence of potential wetlands and other waters subject to federal jurisdiction under Section 404 of the Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act (RHA). This report presents the results of this delineation.

### **1.2 Regulatory Background**

#### *Section 404 of the Clean Water Act*

Section 404 of the CWA gives the U.S. Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (Corps) regulatory and permitting authority over the discharge of dredged or fill material into "navigable waters of the United States." Section 502(7) of the CWA defines navigable waters as "waters of the United States, including territorial seas." Section 328 of Chapter 33 in the Code of Federal Regulations (CFR) defines the term "waters of the United States" as it applies to the jurisdictional limits of the authority of the Corps under the CWA. A summary of this definition of "waters of the U.S." in 33 CFR 328.3 includes (1) waters used for commerce; (2) interstate waters and wetlands; (3) "other waters" such as intrastate lakes, rivers, streams, and wetlands; (4) impoundments of waters; (5) tributaries to the above waters; (6) territorial seas; and (7) wetlands adjacent to waters. Therefore, for the purpose of determining Corps jurisdiction under the CWA, "navigable waters" as defined in the CWA are the same as "waters of the U.S." defined in the CFR above.

The limits of Corps jurisdiction under Section 404 as given in 33 CFR Section 328.4 are as follows: (a) *Territorial seas*: three nautical miles in a seaward direction from the baseline; (b) *Tidal waters of the U.S.*: high tide line (HTL) or to the limit of adjacent non-tidal waters; (c) *Non-tidal waters of the U.S.*: ordinary high water mark (OHWM) or to the limit of adjacent wetlands; (d) *Wetlands*: to the limit of the wetland.

#### *Section 10 of the Rivers and Harbors Act*

The Corps also has jurisdiction over "navigable waters" under Section 10 of the RHA of 1899. Section 10 of this Act applies to tidal areas below mean high water (MHW) and includes tidal areas currently subject to tidal influence, as well as historic tidal areas behind levees that both historically and presently reside at or below MHW. "Navigable waters of the U.S.", as defined in 33 CFR Part 329, are 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. The Act prohibits any unauthorized action that obstructs the "navigable capacity of any waters of the United States." These actions can include building of structures, excavation, fill, and alterations and modifications to navigable waters (33 USC 403). A determination of navigability, once made, applies laterally over the entire surface of the

waterbody, and is not extinguished by later actions or events which impede or destroy navigable capacity. The upper limit of navigable water is at the point along its length where the character of the river changes from navigable to non-navigable, such as at a major fall or rapids. Since the upper limit of navigability of waterways under Section 10 jurisdiction is sometimes difficult to discern, determinations of navigability under Section 10 are often made by the Corps and kept on file, independent of submitted permit applications or delineations.

## 2.0 SUMMARY OF POTENTIAL JURISDICTIONAL AREAS

Appendix A depicts the extent of Corps jurisdiction within the Study Area based on a wetland delineation conducted by WRA on March 11, 2015. The acreage of potential Section 404 and Section 10 jurisdictional areas is summarized in Table 1 below.

Table 1. Summary of Potential Section 404/Section 10 Jurisdictional Areas within the Study Area

Habitat Type	Size (acres)	Potential Jurisdictional Waters of the U.S. (acres)
Section 404 Wetlands		
Tidal Marsh (infill)	0.13	0.13
Section 404 Other Waters of the U.S.		
Open Water	2.65	2.65
Developed Open Water	0.28	0.28
<b>Total (Section 404)</b>	<b>3.06</b>	<b>3.06</b>
Section 10 Waters*		
<b>Total (Section 10)</b>	<b>2.69</b>	<b>–</b>

\*The 2.69 acres of Section 10 Waters all occur within the 3.06 acres of potentially Section 404 Corps jurisdictional tidal marsh habitat and open water.



Figure 1. Study Area Location Map

India Basin Shoreline Park and 900 Innes Ave.  
City and County of San Francisco, California



ENVIRONMENTAL CONSULTANTS

Map Prepared Date: 6/8/2015  
Map Prepared By: pkobylarz  
Base Source: Esri, National Geographic  
Data Source(s): WRA

### **3.0 METHODS**

Prior to conducting field surveys, reference materials were reviewed, including the Soil Survey of San Francisco County (USDA 2015), National Wetland Inventory (NWI) data (USFWS 2015), the Hunter's Point USGS 7.5' quadrangle (USGS 2012), and aerial photos of the site (Google Earth 2015).

A focused evaluation of indicators of wetlands and other waters was performed in the Study Area on March 11, 2015. The methods used in this study to delineate jurisdictional wetlands and waters are based on the *U.S. Army Corps of Engineers Wetlands Delineation Manual* (Corps Manual; Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Arid West Supplement; Corps 2008). The routine method for wetland delineation described in the Corps Manual was used to identify areas potentially subject to Corps Section 404 jurisdiction within the Study Area. A general description of the Study Area, including plant communities present, topography, and land use was also generated during the delineation visit. The methods for evaluating the presence of wetlands and other “waters of the U.S.” employed during the site visit are described in detail below.

#### **3.1 Potential Section 404 Waters of the U.S. and Section 10 Navigable Waters**

##### **3.1.1 Wetlands**

The Study Area was evaluated for the presence or absence of indicators of the three wetland parameters described in the Corps Manual (Environmental Laboratory 1987) and Arid West Supplement (Corps 2008).

Section 328.3 of the CFR defines wetlands 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."*

EPA, 40 CFR 230.3 and CE, 33 CFR 328.3 (b)

The three parameters used to delineate wetlands are the presence of: (1) hydrophytic vegetation, (2) wetland hydrology, and (3) hydric soils. According to the Corps Manual, for areas not considered “problem areas” or “atypical situations”:

*"....[E]vidence of a minimum of one positive wetland indicator from each parameter (hydrology, soil, and vegetation) must be found in order to make a positive wetland determination."*

Data on vegetation, hydrology, and soils collected at sample points during the delineation site visit was reported on Arid West Supplement data forms. Once an area was determined to be a potential jurisdictional wetland, its boundaries were delineated using GPS equipment and mapped on a topographic map. The areas of potential jurisdictional wetlands were measured digitally using ArcGIS software. Indicators described in the Arid West Supplement were used to make wetland determinations at each sample point in the Study Area and are summarized below.

## Vegetation

Plant species observed in the Study Area were identified using the Jepson Manual, Second Edition (Baldwin et al. 2012) and the Jepson eFlora (Jepson Flora Project 2015). Plants were assigned a wetland indicator status according to the National Wetland Plant List (NWPL; Lichvar 2014). Where differences in nomenclature occur between the Jepson Manual or the Jepson eFlora and the NWPL, the species name as it occurred in the NWPL is listed in brackets. Other relevant synonyms may also be provided in brackets.

Wetland indicator statuses listed in the NWPL are based on the expected frequency of occurrence in wetlands as follows:

Classification (Abbreviation)	Definition*	Hydrophytic Species? (Y/N)
Obligate (OBL)	Almost always is a hydrophyte, rarely in uplands	Y
Facultative Wetland (FACW)	Usually is a hydrophyte but occasionally found in uplands	Y
Facultative (FAC)	Commonly occurs as either a hydrophyte or non-hydrophyte	Y
Facultative Upland (FACU)	Occasionally is a hydrophyte but usually occurs in uplands	N
Upland/Not Listed (UPL/NL)	Rarely is a hydrophyte, almost always in uplands	N

\*Lichvar (2014).

The presence of hydrophytic vegetation was then determined based on indicator tests described in the Arid West Supplement. The Arid West Supplement requires that a three-step process be conducted to determine if hydrophytic vegetation is present. The procedure first requires the delineator to apply the “50/20 rule” (Indicator 1; Dominance Test) described in the manual. To apply the “50/20 rule”, dominant species are chosen independently from each stratum of the community. Dominant species are determined for each vegetation stratum from a sampling plot of an appropriate size surrounding the sample point. Dominants are the most abundant species that individually or collectively account for more than 50 percent of the total vegetative cover in the stratum, plus any other species that, by itself, accounts for at least 20 percent of the total vegetative cover. If greater than 50 percent of the dominant species has an OBL, FACW, or FAC status, the sample point meets the hydrophytic vegetation criterion.

If the sample point fails Indicator 1 and both hydric soils and wetland hydrology are not present, then the sample point does not meet the hydrophytic vegetation criterion, unless the site is a problematic wetland situation. However, if the sample point fails Indicator 1 but hydric soils and wetland hydrology are both present, the delineator must apply Indicator 2.

Indicator 2 is known as the Prevalence Index. The prevalence index is a weighted average of the wetland indicator status for all plant species within the sampling plot. Each indicator status is given a numeric code (OBL = 1, FACW = 2, FAC = 3, FACU = 4, and UPL = 5). Indicator 2 requires the delineator to estimate the percent cover of each species in every stratum of the community and sum the cover estimates for any species that is present in more than one

stratum. The delineator must then organize all species into groups according to their wetland indicator status and calculate the Prevalence Index using the following formula, where A equals total percent cover:

$$PI = \frac{A_{OBL} + 2A_{FACW} + 3A_{FAC} + 4A_{FACU} + 5A_{UPL}}{A_{OBL} + A_{FACW} + A_{FAC} + A_{FACU} + A_{UPL}}$$

The Prevalence Index will yield a number between 1 and 5. If the Prevalence Index is equal to or less than 3, the sample point meets the hydrophytic vegetation criterion. However, if the community fails Indicator 2, the delineator must proceed to Indicator 3.

Indicator 3 is known as Morphological Adaptations. If more than 50 percent of the individuals of a FACU species have morphological adaptations for life in wetlands, that species is considered to be a hydrophyte and its indicator status should be reassigned to FAC. If such observations are made, the delineator must recalculate Indicators 1 and 2 using a FAC indicator status for this species. The sample point meets the hydrophytic vegetation criterion if either test is satisfied.

### Hydrology

The Corps jurisdictional wetland hydrology criterion is satisfied if an area is inundated or saturated for a period sufficient to create anoxic soil conditions during the growing season (a minimum of 14 consecutive days in the Arid West region). Evidence of wetland hydrology can include primary indicators, such as visible inundation or saturation, drift deposits, oxidized root channels, and salt crusts, or secondary indicators such as the FAC-neutral test, presence of a shallow aquitard, or crayfish burrows. The Arid West Supplement contains 16 primary hydrology indicators and 10 secondary hydrology indicators. Only one primary indicator is required to meet the wetland hydrology criterion; however, if secondary indicators are used, at least two secondary indicators must be present to conclude that an area has wetland hydrology.

The presence or absence of the primary or secondary indicators described in the Arid West Supplement was utilized to determine if sample points within the Study Area met the wetland hydrology criterion.

### Soils

The Natural Resource Conservation Service (NRCS) defines a hydric soil as follows:

*“A hydric soil is a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part.”*

Federal Register July 13, 1994, U.S. Department of Agriculture, NRCS

Soils formed over long periods of time under wetland (anaerobic) conditions often possess characteristics that indicate they meet the definition of hydric soils. Hydric soils can have a hydrogen sulfide (rotten egg) odor, low chroma matrix color, generally designated 0, 1, or 2,

used to identify them as hydric, presence of redox concentrations, gleyed or depleted matrix, or high organic matter content.

Specific indicators that can be used to determine whether a soil is hydric for the purposes of wetland delineation are provided in the NRCS *Field Indicators of Hydric Soils in the U.S.* (USDA 2010). The Arid West Supplement provides a list of 23 of these hydric soil indicators which are known to occur in the Arid West region. Soil samples were collected and described according to the methodology provided in the Arid West Supplement. Soil chroma and values were determined by utilizing a standard Munsell soil color chart (Munsell Color 2009).

Hydric soils were determined to be present if any of the soil samples met one or more of the 23 hydric soil indicators described in the Arid West Supplement.

### **3.1.2 Other Waters of the U.S.**

This study also evaluated the presence of “waters of the U.S.” (other than wetlands) potentially subject to Corps jurisdiction under Section 404 of the CWA. Other areas, besides wetlands, subject to Corps jurisdiction include lakes, rivers and streams (including intermittent streams) in addition to all areas below the HTL in areas subject to tidal influence.

In tidal areas, the elevation of the HTL is defined as:

*“...the line of intersection of the land with the water's surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm.”*

Federal Register Vol. 51, No. 219, Part 328.3 (d). November 13, 1986

The elevation of the HTL was determined based on a combination of field observations and data reported by the National Oceanic and Atmospheric Administration (NOAA) for San Francisco Pier 22 ½ (Station ID #9414317), correlated to correspond with North American Vertical Datum (NAVD) 1988. The elevation of the HTL was determined to be approximately 7.63 feet NAVD88.

## **3.2 Difficult Wetland Situations in the Arid West**

The Arid West Supplement (Corps 2008) includes procedures for identifying wetlands that may lack indicators due to natural processes (problem areas) or recent disturbances (atypical situations). “Problem area” wetlands are defined as naturally occurring wetland types that periodically lack indicators of hydrophytic vegetation, hydric soil, or wetland hydrology due to normal seasonal or annual variability. Some problem area wetlands may permanently lack certain indicators due to the nature of the soils or plant species on the site. “Atypical situations” are defined as wetlands in which vegetation, soil, or hydrology indicators are absent due to recent human activities or natural events.

The list of difficult wetland situations provided in the Arid West Supplement includes wetlands with problematic hydrophytic vegetation, problematic hydric soils, and wetlands that periodically lack indicators of wetland hydrology. The problem area and atypical situation sections of the Corps Manual (Environmental Laboratory 1987) were utilized to determine if any sample points taken within the Study Area met the criteria for a problem area or atypical situation. If any determination was based on less than three parameters, the rationale for the wetland determination was explained on the data sheets included in Appendix A. Although the Corps Manual and Arid West Supplement were utilized in the wetland determination, they do not provide exhaustive lists of the difficult situations that can arise during delineations in the Arid West. As a result, WRA interpreted the gathered data using best professional judgment and knowledge of the ecology of the wetlands in the region.

### **3.3 Areas Potentially Exempt from Section 404 Jurisdiction**

Some areas that meet the technical criteria for wetlands or waters may not be jurisdictional under the CWA per Section 404 regulations and the Corps Manual. Included in this category are:

- Some man-induced wetlands, including areas that are maintained only due to the presence of man-induced hydrology (1987 Corps Manual);
- Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of the CWA (33 CFR 328.3a);
- Ditches dug wholly in, and draining only uplands and that do not carry a relatively permanent flow of water (51 Fed. Reg. 41206, Corps 2008);
- Artificial lakes or ponds created by excavating and/or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing (51 Fed. Reg. 41206);
- Artificial reflecting or swimming pools, or other similar ornamental bodies of water created by excavating and/or diking dry land to retain water for primarily aesthetic reasons (51 Fed. Reg. 41206);
- Water-filled depressions created as a result of construction activity (51 Fed. Reg. 41206);
- Pits excavated in upland for fill, sand, or gravel (51 Fed. Reg. 41206); and
- Areas that are isolated from and/or do not have a significant nexus to navigable waters of the U.S. (Corps 2008).

Features meeting the criteria for wetlands and non-wetland waters within the Study Area were evaluated in the context of these exemptions for making determinations of areas potentially within the Corps' jurisdiction.

### **3.4 Section 10 Navigable Waters**

This delineation study also determined the extent of areas subject to Corps jurisdiction under Section 10 of the RHA of 1899. Corps jurisdiction under Section 10 applies to any "navigable waters of the United States." Navigable waters are generally determined by the Corps and kept

on file at the Corps District offices. In tidally influenced areas, such as those within the Study Area, the upper limit of “navigable waters” is defined as the elevation of “mean high water” (MHW) (FR Doc 86-25301, 329.12.b). Section 10 navigable waters within the Study Area were therefore mapped for this delineation as areas below the elevation of MHW.

The elevation of the MHW was determined based on the data reported by NOAA for the San Francisco Pier 22 ½ (Station ID #9414317), correlated to correspond with NAVD88. The elevation of the MHW was determined to be approximately 5.62 feet NAVD88. This elevation was used to determine areas within Corps Section 10 jurisdiction.

#### **4.0 STUDY AREA DESCRIPTION**

The Study Area is approximately 11.42 acres, located near the intersection of Innes Avenue and Griffin Street in the Hunter’s Point/Bayview neighborhood in the City and County San Francisco, California. The Study Area includes the India Basin Shoreline Park and the property at 900 Innes Avenue. Currently, the site is bordered by industrial, commercial, and residential uses to the west and south on Hunters Point Boulevard and Innes Avenue, the former Hunters Point Power Plant and Heron’s Head Park to the north, and India Basin (San Francisco Bay) to the northeast.

##### *Vegetation*

Vegetation within the Study Area consisted primarily of ruderal, non-native grass and herbaceous species with some shrubs and trees. Dominant grass and herbaceous species included wild oats (*Avena* sp., NL), ripgut brome (*Bromus diandrus*, NL), foxtail chess (*Bromus madritensis*, UPL), soft chess (*Bromus hordeaceus*, FACU), milk thistle (*Silybum marianum*, NL), fennel (*Foeniculum vulgare*, NL), wild radish (*Raphanus sativus*, NL), and Himalayan blackberry (*Rubus armeniacus*, FACU), among other species. Dominant trees and shrubs included silver wattle (*Acacia dealbata*, NL), California buckeye (*Aesculus californica*, NL), toyon (*Heteromeles arbutifolia*, NL), bush lupine (*Lupinus* sp., NL), Fremont cottonwood (*Populus fremontii* ssp. *fremontii*, FACW), and coast live oak (*Quercus agrifolia*, NL), among other species. Vegetation within the India Basin Shoreline Park is regularly mowed. Tidal marsh within the Study Area is dominated by saltgrass (*Distichlis spicata*, FACW), alkali heath (*Frankenia salina*, FACW), marsh jaumea (*Jaumea carnosa*, OBL), and pickleweed (*Salicornia pacifica*, OBL).

##### *Hydrology*

Natural hydrological sources for the Study Area include precipitation, surface run-off from adjacent lands, and tidal influence. Two storm drain outfalls were observed within the Study Area, although no flowing water was observed at the outfall locations during the field visit. The majority of the India Basin Shoreline Park is irrigated.

##### *Soils*

The San Francisco Soil Survey (USDA 2015) indicates that the Study Area has one, non-native soil type: Urban land-Orthents, reclaimed complex, 0 to 2 percent slopes. Urban land-Orthents is listed as a hydric soil on the NRCS Official List of U.S. Hydric Soils (USDA 2014). This soil type is described in detail below and is shown in Figure 2. Soil samples analyzed during the

site visit showed that sampled areas were dominated by deposited fill material, including pieces of decomposed wood, sand, gravel, and Franciscan rock.

**Urban land-Orthents.** The Urban land-Orthents series consists of well-drained soils composed of mixed fill on disturbed and developed areas. Runoff is slow. This map unit includes areas that were once part of San Francisco Bay and adjacent tidal flats. It is about 65 percent urban land and 30 percent Orthents, reclaimed. Orthents consist of soils that have been filled and vary greatly in texture, including soil, gravel, concrete and asphalt rubble, solid wastes, and Bay Mud. These soils have highly variable soil characteristics that are related to the differences and amount of fill material used. Some areas may have a permanent high water table at a depth of 30 to 60 inches due to fluctuating tides. The main limitations of these soils are a high water table, potential for subsidence and low fertility.



### Soil Types

- Urban land-Orthents, reclaimed complex, 0 to 2 percent slopes
- Water

Figure 2. Soil Types within Study Area



India Basin Shoreline Park and 900 Innes Ave.  
City and County of San Francisco, California

0 50 100 200  
Feet



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Map Prepared Date: 6/8/2015  
Map Prepared By: pkobylarz  
Base Source: Esri Streaming Imagery 2010  
Data Source(s): WRA

## 5.0 RESULTS

Potential Section 404 and Section 10 jurisdictional areas are described in the following sections and depicted in Appendix A. Vegetation, soils and hydrology data collected during delineation site visits are reported on standard Corps Arid West Region data forms in Appendix B. Photos of representative portions of the Study Area and sample points are shown in Appendix C. A list of wildlife and plant species observed during the site visits is included in Appendix D.

### 5.1 Potential Section 404 Waters of the U.S.

#### 5.1.1 Wetlands

Two tidal marsh features are present within the Study Area, occupying approximately 0.13 acre. Tidal marsh is located in the north region of the India Basin Shoreline Park, in the north part of the Study Area. Tidal marsh within the Study Area is not remnant tidal marsh as the site was previously open water. The tidal marsh habitat onsite appears to have established subsequent to the deposition of a large quantity of fill material placed for the creation of present-day India Basin Shoreline Park (Google Earth 2015). One tidal marsh feature within the Study Area appears on the NWI as estuarine and marine wetland, while the other tidal marsh feature appears as estuarine and marine deep water.

Tidal marsh within the Study Area is supported hydrophytic plant species including saltgrass, alkali heath, marsh jaumea, and pickleweed. Overall, the tidal marsh was dominated by obligate, facultative wetland, and facultative species, and was saturated or inundated at the time of the field visit. Due to the presence of hydrophytic plant species and soil saturation/ponding, hydric soils were inferred.

Sample Point 1a (SP1a) was collected within one of the two tidal marsh features within the Study Area. Vegetation at SP1a was dominated by alkali heath and saltgrass. Soil was composed of sandy clay loam. Hydrophytic vegetation and wetland hydrology were observed and hydric soils were inferred due to the presence of saturation and ponding. Soils at the sample point clearly showed high content of fill and debris, such as decomposed wood and Franciscan rock.

Sample Point 1b (SP1b) was collected in an upland area adjacent to SP1a and is characteristic of the surrounding upland area. Vegetation in SP1b was dominated by ripgut brome with cheeseweed mallow (*Malva parviflora*, NL), sealavender (*Limonium perezii*, NL), Bermuda buttercup (*Oxalis pes-caprae*, NL), and redstem stork's bill (*Erodium cicutarium*, NL) scattered throughout. Soils were similar to the soils observed in SP1a; however, without saturation. The boundary between the tidal marsh and upland areas was clearly demarcated by a transition to upland species and a steepening of the slope.

#### 5.1.2 Other Waters of the U.S.

##### Open Water and Developed Open Water

Approximately 2.65 acres of open water (India Basin or San Francisco Bay) occur within the Study Area. In addition, approximately 0.28 acre of developed open water is located in the southern region of the Study Area. Developed open water includes areas bayward of the HTL that contain a concrete substructure or large debris material, or are located beneath existing docks and other pile-supported structures. Developed open water in the Study Area is largely unvegetated and subject to the tides.

## **5.2 Difficult Wetland Situations in the Arid West**

The location of tidal marsh habitat in the Study Area is comprised of historic Bay fill. The Corps manual states that due to the lengthy time periods required to create hydric soils, many man-induced wetlands may not have hydric soil indicators. Soils within the Study Area soils samples consisted of fill material, including decomposed wood and other debris and had limited hydric soil indicators. Accordingly, application of the multi-parameter approach in making wetland determinations in man-induced wetlands must be based on the presence of hydrophytic vegetation and wetland hydrology (Environmental Laboratory 1987). As such, wetland determinations within the Study Area were made focusing on the presence of hydrophytic vegetation and wetland hydrology indicators.

## **5.3 Section 10 Navigable Waters**

Approximately 2.69 acres of navigable waters occur within the Study Area. This area consists of unvegetated Bay waters and is located below MHW along the bayside edge of the Study Area. This portion of the site is subject to Corps jurisdiction under Section 10 of the RHA.

## **6.0 POTENTIAL CORPS JURISDICTION**

The Study Area has 0.13 acre of tidal marsh habitat, 2.65 acres of open water, and 0.28 acre of non-wetland waters that may be considered jurisdictional under Section 404 of the CWA. In addition, 2.69 acres of tidal waters present within the Study Area may be subject to the Corps under Section 10 of the RHA. Tidal marsh was dominated by hydrophytic vegetation with FAC, FACW, and OBL classified plants and contained wetland hydrology indicators. These areas are adjacent to “navigable waters of the U.S.” and therefore meet the definition of jurisdictional wetlands and “other waters” in Section 404 of the CWA.

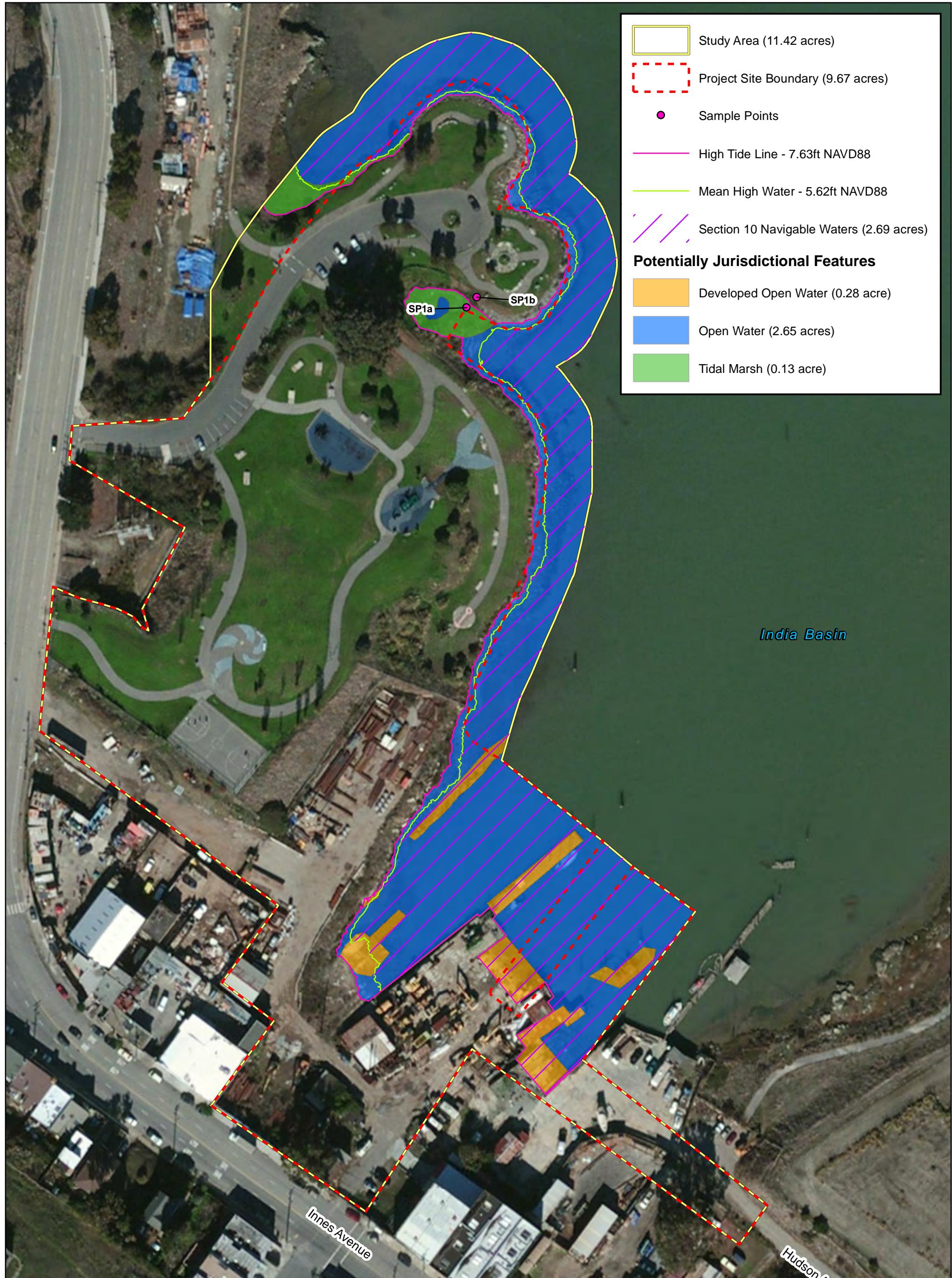
The conclusion of this delineation is based on conditions observed at the time of the field surveys conducted on March 11, 2015.

## **7.0 REFERENCES**

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**APPENDIX A**  
**Preliminary Section 404 Jurisdictional Map**





Appendix A. Jurisdictional Delineation



India Basin Shoreline Park and 900 Innes Ave.  
City and County of San Francisco, California

0 50 100 200  
Feet

Map Prepared Date: 6/9/2015  
Map Prepared By: pkobylarz  
Base Source: Esri Streaming Imagery  
Data Source(s): WRA, USGS



**APPENDIX B**  
**Wetland Delineation Data Sheets**



# Wetland Determination Data Form - Arid West Region

Project/Site 900 Innes Road (Project #24318) City San Francisco County San Francisco Sampling Date 3/11/2015  
 Applicant/Owner City of San Francisco State CA Sampling Point SP1a  
 Investigator(s) Tiffany Edwards, Ellie Knecht Section, Township, Range N/A  
 Landform (hillslope, terrace, etc.) Bay margin Local Relief (concave, convex, none) Concave Slope(%) 0-5  
 Subregion(LRR) LRR C (Medit. CA) Lat: 37°43'56.01"N Long: 122°22'33.01"W Datum: WGS 84  
 Soil Map Unit Name Urban land-Orthents, reclaimed complex, 0 to 2 percent slopes NWI classification None

Are climatic/hydrologic conditions on-site typical for this time of year?  Yes  No (If no, explain in remarks)

Are any of the following significantly disturbed?  Vegetation  Soil  Hydrology Are "Normal Circumstances" present?  Yes  No

Are any of the following naturally problematic?  Vegetation  Soil  Hydrology (If needed, explain any answers in remarks)

## **SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Hydric Soil Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<b>Is the Sampled Area within a Wetland?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>Remarks:</b> Sampling occurred approximately 1-2 hours after low tide. Area consists of historic fill deposits and is highly disturbed. Sample point 1a meets criteria for hydrophytic vegetation, wetland hydrology, and hydric soils and thus is within a wetland.	

## **VEGETATION (use scientific names)**

<u>TREE STRATUM</u> Plot Size: _____		Absolute % cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet</b>		
1.	_____	_____	_____	_____	Number of Dominant Species that are OBL, FACW, or FAC?	<u>2</u> (A)	
2.	_____	_____	_____	_____	Total number of dominant species across all strata?	<u>2</u> (B)	
3.	_____	_____	_____	_____	% of dominant species that are OBL, FACW, or FAC?	<u>100</u> (A/B)	
4.	_____	_____	_____	_____			
<b>Tree Stratum Total Cover:</b> _____							
<u>SAPLING/SHRUB STRATUM</u> Plot Size: _____						<b>Prevalence Index Worksheet</b>	
1.	_____	_____	_____	_____	Total % cover of:	Multiply by:	
2.	_____	_____	_____	_____	OBL species	x1	
3.	_____	_____	_____	_____	FACW species	50 x2	100
4.	_____	_____	_____	_____	FAC species	50 x3	150
<b>Sapling/Shrub Stratum Total Cover:</b> _____					FACU species	x4	
<u>HERB STRATUM</u> Plot Size: <u>5' x 5'</u>		_____	Y	FACW	UPL species	x5	
1.	<u>Frankenia salina</u>	<u>50</u>	<u>Y</u>	<u>FACW</u>	Column Totals	<u>100</u> (A)	<u>250</u> (B)
2.	<u>Distichlis spicata</u>	<u>50</u>	<u>Y</u>	<u>FAC</u>	Prevalence Index = B/A =	<u>2.5</u>	
3.	<u>Limonium perezii</u>	<u>1</u>	<u>N</u>	<u>NL</u>			
4.	_____	_____	_____	_____	<b>Hydrophytic Vegetation Indicators</b>		
5.	_____	_____	_____	_____	<input checked="" type="checkbox"/> Dominance Test is >50%		
6.	_____	_____	_____	_____	<input checked="" type="checkbox"/> Prevalence Index is </= 3.0 <sup>1</sup>		
7.	_____	_____	_____	_____	<input type="checkbox"/> Morphological adaptations (provide supporting data in remarks)		
8.	_____	_____	_____	_____	<input type="checkbox"/> Problematic hydrophytic vegetation <sup>1</sup> (explain)		
<b>Herb Stratum Total Cover:</b> <u>101</u>							
<u>WOODY VINE STRATUM</u> Plot Size: _____						<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
1.	_____	_____	_____	_____			
2.	_____	_____	_____	_____			
<b>Woody Vines Total Cover:</b> _____					<b>Hydrophytic Vegetation Present ?</b>		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
% Bare ground in herb stratum <u>5</u> (open water) % cover of biotic crust _____							

**Remarks:** Sample point meets hydrophytic vegetation criteria.

SOIL

**Sampling Point** SP1a

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

<sup>2</sup>Location: 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)
  - 1cm 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 Soils<sup>3</sup>:

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

<sup>3</sup>Indicators of hydric vegetation and wetland hydrology must be present.

#### **Restrictive Layer (if present):**

Type: \_\_\_\_\_

**Depth (inches):** \_\_\_\_\_

Hydric Soil Present?  Yes  No

**Remarks:** Soil is mixed, deposited fill material. Deposits of black material, possibly decomposed wood, and Franciscan rock visible. Clearly tidally influenced based on presence of water channels, standing water, and historic aerial imagery. Saturation within 12" of surface. Soil map unit is Urban land-Orthents, reclaimed complex, 0 to 2 percent slopes, which is a hydric soil according to the NRCS 2014 hydric soil list. Sample point meets hydric soils criteria.

HYDROLOGY

## **Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

#### **Secondary Indicators (2 or more required)**

- 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 Plowed Soils (C6)
  - Other (Explain in Remarks)
  - 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?  Yes  No Depth (inches): 4"

**Wetland Hydrology Present ?**  Yes  No

Describe recorded data (stream gauge, monitoring well, aerial photos, etc.) if available.

Remarks: Saturation within 4" at sample point test pit. Surface water present in surrounding area. Large area of unvegetated water present, likely from receding high tide. Crab visible within test pit. Sample point meets wetland hydrology criteria.

# Wetland Determination Data Form - Arid West Region

Project/Site 900 Innes Road (Project #24318) City San Francisco County San Francisco Sampling Date 3/11/2015  
 Applicant/Owner City of San Francisco State CA Sampling Point SP1b  
 Investigator(s) Tiffany Edwards, Ellie Knecht Section, Township, Range N/A  
 Landform (hillslope, terrace, etc.) Bay margin Local Relief (concave, convex, none) Concave Slope(%) 0-5  
 Subregion(LRR) LRR C (Medit. CA) Lat: 37°43'56.01"N Long: 122°22'33.01"W Datum: WGS 84  
 Soil Map Unit Name Urban land-Orthents, reclaimed complex, 0 to 2 percent slopes NWI classification None

Are climatic/hydrologic conditions on-site typical for this time of year?  Yes  No (If no, explain in remarks)

Are any of the following significantly disturbed?  Vegetation  Soil  Hydrology Are "Normal Circumstances" present?  Yes  No

Are any of the following naturally problematic?  Vegetation  Soil  Hydrology (If needed, explain any answers in remarks)

## **SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Hydric Soil Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<b>Is the Sampled Area within a Wetland?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
---	--

**Remarks:** Sampling occurred approximately 1-2 hours after low tide. Area consists of historic fill deposits and is highly disturbed. Sample point 1b does not meet hydrophytic vegetation, hydric soils, and wetland hydrology criteria. Sample point 1b is not a wetland.

## **VEGETATION (use scientific names)**

<u>TREE STRATUM</u> Plot Size: _____		Absolute % cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet</b>		
1.	_____	_____	_____	_____	Number of Dominant Species that are OBL, FACW, or FAC?	<u>0</u> (A)	
2.	_____	_____	_____	_____	Total number of dominant species across all strata?	<u>1</u> (B)	
3.	_____	_____	_____	_____	% of dominant species that are OBL, FACW, or FAC?	<u>0</u> (A/B)	
4.	_____	_____	_____	_____			
<b>Tree Stratum Total Cover:</b> _____							
<u>SAPLING/SHRUB STRATUM</u> Plot Size: _____						<b>Prevalence Index Worksheet</b>	
1.	_____	_____	_____	_____	Total % cover of:	_____	Multiply by:
2.	_____	_____	_____	_____	OBL species	_____	x1 _____
3.	_____	_____	_____	_____	FACW species	_____	x2 _____
4.	_____	_____	_____	_____	FAC species	_____	x3 _____
<b>Sapling/Shrub Stratum Total Cover:</b> _____					FACU species	_____	x4 _____
<u>HERB STRATUM</u> Plot Size: <u>5' x 5'</u>		60	Y	NL	UPL species	_____	x5 _____
1.	<u>Bromus diandrus</u>	60	Y	NL	Column Totals	(A)	(B)
2.	<u>Malva parviflora</u>	10	N	NL			
3.	<u>Limonium perezii</u>	5	N	NL			
4.	<u>Oxalis pes-caprae</u>	5	N	NL			
5.	<u>Erodium cicutarium</u>	5	N	NL			
6.	<u>Erodium botrys</u>	+	N	FACU			
7.	_____	_____	_____	_____			
8.	_____	_____	_____	_____			
<b>Herb Stratum Total Cover:</b> <u>85</u>					<b>Hydrophytic Vegetation Indicators</b>		
<u>WOODY VINE STRATUM</u> Plot Size: _____						<input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is </= 3.0 <sup>1</sup> <input type="checkbox"/> Morphological adaptations (provide supporting data in remarks) <input type="checkbox"/> Problematic hydrophytic vegetation <sup>1</sup> (explain)	
1.	_____	_____	_____	_____	_____	_____	_____
2.	_____	_____	_____	_____	_____	_____	_____
<b>Woody Vines Total Cover:</b> _____					<b>Hydrophytic Vegetation Present ?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
% Bare ground in herb stratum <u>10</u> % cover of biotic crust <u>_____</u>							

**Remarks:** Sample point does not meet hydrophytic vegetation criteria.

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

SOIL

Sampling Point SP1b

# HYDROLOGY

<b>Wetland Hydrology Indicators:</b>		
Primary Indicators (any one indicator is sufficient)		
<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 Plowed 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)		
<b>Field Observations:</b>		
Surface water present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No      Depth (inches): _____
Water table present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No      Depth (inches): _____
Saturation Present? (includes capillary fringe)	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No      Depth (inches): _____
<b>Wetland Hydrology Present ?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Describe recorded data (stream gauge, monitoring well, aerial photos, etc.) if available.		
Remarks: Soils are dry. Sample point does not meet wetland hydrology criteria.		

**APPENDIX C**  
**Representative Photographs of the Study Area**





Above: India Basin Shoreline Park landscaped and well-maintained park.

Below: Tidal marsh in the northern Study Area, very limited and disturbed marsh habitat.

Photographs taken March 11, 2015.





Above: Tidal marsh habitat along the eastern edge of India Basin Shoreline Park with limited marsh habitat and abrupt change to maintained park.

Below: Study Area and shoreline within the 900 Innes parcel.

Photographs taken March 11, 2015.





Above: Abandoned house and overgrown shed within the 900 Innes parcel.

Below: Filled and developed shoreline at the 900 Innes parcel.

Photographs taken March 11, 2015.





**APPENDIX D**  
**Wildlife and Plant Species Observed in the Study Area**



Appendix D. Wildlife and plant species observed by WRA biologists during the March 11, 2015 site visit.

SCIENTIFIC NAME	COMMON NAME
<b>Birds</b>	
<i>Egretta thula</i>	snowy egret
<i>Ardea alba</i>	great egret
<i>Ardea herodias</i>	great blue heron
<i>Numenius phaeopus</i>	whimbrel
<i>Tringa semipalmata</i>	willet
<i>Recurvirostra americana</i>	American avocet
<i>Himantopus mexicanus</i>	black-necked stilt
<i>Pelecanus occidentalis</i>	brown pelican
<i>Branta canadensis</i>	Canada goose
<i>Fulica americana</i>	American coot
<i>Aechmophorus occidentalis</i>	western grebe
<i>Anas americana</i>	American wigeon
<i>Oxyura jamaicensis</i>	ruddy duck
<i>Bucephala albeola</i>	bufflehead
<i>Larus occidentalis</i>	western gull
<i>Calypte anna</i>	Anna's hummingbird
<i>Mimus polyglottos</i>	northern mocking bird
<i>Haemorhous mexicanus</i>	house finch
<i>Columba livia</i>	rock pigeon
<i>Streptopelia decaocto</i>	Eurasian collared dove
<i>Euphagus cyanocephalus</i>	Brewer's blackbird
<i>Corvus brachyrhynchos</i>	American crow
<i>Corvus corax</i>	common raven
<i>Sturnus vulgaris</i>	European starling
<i>Melozone crissalis</i>	California towhee
<i>Zonotrichia leucophrys</i>	white-crowned sparrow
<b>Mammals</b>	
<i>Thomomys bottae</i>	Botta's pocket gopher (mounds)
<i>Procyon lotor</i>	Raccoon (tracks and carcass)
<b>Amphibians</b>	
<i>Pseudacris sierra</i>	Sierran tree frog
<b>Invertebrates</b>	
<i>Papilio rutulus</i>	western tiger swallowtail
<i>Hemigrapsus nudus</i>	purple shoreline crab
<b>Plants</b>	
SCIENTIFIC NAME	COMMON NAME
<i>Acacia dealbata</i>	silver wattle
<i>Achillea millefolium</i>	common yarrow

<i>Aesculus californica</i>	California buckeye
<i>Agoseris heterophylla</i> var. <i>heterophylla</i>	annual agoseris
<i>Artemisia californica</i>	coast sagebrush
<i>Avena barbata</i>	slender oat
<i>Avena fatua</i>	wild oat
<i>Baccharis pilularis</i>	coyote brush
<i>Bromus catharticus</i> var. <i>elatus</i>	Chilean brome
<i>Bromus diandrus</i>	ripgut brome
<i>Bromus hordeaceus</i>	soft chess
<i>Bromus madritensis</i>	foxtail chess
<i>Cakile maritima</i>	European searocket
<i>Callitriches heterophylla</i> var. <i>heterophylla</i>	water starwort
<i>Carpobrotus chilensis</i>	sea fig
<i>Carpobrotus edulis</i>	iceplant
<i>Centranthus ruber</i>	red valerian
<i>Cortaderia jubata</i>	pampas grass
<i>Distichlis spicata</i>	saltgrass
<i>Erodium botrys</i>	longbeak stork's bill
<i>Erodium cicutarium</i>	redstem stork's bill
<i>Eucalyptus globulus</i>	blue gum
<i>Festuca myuros</i>	rattail fescue
<i>Festuca rubra</i>	red fescue
<i>Foeniculum vulgare</i>	fennel
<i>Fragaria vesca</i>	woodland strawberry
<i>Frankenia salina</i>	alkali heath
<i>Genista monspessulana</i>	French broom
<i>Geranium dissectum</i>	cutleaf geranium
<i>Geranium molle</i>	woodland geranium
<i>Glebionis coronaria</i>	corndaisy
<i>Grindelia stricta</i> var. <i>stricta</i>	Oregon gumweed
<i>Helminthotheca echioides</i>	bristly ox-tongue
<i>Heteromeles arbutifolia</i>	toyon
<i>Heterotheca grandiflora</i>	telegraph weed
<i>Hordeum marinum</i> ssp. <i>gussoneanum</i>	Mediterranean barley
<i>Hordeum murinum</i>	foxtail
<i>Iris douglasiana</i>	Douglas' iris
<i>Jaumea carnosa</i>	marsh jaumea
<i>Juncus</i> sp.	rush
<i>Liliaceae</i> sp.	lily (not in bloom)
<i>Limonium perezii</i>	sealavender
<i>Limosella australis</i>	Welsh mudwort

<i>Lotus corniculatus</i>	bird's-foot trefoil
<i>Lupinus albifrons</i> var. <i>albifrons</i>	silver bush lupine
<i>Lupinus arboreus</i>	yellow bush lupine
<i>Malva parviflora</i>	cheeseweed mallow
<i>Medicago polymorpha</i>	bur medic
<i>Mimulus aurantiacus</i> var. <i>aurantiacus</i>	sticky monkey
<i>Oxalis pes-caprae</i>	Bermuda buttercup
<i>Phytolacca icosandra</i>	tropical pokeweed
<i>Plantago coronopus</i>	buckhorn plantain
<i>Plantago lanceolata</i>	English plantain
<i>Populus fremontii</i> ssp. <i>fremontii</i>	Fremont cottonwood
<i>Pyracantha angustifolia</i>	narrowleaf firethorn
<i>Quercus agrifolia</i> var. <i>agrifolia</i>	coast live oak
<i>Raphanus sativus</i>	wild radish
<i>Rubus armeniacus</i>	Himalayan blackberry
<i>Rumex crispus</i>	curly dock
<i>Salicornia pacifica</i>	pickleweed
<i>Salix lasiolepis</i>	arroyo willow
<i>Silybum marianum</i>	milk thistle
<i>Trifolium dubium</i>	shamrock clover
<i>Vicia sativa</i> ssp. <i>sativa</i>	pubescent common vetch