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Final
Wetland Delineation
Installation Restoration Site 32

Alameda Point
Alameda, California

August 2011
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Prepared for:

Prepared by:

CH2M HILL-Kleinfelder Joint Venture

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U.S. Department of the Navy
Base Realignment and Closure
Program Management Office West

Prepared by:

CH2M HILL Kleinfelder, A Joint Venture (KCH)
1320 Columbia Street, Suite 310
San Diego, California 92101

Russell Huddleston
Certified Professional Wetlands Scientist

Diane Sarmiento, P.E.
Task Order Manager

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Acronyms and Abbreviations

°F	degree(s) Fahrenheit
BRAC	Base Realignment and Closure
CFR	*Code of Federal Regulations*
IR	Installation Restoration
KCH	CH2M HILL Kleinfelder, A Joint Venture
Navy	United States Department of the Navy
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
OBL	obligate – almost always found in wetlands
PEMA	Palustrine Emergent Temporarily Flooded
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USGS	United States Geological Survey

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Executive Summary

A wetland delineation was conducted at Installation Restoration (IR) Site 32, Alameda Point in Alameda, California. This work was performed in accordance with Naval Facilities Engineering Command Southwest Contract No. N62473-09-D-2622, Modification 1, under Contract Task Order No: 0006 for the United States Department of the Navy (Navy), Base Realignment and Closure (BRAC) Program Management Office West. Field surveys were completed by CH2M HILL Kleinfelder, A Joint Venture (KCH) biologists on July 28 and 29, 2010, and on March 31, 2011. The wetland delineation identified a total of 11.76 acres of potential jurisdictional seasonal wetlands within the 88-acre IR Site 32. All of these waters and wetlands were considered to be adjacent to the San Francisco Bay and were therefore considered potential jurisdictional waters of the United States subject to regulation under the federal Clean Water Act. The results and conclusions of this delineation are preliminary pending verification by the United States Army Corps of Engineers (USACE).

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1.0 Introduction

CH2M HILL Kleinfelder, A Joint Venture (KCH), has prepared this Wetland Delineation report to provide information regarding the wetland delineation at Installation Restoration (IR) Site 32, Former Naval Air Station Alameda, Alameda Point, Alameda, California. This work was performed in accordance with Naval Facilities Engineering Command Southwest Contract No. N62473-09-D-2622, Modification 1, under Contract Task Order No: 0006 for the United States Department of the Navy (Navy), Base Realignment and Closure (BRAC) Program Management Office West.

Alameda Point is a former Navy base located at the western end of Alameda Island in the San Francisco Bay. The United States Army first began development of the base in 1930 by using dredge material to fill what was at the time shallow open water. From the 1930s until its closure in 1997, Alameda Point was a major operations base for the Navy and also provided support for the United States Marine Corps and other operations that were supported by several thousand military and civilian personnel. The approximately 1,700-acre facility comprised hundreds of buildings and extensive infrastructure including utilities, roadways, tarmacs, piers, and berths.

1.1 Project Location

The approximately 88-acre IR Site 32 is located at the western end of Alameda Point, which is situated on the east side of San Francisco Bay in Alameda County, California. The site is bounded on the south by tarmacs, on the east by San Francisco Bay, and on the north by the Oakland Inner Harbor (Figure 1). IR Site 32 is located in Section 05 Township 02 south, Range 04 west (Mt. Diablo Meridian), in the Oakland West United States Geological Survey (USGS) 7.5-minute topographic quadrangle. The approximate center of the site is at 37.79340 degrees north latitude and -122.32653 degrees west longitude.

1.1.1 Environmental Setting

Alameda Point is located at the western edge of the East Bay Terraces and Alluvium ecological subsection of the Central California Coast subregion (Miles and Gouday, 1998). This subsection is generally characterized by the alluvial plain between the East Bay Hills and the San Francisco Bay. Descriptions of the terrestrial habitats, climate, and hydrology and soils associated with the wetland verification area follow. Descriptions of wetlands and waters are provided in the results section of this report.

1.1.2 Vegetation

Terrestrial vegetation associated IR Site 32 is characterized by a variety of weedy native and naturalized grasses and forbs that reflect the historical origins and disturbance history of Alameda Point. Common species include rip-gut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), red brome (*Bromus madritensis*), black mustard (*Brassica nigra*), horseweed (*Conyza canadensis*), saltgrass (*Distichlis spicata*), birds-foot trefoil (*Lotus corniculatus*), English plantain (*Plantago lanceolata*), stinkwort (*Dittrichia graveolens*),

Mediterranean lineseed (*Bellardia trixago*), and Italian thistle (*Carduus pycnocephalus*). A few Monterey pines (*Pinus* sp.) are present along the southwest boundary of the site and scattered clumps of arroyo willow (*Salix lasiolepis*) shrubs occur in the southeastern part of the site.

1.1.3 Climate and Hydrology

The regional climate is moderated by maritime influences and is characterized by mild temperatures with generally wet winters and dry summers and a year-round growing season (United States Department of Agriculture [USDA], 2002). Average temperatures range from a low of 44 degrees Fahrenheit (°F) in December and January to a high of 75°F in September. Average annual precipitation is 23.10 inches, most of which occurs between November and March (USDA, 2002). Alameda Point is located in the East Bay Cities Hydrologic Area, which has a drainage area of 83,633 acres and is in the San Francisco Bay Hydrologic Unit (Hydrologic Unit Code 18050004).

1.1.4 Soils

The entire wetland verification study area has been mapped as Xeropsamments fill by the USDA (2010). Soil maps for the project area are included in Appendix A. This unit consists of sandy material that was dredged from old beach areas. Elevation ranges from near sea level to 10 feet above sea level, with slopes of less than 2 percent. Approximately 10 percent of the map area consists of areas that are underlain by strongly alkaline clay to a depth of 36 to 48 inches. An additional approximately 5 percent on the map area includes concave areas that have a shallow water table (approximately 36 inches) and may be ponded during the winter. These soils are rapidly permeable but the root zone is restricted to a depth of 40 to 60 inches for water-sensitive plants (USDA, 1981).

2.0 Methods

USACE defines wetlands as areas that are "inundated by surface water or groundwater with 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" (Title 40 *Code of Federal Regulations* [CFR] Section 230.3 and Title 33 CFR Section 238). The survey methodology followed USACE's 1987 *Wetland Delineation Manual* (Environmental Laboratory, 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE, 2008).

The USACE uses the three-criteria approach (vegetation, soils, and hydrology) to determine the presence of wetlands. As a general rule, under this method evidence of a minimum of one positive indicator for each criterion must be found (under normal circumstances and in non-problem areas) to make a positive wetland determination. In general, wetlands will normally meet the following criteria:

Hydrophytic Vegetation: More than 50 percent of the dominant vegetation is composed of plant species that are adapted to survive and grow in hydrophytic (wet) conditions. The *National List of Plants that Occur in Wetlands* (Reed, 1988) was originally developed as an appendix to the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin *et al*., 1979) to aid in the consistent application of this classification system for wetlands in the field. The list assigns a wetland indicator value to a particular plant species based on the probability of the species occurring in a wetland. An obligate wetland plant species (OBL) occurs almost always (estimated probability over 99 percent) under natural conditions in wetlands. A plant species listed as a facultative wetland (FACW) usually occurs in wetlands (estimated probability 67 to 99 percent), but is occasionally found in non-wetlands. A facultative (FAC) plant species is considered equally likely to occur in wetlands or non-wetlands.

Hydric Soils: The Natural Resources Conservation Service (NRCS) defines hydric soil as "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). The criteria for establishing the presence of hydric soils vary among soil types, drainage classes, and land resource regions. The USDA (2006) has developed field indicators for identification of hydric soils. These indicators are used by the USACE in the Arid West Regional Supplement guidelines (USACE, 2008). The indicators rely on soil characteristics such as texture, color, and the presence of redoximorphic features to determine if soils are hydric.

Wetland Hydrology: Areas with wetland hydrology are defined as "…inundated either permanently or periodically at mean water depths less than 2 meters (6.6 feet), or the soil is saturated to the surface at some time during the growing season" (Environmental Laboratory, 1987). This saturation or inundation must be present for at least 5 percent of the growing season for an area to meet the wetland hydrology criterion.

2.1 Prefield Investigation

Prior to conducting the field surveys, existing available information pertaining to potential wetlands and waters located at IR Site 32 were reviewed, including the Oakland West USGS topographic map, the Alameda County Soil Survey (USDA, 1981) and aerial photographs. Information from the National Wetlands Inventory (NWI) was also reviewed prior to the field survey. The NWI is maintained by The U.S. Fish and Wildlife Service and is intended to provide information to on the extent and status of the Nation's wetlands. A copy of the NWI map is included in Appendix B.

2.1.1 Field Survey

A field survey was conducted on July 28 and 29, 2010, by Russell Huddleston and Holly Barbare. Pedestrian surveys were conducted by walking meandering transects throughout the 88-acre site to determine if wetlands or other water features were present. An additional field survey was conducted by Mr. Huddleston on March 31, 2011, to collect supplemental information on soil and hydrological conditions during the wet season.

Sample points were established in potential wetland areas and in selected upland habitats (Figure 2). Vegetation and hydrology indicators for the sample points were recorded on standard USACE wetland determination data sheets. Due to potential radiological contamination and unexploded ordinance concerns, only a limited number of soil pits were excavated during the wetland delineation survey. Where possible, soil observations made during previous studies were noted on the field data sheets. In accordance with the 1987 *Wetland Delineation Manual* (Environmental Laboratory, 1987), hydric soils were assumed present in areas where (1) the dominant vegetation has an OBL or FACW indicator status and (2) there was evidence of wetland hydrology and an abrupt wetland boundary. The wetland determination data forms are included in Appendix C and representative site photographs are included in Appendix D.

At each sample point, the dominant plant species were identified, and the percent of cover was visually estimated and recorded. All taxonomic designations follow the *Jepson Manual of Higher Plants of California* (Hickman, 1993) or the updated taxonomy per the *Jepson Online Interchange for California Floristics* (University of California, 2010). The wetland indicator status was determined using the *National List of Plant Species that Occur in Wetlands* (Reed, 1988). Dominant species within each vegetation strata (tree, shrub, and herb) included the most abundant species for which cumulative cover accounted for at least 50 percent of the total cover, as well as any single species that accounted for at least 20 percent of the total vegetative cover. Strata that contained less than 5 percent total cover were not considered in the dominance test. The sample area for herbaceous species included a 5-foot radius from the sample point.

During the March 31, 2011 field survey, soil morphological features such as texture, color, and redoximorphic features (if present) were logged at a limited number of hand-augered soil borings, which ranged in depth from 6 to 12 inches. Soil texture was estimated in the field by touch (Thein, 1979) and moist soil colors were determined using Munsell color charts. In some situations, where saturated soil was present, alpha alpha-dipyrdyl (a chemical dye) was used to test for the presence of reduced iron (Childs, 1989).

Wetland hydrology was determined in the field based on both dry season (July 2010) observations that indicate seasonal hydrology, such as such as algal matting, drift deposits and water marks, as well as observations of surface inundation and soil saturation during the March 31, 2011 field survey. Where available, information from previous wetlands delineations of IR Site 32 and adjacent areas (TetraTech, 2004; EDAW | AECOM, 2008) andaerial photographs and groundwater elevation data from monitoring wells (AMEC, 2010) was also used to evaluate potential wetland hydrology.

Wetland boundaries were determined in the field based on changes in plant species composition and cover, indicators of wetland hydrology, and local micro-topography. The boundaries were mapped in the field using a Trimble® Geo-XT global position system.

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3.0 Results and Discussion

A total of 11.76 acres of potentially jurisdictional seasonal wetlands were identified within IR Site 32 Table 1, Figure 2). General descriptions of these features are provided as follows. Data sheets and representative photographs are provided in Appendix C and D, respectively.

TABLE 1
Summary of Wetland Features

Feature ID	Acreage
SW-1	5.25
SW-2	4.46
SW-3	1.24
SW-4	0.10
SW-5	0.10
SW-6	0.61
Total Wetlands	**11.76**

3.1 Summary of Potential Wetland Features

The following subsections describe the areas mapped as potential seasonal wetlands based on field observations during the July 2010 and March 2011 field surveys. Wetland determination data sheets are provided in Appendix C and representative photographs area provided in Appendix D. A list of plant species observed on the site is included in Appendix E. The following subsection includes descriptions of the problems associated with making the wetland determinations for these areas and provides the rationale for the wetland determinations.

3.1.1 Seasonal Wetland SW-1

This 5.25-acre seasonal wetland is located in the southeast corner of IR Site 32 (Figure 2). This area includes a mosaic of wet meadow habitat and weakly expressed shallow depressional basins that generally correspond to a mapped Palustrine Emergent Temporarily Flooded (PEMA) wetland included in the National Wetland Inventory (Appendix B). The wet meadow is characterized by a mixture of tall fescue (*Festuca arundinacea*), creeping bent grass (*Agrostis stolonifera*), clustered field sedge (*Carex praegracilis*), and velvet grass *(Holcus lanatus)*. Scattered patches of nut sedge (*Cyperus eragrostis*) and creeping spikerush (*Eleocharis macrostachya*) are present in a few areas.

A broad, weakly expressed depressional basin is present in the southwest part of this wetland area. Characteristic vegetation in this part of the potential wetland includes saltgrass, curly dock (*Rumex crispus*), and rabbitsfoot grass (*Polypogon monspeliensis*). Other

plant species observed in this area included birds-foot trefoil (*Lotus corniculatus*), hyssop loosestrife (*Lythrum hyssopifolia*), Mediterranean barley (*Hordeum marinum*), velvet grass, and Muhlenberg's centaury (*Centaurium muehlenbergii*). Dense patches of cudweed (*Gnaphalium purpureum*), hyssop loosestrife (*Lythrum hyssopifolia*), and common knotweed (*Polygonum aviculare*) were also observed in a few areas.

There is a low sandy area towards the north-central part of the potential wetland characterized by very low-growing saltgrass with fat hen (*Atriplex triangularis*), stunted brass buttons (*Cotula coronopifolia*), and very small, low-growing rabbitsfoot grass.

The potential seasonal wetland was dry at the time of the July 2010 field survey and indicators of seasonal inundation were only observed in a few locations. A biotic crust (algal matting) was observed throughout much of the broad depressional area in the southwest corner. A small amount of algal matting was also noted in the low sandy area in the north central area. During the March 2011 field surveys the soils were saturated to the surface in the wet meadow area and surface water was observed in the shallow depressional basins and low lying areas.

Soils were not examined as part of this delineation, but results from a past observation in this area describe the soils as a very dark gray (10YR 3/1) sand with ash, concrete, and glass in the upper 18 inches (TetraTech, 2004).

3.1.2 Seasonal Wetland SW-2

Seasonal Wetland SW-2 is a 4.46-acre area located near the center of the site (Figure 2). This wetland area is similar to SW-1 in that it is also characterized by a mosaic of wet meadow habitat and low depressional basins and swales. A portion of this area is mapped as a PEMA in the National Wetlands Inventory (Appendix B). Most of the wet meadow area is characterized by dense growth of clustered field sedge intermixed with scattered velvet grass, creeping bentgrass, and birds-foot trefoil. A few slightly elevated hummock areas are present within the wet meadow that are characterized by Mediterranean lineseed, birds-foot trefoil, horseweed, soft chess, rip-gut brome, English plantain, and white sweetclover (*Melilotus albus*).

A broad, weakly expressed, low sandy area is present along the northeastern part of this potential wetland. Vegetative cover is more open in this area and consists of hyssop loosestrife with small, stunted saltgrass, and rabbitsfoot grass. Other species scattered in this area include stinkwort, Muhlenberg's centaury, birds-foot trefoil, and seaside heliotrope (*Heliotropium curassavicum*).

A low drainage swale is present in the wet meadow habitat in the southwestern part of this potential wetland area. The swale is characterized by scattered saltgrass, seaside heliotrope, and stinkwort. The swale terminates in a weakly expressed basin with saltgrass, clustered field sedge, sparse fireweed (*Epilobium* sp.), birds-foot trefoil, hyssop loosestrife, and Mediterranean barley. Another low, weakly expressed swale feature is found along the southwestern edge of this potential wetland; it is characterized by cudweed with saltgrass and clustered field sedge.

The entire area was dry at the time of the July 2010 field survey and indicators of wetland hydrology were only observed in the low sandy area along the northeastern part of the

potential wetland area. Primary indicators of surface water in this area included the presence of a biotic crust (dried algal matting), drift deposits, and water staining observed on wooden posts within the wetland area. Surface water and saturated soils were observed throughout this area during the March 31, 2011 field surveys.

While vegetation and hydrology information was collected in this area no soil data was collected as part of the current survey. Previous investigations of soils in this area describe the upper part as a very dark gray (10YR 3/1) to dark grayish brown (10YR 4/2) sand (TetraTech, 2004).

3.1.3 Seasonal Wetland SW-3

Seasonal Wetland SW-3 is a 1.24-acre area in the southeast part of IR Site 32 (Figure 2). Most of this area is a wet meadow habitat that is characterized by dense clustered field sedge intermixed with scattered tall fescue, velvet grass, and creeping bentgrass. There is a low depressional area near the northwest corner of the potential wetland where sedges are notably absent and the vegetation is characterized by Bermuda grass (*Cynodon dactylon*), hyssop loosestrife, and low-growing stunted rabbitsfoot grass and abundant stinkwort. The eastern arm of this wetland is a weakly expressed drainage swale characterized by dense clustered field sedge, creeping bent grass, Bermuda grass, and stinkwort with several large arroyo willows. A storm drain is present along the northern edge of this wetland feature (Figure 2).

The entire area was dry at the time of the July 2010 field survey. A small amount of dried algal matting was noted in the drainage swale area in the eastern part of seasonal wetland, but no other primary indicators of wetland hydrology were evident. Surface water and saturated soils were observed throughout this area during the March 31, 2011 field surveys.

Soil in this area is a very dark grayish brown sand. No redoximorphic features are present and there was no reaction to alpha alpha-dypridyl on March 31, 2011 despite saturated soil conditions in the upper part.

3.1.4 Seasonal Wetland SW-4

Seasonal Wetland SW-4 is a 0.10-acre low linear depressional feature in the southeast part of IR Site 32 (Figure 2). This area appears to have formed as the result of past soil excavation in this area that has altered the conditions of the site such that it now supports wetland vegetation including a relatively dense cover of rushes (*Schoenoplectus americanus*), creeping spikerush, and hyssop loosestrife. Several arroyo willow saplings and shrubs are also present in the depressional feature.

This area was dry at the time of the July 2010 field survey and no primary indicators of seasonal wetland hydrology were evident. However, obligate – almost always found in wetlands (OBL) sedges and rushes were common in this area and exhibited robust green growth at the time of the July survey. This entire area was inundated during the March 31, 2011 field survey.

No soil data were collected in this area.

3.1.5 Seasonal Wetland SW-5

This 0.10-acre potential wetland appears to also be associated with a shallow excavated area. This sandy depression contains sparse herbaceous wetland vegetation including abundant small, stunted rabbitsfoot grass, hyssop loosestrife, and cudweed. Several arroyo willows are also present in this area.

This area was dry at the time of the July 2010 field survey and no primary indicators of seasonal wetland hydrology were noted within the shallow basin at the time of the field survey. This entire area was inundated during the March 31, 2011 field survey.

No soil data were collected in this area.

3.1.6 Seasonal Wetland SW-6

This seasonal wetland occurs in what appears to be an excavated area near the southeast part of IR Site 32, north of a taxiway (Figure 2). The 0.61-acre sandy basin supports sparse vegetation around the margins consisting of hyssop loosestrife, brass buttons, rabbitsfoot grass, Muhlenberg's centaury, sour clover (*Melilotus indicus*), stinkwort, and several arroyo willow shrubs and saplings.

The basin was dry at the time of the July 2010 field survey, but soil cracks, algal matting, and drift deposits were observed within the basin suggesting that this area is seasonally ponded. This entire area was inundated during the March 2011 field survey.

No soil data were collected in this area.

3.1.7 Areas Investigated but Considered Nonwetlands

A few shallow constructed drainage swales are present in the north-central part of IR Site 32. Two pumps and a concrete discharge area are located at the eastern end of one of these swales. From the pumps the swale extends approximately 500 feet to the west-northwest where it terminates at a storm drain. A second excavated drainage swale runs parallel to northern swale associated with the pumps. This second swale also terminates at the storm drain. A third shallow excavated swale is connected to the second swale feature and runs generally to the south.

Dense stinkwort was common in all of three of the swales at the time of the survey. Other species associated with these areas included saltgrass, white sweetclover, black mustard, Mediterranean lineseed, Muhlenberg's centaury and heliotrope. Vegetation in the surrounding areas included tall fescue, velvet grass, saltgrass, horseweed, black mustard, birds-foot trefoil, Mediterranean lineseed, Muhlenberg's centaury, bull thistle (*Cirsium vulgare*), and Italian thistle (*Carduus pycnocephalus*).

The drainage swales were all dry at the time of the July 2010 field survey and no evidence of flowing or standing water was observed. Many of the plants observed within the swales and the surrounding areas are hydrophytic species, but a number of non-wetland plants such as mustard, horseweed, and Italian thistle occur throughout this area. Some saturated soils were present observed during the March 2011 field surveys, but this was likely due to the recent heavy rains and was not considered to be indicative prolonged wetland conditions.

No soil data were collected in this area as part of this survey. Previous observations are consistent with sandy fill in this area (TetraTech, 2004).

3.2 Survey Conditions and Problem Soils

No significant recent disturbance was observed at IR Site 32 and the overall seasonal conditions were considered to be within the normal range, although the monthly rainfall in March 2011 was above average. Soils throughout IR Site 32 are comprised of dredged fill material and were considered to be problematic. While the *Wetland Delineation Manual* (Environmental Laboratory, 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE, 2008) provide useful guidance, the determination of wetland and nonwetland areas was in many cases based on best professional judgment. As described in the following section, observations of the existing site conditions during July 2010 and March 2011, along with established indicators were used in making the wetland determinations.

3.2.1 Rainfall and Hydrology

The hydrology of the wetlands identified within IR Site 32 appears to be influenced by direct precipitation and localized runoff during the winter and early spring months. During the July 2010 surveys, surface water was absent from all of these areas as a result of normal seasonal conditions. In contrast, surface saturation and inundation was observed in all of the wetland areas during the March 31, 2011 survey. The total rainfall during the month of March 2011 was 4.94 inches, compared to a monthly average of 3.56 inches (University of California Integrated Pest management Program, 2011 [UCIPMP], 2011). A total of 0.67 inches of rainfall was recorded in West Oakland the week immediately preceding the March 31, 2011 survey (UCIPMP, 2011). The higher than average rainfall in March 2011 as well as a relatively significant amount of precipitation immediately preceding the survey, likely resulted in an increased extent and depth of ponding; however, the total seasonal rainfall between November 1, 2010 and March 31 2011 was 17.24 inches; slightly below an average of 19.18 for this period (UCIPMP, 2011). Therefore, the overall wet season conditions were considered to be within the range of normal circumstances. Taking into consideration both the monthly rainfall conditions and overall seasonal precipitation, the observations of seasonal ponding during the March 2011 surveys confirmed the presence of wetland hydrology in areas that were mapped as potential wetlands during the July 2010 dry season field survey.

3.2.2 Soils

Because soils throughout IR Site 32 originated from dredged fill material, are predominantly sandy, and are described as moderately alkaline (USDA, 1981), the soils were considered to be problematic. Common hydric soil indicators are frequently absent in wetlands with coarse textured soils (sand), and/or wetlands that have soils with a high pH (USACE, 2008; NRCS 2010). Redoximorphic features (and the presence of reduced iron as detected with alpha alpha-Dipyridyl) are also not found in soils where there are low amounts of soluble carbon, low iron or where there are other chemical and/or physical constraints on microbial processes that result in the reduction of iron under saturated soil conditions (Vepraskas, 1999; Richardson and Vepraskas, 2001; Childs 1989).

Hydric soil indicators such as the presence of depleted matrix or the presence of reduced iron (a positive reaction to alpha alpha-Dipyridyl) confirm the hydric conditions either have been or are currently present in a tested location; however, some hydric soils lack any of the currently identified indicators and the lack of an indicator does not prevent classification of the soil as hydric (NRCS, 2010). As previously mentioned, areas that were characterized by wetland vegetation, exhibited seasonal wetland hydrology and had a notable absence of upland plant species were considered to also have hydric soils present (Environmental Laboratory 1987).

4.0 Preliminary Jurisdictional Determination

The USACE and USEPA are ultimately responsible for making the determination as the limits of waters of the United States subject to regulation under the federal Clean Water Act. The results and conclusions presented in this wetland delineation are intended to assist the USACE with their determination of jurisdictional waters of the United States (including wetlands) and the results and conclusions presented in this report are preliminary, pending verification and subsequent approval by the USACE.

According to the federal Clean Water Act wetlands that are adjacent to traditional navigable waters are *per se* jurisdictional and therefore do not require a significant nexus such as a continuous surface water connection (33 CFR 328.3). According to the Clean Water Act: "The term adjacent means bordering, contiguous, or neighboring. Wetlands separated from other waters of the United States by man-made dikes or barriers, natural river berms, beach dunes and the like are 'adjacent wetlands" (33 CFR 328.3). The USACE considers wetlands to be bordering, contiguous, or neighboring, and therefore "adjacent" if at least one of the following three criteria is satisfied: (1) There is an unbroken surface or shallow sub-surface hydrologic connection between the wetland and jurisdictional waters; or (2) The wetlands are physically separated from jurisdictional waters by "man-made dikes or barriers, natural river berms, beach dunes, and the like"; or (3) Where a wetland's physical proximity to a jurisdictional water is reasonably close, that wetland is "neighboring" and thus adjacent.

Proposed guidance issued by the USEPA (2011) states that "one test for whether a wetland is sufficiently proximate to be considered "neighboring" is whether there is a demonstrable ecological interconnection between the wetland and the jurisdictional waterbody. For example, if resident aquatic species (e.g., amphibians, aquatic turtles, fish, or ducks) rely on both the wetland and the jurisdictional waterbody for all or part of their life cycles (e.g., nesting, rearing, or feeding), that may demonstrate that the wetland is neighboring and thus adjacent" (Federal Register Volume 79, Number 84). While none of the wetland areas identified in IR Site 32 have a direct surface connection to the San Francisco Bay, all of the features are located on lands that were created by the historic filling of a portion of the San Francisco Bay. In addition, these wetlands are located between approximately 150 and 1,400 feet from the Bay and are likely to be considered adjacent wetlands by the USACE and were therefore considered potential jurisdictional wetlands.

Additionally, 33 CFR 329 defines navigable waters of the United States 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." A determination of navigation, 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." Given the fact that this entire area included within Panhandle Area was historically part of the San Francisco Bay, it is likely that the USACE would consider all of the wetlands identified as jurisdictional Waters of the United States.

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5.0 Conclusions

A total of 11.75 acres of potential seasonal wetlands were identified within the 88-acre IR Site 32. The majority of the wetlands (10.94 acres) include large wet meadow habitats intermixed with shallow sandy depressions, small basins, and drainage swales. Three of the potential seasonal wetlands appear to have formed in excavated depressions that were created sometime between March 2001 and December of 2003, based on aerial photographs of the site (Appendix F). Additional field surveys conducted in March 2011 confirmed the presence of seasonal wetland hydrology in the areas previously identified as wetlands during the July 2010 field surveys. Soils throughout IR Site 32 are derived from dredged fill material and were considered problematic. While redoximorphic features were not observed in any of the sample locations, hydric soils were assumed to be present based on abundance of wetland plants and observations of seasonal hydrology per the *1987 Wetland Delineation Manual* (Environmental Laboratory 1987). Based on USEPA and USACE guidance, as well as the definition of Waters of the United States in the Federal Clean Water Act, both of the wetlands identified were considered adjacent to the San Francisco Bay and would therefore be considered potentially jurisdictional under Section 404 of the Clean Water Act. The results and conclusions presented in this report, as well as the jurisdictional determination are preliminary, pending verification by the USACE.

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6.0 References

AMEC, 2010. Final 2009/2010 Data Submission Basewide Groundwater Monitoring Program. Alameda Point, Alameda, California. November, 2010.

Childs, C.W. 1981. *Field Tests for Ferric Iron and Ferric-Organic Complexes (On Exchange Sites or in Water Soluble Forms) in Soils.* Aust. Journal of Soil Research. 19: 175-180.

Cowardin, L. M., V. Carter, F. C. Golet, and E. T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. U.S. Fish and Wildlife Service, Biological Services Program. USFWS/OBS-79/31.

EDAW|AECOM, 2008. *Wetland Delineation and Preliminary Jurisdictional Determination: Proposed Department of Veterans Affairs Facilities at the former NAS Alameda, Alameda County, California.* Prepared for the Department of Veterans Affairs. August 13.

Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Miss. Available online at: http://www.wetlands.com/regs/tlpge02e.htm.

Hickman, James C., ed. 1993. *The Jepson Manual: Higher Plants of California*. University of California Press. Berkeley, California.

Miles, Scott and Charles Goudey, ed. 1998. *Ecological Subregions of California*. United States Department of Agriculture, Forest Service. Pacific Southwest Division. R5-EM-TP-005. San Francisco.

NRCS. 2010. *Field Indicators of Hydric Soils in the United States, Version 7.0.* United States Department of Agriculture. L.M. Vasilas, G.W. Hurt, and C.V. Noble (editors), in cooperation with the National Technical Committee for Hydric Soils.

Reed, P.B. 1988. *National List of Plant Species that Occur in Wetlands, Region 0.* U.S. Fish and Wildlife Service, National Wetlands Inventory, St. Petersburg, FL.

Richardson, L.J. and M. J. Vepraskas (editors). 2001. *Wetland Soils: Genesis, Hydrology, Landscapes and Classification.* Lewis Publishers, Boca Raton, Florida.

TetraTech. 2004. *Wetland Delineation Report Installation Restoration Site 1, 1943-1956 Disposal Area and Site 2(1952-1978) West Beach Landfill.* Prepared for the Department of the Navy Base Realignment and Closure Program Management Office West. Contract No. N68711-98-D-5713. December 1.

Thien, S.J. 1979. *A flow diagram for teaching texture by feel analysis*. Journal of Agronomic Education. 8:54-55.

United States Army Corps of Engineers (USACE). 2008. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region*. Version 2.0 September. ERDC/EL TR-08-28.

United States Department of Agriculture (USDA). 1981. Soil Survey for Alameda County, Western Part. Natural Resources Conservation Service. Available on line at: http://soils.usda.gov/survey/online_surveys/california/

United States Department of Agriculture (USDA). 2002. Climate Analysis for Wetlands by County (WETS). Natural Resources Conservation Service. Available on line at: http://www.wcc.nrcs.usda.gov/climate/wetlands.html.

United States Department of Agriculture (USDA). 2006. *Field Indicators of Hydric Soils in the United States.* Version 6.0 G.W. Hurt and L.M. Vasilas (eds). Natural Resources Conservation Service in cooperation with the National Technical Committee for Hydric Soils.

University of California (UC). 2010. The Jepson Online Interchange California Floristics. Available online at: http://ucjeps.berkeley.edu/interchange.html.

University of California Statewide Integrated Pest Management Program (UCIPMP). 2010. Daily Climate Data for the West Oakland Hills. Available online at: http://www.ipm.ucdavis.edu/WEATHER/wxretrieve.html.

Vepraskas, Michael J. 1999. *Redoximorphic Features for Identifying Aquic Conditions.* North Carolina Agriculture Research Service Technical Bulletin 301. North Carolina State University, Raleigh, North Carolina.

Figures

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Aerial image source: © Google; additional content by KCH.

0 400 800 1,600 Feet

IR Site 32 Wetland Assessment Study Area

Wetland Delineation, IR Site 32
Alameda Point, Alameda, California

N

FIGURE

1

ES071410053357BAO wetland_study_areas_IRSite32.ai 04-29-11 lho

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Feature	Acres
SW-1	5.25
SW-2	4.46
SW-3	1.24
SW-4	0.10
SW-5	0.10
SW-6	0.61
Total	11.76

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Appendix A
Soil Maps

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high shrink-swell potential and low strength affect the construction of roads and streets. Suitable base material is needed.

The water intake rate and permeability are slow; therefore, lawns should be watered slowly to reduce runoff. Shrubs can be drip irrigated to encourage deep rooting. Lawn grasses grow best if 1 pound of elemental nitrogen per 1,000 square feet is applied every 8 weeks, from April through October. Some ornamental plants respond to sulfur and to iron and aluminum chelates. Adding organic matter to the soil can improve the rate of water intake, aeration, and tilth.

Capability classification not assigned.

156—Xeropsamments, fill. This unit consists of sandy material that was dredged from old beach areas. Slopes are less than 2 percent. Elevation ranges from near sea level to 10 feet. The average annual precipitation is 17 inches, and the mean annual temperature is 57 degrees F. The average frost-free season ranges from 300 to 320 days.

Included in mapping, and making up about 10 percent of the map unit, are a few areas that are underlain by strongly alkaline clay at a depth of 36 to 48 inches. Also included, and making up about 5 percent of the map unit, are concave areas that have a water table within a depth of 36 inches and can be ponded in winter.

Typically, Xeropsamments are moderately alkaline sands that extend to a depth of 60 inches. In a few areas they are as much as 5 percent, by volume, shells that are less than one inch in diameter.

These soils are rapidly permeable. The root zone for water-tolerant plants is 60 inches deep; the water table restricts the root zone for water-sensitive plants to a depth of 40 to 60 inches. The available water capacity is 3 to 4 inches. Runoff is slow, and the hazard of erosion is slight. Soil blowing is a serious hazard.

These soils are used mainly for urban and industrial development and as airfields. A few areas are used for small grain. Levees prevent erosion of this fill material.

Frequent and light applications of irrigation water and fertilizer are needed to establish a vegetative cover. Most plants respond to nitrogen and phosphate fertilizer. Iron and aluminum chelates are needed for some ornamental plants.

Capability classification not assigned.

157—Xerorthents-Altamont complex, 30 to 50 percent slopes. This complex consists of soils on foothills adjacent to the bay. The elevation ranges from 200 to 1,500 feet. The average annual precipitation is 16 inches, and the mean annual temperature is 57 degrees F. The average frost-free season ranges from 300 to 320 days. Xerorthents, clayey, make up about 75 percent of this complex; Altamont clay, 20 percent.

Xerorthents consist of soil material that resulted from cutting or filling for urban development; therefore, the soil characteristics are variable. Fill areas consist of heavy clay loam, silty clay, and clay and are as much as 20 percent angular fragments of shale and sandstone. Colors are variable. Reaction is mildly alkaline or moderately alkaline, and these soils are calcareous throughout the profile. Cut areas consist of interbedded shale and fine-grained sandstone. The bedrock dips between 50 and 80 degrees.

Permeability is slow or very slow, depending on the soil texture and on the amount of compaction that takes place during construction.

The Altamont soil is deep and well drained. It formed in the material that weathered from soft, interbedded sedimentary rock and makes up most of the undisturbed areas of this complex. Typically, the surface layer is dark brown, slightly acid to mildly alkaline clay about 28 inches thick. The next layer is finely mixed dark brown and dark yellowish brown, calcareous clay about 9 inches thick. The underlying material extends to a depth of 50 inches. It is yellowish brown, calcareous clay. Below that is highly fractured and weathered fine-grained sandstone and shale.

Permeability is slow. The available water capacity is 5.0 to 9.5 inches. The root zone is 40 to 60 inches deep. Runoff is rapid, and the hazard of erosion is high.

Areas of this complex are used mainly for residential developments that have a density of two to four single family dwellings per acre. Approximately 25 percent of the area is covered by buildings or other urban related structures.

Certain limitations should be overcome before construction is feasible. The shrink-swell potential is high; as a result, foundations can shift and crack. Building pads should be shaped so that water is drained away from the building site, thus keeping the soil beneath the foundation dry and reducing the hazards of differential settlement and shrink-swell. The high shrink-swell potential and low strength affect the construction of roads and streets. Suitable base material is needed. In sloping areas, intercepting drains should be provided to keep moisture from beneath the roads.

Steep banks that result from reshaping these soils for use as building sites are highly erodible. These soils should be seeded to a fast-growing cover as soon as possible to reduce the hazard of erosion. Using straw mulch or jute netting helps to reduce the hazard of erosion during establishment of the grass cover. If runoff from higher areas is a problem, diversions may be needed at the head of these slopes.

The water intake rate and permeability are slow; therefore, lawns should be watered slowly to reduce runoff. Shrubs and trees can be drip irrigated to encourage deep rooting. Lawn grasses grow best if 1 pound of nitrogen per 1,000 square feet is applied every 8 weeks, from April through October. Some ornamental plants respond to sulfur and to iron and aluminum chelates.

Soil Map—Alameda County, California, Western Part
(IR Site 32)

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

Special Point Features

Blowout
Borrow Pit
Clay Spot
Closed Depression
Gravel Pit
Gravelly Spot
Landfill
Lava Flow
Marsh or swamp
Mine or Quarry
Miscellaneous Water
Perennial Water
Rock Outcrop
Saline Spot
Sandy Spot
Severely Eroded Spot
Sinkhole
Slide or Slip
Sodic Spot
Spoil Area
Stony Spot
Very Stony Spot
Wet Spot
Other

Special Line Features

Gully
Short Steep Slope
Other

Political Features

Cities

Water Features

Oceans
Streams and Canals

Transportation

Rails
Interstate Highways
US Routes
Major Roads
Local Roads

MAP INFORMATION

Map Scale: 1:5,530 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 10N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Alameda County, California, Western Part
Survey Area Data: Version 7, Jul 27, 2010

Date(s) aerial images were photographed: 6/12/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Alameda County, California, Western Part (CA610)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
156	Xeropsamments, fill	103.4	99.3%
162	Water	0.7	0.7%
Totals for Area of Interest		**104.1**	**100.0%**

Appendix B
National Wetland Inventory Map

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U.S. Fish and Wildlife Service

National Wetlands Inventory

Printed July 26, 2010

Jul 26, 2010

Wetlands

- Freshwater Emergent
- Freshwater Forested/Shrub
- Estuarine and Marine Deetwater
- Estuarine and Marine
- Freshwater Pond
- Lake
- Riverine
- Other

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

User Remarks:

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Appendix C
Data Sheets

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WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Alameda Point – IR Site 32 City/County: Alameda County Date: July 28, 2010

Applicant/Owner: U.S. Navy State: CA Sampling Point: SP-1

Investigator(s): Russell Huddleston and Holly Barbare Section, Township, Range: 05 02S 04W (Mt. Diablo Meridian)

Landform (hillslope, terrace, etc.): Fill Terrace Local relief (concave, convex, none): Concave Slope (%): 0-1

Subregion (LRR): C-14 Lat: 37.791463 North Long: -122.329430 West Datum: WGS84

Soil Map Unit Name: Xeropsaments, Fill NWI classification: PEMA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil X, or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks: Low depressional area in the southwestern part of IR Site 32. Considered a problem area due to seasonal wetland hydrology and soil derived from dredge fill material.

VEGETATION

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. N/A			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. *Distichlis spicata*	85	Yes	FACW
2. *Rumex crispus*	15		FACW-
3. *Agrostis stolonifera*	2		FACW
4. *Lotus corniculatus*	2		FAC
5.			
6.			
7.			
8.			
Total Cover:	>100%		
Woody Vine Stratum			
1. N/A			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 0% % Cover of Biotic Crust ~5%

Dominance Test worksheet:

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index Worksheet:

	Total % Cover Of:		Multiply By:
OBL species		×1 =	
FACW species	102	×2 =	204
FAC species	2	×3 =	6
FACU species		×4 =	
UPL species		×5 =	
Column Totals:	104 (A)		210 (B)

Prevalence Index = B/A = 2.02

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0*

____ Morphological Adaptations* (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation* (Explain)

* Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks: Biotic crust consists of dried algal matting in this location. – Other scattered species observed within the depressional basin outside of sample point include *Polypogon monspeliensis, Lythrum hyssopifolium, Hordeum marinum,* and *Centaurium muehlenbergii*

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SOIL

Sampling Point SP-1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[a]	Loc[b]	Texture	Remarks

[a] Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [b] 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**)
- ___ 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 Soils[c]:

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

[c] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: N/A

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks: No soil data collected at this location. Hydric soil conditions assumed present based on abundance of OBL and FACW hydrophytic vegetation, lack of non-wetland plants, evidence of seasonal ponding (algal matting), observations of seasonal inundation and depressional topography.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- X 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)
- X 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)

Secondary Indicators (two 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)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	X	No	___	Depth (inches):	~6”
Water Table Present?	Yes	___	No	___	Depth (inches):	N/A
Saturation Present? (includes capillary fringe)	Yes	___	No	___	Depth (inches):	N/A

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: * Some evidence of saturation and possible inundation is evident on aerial photographs taken following above average rainfall see Appendix E.

Remarks: No surface water was present at the time of the July surveys, scattered dried algal matting was observed throughout the topographic basin suggesting that that some duration of surface ponding was present in this location. Surface water was observed in this location during the March 31, 2011 field visit.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Alameda Point – IR Site 32 City/County: Alameda County Date: July 28, 2010

Applicant/Owner: U.S. Navy State: CA Sampling Point: SP-2

Investigator(s): Russell Huddleston and Holly Barbare Section, Township, Range: 05 02S 04W (Mt. Diablo Meridian)

Landform (hillslope, terrace, etc.): Fill Terrace Local relief (concave, convex, none): Concave Slope (%): 0-1

Subregion (LRR): C-14 Lat: 37.791469 North Long: -122.327848 West Datum: WGS84

Soil Map Unit Name: Xeropsaments, Fill NWI classification: PEMA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil X, or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks: Low depressional area in the southwestern part of IR Site 32 – within mesic meadow community on north side of Tarmac. Considered a problem due to seasonal wetland hydrology and soils derived from dredged fill material.

VEGETATION

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. N/A			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. *Eleocharis macrostachya*	35	Yes	OBL
2. *Carex praegracilis*	35	Yes	FACW-
3. *Agrostis stolonifera*	10		FACW
4. *Distichlis spicata*	10		FACW
5. *Lotus corniculatus*	5		FAC
6. *Centaurium muehlenbergii*	3		FAC
7. *Festuca arundinacea*	2		FAC
8.			
Total Cover:	100%		
Woody Vine Stratum			
1. N/A			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 0% % Cover of Biotic Crust N/A

Dominance Test worksheet:

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)

Prevalence Index Worksheet:

	Total % Cover Of:		Multiply By:	
OBL species	35	×1 =	35	
FACW species	55	×2 =	110	
FAC species	10	×3 =	30	
FACU species		×4 =		
UPL species		×5 =		
Column Totals:	100	(A)	175	(B)

Prevalence Index = B/A = 1.75

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0*

____ Morphological Adaptations* (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation* (Explain)

* Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks: With the exception of *Eleocharis* – the vegetation observed in this location includes species that are found throughout the wet meadow community – in other areas *Festuca* is much more abundant and replaces *Carex* as the most abundant species.

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SOIL

Sampling Point SP-2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[a]	Loc[b]	Texture	Remarks

[a] Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [b] 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**)
- ___ 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 Soils[c]:

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

[c] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks: No soil data collected at this location due to potential radiological contamination concerns. Hydric soil conditions assumed present based on abundance of OBL and FACW hydrophytic vegetation and lack of non-wetland plants and observations of surface water during the March 2011 field survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- X 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)

Secondary Indicators (two 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	X	No	___	Depth (inches):	6”
Water Table Present?	Yes	___	No	___	Depth (inches):	N/A
Saturation Present? (includes capillary fringe)	Yes	___	No	___	Depth (inches):	N/A

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Evidence of saturation on Aerial photo from April 2005 in this area (photograph taken during above average rainfall conditions).

Remarks: No surface water was present at the time of the July surveys. Low weakly expressed depressional area – abundant FACW and OBL plants and absence of non-wetland plant species. Surface waster was observed in this location during the March 31, 2011 field survey.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Alameda Point – IR Site 32 City/County: Alameda County Date: July 28, 2010

Applicant/Owner: U.S. Navy State: CA Sampling Point: SP-3

Investigator(s): Russell Huddleston and Holly Barbare Section, Township, Range: 05 02S 04W (Mt. Diablo Meridian)

Landform (hillslope, terrace, etc.): Fill Terrace Local relief (concave, convex, none): Concave Slope (%): 0-1

Subregion (LRR): C-14 Lat: 37.791526 North Long: -122.329837 West Datum: WGS84

Soil Map Unit Name: Xeropsaments, Fill NWI classification: PEMA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil X, or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes *	No ____	* Tentative Determination
Wetland Hydrology Present?	Yes X	No ____	

Remarks: Mesic meadow community on north side of tarmac in southwestern part of site. Considered a problem area – dominant vegetation includes plants that are tolerant of saline soils, and are also commonly observed in no-wetland areas on the site. Soils in this area are derived from dredge fill material and hydrology is seasonal and due to subsurface saturation rather than inundation in this area.

VEGETATION

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. N/A			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. *Holcus lanatus*	65	Yes	FAC
2. *Festuca arundinacea*	25	Yes	FAC-
3. *Agrostis stolonifera*	5		FACW
4. *Centaurium muehlenbergii*	2		FAC
5. *Lotus corniculatus*	2		FAC
6. *Rumex acetosella*	1		FAC-
7. *Bellardia trixago*	1		NL
8.			
Total Cover:	>100%		
Woody Vine Stratum			
1. N/A			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 0% % Cover of Biotic Crust 0%

Dominance Test worksheet:

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)

Prevalence Index Worksheet:

	Total % Cover Of:		Multiply By:	
OBL species		×1 =		
FACW species	5	×2 =	10	
FAC species	95	×3 =	285	
FACU species		×4 =		
UPL species	1	×5 =	5	
Column Totals:	101	(A)	300	(B)

Prevalence Index = B/A = 2.97

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0*

____ Morphological Adaptations* (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation* (Explain)

* Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks: Vegetation in this area predominantly facultative plants many of which are tolerant of saline soils and are also common in upland areas throughout the site. The presence of these species may not be indicative of wetland conditions; however the plant species in this area are notably different from the adjacent area considered to be a non-wetland.

KCH-2622-0006-0109

SOIL

Sampling Point SP-3

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[a]	Loc[b]	Texture	Remarks

[a] Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [b] 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**)
- ___ 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 Soils[c]:

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

[c] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: N/A

Depth (inches): ___

Hydric Soil Present? Yes * **No** ___

Remarks: No soil data collected at this location. Previous soil samples in this area described the soil as 10 YR 3/1 sand and 2.5 YR 4/2-3/2 sandy fill with ash, concrete and glass in the upper 18 inches – no redoximorphic features or other evidence of hydric conditions were noted (TetraTech 2004). Soils in this area may be saturated long enough during the result in anaerobic conditions in the upper part.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X 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)

Secondary Indicators (two 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)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___			
Water Table Present?	Yes ___	No ___	Depth (inches): N/A			
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 0	**Wetland Hydrology Present?**	**Yes** X	**No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Aerial photographs from March 2000 shows some evidence of saturation in this area, but photograph was taken after nearly double the average rainfall for the month of February.

Remarks: Area was dry during the July 20101 field durvey. Saturated conditions in the upper part of the soils during the wet season have been observed previously in this area (TetraTech 2004; EDAW|AECOM 2008).

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Alameda Point – IR Site 32 City/County: Alameda County Date: July 28, 2010

Applicant/Owner: U.S. Navy State: CA Sampling Point: SP-4

Investigator(s): Russell Huddleston and Holly Barbare Section, Township, Range: 05 02S 04W (Mt. Diablo Meridian)

Landform (hillslope, terrace, etc.): Fill Terrace Local relief (concave, convex, none): Concave Slope (%): 0-1

Subregion (LRR): C-14 Lat: 37.791594 North Long: -122.329875 West Datum: WGS84

Soil Map Unit Name: Xeropsaments, Fill NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil X, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?**	**Yes** ____	**No** X
Hydric Soil Present?	Yes ____	No *	* Tentative Determination		
Wetland Hydrology Present?	Yes ____	No X			

Remarks: Sample point in upland area adjacent to wet meadow area in the southwest corner of the site. Soils in this area are derived from dredge fill material

VEGETATION

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. N/A			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. *Bellardia trixago*	20	Yes	NL
2. *Bromus hordeaceus*	10		FACU
3. *Madia gracilis*	10		NL
4. *Hordeum marinum*	10		FAC
5. *Vulpia myuros*	5		FACU*
6. *Plantago lanceolata*	3		FAC-
7. *Brassica nigra*	2		NL
8. *Centaurium muehlenbergii*	2		FAC
Total Cover:	62%		
Woody Vine Stratum			
1. N/A			
2.			
Total Cover:			

% Bare Ground in Herb Stratum *30% % Cover of Biotic Crust 0%

Dominance Test worksheet:

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index Worksheet:

	Total % Cover Of:		Multiply By:	
OBL species		×1 =		
FACW species		×2 =		
FAC species	15	×3 =	45	
FACU species	15	×4 =	60	
UPL species	32	×5 =	160	
Column Totals:	62	(A)	265	(B)

Prevalence Index = B/A = 4.27

Hydrophytic Vegetation Indicators:

____ Dominance Test is >50%

____ Prevalence Index is ≤3.0*

____ Morphological Adaptations* (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation* (Explain)

* Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** ____ **No** X

Remarks: *Bare ground includes relatively high cover of thatch. Sparse *Bromus diandrus* also present in this area. Notably different vegetation community that the adjacent wet meadow area.

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SOIL

Sampling Point SP-4

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[a]	Loc[b]	Texture	Remarks

[a] Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [b] 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**)
- ___ 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 Soils[c]:

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

[c] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** *

Remarks: No soil data collected at this location. Nothing to suggest that soils in this area are anaerobic at any time during the year for a sufficient duration to result in reducing conditions.

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 Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (two 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 X	Depth (inches): ___		
Water Table Present?	Yes ___	No ___	Depth (inches): N/A		
Saturation Present? (includes capillary fringe)	Yes ___	No ___	Depth (inches): N/A	**Wetland Hydrology Present?**	**Yes** ___ **No** X

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

Remarks: No evidence of surface water or seasonal inundation noted in this area during the July 2010 and March 2011 field surveys.

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WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Alameda Point – IR Site 32 City/County: Alameda County Date: July 28, 2010

Applicant/Owner: U.S. Navy State: CA Sampling Point: SP-5

Investigator(s): Russell Huddleston and Holly Barbare Section, Township, Range: 05 02S 04W (Mt. Diablo Meridian)

Landform (hillslope, terrace, etc.): Fill Terrace Local relief (concave, convex, none): Concave Slope (%): 0-1

Subregion (LRR): C-14 Lat: 37.794168 North Long: -122.326561 West Datum: WGS84

Soil Map Unit Name: Xeropsaments, Fill NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation X, Soil X, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No *	* Tentative Determination
Wetland Hydrology Present?	Yes ____	No X	

Remarks: This area was considered a problem area given that the dominant plant species consist of facultative plants that are also associated with saline soils and occur widely throughout IR Site 32 and the soil consists of dredge fill material.

VEGETATION

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. N/A			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. *Holcus lanatus*	60	Yes	FAC
2. *Lotus corniculatus*	30	Yes	FAC
3. *Rumex crispus*	3		FACW-
4. *Carduus pycnocephalus*	3		NL
5. *Bellardia trixago*	1		NL
6. *Convolvulus arvensis*	<1		NL
7.			
8.			
Total Cover:	>97		
Woody Vine Stratum			
1. N/A			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 3% % Cover of Biotic Crust 0%

Dominance Test worksheet:

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)

Prevalence Index Worksheet:

	Total % Cover Of:		Multiply By:
OBL species		×1 =	
FACW species	3	×2 =	6
FAC species	90	×3 =	270
FACU species		×4 =	
UPL species	4.5	×5 =	22.5
Column Totals:	97.5 (A)		(B)

Prevalence Index = B/A = 3.06

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

____ Prevalence Index is ≤3.0*

____ Morphological Adaptations* (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation* (Explain)

* Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks: Marginal hydrophytic vegetation in this area – meets the dominance test, but fails the prevalence test. Vegetation in this area includes species that are common and widespread throughout IR Site 32. Many of the associated plants in this area are not tolerant of prolonged saturation or inundation and would not likely occur in wetland areas.

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SOIL

Sampling Point SP-5

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[a]	Loc[b]	Texture	Remarks

[a] Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [b] 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**)
- ___ 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 Soils[c]:

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

[c] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** *

Remarks: No soil data collected at this location due to potential radiological contamination concerns. Marginal wetland vegetation and no evidence of seasonal wetland hydrology – unlikely the soil in this area is anaerobic in the upper part for prolonged periods during the growing season.

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 Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (two 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 X	Depth (inches): ___		
Water Table Present?	Yes ___	No ___	Depth (inches): N/A		
Saturation Present? (includes capillary fringe)	Yes ___	No ___	Depth (inches): N/A	**Wetland Hydrology Present?**	**Yes** ___ **No** X

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

Remarks: No evidence of surface water or seasonal inundation noted in this area.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Alameda Point – IR Site 32 City/County: Alameda County Date: July 28, 2010

Applicant/Owner: U.S. Navy State: CA Sampling Point: SP-6

Investigator(s): Russell Huddleston and Holly Barbare Section, Township, Range: 05 02S 04W (Mt. Diablo Meridian)

Landform (hillslope, terrace, etc.): Fill Terrace Local relief (concave, convex, none): Concave Slope (%): 0-1

Subregion (LRR): C-14 Lat: 37.795010 North Long: -122.327273 West Datum: WGS84

Soil Map Unit Name: Xeropsaments, Fill NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation X, Soil X, or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No *	*Tentative Determination
Wetland Hydrology Present?	Yes ____	No X	

Remarks: Grassland community in northern part of site near storm drain; problem area – characterized by many hydrophytic species that are also found in saline soil conditions and occur widely throughout the site; soils are derived from dredge fill material; hydrology in this area is seasonal and if present likely consists of shallow surface saturation rather than surface inundation.

VEGETATION

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. N/A			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. *Festuca arundinacea*	50	Yes	FAC-
2. *Distichlis spicata*	20	Yes	FACW
3. *Lotus corniculatus*	10		FAC
4. *Bellardia trixago*	5		NL
5. *Conyza canadensis*	5		FAC
6. *Centaurium muehlenbergii*	5		FAC
7.			
8.			
Total Cover:	>100%		
Woody Vine Stratum			
1. N/A			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 5% % Cover of Biotic Crust 0%

Dominance Test worksheet:

Number of Dominant Species that are OBL, FACW, or FAC: ____ (A)

Total Number of Dominant Species Across All Strata: ____ (B)

Percent of Dominant Species that are OBL, FACW, or FAC: ____ (A/B)

Prevalence Index Worksheet:

	Total % Cover Of:		Multiply By:	
OBL species		×1 =		
FACW species	20	×2 =	40	
FAC species	70	×3 =	210	
FACU species		×4 =		
UPL species	5	×5 =	25	
Column Totals:	95	(A)	275	(B)

Prevalence Index = B/A = 2.89

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0*

____ Morphological Adaptations* (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation* (Explain)

* Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: Vegetation in this area predominantly facultative plants common in many areas of the site and may not be indicative of wetland conditions. Plant species in this area also tolerant of saline soil conditions.

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SOIL

Sampling Point SP-6

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[a]	Loc[b]	Texture	Remarks

[a] Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [b] 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**)
- ___ 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 Soils[c]:

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

[c] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** *

Remarks: No soil data collected at this location. Vegetation in this area predominantly facultative species common throughout the site – not considered indicative of anaerobic soil conditions.

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 Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (two 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 X	Depth (inches): ___		
Water Table Present?	Yes ___	No ___	Depth (inches): N/A		
Saturation Present? (includes capillary fringe)	Yes ___	No ___	Depth (inches): N/A	**Wetland Hydrology Present?**	**Yes** ___ **No** X

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

Remarks: No evidence of surface water in this location. Stormwater drain located to the northwest of the sample point. No strong indication of saturation or inundation on aerial photos, even in extremely wet years, marginal hydrophytic vegetation. This area did not appear to support prolonged soil saturation or inundation.

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WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Alameda Point – IR Site 32 City/County: Alameda County Date: July 28, 2010

Applicant/Owner: U.S. Navy State: CA Sampling Point: SP-7

Investigator(s): Russell Huddleston and Holly Barbare Section, Township, Range: 05 02S 04W (Mt. Diablo Meridian)

Landform (hillslope, terrace, etc.): Fill Terrace Local relief (concave, convex, none): Concave Slope (%): 0-1

Subregion (LRR): C-14 Lat: 37.793476 North Long: -122.326236 West Datum: WGS84

Soil Map Unit Name: Xeropsaments, Fill NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation X, Soil X, or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks: Wet meadow community near central part of the site. Considered a problem area – vegetation in this area tolerant of saline soils and also common in mesic (non-wetland) areas; soils are comprised of dredge fill material and wetland hydrology is seasonal and is present most likely is the result of saturated soils rather than surface inundation.

VEGETATION

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. N/A			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. *Carex praegracilis*	85	Yes	FACW-
2. *Festuca arundinacea*	5		FAC-
3. *Agrostis stolonifera*	5		FACW
4. *Holcus Lanatus*	3		FAC
5. *Lotus corniculatus*	2		FAC
6.			
7.			
8.			
Total Cover:	96		
Woody Vine Stratum			
1. N/A			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 0% % Cover of Biotic Crust 0%

Dominance Test worksheet:

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index Worksheet:

	Total % Cover Of:		Multiply By:	
OBL species		×1 =		
FACW species	90	×2 =	180	
FAC species	10	×3 =	30	
FACU species		×4 =		
UPL species		×5 =		
Column Totals:	100	(A)	210	(B)

Prevalence Index = B/A = 2.1

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0*

____ Morphological Adaptations* (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation* (Explain)

* Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks: Vegetation in this area is characterized by species that may also be associated with moist saline soils as well as in more typical wetland conditions. Notable absence of non- wetland plants in this area.

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SOIL

Sampling Point SP-7

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[a]	Loc[b]	Texture	Remarks

[a] Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [b] 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**)
- ___ 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 Soils[c]:

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

[c] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: N/A

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks: No soil data collected at this location. Hydric soils assumed present based on abundance of FACW vegetation and observations of ponding and surface soil saturation in this area during the March 31, 2011 field survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X 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)

Secondary Indicators (two 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	X	No	___	Depth (inches):	1-3”
Water Table Present?	Yes	___	No	___	Depth (inches):	N/A
Saturation Present? (includes capillary fringe)	Yes	X	No	___	Depth (inches):	0

Wetland Hydrology Present? **Yes** X **No** ___

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

Remarks: This area appears to be seasonally moist and may have prolonged saturated conditions in the upper part of the soils during the wet season (March 2011) sufficient to meet the criteria for wetland hydrology. Saturated soil conditions and surface water was observed in this area during the March 2011 survey and has also been noted for this area during past site surveys (TetraTech 2004; EDAW|AECOM 2008).

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Alameda Point – IR Site 32 City/County: Alameda County Date: July 28, 2010

Applicant/Owner: U.S. Navy State: CA Sampling Point: SP-8

Investigator(s): Russell Huddleston and Holly Barbare Section, Township, Range: 05 02S 04W (Mt. Diablo Meridian)

Landform (hillslope, terrace, etc.): Fill Terrace Local relief (concave, convex, none): Concave Slope (%): 0-1

Subregion (LRR): C-14 Lat: North Long: West Datum: WGS84

Soil Map Unit Name: Xeropsaments, Fill NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation X, Soil X, or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks: This area was considered a problem area – dominant vegetation includes species that are tolerant of saline soils and both *Distichlis* and *Polypogon* exhibited short, stunted growth; soils in this area consist of dredge fill material and hydrology is seasonal and possibly highly ephemeral.

VEGETATION

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. N/A			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. *Lythrum hyssopifolium*	40	Yes	FACW
2. *Distichlis spicata*	5		FACW
3. *Polypogon monspeliensis*	5		FACW
4.			
5.			
6.			
7.			
8.			
Total Cover:	50		
Woody Vine Stratum			
1. N/A			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 50% % Cover of Biotic Crust 0%

Dominance Test worksheet:

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index Worksheet:

	Total % Cover Of:		Multiply By:	
OBL species		×1 =		
FACW species	92	×2 =	184	
FAC species	8	×3 =	24	
FACU species		×4 =		
UPL species		×5 =		
Column Totals:	100	(A)	208	(B)

Prevalence Index = B/A = 2.08

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0*

____ Morphological Adaptations* (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation* (Explain)

* Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks: Open low growing vegetation in this area largely characterized by *Lythrum* – other plants observed in this low sandy area located outside of the sample point included *Centaurium muehlenbergii, Lotus corniculatus* and *Heliotropium curassavicum*. *Dittrichia graveolens* (a late season annual) was also common throughout this area.

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SOIL

Sampling Point SP-8

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[a]	Loc[b]	Texture	Remarks

[a] Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [b] 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**)
- ___ 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 Soils[c]:

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

[c] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks: No soil data collected at this location. Hydric soils assumed present based on the abundance of FACW vegetation along with indicators of surface hydrology noted in this area including extensive surface ponding observed on March 31, 2011.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

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

Secondary Indicators (two 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	X	No	___	Depth (inches):	4”
Water Table Present?	Yes	___	No	___	Depth (inches):	N/A
Saturation Present? (includes capillary fringe)	Yes	___	No	___	Depth (inches):	N/A

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Some evidence o f saturation on March 2000 Aerial Photo – but photograph reflects nearly double the average rainfall for this time of year.

Remarks: Several primary indicators of surface inundation were noted in various locations in this low depressional area during the July 2010 field survey including drift deposits on vegetation near the northeast edge of the feature; dried algal matting and water marks on two wooden posts. The entire area was inundated during the March 31, 2011 field survey.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Alameda Point – IR Site 32 City/County: Alameda County Date: July 28, 2010

Applicant/Owner: U.S. Navy State: CA Sampling Point: SP-9

Investigator(s): Russell Huddleston and Holly Barbare Section, Township, Range: 05 02S 04W (Mt. Diablo Meridian)

Landform (hillslope, terrace, etc.): Fill Terrace Local relief (concave, convex, none): Concave Slope (%): 0-1

Subregion (LRR): C-14 Lat: 37.794133 North Long: -122.325989 West Datum: WGS84

Soil Map Unit Name: Xeropsaments, Fill NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil X, or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks: Sample point taken near southwest edge of large wet meadow habitat. Considered a problem area –soils are derived from dredge sill material; seasonal wetland hydrology.

VEGETATION

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. N/A			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. *Gnaphalium luteo-album*	50	Yes	FACW-
2. *Distichlis spicata*	20	Yes	FACW
3. *Carex praegracilis*	15		FACW
4. *Bellardia trixago*	5		NL
5. *Centaurium muehlenbergii*	2		FAC
6. *Polypogon monspeliensis*	2		FACW
7. *Lotus corniculatus*	2		FAC
8. *Conyza canadensis*	2		NL
Total Cover:	98		
Woody Vine Stratum			
1. N/A			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 2% % Cover of Biotic Crust 0%

Dominance Test worksheet:

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)

Prevalence Index Worksheet:

	Total % Cover Of:		Multiply By:	
OBL species		×1 =		
FACW species	87	×2 =	174	
FAC species	4	×3 =	12	
FACU species		×4 =		
UPL species	7	×5 =	35	
Column Totals:	98	(A)	221	(B)

Prevalence Index = B/A = 2.25

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0*

____ Morphological Adaptations* (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation* (Explain)

* Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks:

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SOIL

Sampling Point SP-9

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[a]	Loc[b]	Texture	Remarks

[a] Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [b] 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**)
- ___ 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 Soils[c]:

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

[c] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks: No soil data collected at this location; hydric soils assumed present based on abundance of FACW vegetation and observations of seasonal saturation and inundation in this area on March 31, 2011.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X 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)

Secondary Indicators (two 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	X	No	X	Depth (inches):	1-3”
Water Table Present?	Yes		No		Depth (inches):	N/A
Saturation Present? (includes capillary fringe)	Yes	X	No		Depth (inches):	0

Wetland Hydrology Present? **Yes** X **No** ___

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

Remarks: Sample point located in shallow linear depression at the edge of a large wet meadow community. This area was dry during the July 2010 surveys, but soils were saturated to the surface and ponded water was noted throughout this area on March 31, 2011. Previous observations of wet season conditions have also been noted for this area (TetraTech 2004; EDAW|AECOM 2008).

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Alameda Point – IR Site 32 City/County: Alameda County Date: July 29, 2010

Applicant/Owner: U.S. Navy State: CA Sampling Point: SP-10

Investigator(s): Russell Huddleston and Holly Barbare Section, Township, Range: 05 02S 04W (Mt. Diablo Meridian)

Landform (hillslope, terrace, etc.): Fill Terrace Local relief (concave, convex, none): Concave Slope (%): 0-1

Subregion (LRR): C-14 Lat: 37.792433 North Long: -122.324746 West Datum: WGS84

Soil Map Unit Name: Xeropsaments, Fill NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil X, or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks: Shallow depressional basin within larger wet meadow area. Considered a problem area as soil in this area is derived from dredge fill material and hydrology is seasonal.

VEGETATION

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. N/A			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. *Distichlis spicata*	50	Yes	FACW
2. *Carex praegracilis*	40	Yes	FACW
3. *Lotus corniculatus*	2		FAC
4. *Epilobium* sp.	2		--
5. *Lythrum hyssopifolium*	2		FACW
6. *Hordeum marinum*	<1		FAC
7.			
8.			
Total Cover:	96		
Woody Vine Stratum			
1. N/A			
2.			
Total Cover:			

% Bare Ground in Herb Stratum <5% % Cover of Biotic Crust 0%

Dominance Test worksheet:

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)

Prevalence Index Worksheet:

	Total % Cover Of:		Multiply By:	
OBL species		×1 =		
FACW species	92	×2 =	184	
FAC species	2	×3 =	6	
FACU species		×4 =		
UPL species		×5 =		
Column Totals:	94	(A)	190	(B)

Prevalence Index = B/A = 2.02

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0*

____ Morphological Adaptations* (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation* (Explain)

* Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks: Notable absence of non- wetland plants in this area.

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SOIL

Sampling Point SP-10

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[a]	Loc[b]	Texture	Remarks

[a] Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [b] 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**)
- ___ 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 Soils[c]:

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

[c] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks: No soil data collected at this location. Shallow, weakly expressed basin characterized by FACW vegetation in this area with multiple observations of seasonal saturated conditions suggests that hydric conditions are likely present at this location.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X 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)

Secondary Indicators (two 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)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	X	No	___	Depth (inches):	2-6”
Water Table Present?	Yes	___	No	___	Depth (inches):	N/A
Saturation Present? (includes capillary fringe)	Yes	X	No	___	Depth (inches):	0

Wetland Hydrology Present? **Yes** X **No** ___

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

Remarks: This area was dry during the July 2010 field survey, but soil was saturated to the surface with areas of ponded water also present during the March 2011 survey. Saturated conditions have also been observed in the upper part of the soils during previous investigations of this area (TetraTech 2004; EDAW|AECOM 2008).

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Alameda Point – IR Site 32 City/County: Alameda County Date: July 29, 2010

Applicant/Owner: U.S. Navy State: CA Sampling Point: SP-11

Investigator(s): Russell Huddleston and Holly Barbare Section, Township, Range: 05 02S 04W (Mt. Diablo Meridian)

Landform (hillslope, terrace, etc.): Fill Terrace Local relief (concave, convex, none): Concave Slope (%): 0-1

Subregion (LRR): C-14 Lat: 37.792005 North Long: -122.323844 West Datum: WGS84

Soil Map Unit Name: Xeropsaments, Fill NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil X, or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks: Wet meadow community in southwestern part of the site. Considered a problem area as the soils are comprised of dredge fill material and wetland hydrology is seasonal.

VEGETATION

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. N/A			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. *Carex praegracilis*	95	Yes	FACW-
2. *Holcus lanatus*	2		FAC
3. Festuca arundinacea	2		FAC-
4. *Agrostis stolonifera*	1		FACW
5.			
6.			
7.			
8.			
Total Cover:	96		
Woody Vine Stratum			
1. N/A			
2.			
Total Cover:			

% Bare Ground in Herb Stratum <5% % Cover of Biotic Crust 0%

Dominance Test worksheet:

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index Worksheet:

Total % Cover Of:		Multiply By:
OBL species		×1 =
FACW species	96	×2 = 192
FAC species	4	×3 = 12
FACU species		×4 =
UPL species		×5 =
Column Totals:	100 (A)	204 (B)

Prevalence Index = B/A = 2.04

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0*

____ Morphological Adaptations* (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation* (Explain)

* Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks: Notable absence of non- wetland plants in this area.

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SOIL

Sampling Point SP-11

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[a]	Loc[b]	Texture	Remarks

[a] Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [b] 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**)
- ___ 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 Soils[c]:

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

[c] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: N/A

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks: No soil data collected at this location. Hydric soils assumed present in this location based on abundance of FACW vegetation and observations of seasonal saturation and inundation.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X 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)

Secondary Indicators (two 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)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	X	No	___	Depth (inches):	1-4“
Water Table Present?	Yes	___	No	___	Depth (inches):	N/A
Saturation Present? (includes capillary fringe)	Yes	X	No	___	Depth (inches):	0

Wetland Hydrology Present? **Yes** X **No** ___

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

Remarks: This area was dry during the July 2010 field survey, but soil was saturated to the surface with areas of standing water also present on March 31, 2011. Previous observations of wet season conditions have also been noted in this area (TetraTech 2004; EDAW|AECOM 2008).

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Alameda Point – IR Site 32 City/County: Alameda County Date: July 29, 2010

Applicant/Owner: U.S. Navy State: CA Sampling Point: SP-12

Investigator(s): Russell Huddleston and Holly Barbare Section, Township, Range: 05 02S 04W (Mt. Diablo Meridian)

Landform (hillslope, terrace, etc.): Fill Terrace Local relief (concave, convex, none): Concave Slope (%): 0-1

Subregion (LRR): C-14 Lat: 37.792193 North Long: -122.324987 West Datum: WGS84

Soil Map Unit Name: Xeropsaments, Fill NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil X, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks: Linear depression in southeast part of the site – appears to have been excavated at some point between march 2000 and 2003. Bottom of the feature is filled with Obligate wetland herbaceous vegetation. Soils consist of dredge fill material.

VEGETATION

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. Salix lasiolepis	20	Yes	FACW
2.			
3.			
4.			
5.			
Total Cover:	20		
Herb Stratum			
1. *Schoenoplectus americanus*	70	Yes	OBL
2. *Eleocharis macrostachya*	20	Yes	OBL
3. *Lythrum hyssopifolium*	5		FACW
4.			
5.			
6.			
7.			
8.			
Total Cover:	95		
Woody Vine Stratum			
1. N/A			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 5% % Cover of Biotic Crust 0%

Dominance Test worksheet:

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index Worksheet:

	Total % Cover Of:		Multiply By:	
OBL species	90	×1 =	90	
FACW species	25	×2 =	50	
FAC species		×3 =		
FACU species		×4 =		
UPL species		×5 =		
Column Totals:	115	(A)	140	(B)

Prevalence Index = B/A = 1.22

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0*

____ Morphological Adaptations* (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation* (Explain)

* Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks: Vegetation in this area was lush and green at the time of the July field survey.

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SOIL

Sampling Point SP-12

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[a]	Loc[b]	Texture	Remarks

[a] Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [b] 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**)
- ___ 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 Soils[c]:

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

[c] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: N/A

Depth (inches): ___

Hydric Soil Present? Yes * **No** ___

Remarks: No soil data collected at this location due to potential radiological contamination concerns. This depressional area that is characterized by dense OBL and FACW vegetation and this are was inundated with several inches of water on March 31, 2011; hydric soil conditions are assumed present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- X 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)

Secondary Indicators (two 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)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	X	No	___	Depth (inches):	>12"
Water Table Present?	Yes	___	No	___	Depth (inches):	N/A
Saturation Present? (includes capillary fringe)	Yes	___	No	___	Depth (inches):	N/A

Wetland Hydrology Present? Yes X **No** ___

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

Remarks: This area was dry during the July 2010 field surveys; but was inundated with over 12 inches of water during the March 31, 2011 field survey.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Alameda Point – IR Site 32 City/County: Alameda County Date: July 29, 2010

Applicant/Owner: U.S. Navy State: CA Sampling Point: SP-13

Investigator(s): Russell Huddleston and Holly Barbare Section, Township, Range: 05 02S 04W (Mt. Diablo Meridian)

Landform (hillslope, terrace, etc.): Fill Terrace Local relief (concave, convex, none): Concave Slope (%): 0-1

Subregion (LRR): C-14 Lat: 37.791899 North Long: -122.325405 West Datum: WGS84

Soil Map Unit Name: Xeropsaments, Fill NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil X, or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	*Tentative Determination
Wetland Hydrology Present?	Yes X	No ____	

Remarks: Low excavated depressional area in the southeastern part of the site – considered a problem area: soil in this area derived from dredge fill material; seasonal hydrology conditions.

VEGETATION

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. *Salix lasiolepis*	25	Yes	FACW
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. *Polypogon monspeliensis*	50	Yes	FACW
2. *Lythrum hyssopifolium*	5		FACW
3. *Gnaphalium luteo-album*	5		FACW-
4.			
5.			
6.			
7.			
8.			
Total Cover: >100%			
Woody Vine Stratum			
1. N/A			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 40% % Cover of Biotic Crust 0%

Dominance Test worksheet:

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index Worksheet:

	Total % Cover Of:		Multiply By:
OBL species		×1 =	
FACW species	20	×2 =	40
FAC species	70	×3 =	210
FACU species		×4 =	
UPL species	5	×5 =	25
Column Totals:	95 (A)		275 (B)

Prevalence Index = B/A = 2.89

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0*

____ Morphological Adaptations* (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation* (Explain)

* Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks: Several willow shrubs (small trees) present within this shallow basin, *Polypogon* observed in this area consists of very small, short stature plants that may be indicative of drier conditions.

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SOIL

Sampling Point SP-13

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[a]	Loc[b]	Texture	Remarks

[a] Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [b] 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**)
- ___ 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 Soils[c]:

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

[c] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: N/A

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks: No soil data collected at this location. Low topographic depression (excavated) with abundance of facultative plants and observations of seasonal saturation and inundation suggest that hydric soil conditions are present in this location.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- X 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)

Secondary Indicators (two 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)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	X	No	___	Depth (inches):	4”
Water Table Present?	Yes	___	No	___	Depth (inches):	N/A
Saturation Present? (includes capillary fringe)	Yes	___	No	___	Depth (inches):	N/A

Wetland Hydrology Present? **Yes** X **No** ___

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

Remarks: This area was dry during the July 2010 field surveys; but was surface water was present during the March 2011 field survey.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Alameda Point – IR Site 32 City/County: Alameda County Date: July 29, 2010

Applicant/Owner: U.S. Navy State: CA Sampling Point: SP-14

Investigator(s): Russell Huddleston and Holly Barbare Section, Township, Range: 05 02S 04W (Mt. Diablo Meridian)

Landform (hillslope, terrace, etc.): Fill Terrace Local relief (concave, convex, none): Concave Slope (%): 0-1

Subregion (LRR): C-14 Lat: 37.791226 North Long: -122.323610 West Datum: WGS84

Soil Map Unit Name: Xeropsaments, Fill NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil X, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks: Excavated basin in the southeast part of the site.

VEGETATION

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. Salix lasiolepis	10	Yes	FACW
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. *Dittrichia graveolens*	15	Yes	NL
2. *Lythrum hyssopifolium*	10	Yes	FACW
3. *Polypogon monspeliensis*	5		FACW
4. *Cotula coronopifolia*	5		FACW
5. *Melilotus albus*	2		FAC
6.			
7.			
8.			
Total Cover:	100		
Woody Vine Stratum			
1. N/A			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 0% % Cover of Biotic Crust 0%

Dominance Test worksheet:

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 66% (A/B)

Prevalence Index Worksheet:

	Total % Cover Of:		Multiply By:	
OBL species		×1 =		
FACW species	30	×2 =	60	
FAC species	2	×3 =	6	
FACU species		×4 =		
UPL species	15	×5 =	45	
Column Totals:	37	(A)	111	(B)

Prevalence Index = B/A = 3.0

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0*

____ Morphological Adaptations* (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation* (Explain)

* Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks: Vegetation found around the margins, much of the basin is devoid of plants. *Dittrichia graveolens* is a late season annual that likely has colonized the area after the water has receded and may not be indicative of wet season growing conditions.

KCH-2622-0006-0109

SOIL

Sampling Point SP-14

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[a]	Loc[b]	Texture	Remarks

[a] Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [b] 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**)
- ___ 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 Soils[c]:

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

[c] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: N/A

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks: No soil data collected at this location. Hydrophytic vegetation is present around the margins of the basin and there is evidence to suggest that over 12 inches of ponded water was present in this area, therefore hydric soil conditions are likely present in this area. This basin was completely inundated in March 2011.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

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

Secondary Indicators (two 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	X	No	___	Depth (inches):	>12
Water Table Present?	Yes	___	No	___	Depth (inches):	N/A
Saturation Present? (includes capillary fringe)	Yes	___	No	___	Depth (inches):	N/A

Wetland Hydrology Present? **Yes** X **No** ___

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

Remarks: Numerous primary indicators were observed within the basin during the July 2010 field survey and some evidence of standing water is apparent on aerial photographs. The entire basin was filled with water on March 31, 2011.

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WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Alameda Point – IR Site 32 City/County: Alameda County Date: March 31, 2011

Applicant/Owner: U.S. Navy State: CA Sampling Point: SP-15

Investigator(s): Russell Huddleston Section, Township, Range: 05 02S 04W (Mt. Diablo Meridian)

Landform (hillslope, terrace, etc.): Fill Terrace Local relief (concave, convex, none): None Slope (%): 0-1

Subregion (LRR): C-14 Lat: 37.792135 North Long: -122.324191 West Datum: WGS84

Soil Map Unit Name: Xeropsaments, Fill NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil X, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks: Upland area adjacent to wet meadow in southeast part of IR Site 32.Soils consist of dredged fill material.

VEGETATION

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. *Bromus madritensis spp. rubens*	25%	Y	NL
2. *Bromus hordeaceous*	25%	Y	FACU
3. *Rumex acetosella*	5%		FAC-
4.			
5.			
6.			
7.			
8.			
Total Cover:	55%		
Woody Vine Stratum			
1. N/A			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 45% % Cover of Biotic Crust 0%

Dominance Test worksheet:

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index Worksheet:

Total % Cover Of:	Multiply By:
OBL species ____	×1 = ____
FACW species ____	×2 = ____
FAC species ____	×3 = ____
FACU species ____	×4 = ____
UPL species ____	×5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ____ Dominance Test is >50%
- ____ Prevalence Index is ≤3.0*
- ____ Morphological Adaptations* (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation* (Explain)

* Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** ____ **No** X

Remarks: Vegetation found around the margin of wet meadow area.

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SOIL

Sampling Point SP-15

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[a]	Loc[b]	Texture	Remarks
0-12	10 YR 4/3	100	--	--	--	--	Sand	Fill material

[a] Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [b] 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**)
- ___ 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 Soils[c]:

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

[c] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: N/A

Depth (inches): >12

Hydric Soil Present? **Yes** ___ **No** X

Remarks: No evidence of hydric conditions at this location

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 Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (two 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 X	Depth (inches): ___		
Water Table Present?	Yes ___	No X	Depth (inches): ___		
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___	**Wetland Hydrology Present?**	**Yes** ___ **No** X

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

Remarks: No evidence of seasonal wetland hydrology at this location.

KCH-2622-0006-0109

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Alameda Point – IR Site 32 City/County: Alameda County Date: March 31, 2011

Applicant/Owner: U.S. Navy State: CA Sampling Point: SP-16

Investigator(s): Russell Huddleston Section, Township, Range: 05 02S 04W (Mt. Diablo Meridian)

Landform (hillslope, terrace, etc.): Fill Terrace Local relief (concave, convex, none): None Slope (%): 0-1

Subregion (LRR): C-14 Lat: 37.792257 North Long: -122.324724 West Datum: WGS84

Soil Map Unit Name: Xeropsaments, Fill NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil X, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks: Upland area adjacent to wet meadow in southeast part of IR Site 32.Soils consist of dredged fill material.

VEGETATION

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. *Vulpia myuros*	50%	Y	FACU*
2. *Bromus hordeaceous*	25%	Y	FACU-
3. *Geranium dissectum*	15%		NL
4. *Carduus pycnocephalus*	10%		NL
5.			
6.			
7.			
8.			
Total Cover:	100%		
Woody Vine Stratum			
1. N/A			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 0% % Cover of Biotic Crust 0%

Dominance Test worksheet:

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index Worksheet:

Total % Cover Of:		Multiply By:
OBL species	×1 =	
FACW species	×2 =	
FAC species	×3 =	
FACU species	×4 =	
UPL species	×5 =	
Column Totals:	(A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ____ Dominance Test is >50%
- ____ Prevalence Index is ≤3.0*
- ____ Morphological Adaptations* (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation* (Explain)

* Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** ____ **No** X

Remarks: Vegetation found around the margin of wet meadow area.

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SOIL

Sampling Point SP-16

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[a]	Loc[b]	Texture	Remarks
0-12	10 YR 4/3	100	--	--	--	--	Sand	Fill material

[a] Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [b] 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**)
- ___ 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 Soils[c]:

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

[c] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: N/A

Depth (inches): >12

Hydric Soil Present? **Yes** ___ **No** X

Remarks: No evidence of hydric conditions at this location

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 Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (two 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 X	Depth (inches): ___		
Water Table Present?	Yes ___	No X	Depth (inches): ___		
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___	**Wetland Hydrology Present?**	**Yes** ___ **No** X

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

Remarks: No evidence of seasonal wetland hydrology at this location.

KCH-2622-0006-0109

Appendix D
Representative Photographs

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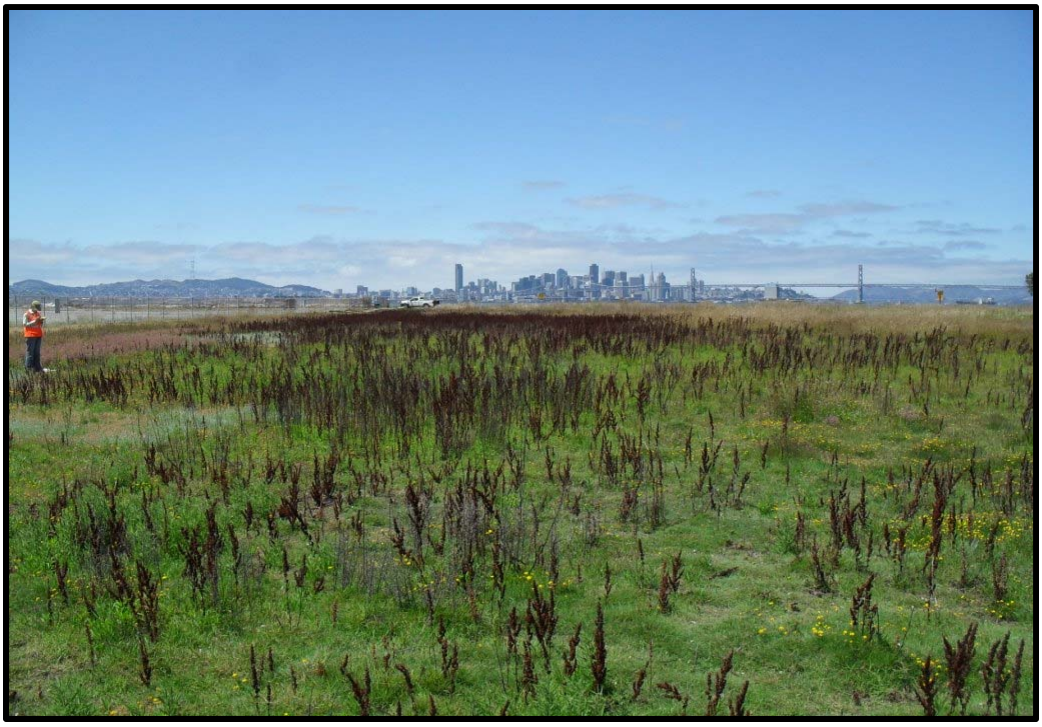

Seasonal Wetland SW-1: Low depressional basin area in the southwest corner; characterized primarily by saltgrass and curly dock with other scattered hydrophytic plant species (July, 2010).

Seasonal Wetland SW-1: Biotic crust (algal matting); a primary indicator of seasonal wetland hydrology; observed in scattered locations throughout the southwest portion (July, 2010).

Seasonal Wetland SW-1: looking north from outside perimeter fence area March 31, 2011, surface ponding evident in this area.

Seasonal Wetland SW-1: Mesic meadow habitat, characterized by a mixture of creeping bent grass, clustered field sedge, and tall fescue in this area (July 2010).

Seasonal Wetland SW-2: Dense clustered field sedge along the south and western part of low depressional area (July, 2010).

Seasonal Wetland SW-2: Low, sandy depressional area characterized by relatively dense hyssop loosestrife with young stinkwort also common (July, 2010).

Seasonal Wetland SW-2: Hyssop loosestrife with biotic crust (dried algal matting); a primary indicator of seasonal wetland hydrology (July, 2010).

Seasonal Wetland SW-2: Drift deposits (nonriverine) observed near the northeast edge of the low depressional area, with young growth of stinkweed - a primary indicator of wetland hydrology (July, 2010).

Seasonal Wetland SW-2: Water marks (nonriverine) on wooden post within the low depressional area are also primary indicators of seasonal wetland hydrology (July, 2010).

Seasonal Wetland W-2: Looking to the northwest from perimeter fence (March 31, 2011).

Seasonal Wetland SW-2: Drainage swale through dense clustered field sedge (July, 2010).

Seasonal Wetland SW-2: Drainage swale through dense clustered field sedge, ponded water and surface saturation noted throughout this area on March 31, 2011.

Seasonal Wetland SW-3: Dense clustered field sedge (June 2010).

Seasonal Wetland SW-3: Dense clustered field sedge, extensive surface ponding and soil saturation noted in this area on March 31, 2011.

Seasonal Wetland SW-4: Linear depression area with arroyo willows, rushes, and creeping spikerush; depressional topography along with abundance of obligate wetland vegetation in this area (July, 2010).

Seasonal Wetland SW-4: Extensive surface ponding observed in this area on March 31, 2011.

Seasonal Wetland SW-6: Appears to be an excavated area subject to seasonal inundation with wetland vegetation around the margins (July, 2010).

Seasonal Wetland SW-6: Drift deposits (nonriverine) observed within the basin indicates over 12 inches of seasonal ponding in this area (July, 2010).

Seasonal Wetland SW-6: Extensive ponding observed on March 31, 2011.

Non-wetland Excavated drainage swale and discharge pumps; dense stinkwort throughout the feature in this photograph (July, 2010).

Appendix E
Plant Species Observed

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Appendix E

Table E-1.
Plant Species Observed on IR Site 32 - July, 2010

Scientific Name[1]	Common Name	Status[2]	Wetland	Upland
Agrostis stolonifera	Spreading bentgrass	FACW	X	X
Aira caryophyllea	Silver hairgrass	NL		X
Anagallis arvensis	Scarlet pimpernel	FAC	X	X
Atriplex triangularis [*A. patula*]	Saltbush	FACW	X	
Avena barbata	Wild oat	NL		
Bellardia trixago	Mediterranean lineseed	NL	X	X
Brassica nigra	Black mustard	NL		X
Bromus diandrus	Rip-gut brome	NL		X
Bromus hordeaceus	Soft chess	FACU		X
Bromus madritensis [*B. rubens*]	Red brome	NI		X
Carduus pycnocephalus	Italian thistle	NL		X
Carex praegracilis	Clustered field sedge	FACW-	X	X
Centaurium muehlenbergii	Monterey centaury	FAC	X	X
Cirsium vulgare	Bull thistle	FACU		X
Conyza canadensis	Horseweed	FAC		X
Cortaderia jubata	Pampas grass	NL	X	X
Cotula coronopifolia	Brass buttons	FACW+	X	
Cynodon dactylon	Bermuda grass	FAC	X	X
Distichlis spicata	Saltgrass	FACW	X	X
Dittrichia graveolens	Stinkwort	NL	X	X
Eleocharis macrostachya	Creeping spikerush	OBL		X
Festuca arundinacea	Tall fescue	FAC-	X	X
Gnaphalium luteo-album	Cudweed	FACW-	X	
Heliotropium curassavicum	Seaside heliotrope	OBL	X	X
Holcus lanatus	Velvet grass	FAC	X	X
Hordeum marinum [*H. hysrtrix*]	Mediterranean barley	FAC	X	X
Lotus corniculatus	Birds-foot trefoil	FAC	X	X
Lythrum hyssopifolia	Hyssop loosestrife	FACW	X	
Melilotus alba	White sweetclover	FACU+	X	X

Table E-1.
Plant Species Observed on IR Site 32 - July, 2010

Scientific Name[1]	Common Name	Status[2]	Wetland	Upland
Melilotus indica	Yellow sweetclover	FAC	X	X
Plantago coronopus	Cut-leaf plantain	FAC		X
Plantago lanceolata	English plantain	FAC-	X	X
Polygonum aviculare	Prostrate knotweed	FAC	X	X
Polypogon monspeliensis	Rabbitsfoot grass	FACW	X	X
Rumex acetosella	Sheep sorrel	FAC-	X	X
Rumex conglomeratus	Clustered Dock	FACW	X	X
Rumex crispus	Curly Dock	FACW-	X	X
Salix lasiolepis	Arroyo willow	FACW	X	X
Schoenoplectus americanus [*Scirpus*]	Olney's bulrush	OBL	X	
Vulpia myuros	Rat-tail fescue	FACU*		X

Notes:
[1]Nomenclature follows *The Jepson Manual* (Hickman, 1993) or currently accepted taxonomy per the Jepson On-Line Interchange (U.C. Berkley, 2010)
[2]Indicator status is from the *National List of Plant Species that Occur in Wetlands, Region 0* (Reed,1988)

FAC	Facultative (equally likely to occur in wetlands and nonwetlands)
FACU	Facultative Upland (67 to 99 percent probability of occurrence in nonwetlands)
FACW	Facultative Wetland (67 to 99 percent probability of occurrence in wetlands)
NI	Insufficient information available to assign an indicator status
NL	Not Included on the *National List of Plant Species that Occur in Wetlands: Region 0.*
OBL	Obligate (99 percent probability of occurrence in wetlands)
*	Indicatives tentative indicator status assignment
+	Frequency tends towards the higher end of the category
-	Frequency tends towards the lower end of the category

Appendix F
Aerial Photographs

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Appendix F

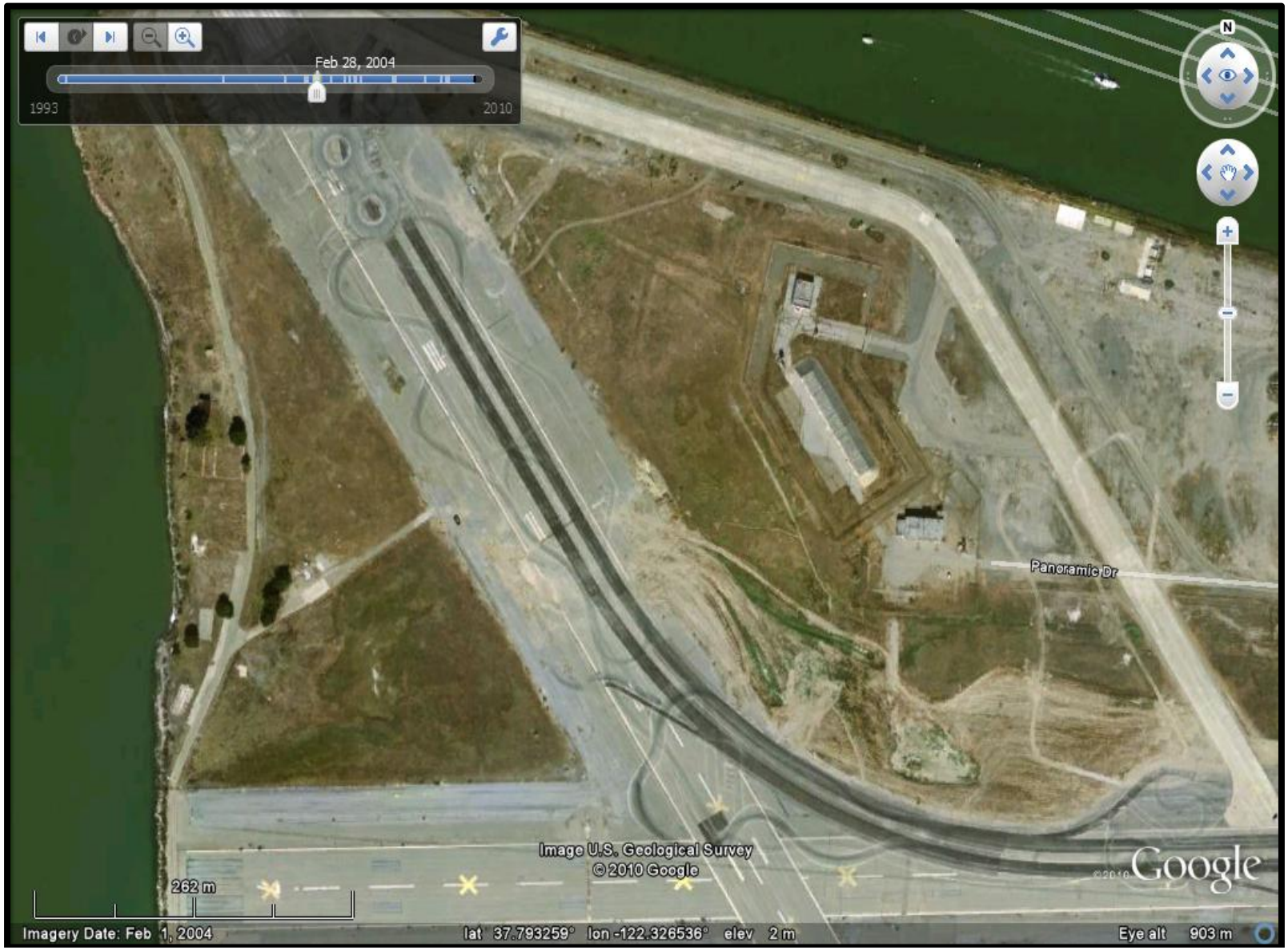
Table F-1.
Summary of Aerial Photograph Review for IR Site 32.

Date of Aerial Photo[1]	Percent of actual rainfall compared to average[2]	Notes and observations of saturation and or inundation[2]
March 11, 2000	January 150 percent February 200 percent	A total of 2.47 inches of rainfall were recorded in the 2 weeks prior to the photograph. Extensive inundation appears present including in portions of some areas identified as potential seasonal wetlands (SW-1, SW-2, and SW-3). Inundation is also evident in a number of areas that were determined to be nonwetlands.
December 30, 2003	November 86 percent December 160 percent	Total rainfall in the 2 weeks prior to the photograph was 3.46 inches. Marginal evidence of soil saturation is present in the southwestern part of potential wetland SW-1 and in a small area on the west side of SW-3. No other obvious signs of surface inundation or saturation are apparent. Evidence of earthwork, including excavation, is apparent in the southeast portion of IR Site 32 on this photograph. The excavated areas appear to correspond to the locations mapped as potential seasonal wetlands SW-4, SW-5, and SW-6.
February 28, 2004	January 70 percent February 135 percent	Total rainfall recorded in the month of February 2004 was 5.83 inches but there is no definitive evidence of surface inundation or saturated soils on this aerial photograph. There are weak, marginal indications of possible saturation associated with the west and southwestern areas of SW-1 and SW-3.
December 30, 2005	November 80 percent December 214 percent	Total rainfall during the month of December in 2005 was 8.98 inches. Surface ponding is apparent in the excavated areas in the southeast part of IR Site 34 in areas identified as potential seasonal wetlands SW-4, SW-5, and SW-6. There appears to be some suggestion of saturation associated with portions of areas mapped as SW-1, SW-2, and SW-3.
April 21, 2005	March 1 – April 21 140 percent	Rainfall between March 1 and April 21 in 2005 was 6.68 inches. There appears to be extensive surface flooding associated with the excavated areas in the southeast part of IR Site 32 (SW-4, SW-5, and SW-6) and some areas of potential saturation or inundation in portions of areas mapped as potential seasonal wetlands SW-1, SW-2, and SW-3.
May 19, 2007	April 1 – May 18 116 percent	Total rainfall between January and May of 2007 was only 66 percent of the average for this period. Only 0.3 inch of rainfall was reported in the 2 weeks prior to the aerial photograph date. Surface ponding is evident in the excavated areas associated with SW-4, SW-5, and SW-6. There are distinct color differences in areas that have been mapped as potential seasonal wetlands SW-1, SW-2, and SW-3 as well as in an area in the north central part of IR Site 32. From the photograph it is unclear if this represents potential inundation or if the color signature is the result of dense perennial vegetation in some areas.

Notes:
[1]Aerial photos from Google Earth 2010.
[2]Rainfall data from University of California Integrated Pest Management (2010) and Western Regional Climate Center (2010).

Aerial Photo from March 11, 2000. Seasonal rainfall in January and February of 2000 was 150 percent and 200 percent above the average for each month, respectively.

Aerial photograph from December 30, 2003. Total rainfall for the month of December was 6.77 inches, which is 160 percent above the average for this month. Total rainfall in November was approximately 86 percent of normal.



Aerial Photo from February 28, 2004. Total rainfall during February 2004 was 5.83 inches, which is approximately 135 percent of average precipitation for this month. Rainfall in January of 2004 was approximately 70 percent of the average.

Aerial Photo from April 21, 2005. Total rainfall between March 1 and April 21 was 6.68 inches, which is approximately 140 percent the average for this time of year.

Aerial photograph from December 30, 2005. Total rainfall during December 2005 was 8.98 inches, or 214 percent of the average for this month. Rainfall in November was approximately 80 percent of normal.

Aerial photograph from May 19, 2007. Overall, 2007 was a drought year; total rainfall between January and May was only 66 percent of normal. Rainfall between April 1 and May 18, 2007 was 2.59 inches, which is slightly above (116 percent) average for this time of year.

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