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Conceptual Restoration Plan

Chelsea Wetland Restoration Project

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Prepared for:

City of Hercules
111 Civic Drive
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Project No. 1136

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1.0 Introduction

The City of Hercules (the City) is proposing the restoration of tidal marsh habitat on the Chelsea parcel. The restoration site is a vacant 11-acre lot adjacent to Pinole Creek in the City of Hercules, Contra Costa County, California (Figure 1) that historically supported tidal marsh habitat. A large portion of the site was filled approximately 100 years ago during the rapid urbanization of the Hercules/Pinole area. The site currently supports annual grasslands, a small tidal drainage channel with adjacent pockets of tidal marsh, and a few small, scattered seasonal wetlands. We will accomplish the restoration by excavating the fill deposited on the site to appropriate marsh elevations and by reintroducing the tides through improved culverts connecting to Pinole Creek. We will incorporate into the design an existing marsh-upland transitional area on the site to enhance this important ecotone. The project will complement and enhance other local ecosystem restoration efforts as it will be adjacent and hydrologically connected to the planned Pinole Creek Greenway Demonstration Project (Pinole Creek Project), a pilot scale effort to enhance flood conveyance and ecosystem function in Pinole Creek. The project will also provide off-channel flood storage for lower Pinole Creek.

The project goals include:

1. Restore onsite tidal marsh habitats to reflect historic conditions
2. Provide flood storage benefits to the cities of Pinole and Hercules
3. Provide passive recreational opportunities along the existing San Francisco Bay Trail

Wetlands and Water Resources, Inc. (WWR) has prepared this Conceptual Restoration Plan for the Chelsea Wetlands in collaboration with the City of Hercules and the Contra Costa County Flood Control District (the District). This plan includes the following elements:

- Site Description (Section 2)
- Conceptual Restoration Plan (Section 3)
- Project Maintenance and Monitoring (Section 4)

2.0 Site Description

This section describes historic and current conditions on the project site and in the immediate vicinity that are pertinent to developing the restoration design.

2.1 Land Ownership

The project site is comprised of three land parcels owned by different entities (Figure 2). The main "Chelsea parcel" (7.5 acres), owned by the City of Hercules, is the largest parcel. PG&E owns a small parcel (0.4 acres) situated between the City's parcel and Pinole Creek. These two parcels are collectively referred to as the "Chelsea parcel" in this document as this is where the bulk of the new

Chelsea Wetlands will be created. The third parcel, which runs along the southern boundary of the project site, is owned by the adjacent Chelsea by the Bay Homeowners Association (HOA) (3.1 acres). The City of Hercules is the project lead, while the other two property owners will be either co-applicants or provide easements.

2.2 Current and Historic Land Uses

The project site was at one time part of a large complex of tidal marshes and mudflats that fringed San Pablo Bay and provided essential habitat for a wide range of animals, birds, and plants. Beginning in the mid 19th century, many of these low-lying areas around the Bay were diked, drained, and filled to support agriculture and urban development, resulting in the loss of approximately 82% of the North Bay's historic tidal wetlands (Goals report 1999). The loss of habitat directly translated into reductions in native wildlife populations. Without the habitats they need to sustain themselves, many birds, animals, and plants have become threatened or endangered.

While the exact time that the Chelsea parcel was filled is unknown, we presume that it happened sometime in the late 19th/early 20th century based on historical aerial photograph review (ENGEO 2008a) and conversations with local historians and City officials. The Phase 1 Environmental Assessment for the project site indicates that the site supported sparse commercial and residential development from at least the 1930s through the 1960s. However, there are no Records of Environmental Consideration (RECs) listed for the site in any local, state, tribal, or federal databases (ENGEO 2008a).

The Chelsea parcel is currently zoned as open space and supports annual grasslands and small, scattered seasonal wetlands. The adjacent HOA parcel appears not to have been filled and still supports tidal salt marsh, seasonal wetlands, and annual grasslands. A small channel connected to Pinole Creek runs along the southern project boundary. The areas surrounding the project site were slowly developed over time and the site is now bordered by housing developments to the south and east, the Amtrak/Union Pacific Railroad to the north, and the Pinole Creek flood control channel to the west (Figure 2).

2.3 Surrounding Land Uses and Habitats

The land uses and habitat features surrounding the project site are displayed in Figure 2. Residential development occurs to the south and east of the project site. The Chelsea by the Bay subdivision, which borders the project site to the south, was constructed in the late 1980s. The residential area to the east of the project site, on the east side of Santa Fe Avenue has been slowly developed over the past 100 years.

Pinole Creek runs west of the project site and is separated from the site by a paved and gravel walkway/access road. The portion of Pinole Creek bordering the project site is located approximately 800 feet upstream from San Pablo Bay, making it tidally influenced. Several beds of California cordgrass (*Spartina foliosa*) occur near the mouth of Pinole Creek, while other portions of the creek are dominated by Alkali bulrush (*Bolboschoenus maritimus*). Both vegetation types are classified as coastal brackish marsh.

A large tidal marsh, which is a part of the East Bay Regional Park District's San Pablo Bay Regional Shoreline Park, is located approximately 140 feet to the northwest of the project site. The tidal marsh is separated from the site by a constructed berm (containing the San Francisco Bay Trail), a row of planted eucalyptus trees, Railroad Avenue (now closed to vehicles), and the Amtrak railroad right-of way (containing railroad tracks and areas of compacted dirt and gravel). The tidal marsh is dominated by pickleweed (*Sarcocornia pacifica*), but contains other tidal marsh species including fleshy jaumea (*Jaumea carnosa*) and marsh gumplant (*Grindelia stricta* var. *angustifolia*).

A freshwater marsh is located to the southeast of the project site. The marsh is generally choked with cattails (*Typha* spp.) with no large open water areas visible. Willows (*Salix* spp.) occur in locations throughout the marsh, as well as dense stands of Himalayan blackberry (*Rubus discolor*). The tidal channel traversing the southern project site boundary continues into and terminates within the freshwater marsh. Upon entering the marsh, vegetation within the channel (primarily cattails) becomes dense and open water areas are limited. A small drainage channel and two ponds occur east and upslope of the freshwater marsh and connect to the marsh via a culvert under Santa Fe Avenue. This channel is completely choked with cattails and willows while the ponds contain open aquatic habitat and are generally surrounded by cattails.

2.4 Project Site Conditions

This section describes the existing conditions on the project site in terms of topography, soils, hydrology, biological resources, jurisdictional areas, and structures/utilities. Representative site photographs can be found in Appendix A.

2.4.1 Topography

Topographic data of the project site and the surrounding area were collected by Moran Engineering and HJW in June 2007 to support the development of the Pinole Creek Project. WWR collected additional focused topographic data on the project site in October of 2007 to supplement the Moran Engineering dataset. All elevation data were referenced to the North American Vertical Datum of 1988 (NAVD8888). Figure 3 shows the digital elevation model (DEM) of the project site.

Much of the Chelsea parcel has elevations from 8 to 10 ft with some depressional areas being as low as 7 ft. These elevations are well above mean higher-high water (MHHW), which is 6.4 ft (see section 2.4.3, Hydrology, below). The HOA parcel has elevations ranging from 6 ft adjacent to the on-site channel to 10 ft at the upland margins, indicating that some areas receive occasional spillover water from the tidal channel.

The project site is surrounded by berms on all four sides, essentially forming a basin (Figure 4). The southern berm is created by the Chelsea by the Bay housing development, the eastern berm is formed by Santa Fe Avenue, the northern berm is created by the Bay Trail, and the western berm forms the District maintenance road along Pinole Creek. This road is relatively low (9.5 to 10 ft) and is occasionally overtopped by Pinole Creek during extreme flood events.

2.4.2 Geology and Soils

ENGEO Inc. performed a preliminary geotechnical assessment of the project site in September 2007 (ENGEO 2008b). The information contained in this section comes from that report.

The project site is located in the Coast Ranges geomorphic province of California, a region characterized by a series of parallel, northwesterly trending, folded, and faulted mountain ranges and valleys. The site geology is primarily undivided Quarternary deposits. The USDA soil survey of Contra Costa County indicates that the site is underlain entirely by Clear Lake Clay (bay mud) (Figure 5), a substrate highly suitable for wetland creation.

ENGEO conducted a field exploration of site soil conditions on September 25, 2007. Five hand auger borings were drilled to a depth of approximately five feet below ground surface (bgs). The locations of the borings are shown in Figure 6. The soil characteristics were logged to describe subsurface conditions and samples were collected for geotechnical and environmental testing.

Subsurface Conditions

A majority of the Chelsea Parcel (borings B1, B3, and B5) is characterized by a layer of fill extending to depths ranging from three to five feet bgs. The fill consists of silty clay material with various amounts of claystone or siltstone fragments. Underneath this upper layer of fill exists a layer of highly expansive native clay, representing the natural bay mud deposits. Borings B2 and B4, which were taken in the marsh/upland transitional parcel and the small channel that traverses the Chelsea Parcel, indicate that this natural Bay Mud layer exists directly below the surface in these areas.

Environmental Testing

Laboratory tests were performed on a composite sample of the five discrete soil samples. The sample was analyzed for the following substances:

- Petroleum hydrocarbons
- Organochlorine pesticides
- Volatile organic compounds
- Semi-volatile organic compounds
- Nitrosamines
- CAM-17 metals
- CAM-17 metals soluble threshold limit concentration

The results were compared to respective California Human Health Screening Levels (CHHSLs) developed by the California EPA and the Environmental Screening Levels (ESLs) developed by the San Francisco Bay Regional Water Quality Control Board (SFRWQCB). None of the detected target analyte concentrations exceeded respective CHHSLs and ESLs for a residential land use scenario, the most conservative soil re-use scenario. Based on these data, the on-site soil is suitable to be off-hauled for unrestricted use.

2.4.3 Hydrology

The lower reach of Pinole Creek is essentially a tidal slough that connects to San Pablo Bay approximately 800 ft downstream of the project site. Environmental Data Solutions (EDS) determined the tidal datums on Pinole Creek for the Pinole Creek Project in June of 2007. These tidal datums are listed in Table 1.

The site has a limited tidal connection to Pinole Creek through a 3-ft culvert under the District maintenance road. The culvert invert is at 2.6 ft, which is 2.2 ft above mean lower low water (MLLW), indicating the site only receives water during the higher portions of the tidal cycle. This culvert connects to the small channel which traverses the southeastern boundary of the project site and terminates in the adjacent freshwater marsh (Figure 7). The range of normal tidal influence only extends to the first 1,300 ft of the channel, short of the freshwater marsh. Due to the presence of perennial surface water and shallow ground water, it is assumed that this freshwater marsh is fed primarily by groundwater. At the upstream end of the channel, another 3-ft culvert provides stormwater input from the housing development on the east side of Santa Fe Avenue. This input of freshwater is highly variable and is only appreciable in the winter.

As described in Section 2.4.1, Topography, most of the Chelsea parcel is out of the range of the tides and hence does not receive water from the on-site channel. There are few isolated areas that may be low enough to receive occasional spillover from the channel during extreme high tides and storm events. Several areas in the HOA parcel are low enough to receive spillover from the channel during these high-water events. These areas on the project site support pickleweed wetlands which are discussed below in Section 2.4.4, Biological Resources.

Along the base of the Bay Trail berm on the northern side of the project area there is a small 2-ft culvert that drains a portion of Railroad Avenue, on the northern side of the Bay Trail berm. This culvert is damaged and provides limited seasonal freshwater input to the largest wetland on the Chelsea parcel (see section 2.4.5, Jurisdictional Areas, below).

During storm events, the water in Pinole Creek occasionally reaches high enough elevations to overtop the District road and flood the project site. Images taken during the January 1, 2006 storm illustrate this phenomenon (see Appendix A, Site Photographs).

2.4.4 Biological Resources

WWR evaluated the project site biological conditions in the winter of 2008 and presented the results in the Biological Evaluation Report (WWR 2008a). The information in this section is summarized from that document.

Plant Communities

Four plant communities occur on the project site, including annual grassland (the dominant cover), pickleweed wetland, salt-alkali marsh, brackish bulrush-cattail wetland, and annual grassland. These plant communities are classified based on the CNDDB *Vegetation Classification and Mapping Program* (CDFG 2003). The locations of these plant communities are displayed in Figure 8. Of these habitat types, pickleweed wetlands and brackish bulrush-cattail wetland are considered sensitive plant communities by the California Department of Fish and Game (CDFG).

Annual grasslands (9.078 ac) cover the majority of the project site. Non-native grasses, including wild oats (*Avena* sp.) and beardless wildrye (*Leymus triticoides*), are abundant on the site. Other dominant herbaceous vegetation includes spreading hedgeparseley (*Torilis arvensis*) garden vetch (*Vicia sativa*), ripgut brome (*Bromus diandrus*), and cutleaf geranium (*Geranium dissectum*). Large stands of field mustard (*Brassia rapa*) and scattered patches of curly dock (*Rumex crispus*), Harding grass(*Phalaris aquatica*), and salt grass(*Distichlis spicata*) occur within the grassland. A stand of coyote brush (*Baccharis pilularis*) occurs in the western corner of the project site. This native shrub quickly establishes in disturbed areas. A stand of coyote brush, intermixed with Himalayan blackberry (*Rubus discolor*), also occurs in the southeast corner of the site. Approximately ten non-native palm trees occur along the eastern site boundary. The southern site boundary contains a row of moderate-sized non-native pine (*Pinus* spp.) and eucalyptus trees, which were likely planted as a wind/visual barrier for the adjacent development.

There are isolated pockets of freshwater seasonal wetlands (0.436 ac) scattered throughout the annual grassland where rainwater accumulates in topographic depressions. These areas are discussed in more detail below under Section 2.4.5, Jurisdictional Areas.

Pickleweed wetlands (0.855 ac) are dominated by pickleweed and occur in low-lying portions of the site. These areas pond water following rain events and likely have remnant soil salinities, which favor the establishment of salt-tolerant vegetation. Some of the lower-elevation areas on the HOA parcel also receive occasional spillover of brackish water from the channel during extreme high tides and storm events.

Salt-alkali marsh (0.377 ac) habitat is found in the first 1,000 ft of the tidal channel traversing the southern project boundary (starting from the culvert on Pinole Creek). California cordgrass and alkali bullrush occur within lower portions of the channel, transitioning into a matrix of pickleweed, saltgrass, and marsh gumplant. Plant species bordering the channel include Harding grass, wild radish (*Raphanus raphanistrum*), and various non-native annual grasses.

Brackish bulrush-cattail wetland (0.084 ac) occurs in the tidal channel above the first 1,000 ft. The vegetation in the channel is dominated by cattails and California bulrush *(Schoenoplectus californicus*) and transitions into a matrix of more salt-tolerant species at higher elevations (saltgrass, pickleweed, marsh gumplant). This transition to salt tolerant species is likely due to intrusion of brackish water during storm events and remnant soil salinity.

Special Status Species

Due to the disturbed nature of the project site and the fact that no special status plant species have been noted on any of the many site visits, it is assumed that the project site does not currently support any special status plants. There are, however, many special status wildlife species that could potentially occur on the site. Review of the California Natural Diversity Database (CNDDB) and knowledge of the project region identified 18 special-status wildlife species (including mammal, amphibian, reptile, bird, and fish species) that could potentially occur on the project site. These species, along with their potential use of the project site, are listed in Table 2. Most species have a low likelihood of occurrence due to the presence of marginal or poor habitat conditions. The species with the greatest likelihood of occurring on site include **Cooper's hawk** (*Accipiter cooperi)*, **white-tailed kite** (*Elanus leucurus)*, **saltmarsh common yellowthroat** (*Geothlypis trichas sinuosa)*, and **osprey** (*Pandion haliaetu*).

2.4.5 Jurisdictional Areas

WWR performed a wetland delineation in March of 2008 to identify areas potentially falling under the jurisdiction of the U.S. Army Corps of Engineers (Corps), BCDC, or CDFG. The results of this effort are presented in the Potential Jurisdictional Determination Report (WWR 2008b). The following information in this section comes directly from that report. The location of all

jurisdictional waters on the site can be found in Figure 9. The Corps verified wetland delineation map and concurrence letter can be found in Appendix B.

There are **1.752 acres** of wetlands on the project site, which are subject to Corps jurisdiction under Section 404 of the Federal Clean Water Act. These wetlands fall into three general categories: brackish/salt marsh, brackish/salt marsh with tidal channel, and freshwater seasonal wetlands. The brackish/salt marshes (**0.855 ac**) consist of the pickleweed wetlands; the brackish marsh with tidal channel (**0.461 ac**) consists of the salt-alkali marsh and brackish bulrush cattail wetlands found in and along the tidal drainage channel. The freshwater seasonal wetlands (**0.436 ac**) mainly occur in isolated depressions that are fed primarily by rainwater. In addition, a **0.150** ac area of the brackish/salt marsh with tidal channel is subject to Corps jurisdiction under Section 10 of the Rivers and Harbors act as it falls below MHW.

Pinole Creek in the vicinity of the project site supports coastal brackish marsh vegetation along the channel margins. The creek channel and adjacent marsh areas fall under Section 10 and/or Section 404 Corps jurisdiction depending on elevation. The Pinole Creek channel may also be subject to regulation by the CDFG as a "stream" under Section 1602 of the California Fish and Game Code. A stream is defined under these regulations as a body of water that flows at least periodically or intermittently through a bed or channel having banks, and that supports fish or other aquatic life. CDFG jurisdiction extends to the edge of riparian vegetation associated with a creek. However, the fully tidal nature of Pinole Creek in the vicinity of the project site is expected to make the channel and adjacent banks not subject to CDFG jurisdiction.

2.4.6 Structures and Utilities

There are relatively few engineered structures and utilities on the project site. As described in Section 2.4.3, Hydrology, there are three culverts that connect to the site. There is also a fourth culvert that exists along the alignment of the tidal drainage channel (Figure 7). This culvert was presumably installed to provide a channel crossing point in this area for maintenance activities on the HOA parcel. There are two visible concrete foundations on the property that supported structures in the past (Figure 8). The larger of the two foundations is a 2,075 square foot concrete pad, approximately eight inches thick, near the southwest corner of the site, adjacent to the tidal drainage channel. The second foundation is rectangular concrete footer wall that is partially buried by the adjacent Bay Trail berm. The wall is flush with the ground and barely visible. A six-inch sewage force main crosses the project site along the boundary between PG&E and City parcels. The pipe is buried approximately one to two feet below the ground surface.

2.5 Project Site Constraints

The project site has only four major constraints, all of which are easily dealt with:

1) Protect adjacent residential areas from flooding
2) Maintain access to the District road on Pinole Creek
3) Protect sewage force main on the property
4) Maintain or reduce current mosquito production levels

2.5.1 Protect Adjacent Residential Areas from Flooding

As described earlier, the project site is bordered by residential areas on two sides. It is essential that the construction of the project does not increase the flooding risk to these communities.

2.5.2 Maintain Access to the District Road along Pinole Creek

The District maintenance road runs between Pinole Creek and the project site. Restoration activities on the project site must not conflict with the District's ability to continue to use this road during dry weather conditions.

2.5.3 Protect Sewage Force Main on the Property

As described above in Section 2.4.6, a six-inch sewage force main runs along the border of the PG&E and City parcels, buried approximately one to two feet below the ground surface (Figure 2). The project design must accommodate this pipe.

2.5.4 Maintain or Reduce Current Mosquito Production Levels

The project site in its current condition supports the production of significant quantities of mosquitoes, requiring regular treatment from the Contra Costa County Mosquito and Vector Control District. Since the project site is bordered by residential developments, it is essential that the restoration activities not increase mosquito production over current levels.

3.0 Conceptual Restoration Plan

This section describes the goals of the Chelsea Wetland Restoration Project and presents the design details of the conceptual restoration plan.

3.1 Project Goals

This project has three primary goals:

1. Restore tidal marsh habitat
2. Enhance flood storage on lower Pinole Creek
3. Provide recreational opportunities along the existing Bay Trail

These goals are discussed in more detail below.

3.1.1 Restore Tidal Marsh Habitat

The overarching goal of the Chelsea Wetlands Restoration Project is to restore tidal marsh, a once-common ecotone between bottomland tidal floodplain communities and riparian corridors. Throughout the San Francisco Estuary, historic efforts to control and straighten stream corridors in both urban and rural areas has cut off many of these corridors from their floodplains. This region-wide loss caused the populations of many wildlife species dependent on such habitats to plummet. Restoring tidal marsh to the Chelsea parcel will provide important reproductive and non-reproductive habitat for a wide range of resident and migratory wildlife, including wading and passerine birds, waterfowl, small mammals, reptiles, amphibians, and fish. Several special-status species will benefit from the restoration project. These species are listed in Table 3. The project will restore multiple physical and biological dynamics associated with variable estuarine conditions and winter storm flows, with an emphasis on restoring an aquatic-terrestrial food web that ultimately is capable of enhancing the populations of all local wildlife, whether or not they use the restored habitat directly.

The project will restore/enhance the following amounts of habitat:

- 5.2 acres of new tidal salt marsh
- 0.7 acres of new tidal channel (~1,400 linear ft)
- 0.05 acres of existing tidal channel (~400 linear ft)
- 1.1 to 1.8 acres of new marsh-upland transition (depending on alternatives)
- 2.1 acres of existing marsh-upland transition (consisting of tidal marsh, seasonal wetlands, and upland habitats)

3.1.2 Enhance Flood Storage on Lower Pinole Creek

Pinole Creek was modified in 1964 by the District and the U.S. Army Corps of Engineers (Corps) to provide flood conveyance for runoff expected from a 50-year recurrence interval (RI) storm event. During the last 43 years, as much as 4 feet of sediment have deposited in areas of the channel and development and other land use changes in the watershed have increased runoff so that the creek now provides protection against a storm of only a 15-year RI in the vicinity of the project site. The Union Pacific railroad bridge immediately downstream of the project site also serves as a constriction that prevents effective flood conveyance. Due to the nature of development in the watershed, it is difficult to enlarge the channel to increase capacity and, aside from the vacant Chelsea property, there is little room for off-channel flood storage. Because of these conditions, flooding is a constant threat to the surrounding community. On New Year's Day 2006, properties along lower Pinole Creek incurred flood damage when the creek overtopped its banks.

The Chelsea Wetland Project is located immediately north of and adjacent to Pinole Creek and will provide flood attenuation benefits to the Pinole Creek watershed by serving as an offline detention

basin. Elements are incorporated into the project design to improve the transfer of flood waters from the creek into the newly created wetlands on the Chelsea parcel (see Section 3.2, Restoration Design, below). Depending on the final design specifications, the Chelsea Wetlands will provide a minimum of 18.7 acre-feet of flood storage. Under current conditions, the Chelsea property offers only 7.4 acre-feet of off-channel storage.

3.1.3 Provide Recreational Opportunities along the Existing Bay Trail

Approximately 1,200 linear feet of the San Francisco Bay Trail run along the Project site. As tidal marsh is relatively scarce along the Bay Trail in this area of Contra Costa County, the Project will provide valuable nature/wildlife viewing opportunities. With future developments planned in the area, including the Hercules Multimodal Transit Center to the northeast, usage of the Bay Trail in the project vicinity is expected to increase. To enhance passive recreation opportunities on the Bay Trail, the Project will add interpretive signage in various locations along the newly created wetlands. These signs will describe tidal marsh ecology, the restoration process, and how the wetlands integrate into the Pinole Creek watershed. In addition, the project also includes the creation of two turnouts on the bay trail, which will provide wildlife viewing platforms.

3.2 Restoration Design

The features of the proposed restoration design are shown in Figure 10. The design includes the following elements:

1. Excavate new tidal marsh and tidal channel complex
2. Improve tidal and flood overflow connections with Pinole Creek
3. Create habitat transition berms around project perimeter
4. Integrate existing marsh-upland transitional area
5. Build flood walls in low points around project perimeter
6. Add passive recreational Bay Trail improvements

These design elements are described in detail below.

3.2.1 Excavate New Tidal Marsh and Tidal Channel Complex

The project will begin with the excavation of a new tidal marsh plain on the Chelsea parcel. We will remove approximately 50,000 cubic yards of fill to bring the ground surface down to appropriate elevations for restoring tidal marsh (Figure 11). The soils at the excavation depth are primarily native bay mud, and should therefore support the establishment of tidal marsh vegetation. We will construct a large tidal channel through the center of the site to bring in water from Pinole Creek. The channel will have a top width of 20 ft and will be approximately 4 ft deep. We will grade the marsh to drain toward this new channel. We will grade the marsh perimeter to 5.5ft NAVD88 and it will slope toward the channel banks, which will be at 5.0 ft NAVD88. These elevations will make the new marsh plain approximately 0.5-1 ft below MHW. This design will allow the new marsh plain to

be regularly inundated during the tidal cycle, which will help to condition the soils and bring in seeds to promote vegetation establishment. As vegetation becomes established, rates of sedimentation will increase and the marsh plain will begin to seek its own elevation equilibrium. This self design process will eliminate the need to plant the marsh plain and will reduce initial maintenance costs of the project. In addition, the first 1,000 ft of the existing on-site tidal channel will be filled in and graded to marsh plain elevations.

3.2.2 Improve Tidal and Flood Overflow Connections with Pinole Creek

Currently, the project site is connected to Pinole Creek through a 3 ft culvert under the District maintenance road. We will replace this culvert with twin 5-ft culverts that will provide sufficient cross sectional area to allow full tidal exchange between Pinole Creek and the property (Figure 12). We will position the culvert inverts at 1 ft NAVD88 to capture the full tidal range in Pinole Creek. The creek-side face of the culvert array will be sloped to follow the contour of the bank so that there is minimal obstruction to creek flow. These culverts will spill directly into the newly created tidal channel which will distribute the tidal water throughout the wetlands.

To provide flood overflow connection with Pinole Creek, we will lower a 100 ft section of the District maintenance road that borders the project site by approximately 1 ft, creating a weir (Figure 12). Under normal conditions, water will enter and exit the wetland via the new culvert array. However, during flood events when water levels rise drastically above normal, water from Pinole Creek will spill over this weir and into the wetlands. When flood waters recede, the excess water will drain from the wetlands over the weir and out through the culverts. We will pave the weir and will reinforce the slopes on the creek and wetland sides with rip-rap to prevent erosion to the road.

Under this restoration design design, the Chelsea Wetlands will provide a minimum of 18.7 acre-feet of flood storage. Under current conditions, the Chelsea property offers 7.4 acre-feet of off-channel storage and since there is currently no weir installed in the roadway, the water must crest the road surface before it spills into the Chelsea parcel. The added storage and lower overflow elevation will improve the flood protection provided to the cities of Hercules and Pinole.

The potential benefits of the Chelsea Wetlands on Pinole Creek flood conveyance were modeled using HEC-RAS (version 4) in the unsteady-state flow analysis. Input hydrographs for the 100-yr 12-hour storm and the 10-yr 6-hour storms were developed from a HEC-HMS hydrology model provided by the District. The input hydrographs show peak flows of approximately 4,100 cfs and 2,200 cfs for the 100-yr and 10-yr hydrographs, respectively. The model was run for the creek channel under existing conditions (pre-Pinole Creek Project). The flood modeling results show a substantial projected flood control benefit from the proposed Chelsea Wetlands project over existing conditions. Even modeled against a high tide downstream boundary condition, water surface elevations under the peak flow condition of the hydrograph were reduced by 1.2 feet for the

10-yr 6-hour flood flow condition and by up to 2 feet for the 100-year 12-hour storm condition. The proposed project provides a demonstrable reduction in water surface elevation over existing conditions.

3.2.3 Create Habitat Transition Berms around Project Perimeter

Much of the perimeter of the newly created marsh (with the exception of where it borders the existing marsh-upland transitional area) is bordered by steep berms. In these areas, we will grade the berms down to the marsh plain at a gentle (10:1) slope to provide a smooth transition between marsh and upland habitats. This transitional area is an important ecotone with benefits to many bird and wildlife species. We will plant the berms with appropriate native vegetation to preclude the establishment of weedy invasives (Table 4). The existing culvert along the Bay Trail berm that drains Railroad Avenue can either be retained or removed depending on the City's preference.

There are two alternatives for the berm along the Chelsea by the Bay housing development on the southern project boundary. Alternative 1 involves leaving the berm in its present configuration and grading the lower portion to transition into the marsh plain. Alternative 2 involves widening the existing berm to provide more of a buffer between the marsh and the housing development. The berm will have a top elevation of 12 ft NAVD88 and a top width of 10 ft and will transition down to meet the marsh plain at a 5:1 slope. This berm will be planted with appropriate vegetation as described above. Though this berm would create a smoother transition to the marsh than currently exists, and provide a buffer between the marsh and the housing development, it would also require the removal of many large trees that exist on the berm slope. This would deprive the homeowners of shade and a visual screen in their back yards, and may not be a preferred option for them. The implementation of this alternative will depend completely on homeowner willingness to proceed.

3.2.4 Integrate Existing Marsh-Upland Transitional Area

We will integrate the marsh-upland transitional area that borders the Chelsea parcel into the newly created tidal marsh. We will grade the border at a 10:1 slope down to meet the marsh plain. In addition, a branch of the new tidal channel will tie into the existing drainage channel that runs through the transitional area to bring tidal water to the parcel and to receive the freshwater inputs from the surrounding watershed during the rainy season. It is expected that the restoration activities on the Chelsea parcel will cause some changes to the vegetation community on the transitional parcel. It is likely that areas of salt marsh will expand due to the increased tidal prism on the Chelsea parcel, which may cause increased groundwater elevations and salinities. The increased volume of water transferred into the existing drainage channel from the new tidal channel may cause deepening and widening of the existing channel, leading to an expansion of this habitat type and associated adjacent tidal marsh habitats. These changes to the transitional parcel will be beneficial to birds and wildlife and will increase the overall habitat value of the project site. The culvert under Santa Fe Avenue at the southeast corner of the transitional parcel will remain intact.

3.2.5 Build Floodwalls in Low Points around Project Perimeter

The District is planning on constructing floodwalls down the length of lower Pinole Creek in conjunction with the Pinole Creek Project. In their planned configuration, they will wall off the Chelsea parcel from the creek, preventing flood waters from flowing onto the property. When the Chelsea project is constructed, we will remove the walls separating the property from Pinole Creek to allow flood storage on the project site. To maintain the same level of flood protection afforded by the walls on Pinole Creek to the roads and housing developments surrounding the project site, we will construct floodwalls in those areas around the project perimeter where the ground surface is lower than the planned Pinole Creek floodwall elevation of 14 ft NAVD88 (Figure 4). In most areas, these new floodwalls will be one foot or less tall to achieve the 14-ft height and will be constructed as earthen berms reinforced with vinyl sheet pile. We will construct approximately 965 ft of floodwalls around the perimeter.

3.2.6 Add Passive Recreational Bay Trail Improvements

As previously described, the San Francisco Bay Trail runs along the northern border of the project site. Under this configuration, the Chelsea Wetlands will offer passive recreation opportunities to Bay Trail users in the form of nature and wildlife viewing. To enhance these opportunities, we plan to install two turnouts along the Bay Trail to accommodate wildlife viewing. These two turnouts will have signage describing the ecological and flood control features of the wetlands. In addition, we will place signs on the east and west boundaries of the project site along the Bay Trail, identifying the Chelsea Wetlands and describing the wetland restoration process.

3.3 Construction Methods

This section describes the general equipment and methods that will be used in the construction of the project. These details will be flushed out completely in the final design phase.

3.3.1 Equipment

The project will be constructed using three major pieces of heavy equipment: long-reach excavator, bulldozer, and dump truck. Other pieces of specialized equipment may be used during construction. These will be identified during the final design stage.

Long-Reach Excavator

This is a standard excavator used for most land-based construction projects. It will be used for all excavation activities in the project, including removing existing fill from the marsh plain, digging the new tidal channel, and digging out the new culvert alignment and flood-overflow weir.

Bulldozer

This is a standard bulldozer used for most land-based construction projects. It will be used for grading the new marsh plain, habitat transition berms, and the flood-overflow weir.

Dump Truck

This is a standard dump truck used for most land based construction projects. It will be used to haul material excavated from the new marsh plain to other areas on the site for building habitat transition berms, and for off-hauling all excess excavated materials to the selected disposal sites.

3.3.2 Site Access and Equipment Staging

All equipment will be staged on the Chelsea Parcel during construction. At this time in the planning process, it is assumed that all equipment will access the site via Santa Fe Ave., on the east side of the project site or via the District maintenance road along Pinole Creek. Dump trucks taking excavated fill from the construction site to approved off-site disposal areas will use Railroad Ave. and Tennant Ave. to get to San Pablo Ave., the nearest major road (Figure 13). At this time, the City has agreed to open the now-defunct Railroad Ave. to truck traffic during construction. Should it not be possible to use Railroad Ave. at the time of construction, the alternate route will be to access San Pablo Ave. via Santa Fe Ave. This route is less preferred because residential development along it is denser and there are more stop signs, hills, and turns than on the Railroad Ave. route.

3.3.3 Excavated Soil Disposal

Project construction will involve the excavation of approximately 50,000 cubic yards of fill soil. While some of this material will be retained on-site for various uses, the bulk of it will need to be disposed of at an off-site location. Soil off-haul and disposal can be expensive due to trucking costs and disposal fees at landfills. While landfill disposal is the default scenario at this stage in the planning process, a preferred disposal scenario for the excavated soil would be to find a local construction project in need of fill material, which would likely eliminate any disposal fees, reduce trucking distance, and potentially offer trucking cost sharing. The viability of this option will depend on the status of construction projects at the time of project implementation, which cannot be forecast at this time.

3.3.4 Construction Schedule

We anticipate construction taking place during the dry season (May – October). Construction should take approximately eight to twelve weeks to complete.

3.4 Project Impacts to Sensitive Resources

The project involves the restoration and enhancement of tidal marsh and adjacent marsh-upland transitional habitats that will provide valuable habitat for fish and wildlife and restore important tidal floodplain ecological functions to lower Pinole Creek. The construction of the project will, however,

impact existing jurisdictional habitats and wildlife on the project site. There will be both short-term, construction-related impacts and permanent impacts to these resources. These impacts and the anticipated avoidance measures are described briefly below. A more complete treatment of the impacts and avoidance measures is presented in the project Biological Evaluation report (WWR 2008a). We will outline the complete suite of impact avoidance measures in the project permits from the various resource and regulatory agencies.

3.4.1 Impacts to Jurisdictional Resources

The construction of the project will directly impact **1.01 acres** of existing wetland habitats on the Chelsea parcel that fall under Corps jurisdiction (Figure 14). Restoring over 5 acres of tidal marsh will more than sufficiently mitigate for the habitats lost due to construction activities.

The construction activities will not directly impact the wetland habitats on the existing marsh-upland transitional parcel, however there could be long term indirect impacts to these areas. As described in Section 3.2.4 above, the increased tidal prism on the property may lead to increased groundwater levels and groundwater salinities on the parcel. These changes may cause an expansion in the area of salt marsh habitat and a conversion of freshwater seasonal wetlands to salt marsh. In addition, the increased volume of water transferred into the existing drainage channel from the new tidal channel may cause deepening and widening of the existing channel, leading to an expansion of this habitat type and associated adjacent tidal marsh habitats. These impacts are viewed to be beneficial to the habitat value of the site and will not require any mitigation.

There will be impacts to Corps jurisdictional habitats on Pinole Creek due to the construction of the flood overflow weir and culvert array on the District maintenance road (Figure 14). The new culvert array will include an outfall structure on the creek bank created from concrete and rip-rap materials, which will result in the loss of **0.009 acre** of coastal brackish marsh. Depending on the final engineering designs, it may be necessary to armor the creek bank along the weir with rip-rap to prevent erosion to the road and bank during flood-overflow events. This activity would result in the loss of **0.059 acre** of coastal brackish marsh. The total area of habitats on Pinole Creek under Corps jurisdiction that could be permanently impacted is therefore **0.068 acre**. These areas will also fall under CDFG jurisdiction if it is determined that the tidal reach of Pinole Creek qualifies as "stream" habitat under Section 1602 of the California Fish and Game Code.

The project will be self mitigating for losses of salt/brackish marsh and channel habitats as it will result in a net increase in these habitat types. There will be a net loss of freshwater wetland habitats due to project construction, however these habitats are fragmented and due to their small size are presumed to be of low habitat value. The restoration of the site to its original state (tidal marsh) should be adequate mitigation for any loss of freshwater wetlands.

3.4.2 Impacts to Sensitive Wildlife

Though the project will create much needed habitats for fish and wildlife, construction activities could result in short-term impacts to special-status species. The species most directly impacted are described in Table 2, and include small marsh-dependent mammals, amphibians, fish, and several bird species.

Mammals:

The mammals that could be potentially impacted by construction include the salt marsh harvest mouse and San Pablo vole. These mammals could occupy the salt marsh habitat on the project site and could therefore be injured or killed during excavation activities.

To avoid impacts to these species we will install temporary fencing along the border of the construction area to prevent individuals from entering. The fencing will remain in place throughout the construction period.

Amphibians:

Though favorable habitat is not present on site, the California red legged frog (CRLF) could potentially occur as the site may act as a dispersal corridor between nearby suitable habitats. Though the potential for occurrence is quite low, it is still possible that individuals could infrequently access the site, where they could potentially be injured or killed during construction activities.

To avoid impacts to CRLF, a clearance survey for the frogs would be performed no more than two weeks before construction activities begin. If CRLF are found, construction activities will be postponed until further consultation with the USFWS takes place.

Fish:

The onsite tidal channel may provide marginal habitat for juvenile steelhead trout and Chinook salmon and tidewater gobies. Though highly unlikely, it is possible that the filling of this small channel during construction could result in the loss of individuals of these species.

To avoid impacts to these species, a qualified fisheries biologist will be present at the outset of work occurring within the small tidal channel. The biologist shall implement USFWS and NMFS approved procedures to ensure that no special status species are harmed during construction. The biologist will survey the channel at low tide to confirm that no fish are present, after which the culvert would be blocked until excavation is complete. If fish are found in the channel, they will be netted, and released in Pinole Creek.

Birds:
Several special-status bird species may use the trees on-site as roosting habitat or forage in the on-site drainage channel or within adjacent reaches of Pinole Creek. In addition, it is possible that burrowing owls could occur on the site. Nesting and foraging activities of these species could be affected by construction activities.

To the extent possible, we will plan all construction activities outside of the nesting/breeding season of native bird species (typically February through August). Should we need to perform any construction activities during the nesting season, we will conduct a pre-construction survey for nesting special-status birds on and adjacent to the project site no more than two weeks before the commencement of construction activities. We will also conduct surveys for clapper rail and black rail in areas of the nearby tidal marsh, within 600 ft of the project boundary, using methods acceptable to USFWS and CDFG. Should any nesting birds or rails be found, we will establish disturbance buffers around the birds based on consultations with CDFG and USFWS, or we will halt construction activities until a biologist determines that nests are no longer occupied or the construction avoidance windows expire.

In addition, no more than two weeks prior to the commencement of construction activities during the non-nesting season of burrowing owl (typically September through January), we will conduct a clearance survey for wintering (non-breeding) burrowing owls. If owls are observed within the disturbance footprint, we will eremove them from the burrows through the use of exclusion devices utilizing one-way doors. Once owls have evacuated the burrows, we will excavate and fill them by hand to prevent re-occupation.

3.5 Addressing Project Site Constraints

There are four major project site constraints described in Section 2.5 above:

1) Protect adjacent residential areas from flooding
2) Maintain access to the District road on Pinole Creek
3) Protect sewage force main on the Property
4) Maintain or reduce current mosquito production levels

The restoration design adequately addresses all of these constraints as described below.

3.5.1 Protect Adjacent Residential Areas from Flooding

The project itself will reduce flooding potential to surrounding areas by serving as an off-channel storage basin during flood events. Preliminary hydraulic modeling indicates that the Chelsea Wetlands will offer flood stage reduction benefits to Pinole Creek. The project also involves the construction of floodwalls along the lower-lying areas of the project perimeter to improve flood protection to adjacent areas over current conditions.

3.5.2 Maintain Access to the District Road on Pinole Creek

The project will maintain access to the District maintenance road by utilizing culverts as the main connection to Pinole Creek as opposed to an open channel. Also, the flood overflow weir that is planned for the road is designed to allow the road to be used during non-flood conditions.

3.5.3 Protect Sewage Force Main on the Property

The City of Hercules Department of Public Works has indicated that the force main on the property can be modified to accommodate our design for the project. No design elements will be incorporated that would prevent the continued use of this pipe.

3.5.4 Maintain or Reduce Current Mosquito Production Levels

The project will reduce mosquito production over current conditions. Well-drained tidal marshes do not produce significant quantities of mosquitoes because they do not pond water for extended periods of time. We will grade the new tidal marshes to drain toward the main, central channel, ensuring that the marsh will not hold water in isolated depressions at low tide.

4.0 Project Maintenance and Monitoring

This section describes the proposed maintenance and monitoring plan for the completed project. We will describe these two items in detail in separate documents to be completed later in the project development phase.

4.1 Project Maintenance

Project maintenance will involve the following components.

1) Vegetation management
2) Culvert maintenance
3) District road and weir maintenance
4) Bay Trail maintenance

The City of Hercules will carry out vegetation management and culvert maintenance. Vegetation management will primarily involve removing non-native vegetation during the first few years following project construction to aid the development of a native plant community in the wetlands. Culvert maintenance will include the periodic removal of debris from the culvert array on Pinole Creek to ensure unobstructed tidal exchange in the wetlands.

The District currently maintains their adjacent access road, where we will construct the new flood overflow weir. The District will continue to maintain this stretch of road, including the new weir structure following project construction.

The City of Hercules and the East Bay Regional Parks District share maintenance responsibilities for the segment of the Bay Trail adjacent to the project site. These two entities will be responsible for maintaining all signage and turnouts constructed during the project.

4.2 Monitoring Plan

We will monitor the following elements for a period of at least five years following project construction:

1) Topography and geomorphology
2) Vegetation
3) Bird use
4) Flood storage

The methods for monitoring these various elements are discussed below. A detailed monitoring plan will be developed separately as part of the final design stage of the project.

4.2.1 Topography and Geomorphology

We will establish three cross sections across the marsh plain-channel complex. We will permanently monument these cross sections so that they can be re-established in subsequent years. We will survey the cross sections in years 1, 3, and 5 following construction. In addition, we will survey the channel longitudinal profile. These data will inform us if there have been significant changes in marsh plain elevations and if the channel is stable, or if it is eroding or filling in with sediment.

We will have an aerial photograph of the project area taken in years 1, 3, and 5 following construction. We will orthorectify these photographs and use them for various monitoring activities. From these photographs we will digitize the boundaries of the channel complex on the project site. These data will allow us to determine changes in the channel planform (i.e. widening, meandering) over time.

4.2.2 Vegetation

We will use the aerial photographs taken in years 1, 3, and 5 to delineate areas of vegetation using Geographic Information System (GIS) technology. We will determine changes in marsh vegetation cover over time using these data. We will ground truth the resulting vegetation maps by field observation. We will perform vegetation inventories during this time as well.

4.2.3 Bird Use

We will work with the local chapter of the Audubon Society and Friends of Pinole Creek to perform bird surveys at the project site once a year. We will use these data to determine the different kinds and species of birds that use the site and any change in species richness and diversity in the bird community over time.

4.2.4 Flood Storage

We will install a staff gauge in an easily accessible location in the wetland. During flood events where water levels in Pinole Creek rise drastically above normal, a volunteer from the Friends of Pinole Creek will record the level on the staff gauge. These data will enable us to determine the amount of water stored in the wetlands during flood events of various magnitudes.

5.0 References

ENGEO, 2008a. Phase One Environmental Site Assessment: Chelsea Wetlands, Herculese California. Prepared for the City of Hercules.

ENGEO. 2008b. Santa Fe Wetland Restoration Project, Preliminary Geotechnical and Environmental Site Assessment Study. Prepared for the City of Hercules.

Goals Project. 1999. Baylands Ecosystem Habitat Goals. A report of habitat recommendations prepared by the San Francisco Bay Area Wetlands Ecosystem Goals Project. First Reprint. U.S. Environmental Protection Agency, San Francisco, Calif./S.F. Bay Regional Water Quality Control Board, Oakland, Calif.

Wetlands and Water Resources, Inc. (WWR). 2008a. Draft Biological Evaluation Report, Chelsea Wetlands Restoration Project. Prepared for the City of Hercules.

WWR. 2008b. Potential Jurisdictional Delineation, Chelsea Wetlands Restoration Project. Prepared for the City of Hercules.

Tables

Table 1
Tidal Datum Reckoning Results
Pinole Creek

Elevations adjusted based on benchmark update, January 2008

Datum	San Francisco Elev [1] (ft NAVD)	San Francisco Elev (ft MLLW)	Pinole Creek Elev (ft NAVD)	Pinole Creek # Tides	Pinole Creek Uncert (ft) [2]
HOWL	8.72	8.66	7.70		
MHHW	5.90	5.84	6.43	65	0.13
MHW	5.29	5.23	5.87	67	0.13
MTL[4]	3.24	3.18	3.51		0.13
MLW	1.20	1.14	1.14	45	0.14
MLLW[5]	0.06	0.00	0.35		
LOWL	-2.82	-2.88	--		

Notes:

HOWL = highest observed water level (Jan 1983-Dec 2001 at San Francisco)
MHHW = mean higher high water
MHW = mean high water
MTL = mean tide level
MLW = mean low water
MLLW = mean lower low water
LOWL = lowest observed water level (Jan 1983-Dec 2001 at San Francisco)

1 NOS San Francisco station ID 9414290.

2 Uncertainty derived from NOAA (2003) based on record duration.

3 HOWL for Pinole occurred at 6/15/2007 12:24:00 AM

4 Mean tide level (MTL) calculated as mid-point between MLW and MHW.

5 Monitoring station was not subtidal. Missing some low and all lower-low tides. MLLW was estimated by subtracting the tidal range at nearby tidal benchmark 9415074 from the calculated MHHW.

Table 2
Special-Status Wildlife Species Documented in the Project Vicinity

Common and Scientific Name	Status		Habitat Requirements	Historical and Potential Occurrence
	Federal	State		
Mammals				
Pallid bat *Antrozous pallidus*	--	CSC	Inhabits deserts, grasslands, shrublands, woodlands and forests. Most commonly found in open, dry habitats with rocky areas for roosting. Also known to roost within oak woodlands.	***Not Expected*:** marginal roosting habitat present and the species prefers dry habitats.
San Pablo vole *Microtus californicus*	--	CSC	Inhabits salt marshes on the south shore of San Pablo Bay. Feeds on a wide variety of grasses, sedges, and herbs.	***Potential:*** in its current condition the project site provides limited potential habitat for the species. However, given the presence of suitable habitat in the neighboring large tidal marsh, and the presence of some pickleweed habitat on the site, there is some potential that the species could occur within the project boundaries.
Big free-tail bat *Nyctinomops macrotis*	--	CSC	Requires cliffs or rocky outcrops for roosting sites.	***Not Expected:*** suitable roosting habitat not present.
Salt marsh harvest mouse *Reithrodontomys raviventhris*	FE	CE, CFP	Pickleweed and salt marsh stands in tidal and diked coastal salt marshes.	***Potential:*** in its current condition the project site provides limited pickleweed habitat, which is the preferred habitat of the species. However, the species is known to occur within diked tidal marshes with similar habitat composition to the project site. Further, given the presence of suitable habitat in the neighboring large tidal marsh, and that the species occupies habitats surrounding tidal marshes to escape high tides, the species could occur within the project boundaries.
Salt-marsh wandering shrew *Sorex vagrans halicoetes*	--	CSC	Salt marshes of the south arm of San Francisco Bay; dense, low-lying pickleweed areas.	***Not Expected:*** outside of expected range of the species.
Suisun shrew *Sorex ornatus sinuosus*	--	CSC	Tidal marshes of the northern shores of San Pablo and Suisun Bay.	***Not Expected:*** outside of expected range of the species.

Table 2

Special-Status Wildlife Species Documented in the Project Vicinity

Common and Scientific Name	Status		Habitat Requirements	Historical and Potential Occurrence
	Federal	State		
Amphibians and Reptiles				
Western pond turtle *Clemmys marmorata*	--	CSC	Aquatic habitats including ponds, streams, and irrigation ditches. Requires basking sites such as partially submerged logs, vegetation mats, or open mud banks.	***Not Expected*:** Suitable habitat not present on the project site. While the species could occur in Pinole Creek, high salinity levels in the lower reach of the creek (near the project site) likely deters the species from occurring (including egg laying in adjacent habitats). The nearby freshwater marsh lacks open water habitats of suitable size to support the species.
Alameda whipsnake *Masticolphis lateralis euryxanthus*	FT	CT	Inhabits south facing slopes and ravines where shrubs form vegetation mosaic with oak trees and grasses.	***Not Expected:*** suitable habitat is not present and the project site is outside of expected distribution of the species.
California red-legged frog *Rana draytonii*	FT	CSC, CP	Permanent water sources such as ponds, lakes, reservoirs, streams and adjacent riparian woodlands.	***Potential*:** the project site does not provide favorable habitat for the species and cannot sustain resident frogs. However, the species is known to occur in Pinole Creek, approximately 4 miles upstream of the project site (CNDDB) and there is some potential that non-breeding frogs could disperse to the lower reach of the creek. The species is also known to occur in nearby Refugio Creek and there is some potential that frogs could occur in the nearby ponds and disperse to the adjacent freshwater marsh. As there is potential the species could occur in nearby habitats, there is low potential that the species could temporarily and infrequently occur on the project site.

Table 2

Special-Status Wildlife Species Documented in the Project Vicinity

Common and Scientific Name	Status		Habitat Requirements	Historical and Potential Occurrence
	Federal	State		
Birds				
Cooper's hawk (nesting) *Accipiter cooperi*	--	CSC	Inhabits primarily open, interrupted or marginal woodlands. Nests mainly in riparian groves of deciduous trees in canyon bottoms on river flood-plains. Also nests in coast live oak.	***Potential:*** trees on and bordering the project site provide suitable nesting habitat.
Tricolored blackbird (nesting colony) *Agelaius tricolor*	BCC	CSC	Nests in freshwater marshes and riparian scrub.	***Potential (near project site):*** suitable nesting habitat is present in the adjacent freshwater marsh, but onsite habitats are marginal.
Great egret (rookery) *Ardea alba*	--	***	Nests colonially in large trees. Rookery sites are typically located near marshes, tide-flats, irrigated pastures, and margins of rivers and lakes.	***Potential:*** trees on and bordering the project site provide suitable rookery habitat; no rookeries have been reported. Extent of local urbanization reduces rookery potential.
Great blue heron (rookery) *Ardea herodias*	--	***	Nests colonially in tall trees, cliff sides, and sequestered spots on marshes. Rookery sites are usually in close proximity to foraging areas such as marshes, lake margins, tide-flats, wet meadows, rivers, and streams.	***Potential****:* trees on and bordering the project site provide suitable rookery habitat; no rookeries have been reported. Extent of local urbanization reduces rookery potential.
Short-eared owl (nesting) *Asio flammeus*	--	CSC	Found in open areas with few trees such as grasslands, prairies, meadows, dunes, irrigated lands, and saline and fresh emergent marshes; builds nest on ground.	***Not Expected***: not known to nest in the project region; could occur as a winter migrant.
Western burrowing owl (occupied burrow sites) *Athene cunicularia*	BCC	CSC	Forages and nests in grasslands and open scrub with small mammal burrows.	***Potential****:* no ground squirrel burrows or other suitable small mammal burrows observed and nesting by the species has not been observed within 16 miles of the project site (CNDDB). Therefore, it is unlikely that the species nests on the site. However, the species could occur as a winter migrant and utilize structures such culverts as shelter.

Table 2

Special-Status Wildlife Species Documented in the Project Vicinity

Common and Scientific Name	Status		Habitat Requirements	Historical and Potential Occurrence
	Federal	State		
Northern harrier (nesting) *Circus cyaneus*	--	CSC	Inhabits coastal salt and freshwater marshes. Nests and forages in grasslands, from salt grass in desert sink to mountain cienagas. Nests on ground in shrubby vegetation, usually at marsh edge. Nests are large mounds of sticks in wet areas.	***Potential*:** suitable nesting habitat present. Extent of local urbanization reduces nesting potential.
Yellow warbler (nesting) *Dendroica petechia brewsteri*	--	CSC	Found in riparian areas.	***Not Expected:*** suitable riparian woodland/scrub habitats are not present on the project site.
White-tailed kite (nesting) *Elanus leucurus*	--	CFP	Usually nests in large bushes or trees, often in isolated stand, surrounded by open foraging habitat.	***Potential:*** species frequently occurs in the project area and suitable nesting habitat is present on and near the project site.
Saltmarsh common yellowthroat (nesting) *Geothlypis trichas sinuosa*	--	CSC	Fresh and salt water marshes; requires thick continuous cover down to water surface for foraging.	***Potential:*** suitable nesting habitat is present on and bordering the project site.
California black rail *Laterallus jamaicensis coturniculus*	--	CT	Salt marshes bordering larger bays; pickleweed typically present.	***Potential (near project site):*** in its current condition, the project site provides marginal habitat for the species. However, the species has been documented in the pickleweed tidal marsh near the project site.
Alameda song sparrow (nesting) *Melospiza melodia pusilluia*	--	CSC	Inhabits salt marshes bordering south arm of San Francisco Bay. Nests low in marsh gumplant bushes and in pickleweed.	***Potential:*** known to nest in the project area, including brackish marsh habitats along Pinole Creek. Some suitable nesting habitat present on the project site.
Osprey (nesting) *Pandion haliaetu*	--	CSC	Nests built in tree tops within 15-miles of a good fish producing body of water.	***Potential:*** observed in the project area; potential nesting habitat on and near the project site.
Double crested cormorant (rookery) *Phalacrocorax auritus*	--	CSC	Colonial nester on coastal cliffs, offshore islands, and along lake margins in the interior of the state.	***Not Expected:*** suitable nesting/roosting habitat not present.

Table 2

Special-Status Wildlife Species Documented in the Project Vicinity

Common and Scientific Name	Status		Habitat Requirements	Historical and Potential Occurrence
	Federal	State		
California clapper rail *Rallus longirostris obsoletus*	FE	CE	Salt marshes bordering larger bays; pickleweed typically present.	***Potential (near project site):*** in its current condition, the project site provides marginal habitat for the species. However, the large tidal marsh near the project site provides suitable habitat.
Fish				
Green sturgeon *Acipenser medirostris*	FT	--	Spawn in deep pools or "holes" in large, turbulent, freshwater river mainstems including the Sacramento and Feather Rivers. Adults live in oceanic waters, bays, and estuaries when not spawning. Green sturgeons are believed to spend the majority of their lives in near-shore oceanic waters, bays, and estuaries.	***Not Expected:*** green sturgeon may potentially be found in the vicinity of lower Pinole Creek as foraging adults or juveniles. However, given the small size of the onsite drainage channel, shallow water depth, the density of emergent vegetation, and that the channel is separated from Pinole Creek by a culvert, the species is not expected to occur within the onsite drainage channel.
Delta smelt *Hypomesus transpacificus*	FT	CT	This fish is endemic to the upper Sacramento-San Joaquin estuary and occurs primarily in open, surface waters of Suisun Bay, in the Sacramento River upstream to Isleton, and in the San Joaquin River.	***Not Expected:*** the project site is outside of the expected distribution of the species. In the event that individual fish occur in Pinole Creek, it is very unlikely that the species would occur within the onsite drainage channel given its small size, shallow water depth, density of emergent vegetation, and that the channel is separated from Pinole Creek by a culvert.
Steelhead trout *Oncorhyncus mykiss*	FT	--	Highly flexible life history and may follow a variety of life-history patterns including freshwater residents (non-migratory) at one extreme and individuals that migrate to the open ocean (anadromous) at another extreme.	***Potential:*** the species has been reported in Pinole Creek on numerous occasions between 1975 and 2002 (Leidy et al. 2005). Juveniles and smolts could enter the onsite drainage channel, although it is considered to provide marginal habitat.

Table 2

Special-Status Wildlife Species Documented in the Project Vicinity

Common and Scientific Name	Status		Habitat Requirements	Historical and Potential Occurrence
	Federal	State		
Chinook salmon *Oncorhynchus tshawytscha*	FT	CT	Migrates up rivers/creeks to spawn and juveniles then return to the ocean.	***Potential:*** the species has not been reported in Pinole Creek. However, there is some potential that juveniles and smolts could occur within Pinole Creek briefly during rearing or migration periods. If present in the creek, juveniles and smolts could enter the onsite drainage channel, although it is considered to provide marginal habitat.
Tidewater goby *Eucyclogobius newberyi*	FE	CSC	Restricted to coastal, brackish-water habitats in California and are found primarily in discrete lagoons, estuaries or stream mouths.	***Potential:*** the species has not been reported in Pinole Creek. However, as available information indicates that the species is tolerant of a very wide range of salinity, temperature, and other water quality conditions, there is some potential that the species could occur in lower Pinole Creek. If present in the creek, individuals could enter the onsite drainage channel, although it is considered to provide marginal habitat.

Status Key:

Federal:

FE: Federal Endangered
FT: Federal Threatened
BCC: Federal Bird of Conservation Concern

State:

CE: California Endangered
CT: California Threatened
CSC: California Species of Special Concern
***: Special Animal

Table 3:
Special Status Wildlife Species Benefitting from Tidal Marsh Restoration

Common Name	Scientific Name	Status	Habitat Usage
Steelhead, central California coast ESU	*Oncorhynchus mykiss irideus*	FT	Juveniles rear in shallow, vegetated sub-tidal waters.
Chinook salmon, various ESUs	*Oncorhynchus tshawytscha*	Varies[1]	Juveniles rear to varying degrees in brackish waters.
California clapper rail	*Rallus longirostris obsoletus*	FE	Forages and breeds in tidal salt marsh bordering San Francisco Bay, particularly in highly channelized areas with dense vegetation, especially cordgrass.
California black rail	*Laterallus jamaicensis coturniculus*	FSC	Forages and breeds in channelized upper marsh with an open understory.
Saltmarsh common yellowthroat	*Geothlypis trichas sinuosa*	FSC CSSC	Forages and breeds in dense fresh to salt marsh, primarily associated with tall plants such as cattails and bulrush.
San Pablo song sparrow	*Melospiza melodia samuelis*	FSC	Forages and breeds in wetland and riparian habitat, primarily in areas with dense shrubby vegetation.
Northern harrier	*Circus cyaneus*	CSSC	Breeds in open areas, particularly grasslands adjacent to wetlands. Forages in grasslands, wetlands, and agricultural areas.
Salt marsh harvest mouse	*Reithrodontomys raviventris halicoetes*	FE CE	Forages and breeds in tidal or non-tidal high salt marsh or brackish marsh around the San Francisco Estuary; seasonal dispersal or use of adjacent grasslands (non-breeding).

Status Key:

Federal:

FE = federally listed as endangered
FT = federally listed as threatened
FSC = federal species of concern

State:

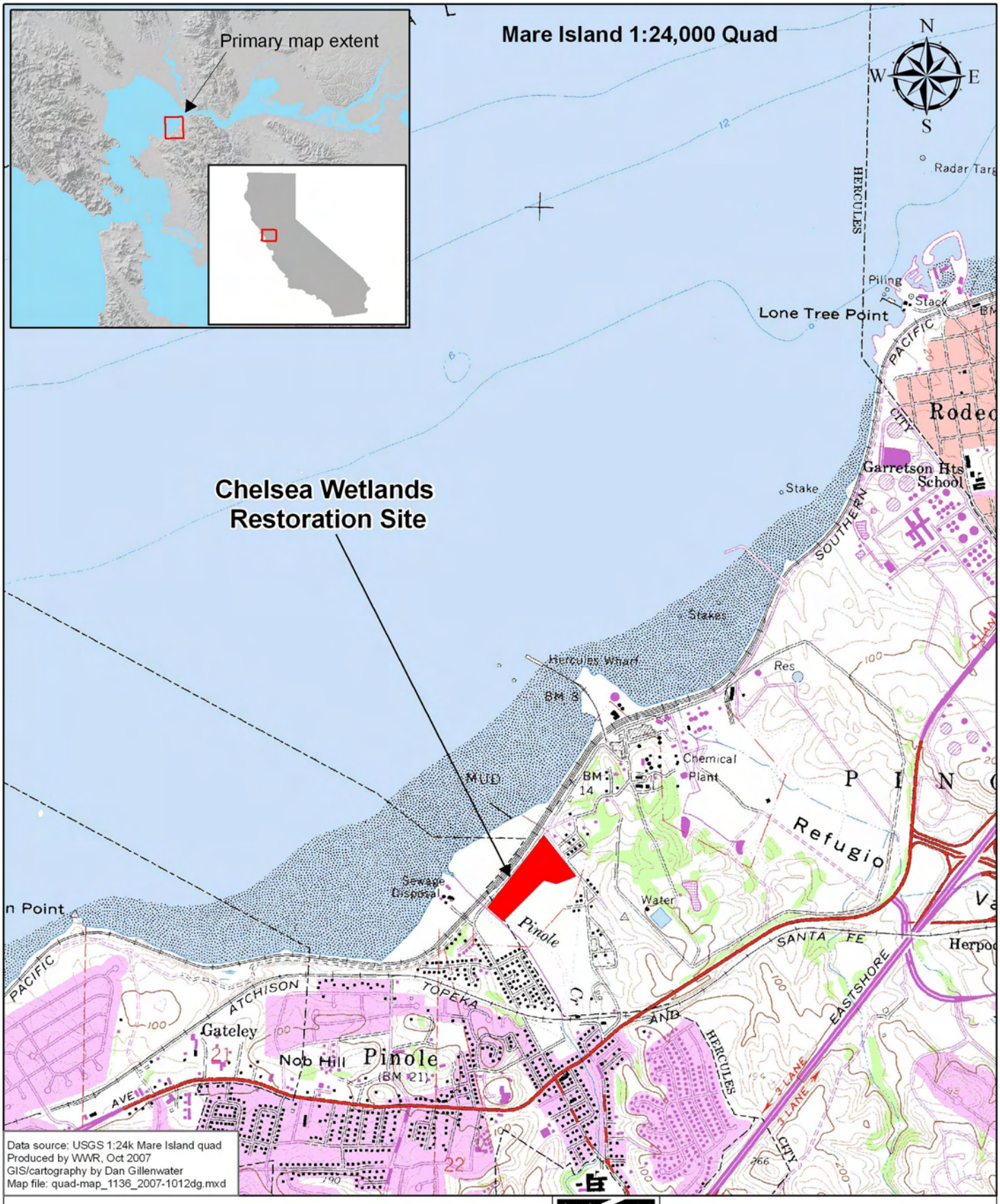
CE = state listed as endangered
CT = state listed as threatened
CI = culturally and/or commercially important
CSSC = state species of special concern

1. Status dependent on ESU; ranges from CI to FE

Table 4: Project Site Plant List - Proposed Conditions

Habitat Type	Common Name	Scientific Name
Tidal Channel (Self colonization)	California cordgrass	*Spartina foliosa*
	alkali bullrush	*Bolboshoenus maritimus*
Tidal Marsh Plain (Self colonization)	pickleweed	*Sarcocornia pacifica*
	saltgrass	*Distichlis spicata*
	fleshy jaumea	*Jaumea carnosa*
	alkali seaheath	*Frankenia salina*
	marsh gumplant	*Grindelia stricta*
Marsh-Upland Transitional Areas (maintain existing conditions with invasive species removal)	pickleweed	*Sarcocornia pacifica*
	saltgrass	*Distichlis spicata*
	fleshy jaumea	*Jaumea carnosa*
	alkali seaheath	*Frankenia salina*
	marsh gumplant	*Grindelia stricta*
	coyote brush	*Baccharis piluiaris*
	beardless wildrye	*Leymus triticoides*
	curly dock	*Rumex crispus*
	meadow barley	*Hordeum brachyantherum*
Upland Margins of Habitat Berms (active planting)	toyon	*Heteromeles arbutifolia*
	coyote brush	*Baccharis piluiaris*
	California sagebrush	*Artemisia californica*
	California buckeye	*Aesculus californica*
	California rose	*Rosa californica*

Figures



1:24,000(1" = 2,000' at letter layout)

0 2,000 4,000 Feet

0 600 1,200 Meters

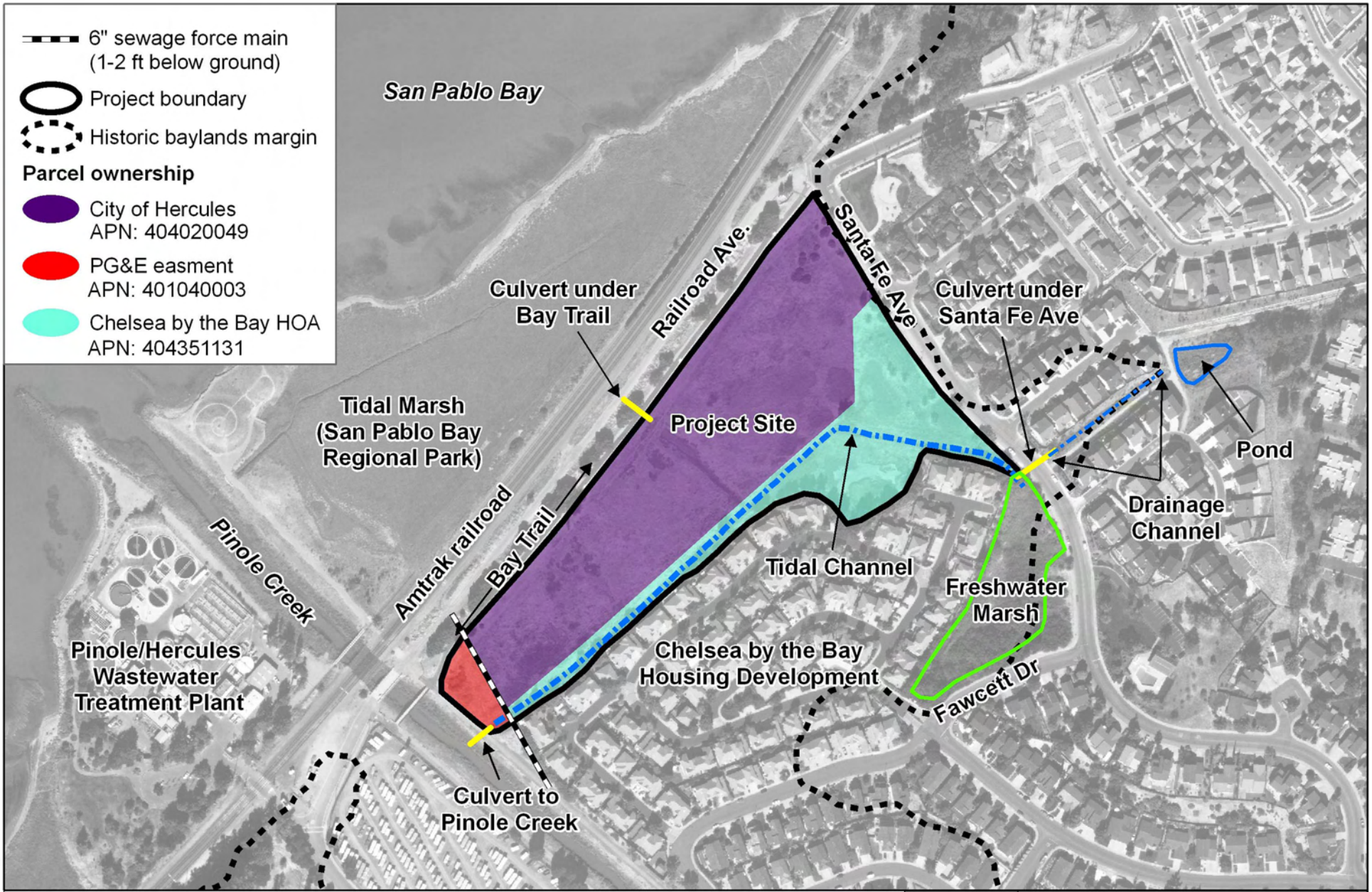
CITY OF HERCULES CALIFORNIA

WETLANDS AND WATER RESOURCES

VICINITY MAP

Chelsea Wetlands Restoration Project
City of Hercules
Hercules, California

October 2007	Project No. 1136	Figure 1



Data sources: photo (USGS, 2004); parcels (Contra Costa County, 2008); bayland margin (SFEI, 1998)
Produced by WWR, April 2009
GIS/cartography by Dan Gillenwater
Map file: Project-area_2009-0414dag.mxd

N
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1:3,600 (1" = 300' at letter layout)

0 150 300 600 Feet

0 45 90 180 Meters

CITY OF HERCULES · CALIFORNIA ·

WETLANDS AND WATER RESOURCES

PROJECT AREA

Chelsea Wetlands Restoration Project
City of Hercules
Hercules, California

April 2009 | Project No. 1136 | Figure 2

Data sources: topo points (WWR; Moran Engineering 2007); DEM (WWR, 2007); photo (USGS, 2004)
Produced by: WWR, Feb 2009
GIS/cartography by Dan Gillenwater
Map file: current-topo_1136_2009-0309lee.mxd

N
W E
S

1:2,400 (1" = 200' at letter layout)

0 100 200 400 Feet

0 30 60 120 Meters

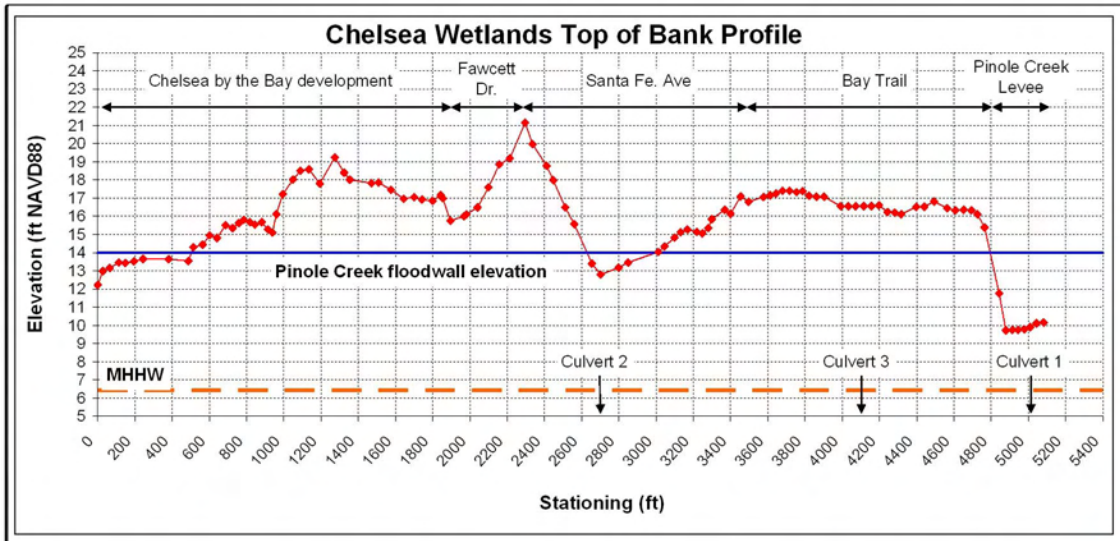
CITY OF HERCULES · CALIFORNIA ·

WETLANDS AND WATER RESOURCES

CURRENT SITE TOPOGRAPHY

Chelsea Wetlands Restoration Project
City of Hercules
Hercules, California

February 2009 | Project No. 1136 | Figure 3



Data source: profile data (WWR, 2007);
photo (USGS, 2004)
Produced by WWR, February 2009
GIS/cartography by Dan Gillenwater
Map file: Chelsea-TOB-profle_2009-0309lee.mxd

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1:3,000 (1" = 250' at letter layout)

0 250 500 Feet

0 75 150 Meters

CITY OF HERCULES CALIFORNIA

WETLANDS AND WATER RESOURCES

CHELSEA BASIN PERIMETER PROFILE

Chelsea Wetlands Restoration Project
City of Hercules
Hercules, California

March 2009 | Project No. 1136 | Figure 4

Project boundary

Data sources: photo (USGS, 2004);
Soils (USDA, 2007)
Produced by WWR, February 2009
GIS/cartography by Dan Gillenwater
Map file: USDA-soils_2009-0309lee.mxd

N
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1:2,400 (1" = 200' at letter layout)

0 100 200 400 Feet

0 30 60 120 Meters

CITY OF HERCULES CALIFORNIA

WETLANDS AND WATER RESOURCES

USDA SOIL TYPES

Chelsea Wetlands Restoration Project
City of Hercules
Hercules, California

February 2009 | Project No. 1136 | Figure 5

Data sources: photo (USGS, 2004); Bore locations (ENGEO, 2008)
Produced by WWR, July 2008
GIS/cartography by Dan Gillenwater
Map file: Soil-bore-locations_2008-0725dag.mxd

N
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1:2,400 (1" = 200' at letter layout)

0 100 200 400 Feet

0 30 60 120 Meters

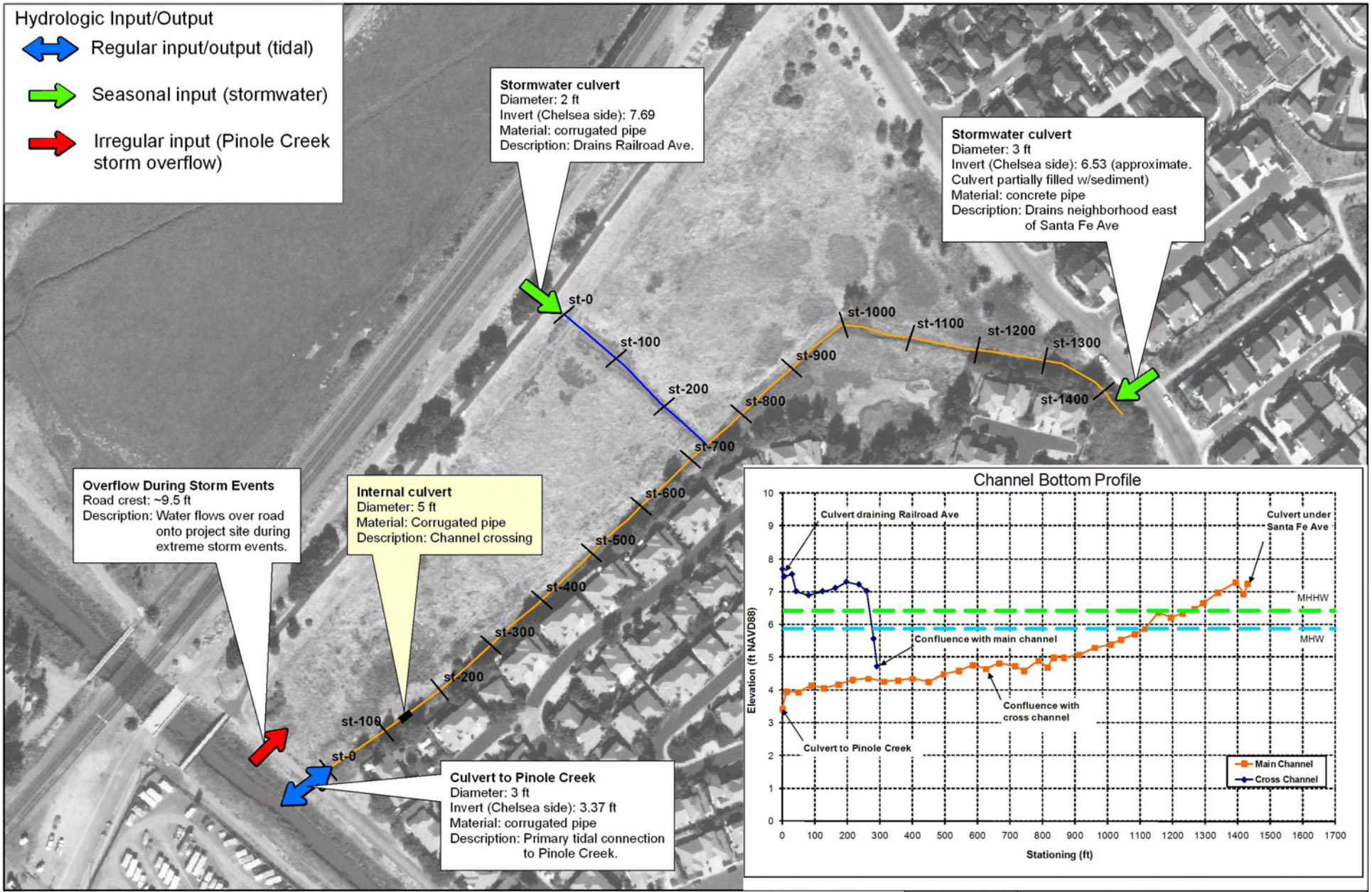
CITY OF HERCULES · CALIFORNIA ·

WETLANDS AND WATER RESOURCES

ENGEO SOIL BORE LOCATIONS

Chelsea Wetlands Restoration Project
City of Hercules
Hercules, California

July 2008	Project No. 1136	Figure 6



Data sources: photo (USGS, 2004); topo data (WWR, 2007)
Produced by WWR, May 2009
GIS/cartography by Dan Gillenwater
Map file: site-hydrology_2009-0531dag.mxd

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All elevations in feet NAVD88

1:2,400 (1" = 200' at letter layout)

0 100 200 400 Feet

0 30 60 120 Meters

CITY OF HERCULES · CALIFORNIA ·

WETLANDS AND WATER RESOURCES

SITE HYDROLOGY

Chelsea Wetlands Restoration Project
City of Hercules
Hercules, California

May 2009 | Project No. 1136 | Figure 7

N
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1:2,400 (1" = 200' at letter layout)

0 100 200 400 Feet

0 30 60 120 Meters

Data sources: photo (USGS, 2004); habitat data (WWR, 2008)
Produced by WWR, June 2009
GIS/cartography by Dan Gillenwater
Map file: biological-conditions_2009-0603dag.mxd

CITY OF HERCULES · CALIFORNIA ·

WETLANDS AND WATER RESOURCES

EXISTING BIOLOGICAL CONDITIONS

Chelsea Wetlands Restoration Project
City of Hercules
Hercules, California

June 2009 | Project No. 1136 | Figure 8

Study area (10.9 ac)

Data sources: photo (USGS, 2004); delineation data (WWR, 2008)
Produced by WWR, June 2009
GIS/cartography by Dan Gillenwater
Map file: jurisdictional-resources_2009-0612dag.mxd

N W E S

1:2,400 (1" = 200' at letter layout)

0 100 200 400 Feet

0 30 60 120 Meters

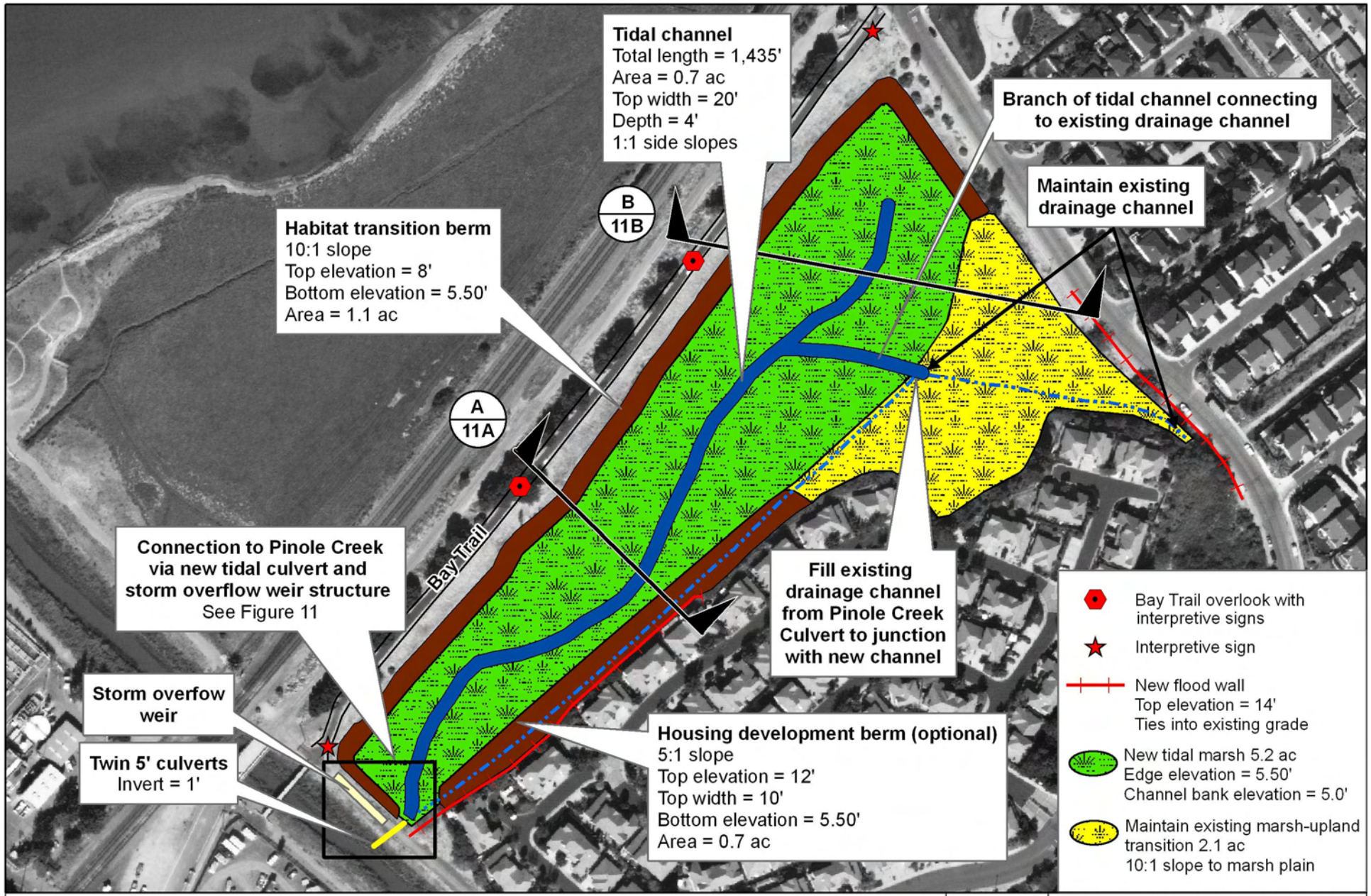
CITY OF HERCULES CALIFORNIA

WETLANDS AND WATER RESOURCES

CORPS JURISDICTIONAL HABITATS

Chelsea Wetlands Restoration Project
City of Hercules
Hercules, California

June 2009 | Project No. 1136 | Figure 9



All elevations in feet NAVD88

1:2,400 (1" = 200' at letter layout)

0 100 200 400 Feet

0 30 60 120 Meters

N W E S

Data Sources: Photo (USGS, 2004); Vector data (WWR, 2008)
Produced by WWR, Feb 2009
GIS/cartography by Dan Gillenwater
Map file: proposed-conditions_1136_2009-0211dg.mxd

CITY OF HERCULES CALIFORNIA

WETLANDS AND WATER RESOURCES, INC.

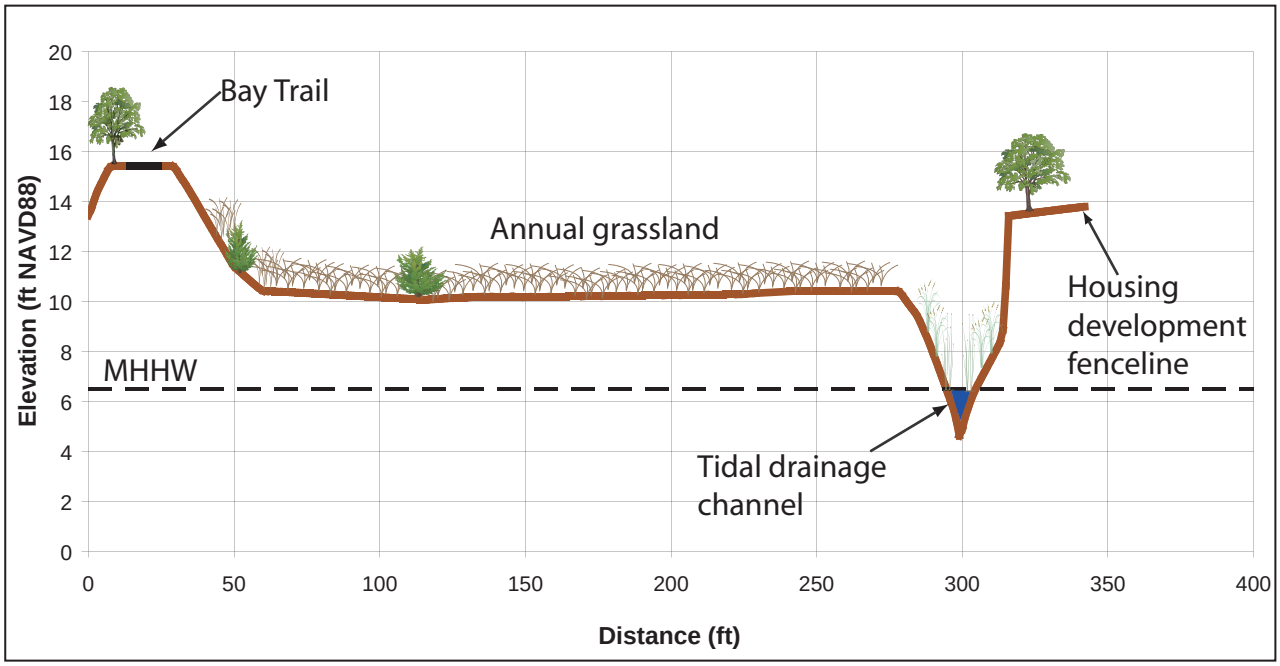
PROPOSED RESTORATION DESIGN

Chelsea Wetlands Restoration
City of Hercules
Hercules, California

February 2009 | Project No. 1136 | Figure 10

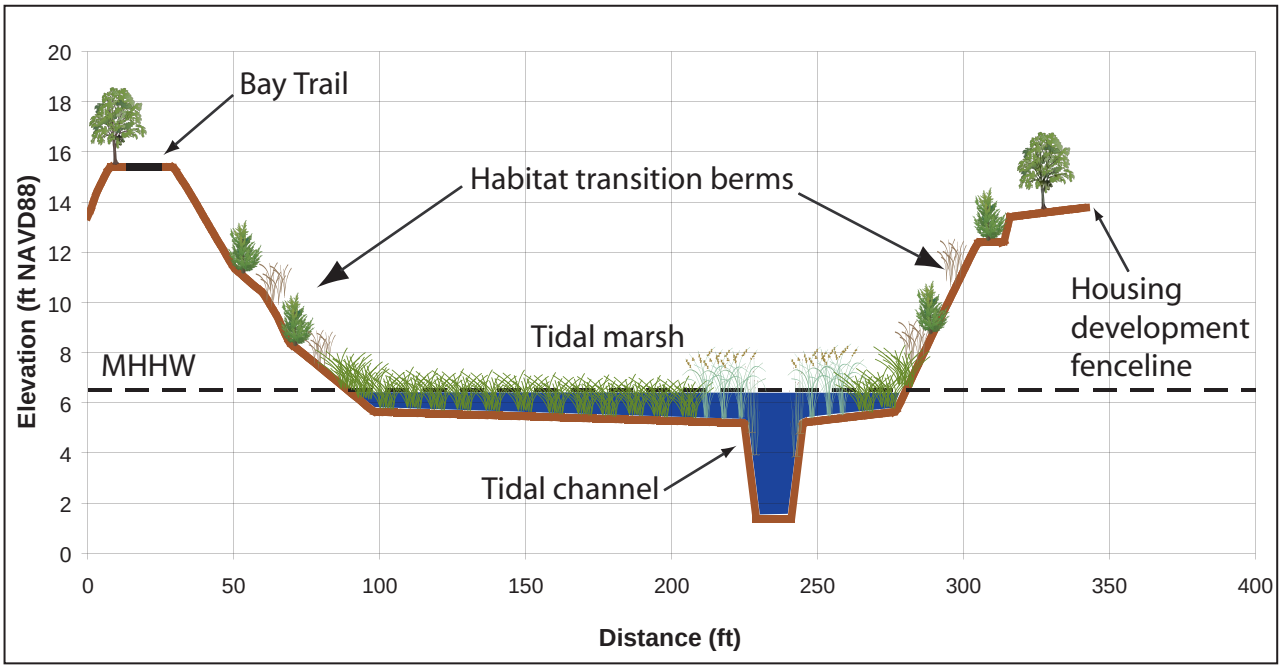
A
-

1. Existing Conditions



A
-

2. Proposed Conditions



CROSS SECTION VIEWS
CURRENT AND PROPOSED CONDITIONS

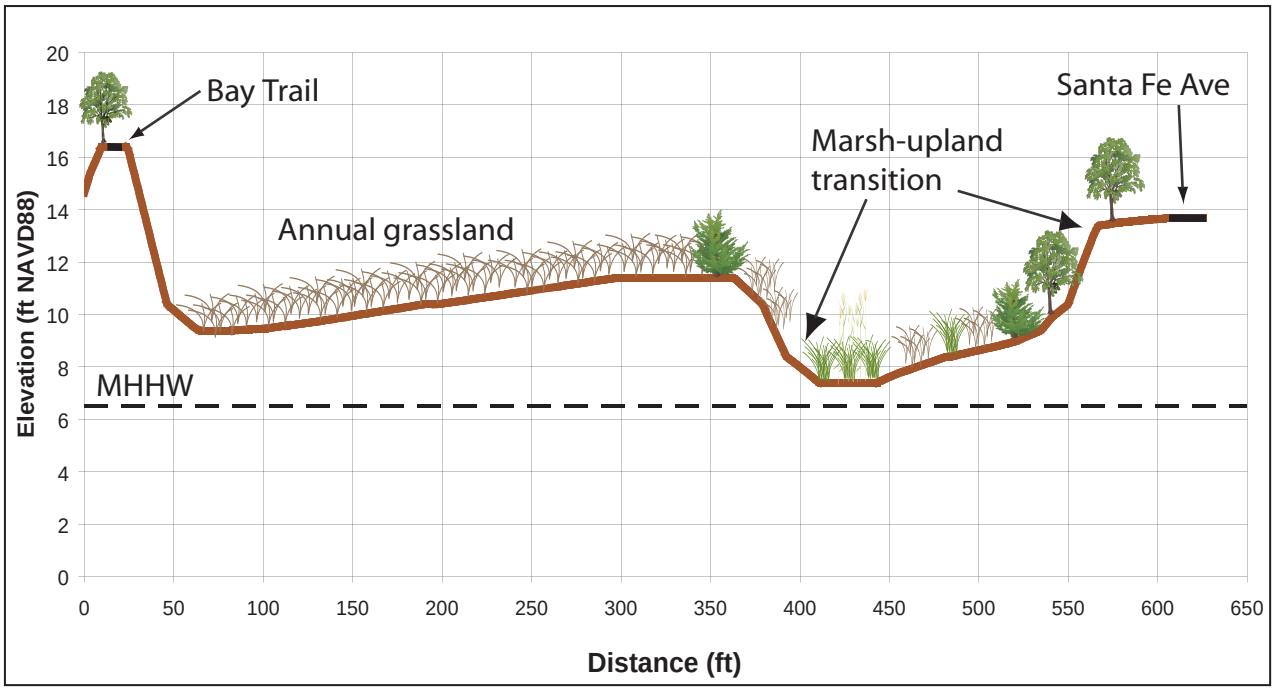
Chelsea Wetlands Restoration
City of Hercules
Hercules, California

February 2009	Project No. 1136	**Figure 11A**

marsh-XS_1136_2009-0211dag.ai

B
-

1. Current Conditions



B
-

2. Proposed Conditions

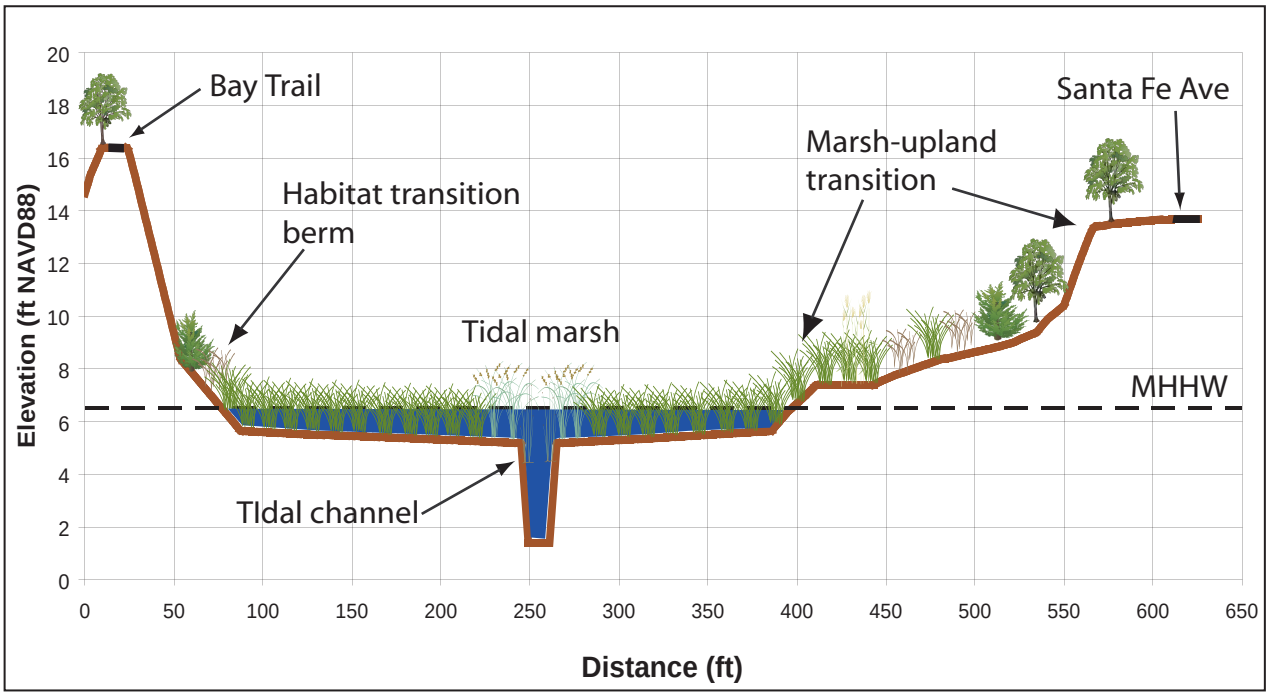
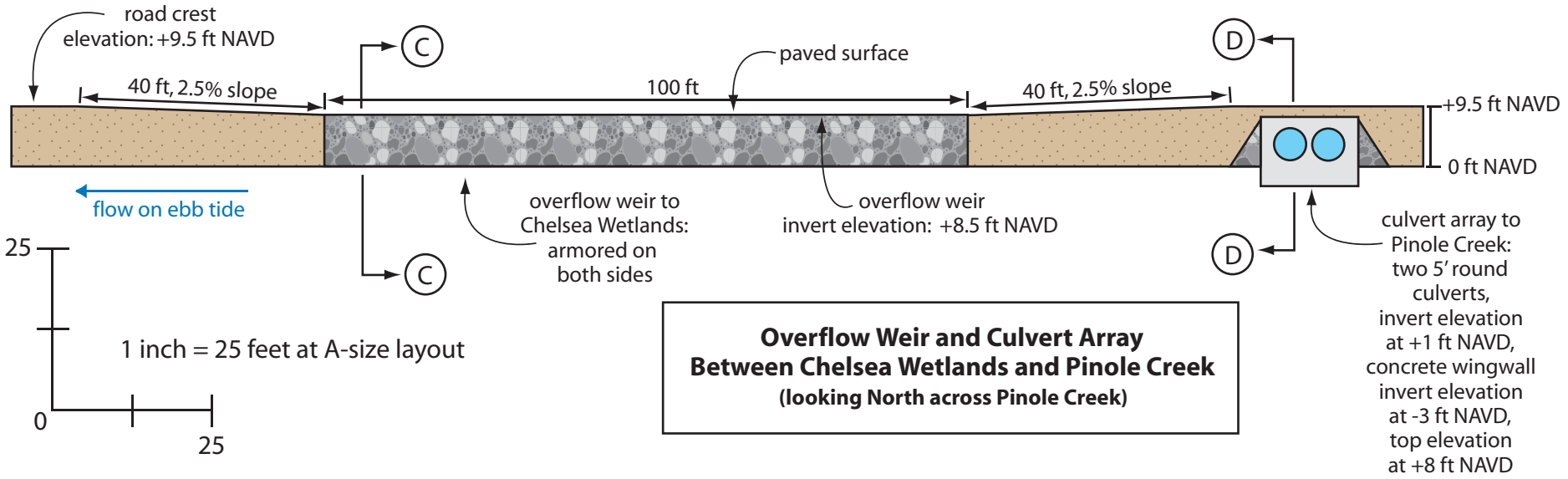


Image source: marsh-XS2_1136_2009-0211dag.ai

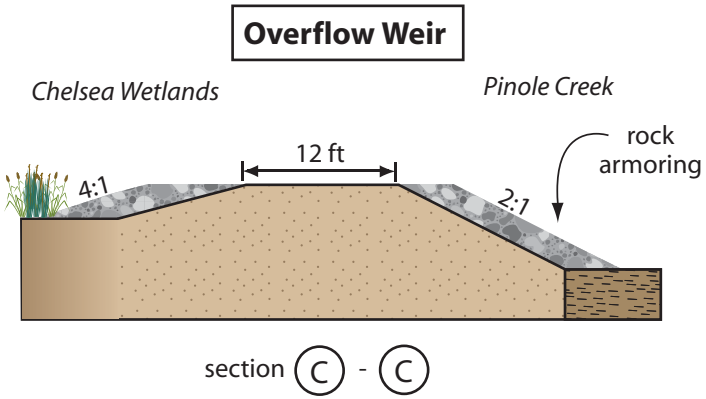
CROSS SECTION VIEWS
CURRENT AND PROPOSED CONDITIONS

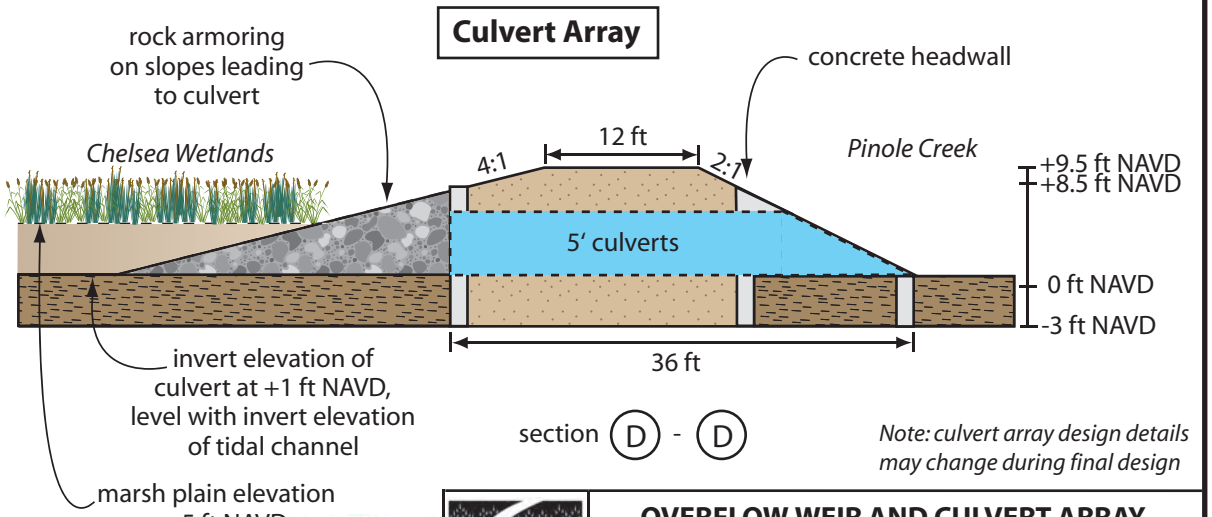
Chelsea Wetlands Restoration
City of Hercules
Hercules, California

February 2009	Project No. 1136	**Figure 11B**



Overflow Weir and Culvert Array
Between Chelsea Wetlands and Pinole Creek
(looking North across Pinole Creek)





Note: culvert array design details may change during final design

OVERFLOW WEIR AND CULVERT ARRAY CONCEPTUAL ENGINEERING DETAILS
Chelsea Wetlands Restoration Project
City of Hercules
Hercules, California

WETLANDS AND WATER RESOURCES

June 2009	Project No. 1136	Figure **12**

Graphic file: weir and culvert detail_2009-0611dag.ai

Project Site

1:9,600 (1" = 800' at letter layout)

0 400 800 1,600 Feet

0 125 250 500 Meters

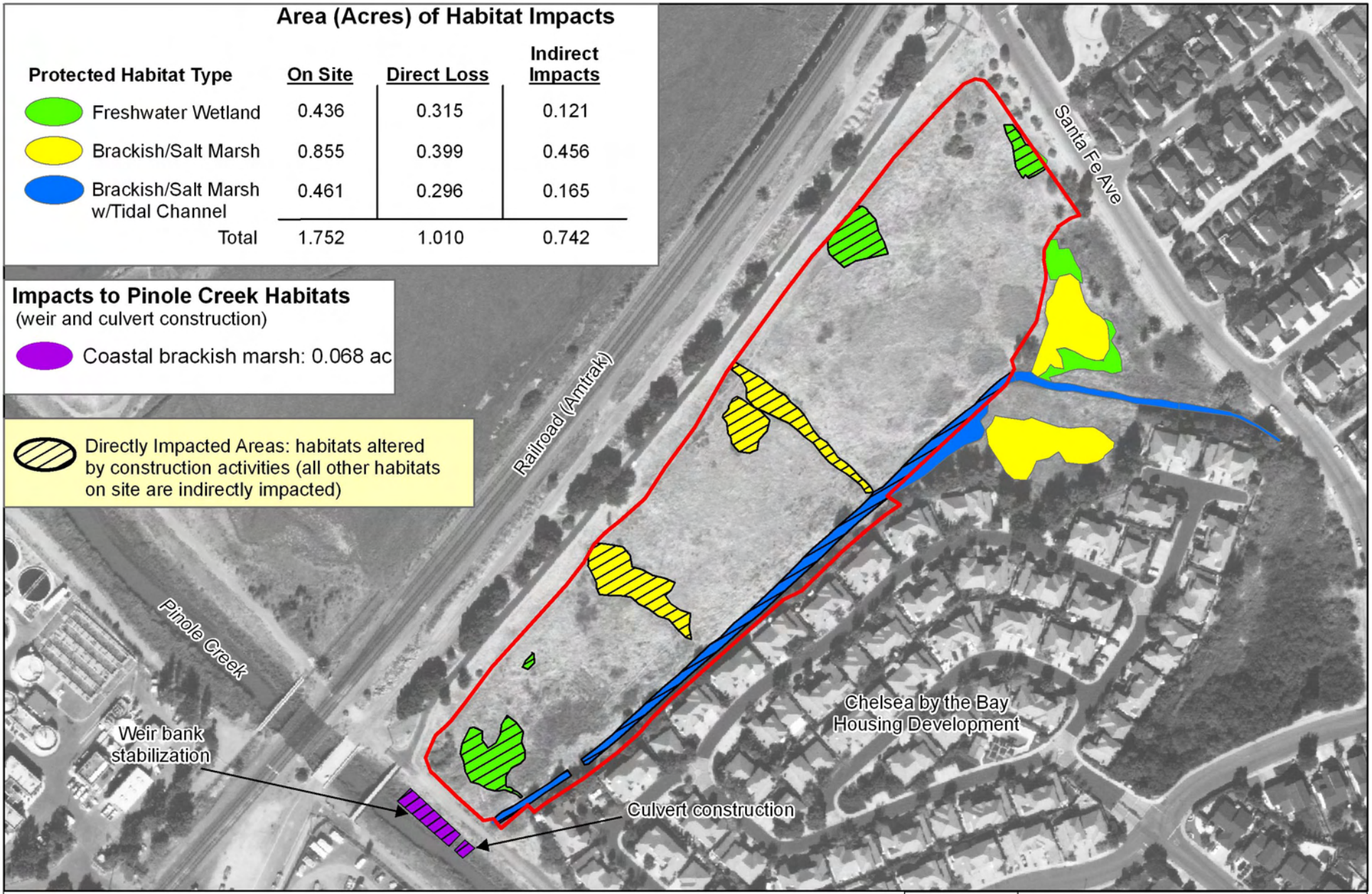
Data sources: NAIP (air photo, 2005)
Produced by WWR, Marsh 2009
GIS/cartography by Dan Gillenwater
Map file: Fig13_site-access_2009-0316.mxd

WETLANDS AND WATER RESOURCES

PROJECT SITE ACCESS ROUTES

Chelsea Wetlands Restoration Project
City of Hercules
Hercules, California

March 2009 | Project No. 1136 | Figure 13


Area (Acres) of Habitat Impacts
Protected Habitat Type
On Site
Direct Loss
Indirect Impacts
Freshwater Wetland 0.436 0.315 0.121
Brackish/Salt Marsh 0.855 0.399 0.456
Brackish/Salt Marsh w/Tidal Channel 0.461 0.296 0.165
Total 1.752 1.010 0.742
Impacts to Pinole Creek Habitats
(weir and culvert construction)
Coastal brackish marsh: 0.068 ac
Directly Impacted Areas: habitats altered by construction activities (all other habitats on site are indirectly impacted)
Railroad (Amtrak)
Santa Fe Ave
Pinole Creek
Chelsea by the Bay Housing Development
Weir bank stabilization
Culvert construction
Grading footprint
1:2,400 (1" = 200' at letter layout)
0 100 200 400 Feet
0 30 60 120 Meters
N
W
E
S
Data sources: photo (USGS, 2004); delineation data (WWR, 2008)
Produced by WWR, June 2009
GIS/cartography by Dan Gillenwater
Map file: Jurisdictional-impacts_2009-0611dag.mxd
CITY OF HERCULES CALIFORNIA
WETLANDS AND WATER RESOURCES
POTENTIAL IMPACTS TO JURISDICTIONAL RESOURCES
Chelsea Wetlands Restoration Project
City of Hercules
Hercules, California
June 2009
Project No. 1136
Figure 14

Appendix A:
Site Photographs

Photo 1: Annual grasslands covering most of the project site

(photo by Dan Gillenwater, 3/5/2008)

Photo 2: Pickleweed wetland in a depressional area

(photo by Dan Gillenwater, 3/5/2008)

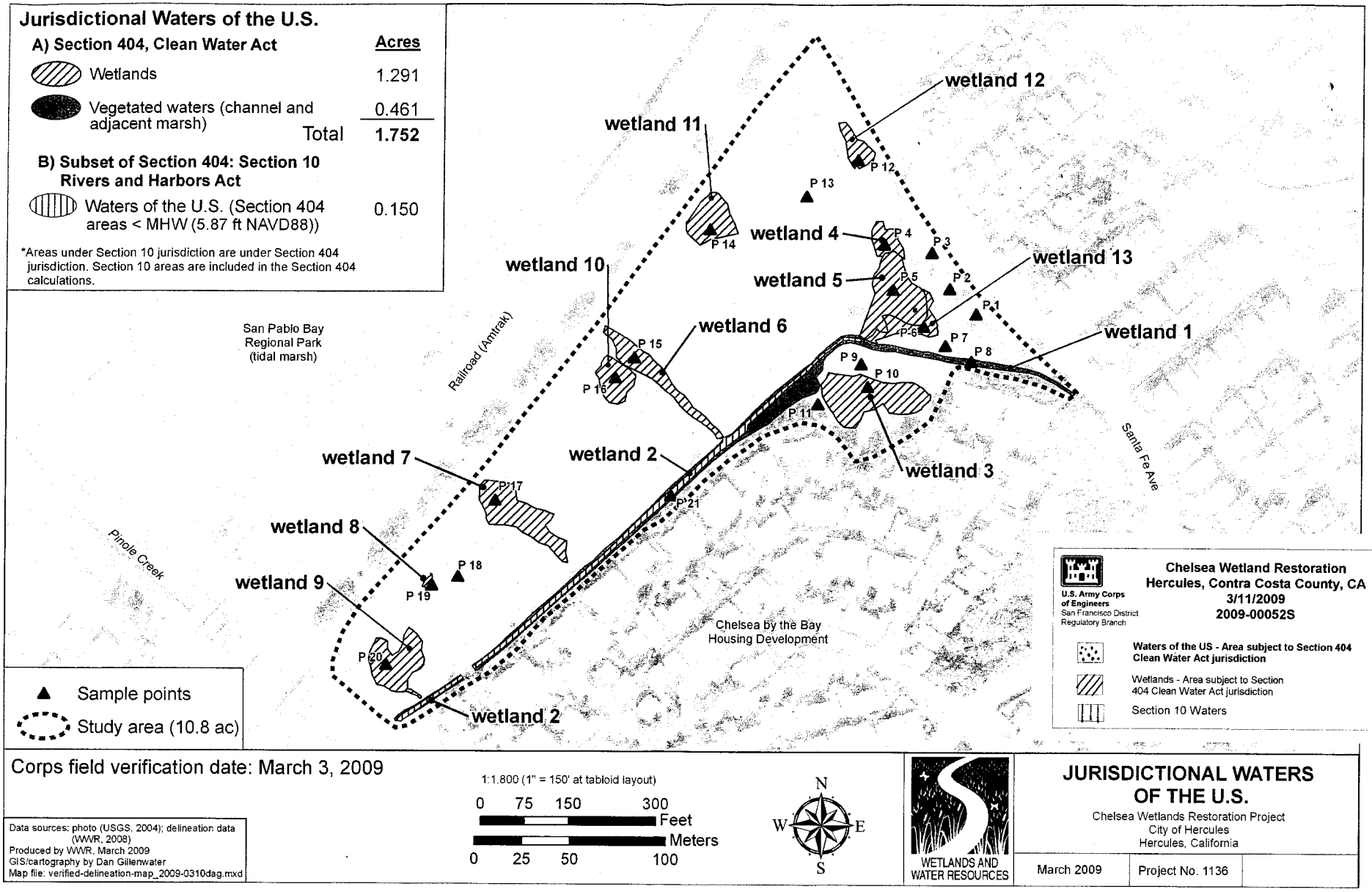
Photo 3: Tidal channel through site with associated marsh vegetation (photo by Dan Gillenwater, 10/1/2007)

Photo 4: District maintenance road separating the project site from Pinole Creek (photo by Dan Gillenwater, 9/6/2007)

Photo 5: Pinole Creek adjacent to the project site, looking south toward Pinole (photo by Dan Gillenwater, 9/6/2007)

Photo 6: Flooding on the project site following the 12/31/2005 storm (photo by Carol Allen, 1/1/2006)

Appendix B:
Corps Verified Wetland Delineation Map


Jurisdictional Waters of the U.S.
A) Section 404, Clean Water Act
Acres
Wetlands 1.291
Vegetated waters (channel and adjacent marsh) 0.461
Total 1.752
B) Subset of Section 404: Section 10 Rivers and Harbors Act
Waters of the U.S. (Section 404 areas < MHW (5.87 ft NAVD88)) 0.150
*Areas under Section 10 jurisdiction are under Section 404 jurisdiction. Section 10 areas are included in the Section 404 calculations.
wetland 11
wetland 12
wetland 4
wetland 10
wetland 5
wetland 13
wetland 6
wetland 1
wetland 7
wetland 2
wetland 3
wetland 8
wetland 9
wetland 2
P 1
P 2
P 3
P 4
P 5
P 6
P 7
P 8
P 9
P 10
P 11
P 12
P 13
P 14
P 15
P 16
P17
P 18
P 19
P 20
P 21
San Pablo Bay Regional Park (tidal marsh)
Railroad (Amtrak)
Pinole Creek
Chelsea by the Bay Housing Development
Santa Fe Ave
Sample points
Study area (10.8 ac)
U.S. Army Corps of Engineers
San Francisco District
Regulatory Branch
Chelsea Wetland Restoration
Hercules, Contra Costa County, CA
3/11/2009
2009-00052S
Waters of the US - Area subject to Section 404 Clean Water Act jurisdiction
Wetlands - Area subject to Section 404 Clean Water Act jurisdiction
Section 10 Waters
Corps field verification date: March 3, 2009
1:1,800 (1" = 150' at tabloid layout)
0 75 150 300 Feet
0 25 50 100 Meters
N
W E
S
Data sources: photo (USGS, 2004); delineation data (WWR, 2008)
Produced by WWR, March 2009
GIS/cartography by Dan Gillenwater
Map file: verified-delineation-map_2009-0310dag.mxd
WETLANDS AND WATER RESOURCES
JURISDICTIONAL WATERS OF THE U.S.
Chelsea Wetlands Restoration Project
City of Hercules
Hercules, California
March 2009
Project No. 1136

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
1455 MARKET STREET
SAN FRANCISCO, CALIFORNIA 94103-1398

MAR 30 2009

Regulatory Division

SUBJECT: File Number 2009-00054S

Mr. Dan Gillenwater
Wetlands and Water Resources, Inc.
818 5th Avenue, Suite 208
San Rafael, California 94901

Dear Mr.Gillenwater:

This letter is written in response to your submittal of January 11, 2009 requesting confirmation of the extent of Corps of Engineers jurisdiction at Chelsea Wetland Restoration Site, City of Hercules, Contra Costa County, California

The Corps concurs with the maps provided in the jurisdictional delineation map prepared by Wetland and Water Resources, Inc. dated March, 2009. We have based this jurisdictional delineation on the current conditions on the site as verified during a site visit performed by our staff on March 3, 2009. A change in those conditions may also change the extent of our jurisdiction. This jurisdictional delineation will expire in five years from the date of this letter. However, if there has been a change in circumstances that affects the extent of Corps jurisdiction, a revision may be completed before that date.

All proposed work and/or structures extending bayward or seaward of the line on shore reached by: (1) mean high water (MHW) in tidal waters, or (2) ordinary high water in non-tidal waters designated as navigable waters of the United States, must be authorized by the Corps of Engineers pursuant to Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. Section 403). Additionally, all work and structures proposed in unfilled portions of the interior of diked areas below former MHW must also be authorized under Section 10 of the same statute.

All proposed discharges of dredged or fill material into waters of the United States must be authorized by the Corps of Engineers pursuant to Section 404 of the Clean Water Act (CWA) (33 U.S.C. Section 1344). Waters of the United States generally include tidal waters, lakes, ponds, rivers, streams (including intermittent streams), and wetlands.

Your proposed activity may be within our jurisdiction and a permit may be required for your project. Application for Corps authorization should be made to this office using the application form in the enclosed pamphlet. To avoid delays it is essential that you enter the file number at the top of this letter into Item No. 1 of the application. The application must include plans showing the location, extent and character of the proposed activity, prepared in accordance with the requirements contained in this pamphlet. You should note, in planning your project, that

upon receipt of a properly completed application and plans, it may be necessary to advertise the proposed work by issuing a Public Notice for a period of 30 days.

Our Nationwide Permits and Regional General Permits have already been issued to authorize certain activities provided specified conditions are met. Your completed application will enable us to confirm that your activity is already authorized. You are advised to refrain from starting your proposed activity until we make a determination that the project is covered by an existing permit. Commencement of work before you receive our notification will be interpreted as a violation of our regulations.

You are advised that the Corps has established an Administrative Appeal Process, as described in 33 C.F.R. Part 331 (65 Fed. Reg. 16,486; March 28, 2000), and outlined in the enclosed flowchart and "Notification of Administrative Appeal Options, Process, and Request for Appeal" form (NAO-RFA). If you do not intend to accept the approved jurisdictional determination, you may elect to provide new information to the District Engineer for reconsideration or submit a completed NAO-RFA form to the Division Engineer to initiate the appeal process. You will relinquish all rights to appeal, unless the Corps receives new information or a completed NAO-RFA form within sixty (60) days of the date of the NAO-RFA.

Should you have any questions regarding this matter, please call Kyle Dahl of our Regulatory Division at (415) 503-6783. Please address all correspondence to the Regulatory Division and refer to the File Number at the head of this letter. If you would like to provide comments on our permit review process, please complete the Customer Survey Form available online at http://per2.nwp.usace.army.mil/survey.html.

Sincerely,

Jane M. Hicks
Chief, Regulatory Division

Enclosures

Copy Furnished

CA RWQCB, Oakland, CA