

Appendix D

Revegetation/Restoration Plan

## **Frenchmans Creek Water Intake Replacement Project Revegetation/Restoration Plan**

**Prepared for Jack Wu and Lucky Stars Investments Group, LLC  
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July, 2012**

Permit Numbers: California Department of Fish and Game; 1600-2010-0022-R3  
California State Water Quality Control Board; no number issued yet  
U. S. Army Corps of Engineers; no number issued yet

Attachments: Engineered Drawings prepared by Waterways, Inc. dated 4/1/11  
Figure 1. Location of Wildlife Exclusion Fence (WEF)  
Figure 2. Exclusion Fence Details (designed by Caltrans for Caltrans projects)  
Figure 3. Sketch of gate for access into WEF area  
Figure 4. Graphic of restoration area

### **INTRODUCTION**

This Revegetation/Restoration Plan (RRP) was prepared for the Frenchmans Creek Water Intake Replacement Project on the behalf of Jack Wu and the Lucky Stars Investment Group, LLC. In October of 2010, permit applications were submitted to the Regional Water Quality Control Board (RWQCB), and the U. S. Army Corps of Engineers (USACE) for the completion of the relocation of a small water intake system placed in Frenchmans Creek on a parcel of land located at 37-K Frenchmans Creek Road, Half Moon Bay, San Mateo County. A California Department of Fish and Game (CDFG) permit for the project was issued on May 25, 2010.

During a site visit with Suzanne DeLeon with CDFG, Sandi Potter with RWQCB, Paula Gill with USACE, Bill Stevens with National Marine Fisheries Service, and Dan Cordova with the U. S. Fish and Wildlife Service, it was collectively stated that a Mitigation, Monitoring and Revegetation Plan would have to be approved by the attending agencies representatives before permits could be issued for the project. Since that time the State Water Resources Control Board (SWRCB) has stepped in as the lead agency to ensure that the project is in compliance with the California Environmental Quality Act (CEQA) and is in the process of preparing a CEQA document. The San Francisco Bay (RWQCB) no longer holds jurisdiction over the project since it has been transferred to the SWRCB which regulates water diversions/intakes.

This RRP accompanies engineered drawings prepared for the project by Waterways Consulting, Inc.

### **REVEGETATION/ENHANCEMENT ELEMENT**

Frenchmans Creek originates from Montara Mountain from an elevation of approximately 1,500 feet and flows south to the Pacific Ocean. The creek is perennial and retains a natural configuration with a narrow but diverse riparian corridor in the upper reaches. As it descend to Half Moon Bay, patches of coastal scrub habitat have been cleared for agricultural purposes and where it passes through agricultural areas the riparian corridor becomes increasingly sparse. In the lower reaches, native riparian trees have been replaced with exotic species such as eucalyptus. Within the project vicinity narrow bands of agricultural field lie on either side of the creek outside

of a sparse riparian corridor. Riparian vegetation at the project site extends from 25 to 50 feet from top of bank outward on each side of the creek. The dominant tree species at the project site is white alder (*Alnus rhombifolia*), typically a sub-canopy tree in riparian woodlands. Eucalyptus trees are also present. Willows ranging from emergent to mature are interspersed throughout the corridor. The understory is comprised of a mix of native plants such as mugwort, poison oak, elk clover, California blackberry, and a few species of ferns and non-native plants such as cape, ivy, English ivy, wild radish, poison hemlock, sow thistle, and Queen Anne's lace.

The majority of the water intake replacement project took place within an area that was previously disturbed. There is an existing pump house on a concrete pad, and some small structures associated with the original pump. When the old pump was removed and the new system was being placed, no trees were removed. Some riparian vegetation was removed with the use of hand tools from the east bank in an approximate 12 ft by 20 ft (240 ft<sup>2</sup>, 0.006 acre) area where the water intake and HDPE pipe was installed in the streambed. The majority of the project took place within the dirt service road on west side of the pump house.

Once completed the Frenchmans Creek Water Intake Replacement Project will permanently impact a total of 5 linear feet, and a total of 25 ft<sup>2</sup> (0.0006 acre) of aquatic habitat. No trees were removed and none will be removed as part of the completion project. To keep the intake structure clear, occasional cleaning would be performed by hand-cleaning – no tools would be required. For this reason an access path will not be replanted during the revegetation of the creek bank in this area. In order to mitigate for the permanent loss of riparian vegetation, enhancement of the riparian corridor in the project area will be conducted. Enhancement will take place at a 3:1 ratio (3 replaced for every 1 impacted). Because original impacts totaled 240 ft<sup>2</sup>, (0.006 acre), enhancement at a 3:1 ratio would require the replanting of riparian vegetation on 720 ft<sup>2</sup> (0.017). However because emergent native riparian vegetation is sprouting vigorously at the site (see Photo 1), rather than focus on a revegetation element the eradication of non-native species would be more beneficial to the existing native trees in the project area. The following enhancement is proposed:

- Cape ivy (*Delairea odorata*) and English ivy has spread prolifically along the riparian corridor throughout the project area and beyond. The two ivy species are climbing up trees causing them to die (see Photo 2). As part of the enhancement project ivy species will be removed from the east bank and all trees along a 60-ft stretch of riparian corridor along the east bank extending 10 ft upstream from the water intake and 50 ft. downstream. Figure 4 shows the enhancement area. Ivy would be removed from all trees within the riparian corridor in this 60 ft section. Therefore the enhancement area is 3,000 sq. ft (0.069 acre) although the access road that traverses the area would be kept free of vegetation plus there are existing structures thereby reducing the actual enhancement but it would still be well above the required 0.017 acre mitigation requirement.



**Photo 1.** Natural regeneration of primarily native plant species that has grown since original clearing of the site in 2010.



**Photo 2.** Cape ivy parasitizing native trees along Frenchmans Creek

The removal of the two ivy species over a five year mitigation/monitoring period would allow native trees to sprout new growth and become more vigorous thus eventually providing denser tree canopy cover over the creek. The proliferation of ivy has suppressed growth of new native vegetation. The removal of the ivy over the five year period would allow native vegetation to emerge thus providing a native plant understory.

#### **IMPLEMENTATION OF ENHANCEMENT PLAN**

Following are the steps that would be taken to implement the enhancement project:

1. After the completion of the water intake replacement project, as necessary, erosion control mat and other permanent stabilization materials will be placed.
2. Ivy will be removed by hand crews from the east bank of Frenchmans Creek in the enhancement areas depicted in Figure 4. In order to eradicate the ivy, the vines will be pulled away from around the base of the trees and the creek bank within the riparian corridor. Within 15 minutes of the base of the ivy stalks being cut, the stalks will be spot sprayed with Round-up. The use of herbicide will only take place during extended periods of dry weather and at least five-feet from the water's edge. Spot spraying means that only newly cut stems will be sprayed with herbicide. Herbicide will not be applied by any other method particularly wide-spread spraying of vegetation and shall only be applied to the two ivy species.
  - Ivy removal will occur after June 15<sup>th</sup> of each year and only during extended dry weather. Weather forecasts shall be checked prior to the application of herbicide. No herbicide treatment shall occur if rain is forecasted within 10 days of herbicide application. At least

one other effort of ivy removal should occur prior to September 15<sup>th</sup> of each year and before the onset of the rainy season. Ivy removal may occur between June 15 and September 15 as necessary for eradication.

- All removed ivy shall be disposed of at a landfill facility. They shall not be placed anywhere that they will re-sprout and invade new territory. Cuttings will not be placed on the ground or stockpiled where they may attract CRLF or SFGS but placed in a debris bin or other enclosed container to be off-hauled.

## RESTORATION OF EAST BANK

To restore the east bank and provide bank stability adjacent to the water intake, willow cuttings will be harvested from trees in the vicinity of the project and planted on the bank where vegetation was removed during the initial intake installation. Torrent sedge (*Carex nudata*) will be planted every five feet just above the water line. California blackberry vines are growing over most of the area that was disturbed during the initial clearing of the project area.

Table 2 provides the scientific, common names, and appropriate application rates (pounds per acre) of plant species included in the seed mix that will be utilized to restore all disturbed areas after the project is complete:

**Table 2. Native Plant Seed Mix**

Scientific Name	Common Name	Pounds / Acre
<i>Bromus californica</i>	California brome	16
<i>Hordeum californicum</i>	California meadow barley	12
<i>Elymus glaucus</i>	Blue wildrye	10
<i>Danthonia californica</i>	California oat grass	10
<i>Nasella pulchra</i>	Purple Needlegrass	10

All planting will occur in the early fall after the hot dry season but before the light rains which will enhance seed germination. Heavier rains could cause the seeds and mulch to wash away from the treated areas.

The restoration ecologist will inspect the enhancement planting area biannually for five years for the purpose of assessing planting success and to relay maintenance needs to the restoration contractor. During the inspection, the number of failed plantings will be recorded and a determination will be made if remedial measures should be taken.

## Annual Reports to Permitting Agencies

Typically permits from CDFG and RWQCB require an annual monitoring report to demonstrate that efforts to mitigate impacts to riparian habitat are in progress. The restoration ecologist will prepare an annual monitoring report which will be submitted to agency contacts for the project by December 31<sup>st</sup> of each year for five years until the performance criteria has been achieved and signed-off by the agencies.

## **PERFORMANCE STANDARDS**

The following sliding scale performance standard will apply to the plantings. The percentage of plants which shall be alive and healthy at the end of each of the five years of maintenance shall be as follows:

First year – 90%

Second year – 80%

Third year – 80%

Fourth year – 75%

Fifth year – 70%

Plants will be considered alive and healthy if they display noticeable growth, the presence of new shoots or buds, and show no signs of stress caused by over or under watering.

After the five year monitoring period has been completed, a report on whether or not the success criterion for the restoration has been met will be submitted to the permitting agencies.