Hugo Tottino Wetland Restoration, Construction and Maintenance Plan

Central Coast Wetlands Group

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Introduction

In January 2017, the Central Coast Wetlands Group received funding from the Ocean Protection Council through Proposition 1, the Water Quality, Supply, and Infrastructure Improvement Act of 2014, to Completing the Core Objectives of the Moro Cojo Slough Management and Enhancement Plan. The grant includes restoration of a 35-acre parcel in the lower Moro Cojo Slough, referred to as Hugo Tottino Wetland. The goal the restoration project is habitat enhancement, flood water retention, and water quality improvement. The water quality improvement will be accomplished through the use of water filtration, nutrient uptake, and denitrification performed by native vegetation (Figure 1). This plan details restoration and maintenance activities for the parcel.



Figure 1. The physical, chemical, and biological processes that occur in wetlands help filter out pollutants.

The parcel is located in Monterey County. The parcels (APN 133-081-006-000) is agricultural and disked annually but is not in production (Figure 2). Vegetation at the site consists of weedy, non-native annuals such as annual bluegrass (*Poa annua*), black mustard (*Brassica nigra*), cultivated radish (*Raphanus sativus* L.), hemlock (*Conium maculatum*), wall barley (*Hordeum murinum* ssp. *murinum*), and bur clover (*Medicago polymorpha*). In

addition to the non-natives, there are a few native plants, including pickleweed (*Salicornia pacifica*) and saltgrass (*Distichlis spicata*).



Figure 2. Site map of the Hugo Tottino Wetland restoration area. The red line represents the parcel boundary, while the blue line with yellow shading represents the restoration area. The current habitat type is fallow farm field.

Overview

We will use a phased approach to construct and plant the wetland (Figure 3, Table 1) and reestablish hydraulic connectivity with the main Moro Cojo slough channel. Earth moving will be completed in two phases. Phase I will be completed by Sea Mist farms as part of preparatory work necessary to bisect the property into the 35 acre restoration area and the remaining portion of the parcel that will remain in farm operations. A lot line adjustment will codify this delineation between wetland restoration and active agriculture. Sea Mist Farms will excavate several shallow pond areas as specified in the design plans to construct the farm levee necessary to restrict flooding to the 35 care portion of the site. Construction of the levee will be completed by the Sea Mist Farms to their required specification and will be maintained in perpetuity by the landowner of the larger farm

parcel. Additional grading of the site will be completed in the late summer to early fall. Additional grading and water control structure installation called for within the construction plans (Figure 3) will be managed by Coastal Conservation and Research. CCR will submit applications for necessary permits for this phase of the construction and will manage site operations, restoration activities and condition compliance.



Figure 3. Draft construction designs for 35 acre Hugo Tottino Wetland project.

After construction is complete, the site will be seeded with native annual grasses using drill seeding and broadcast seeding. A combination of direct irrigation and rains will be used to irrigate the project sites. We will flood the wetland areas with water from the Moro Cojo Slough once seeds have germinated to encourage establishment of the rushes and sedges. In mid spring we will allow the site to dry enough to mow using a tractor mower and hand held weed whipper to reduce non-native plants before they seed. We will then plant native shrubs and other perennial plants to help shade out annual weeds. The following autumn we will again seed the sites, followed by mowing or weed whipping, and then planting shrubs and perennials.

The site will be managed indefinitely to minimize weed species undesirable to adjacent farm operations. Various mechanical methods (mowing, weed whipping, tarping) will be used when appropriate and herbicide will be used for spot treatments on difficult-to-eradicate weeds. Maintenance will be ongoing, but will intensify in the spring when weeds begin to germinate and will be focused on interrupting the weed life cycle, preventing the

setting of weed seeds. Periodic drying of the wetland (through use of water control structures) will occur to selectively manage for native species.

Ditch and berm maintenance along the southern border of the wetland will be managed by the adjacent farmer. Accumulated sediments will be removed from the agriculture drainage ditch periodically to ensure proper function of the systems. Accumulated sediments will be used to reinforce surrounding berms and grade control structures. Proper erosion control and replanting will be completed.

Long-Term Maintenance

The project will be designed to minimize the need for long term management. Initial designs and restoration activities will be completed to minimize long term weed maintenance needs. Hydraulic control structures will be designed to be modified if needed but no long term operational needs are anticipated. Similar to the Sea Mist I project, minimal long term maintenance will be needed. CCR will work with Elkhorn Slough Foundation to maintain the project site and ensure that the project operates as designed with little to no long term costs. CCR and CCWG will work with farmers within the watershed and the Regional Water Quality Control board to integrate the Sea Mist 1 & Hugo Tottino Wetland projects into a watershed wide water quality management program, intended to offset any long term costs through farmer contribution to water quality benefits.

Best Management Practices

The below described BMPs will be employed as needed to optimize the long term health of this wetland. Timing of various practices will be scheduled to minimize impacts to bird and other native animals and maximize weed suppression.

Erosion, Sediment Control, and Stormwater Best Management Practices (EPA, 2015)

1. Schedule construction activities during dry weather.

Activities such as digging of holes for planting will be timed to avoid heavy rains, thereby eliminating increased runoff caused by rainfall on unstable sediment surfaces. Restoration can be completed in phases such that activities that most disrupt the soil are paused during the rainy season.

2. Protect exposed soil.

Once earth moving is complete, bare sediment will be seeded, drilled and plugged with grasses in the fall to reduce the necessity for irrigation. Seeded, drilled and plugged plots will be covered with a thin layer of straw mulch. The mulch acts to prevent seeds and sediment from being carried away by rainfall and helps to hold in moisture for newly germinated grasses. Grasses establish quickly and withstand the weed whipping which will be used to cut down annual weeds before they set seed in the early spring. Also in early

spring shrubs and rushes will be planted. Roots of the larger plants will add further stability to the sediment, while the growth of the aboveground portion of the plants will help to shade remaining weeds, preventing them from establishing.

3. Avoid concentrating water – if necessary, slow it down and spread it out.

The wetland is built with this BMP in mind, with water from the Moro Cojo Slough entering the site which allows for sediment deposition, and then water flows through a series of channels and ponds in a wetland where it is exposed to denitrification and other waterquality improving processes, before the water flows back into the Moro Cojo Slough with less sediment, fewer nutrients, and improved water quality. The channel and pond structure enables the water to spread out and slow down, thereby eliminating erosional processes in these areas.

4. Minimize impervious surfaces and promote infiltration in project design.

Some of the berm surfaces will be used for driving. For those, an erosion control mix of grasses will be used to cover the compacted sediment surface and further stabilize it. Most of the berm surfaces will not be used for driving. Those surfaces will be seeded with grasses (see #2 above) and will remain permeable. The rest of the surfaces within the project location will also be permeable and will be planted with native grasses, sedges, and rushes (low wetland) and/or other native grasses and shrubs (high wetland) appropriate to the elevation (see Table 2, Plant Palette). The sediment surfaces in the low and high wetland habitats as well as the seeded area will all be permeable to promote infiltration. The project site is a naturally occurring low-lying areas, which is why it is not in production and available to be used for wetland habitat and water quality improvement projects.

5. Filter stormwater through organic filters.

Although not an "organic filter" in the strictest sense of the phrase, the wetlands at the project site accomplish similar activities through the use of wetland vegetation, which slows water flow, traps suspended sediment, and fosters the necessary conditions for microorganisms to transform and remove pollutants from water.

6. Inspect and maintain erosion and sediment controls as required.

Weeding is an ongoing task during the early stages of restoration projects. Thus various personnel will be onsite frequently and will be able to inspect and maintain erosion and sediment controls. In particular we will be making sure that newly planted seeds and plants are watered, that mulch and other erosion barriers are placed appropriately, that irrigation from nearby farms and water flows for treatment areas are not creating gullies through planted areas, and that wetlands and ditches are not filling with sediment. Any scour, erosion, or sedimentation will be fixed and areas revegetated immediately.

Native Wetland Treatment Systems Best Management Practices

1. Select sites appropriate for wetland restoration.

Freshwater wetlands were plentiful on the central coast of California prior to the initiation of Spanish exploration. Although estimates vary, we know the vast majority of our freshwater wetlands were lost to the agriculture industry (ditching, draining, dewatering

through groundwater withdrawals) and historical and recent development. Yet some farm parcels are at such a low elevation that the farmers can't use them for production because they are too wet. Such is the case for the Hugo Tottino Wetland site, which historical maps indicate was wetland habitat. Because these low areas already pond water, they are natural sites for restoration of wetland plant communities.

2. Time planting to take advantage of rainy season and plant natural history.

Plant communities on the California coast have evolved to take advantage of the seasonal rains we experience. In fact, many native plants die in typical garden settings because of too much irrigation. Seeds and plants are typically dormant in the warm summer months and experience growth during late fall, winter, and early spring, when rains provide water. We can time our planting of seeds and shrubs to take advantage of this natural cycle.

3. Use native, locally-sourced seeds and plants whenever possible.

The planting work will be performed by Coastal Conservation & Research, Inc. (CCR), a local non-profit with staff that have been active in habitat restoration in the area for over 30 years. CCR has a greenhouse in Moss Landing and has been propagating terrestrial and wetland plants for many years and maintains a stock on site of many local species to be used on the Hugo Tottino Wetland site. The CCR stock can be utilized for propagation by both seeds and cuttings. CCR staff also harvest from nearby populations of grasses and shrubs. In cases where CCR does not have the appropriate seed or plant stock, we will purchase from local native plant nurseries. See Table 2 for proposed plant palette.

4. Employ a combination of prevention and control measures to minimize non-native species. Much of the vegetation present onsite prior to disking was comprised of annual nonnatives. Through the use of mechanical methods (weed whipping, hand pulling, tarping) and targeted herbicide, we will work to eliminate non-native species as they germinate in winter and early spring. Then the introduction of native plants and seeds will occupy much of the habitat previously available to non-natives. Repeated treatments the following fall, winter and spring will help to exhaust the non-native seed bank present in the soil.

5. Plan for post-activity management of highly damaging non-native invasive species. Although a few of the non-native species identified are considered to have moderate impacts according to the California Invasive Plant Council's Invasive Plant Inventory, the bulk of the species have limited impact on native ecosystems. The Central Coast Wetlands Group and Coastal Conservation & Research are committed to managing for non-native species long after grant funds for the initial project have been spent. CCWG and CCR currently conduct annual weeding at several former restoration sites, including the sites west of the Sea Mist parcel and they are dedicated to continuing this site maintenance in the future by seeking out grant funds. Personnel visit sites frequently, ensuring that if any new non-native species show up, we will be early responders to the new threat, which helps immensely with control and prevention.

Recommended Measures

Establishment of buffer between new wetland and ongoing farming activiites

The farmer has notified CCWG of their intentions to complete berm upgrades and buffer establishment prior to completion of land agreements. This intent is for the farmers to install necessary agricultural drainage upgrades that they can maintain and will provide flood protection of their adjacent property. CCWG will work with the land owner to implement these initial landform changes in ways that benefit the overall wetland restoration activirties.

Diversion of Moro Cojo Slough Water to the Wetland

Water from the Moro Cojo Slough will be diverted onto the wetland through the installation of several pipes in the berm along the north side of the parcel. A control valve will be inserted into the pipe to allow water to be controlled at various elevations as needed to maintain the system and allow periodic drying of the wetland areas.

Construction Impact Avoidance

The project site is agricultural land with no current habitat value so there is no required mitigation to be performed. The site is adjacent to previous restoration areas. In order to prevent construction activities from impacting the existing wetlands, flagging of the construction zone boundaries will be completed to assure that no heavy equipment operators drive into the adjacent restoration areas. We will also brief all construction personnel on the extent of the construction zone and forbid them from entering the adjacent restoration areas. No material will be dumped in the wetland. We will employ a biological monitor to ensure that construction activities do not negatively impact the adjacent wetlands.

Amphibian Impact Avoidance

Amphibian impact avoidance measures are spelled out in the report "Assessment of California Tiger Salamander, Santa Cruz Long-toed Salamander, and California Red-legged Frog for the Central Coast Wetland Group Restoration and Enhancement Project: Moss Landing, CA" by Dayton Biological. They include a biological training session by an approved biologist for everyone working on the project, including instruction on the identification of, the ecology and natural history of, project specific avoidance measures for, and required steps if an individual is encountered for California Tiger Salamanders (CTS) and Santa Cruz Long-toed Salamanders (SCLTS). The Central Coast Wetlands Group (CCWG) will be required to submit in writing to the California Department of Fish and Wildlife (CDFW) the name, qualifications and contact information of the approved biologist who will conduct the training session. The approved biologist will inspect the project site for presence of CTS and SCLTS. At any time during construction if CTS and/or SCLTS are found, all work on the project site must cease until the approved biologist can work with CDFW and the United States Fish and Wildlife Service (USFWS) to determine the appropriate measures to be taken. CCWG will initiate a trash abatement program on site to avoid attracting predators and will confine all project-related parking and storage to previously disturbed areas such as fallow farmland and/or farm roads. Prior to disturbance of standing water during project-related activities, the approved biologist will sample for CTS and SCLTS and project activities will stop until CDFW, USFWS and the biologist determine the appropriate measures to be taken. These avoidance measures will also reduce the likelihood of impacting California Red-legged Frogs.

Sediment/Erosion Control During Construction

Three actions will be taken to ensure sedimentation of adjacent wetland resources does not occur. 1) Due to the minimal grade (2% max) erosion risk is limited to the surrounding berms. These areas will be hydroseeded prior to the first rains and standard sediment control structures (jute netting and erosion wattles) will be placed where erosion is possible along the outer edge of the construction site. 2) The south side of the construction site will be surrounded by an agriculture ditch to maintain adjacent farming practices. Sediment control structures will be placed within the ditch to reduce transport of sediment towards the discharge location. Silt screening will be placed adjacent to the farming pump at the end of the ditch to ensure sediment is not discharge into adjacent restored wetlands. 3) The lower end of the treatment wetland will discharge into the Moro Cojo Slough. Silt fencing and jute wattles will be installed between the constructed wetland and the slough discharge location to ensure any suspended sediment is removed from drainage waters.

Monitoring

Funding for the construction of these treatment systems is focused on habitat restoration and the removal of nutrient loading from agriculture drainage waters. Habitat condition assessments using the California Rapid Assessment Method (<u>www.cramwetlands.org</u>) will be utilized before construction, just following planting, and at the end of the grant to track the restoration progress. Nutrient and other water chemistry will be sampled at numerous locations within the wetland and the main slough throughout the dry and raining seasons. Bird surveys, plant surveys and other monitoring will also be completed as needed to manage the function of the sites and minimize farm interactions. Data will be made available at <u>www.centralcoastwetlands.org</u>.

References for the watershed:

EPA 2015. Stormwater Management Best Practices. Accessed 4/6/15. URL: <u>www.epa.gov/oaintrnt/stormwater/best_practices.htm</u>

Moro Cojo Slough Management and Enhancement Plan. 1994. The Habitat Restoration Group.

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Moro Cojo Slough NPS Implementation Project. Creative Conservation and Research. 2003 http://ccwg.mlml.calstate.edu/sites/default/files/documents/cec-00-152-253-0-final1.pdf Implementation of the Moro Cojo Slough Management and Enhancement Plan: Restoration of the Core of the Watershed. 2008 Coastal Conservation and Research, Inc. <u>http://ccwg.mlml.calstate.edu/sites/default/files/documents/final_report_moro_cojo.pdf</u>

Moro Cojo Slough Management and Enhancement Plan Status Report. 2013. Central Coast Wetlands Group.

http://ccwg.mlml.calstate.edu/sites/default/files/documents/MoroCojoReport2013.pdf

Table 1.	Anticipated	timetable for Hugo Tottino Wetland construction.	
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Task	Anticipated Start Date	End Date
Planning and Construction		
Treatment wetland design	June 1, 2017	May 31, 2018
Landowner agreements	February 1, 2017	June 30, 2018
Construction permitting	January 1, 2018	August 31, 2018
Construction contracting	June 1, 2018	August 31, 2018
Construction - earth moving	September 1, 2018	October 15, 2018
Native grass seeding	October 1, 2018	October 31, 2018
Weed suppression - initial mowing and		
maintenance	November 1, 2018	March 30, 2020
Native plantings	November 1, 2018	March 30, 2020
Monitoring and Reporting		
Habitat condition assessments	May 15, 2018	March 30, 2020

Habitat	at Area (Acres) Species		Common Name
Low Wetland	5	Bolboschoenus maritimus Eleocharis macrostachya Juncus mexicanus Juncus patens Juncus xiphioides Hordeum brachyantherum Carex spp. Distichlis spicata	alkali bulrush spikerush Mexican rush common rush iris-leaved rush Meadow barley native local sedges salt grass
		Salicornia pacifica	pickleweed
High Wetland	9.5	Artemisia californica Ceanothus griseus horizontalis Elymus triticoides Eriogonum fasciculatum foliolosum Eriophyllum staechadifolium Eschscholzia californica Frankenia salina Hordeum brachyantherum Jaumea carnosa Rumex fueginus Salvia mellifera Scrophularia californica	California sagebrush Yankee Point Ceanothus creeping wild rye California buckwheat lizard tail California poppy alkali heath meadow barley fleshy jaumea golden dock black sage bee plant
Berm	6	Elymus triticoides Eschscholzia californica Hordeum brachyantherum Lupinus arboreus Ceanothus sp.	creeping wild rye California poppy meadow barley yellow bush lupine California lilac
Seasonally inundated wetland/ upland	14.5	Bromus carinatus Elymus glaucus Elymus triticoides Hordeum brachyantherum Juncus mexicanus Juncus patens Juncus xiphioides	California brome Blue wild rye Creeping wild rye Meadow barley Mexican rush common rush iris-leaved rush

Table 2. Plant palette for Hugo Tottino Wetland