

# TABLE OF CONTENTS

---

## Kaiser OMC Replacement Project-Glen Echo Creek Restoration, Revegetation & Planting Plan (RRPP)

	<u>Page</u>
<b>I. Introduction</b>	<b>1-1</b>
1.1 Purpose of the Plan	1-1
1.2 Project Description	1-2
1.3 Affected Area and Site Conditions	1-2
1.4 Restoration and Enhancement Goals	1-2
1.5 Success Criteria	1-3
<b>2. Restoration Approach</b>	<b>2-1</b>
2.1 Restoration Monitor	2-1
2.2 Plant Sources	2-2
<b>3. Monitoring and Reporting</b>	<b>3-1</b>
3.1 Baseline Monitoring	3-1
3.2 Monitoring Frequency	3-1
3.3 Monitoring Methods	3-2
3.4 Annual Reports	3-3
3.5 Monitoring and Reporting Schedule	3-4
<b>4. Performance Criteria</b>	<b>4-1</b>
4.1 Vegetation	4-1
4.2 Hydrology	4-2
<b>5. Contingency Measures</b>	<b>5-1</b>
5.1 Introduction	5-1
5.2 Range of Contingency Measures	5-1
5.3 Initiating Procedures	5-2
5.4 Responsible Parties	5-3
5.5 Review of Performance	5-3
5.6 Notification of Completion	5-3
5.7 Agency Confirmation	5-3
<b>List of Tables</b>	
2-1 Plant Species for Revegetation	2-3
2-2 Recommended Hydroseed Mix	2-11
2-3 Irrigation Guidelines	2-16

	<u>Page</u>
<b>List of Figures</b>	
2-1 Planting Plan	2-5
2-2 Erosion Blankets and Turf Reinforcements	2-8
2-3 Straw Rolls	2-9
2-4 Willow Wattle Specifications	2-11
2-5 Typical Tree and Shrub Planting Specifications	2-15
2-6 Willow Stake Planting Detail	2-16

# SECTION 1

---

## Introduction

### 1.1 Purpose of the Plan

The Revegetation, Restoration, and Planting Plan (RRPP) describes treatments and methods to be implemented to restore Glen Echo Creek and to restore areas temporarily disturbed during construction of the West Broadway Garage and Medical Services Building (MSB) and Cancer Center. The RRPP describes all possible treatments that may be used to restore areas within the creek for riparian habitat restoration and for post-construction vegetation. Therefore, not all treatments provided in this RRPP may be used. The specific treatments to be applied will depend on the type and extent of habitat disturbance at the completion of construction. It also describes revegetation and restoration methods that may be used in the future if permanent impacts are determined and additional restoration is necessary.

The RRPP component outlines restoration plans, treatment options, and planting plans to be implemented. The goals of this component include:

- Restore affected areas to improved riparian habitat conditions and hydrologic functions;
- Provide revegetation of riparian habitats temporarily disturbed by construction activities;
- Provide slope stability and erosion control through the implementation of revegetation and restoration activities;
- Provide monitoring and maintenance to ensure riparian restoration is successful;
- Maintain compliance with regulatory agreements and permit conditions.
- Restoration shall include the revegetation of areas exposed or stripped of vegetation during construction activities. All planting shall be done during October 15 through April 1 to take advantage of the winter rainy season and to avoid manual irrigation if necessary.
- Revegetation and replacement plantings shall consist of locally-obtained native species that are suitable ecologically with the existing native plants. Revegetation may also include plant salvage, seeds, and seedlings obtained from local native sources. If necessary, nursery stock will be used from nurseries specializing in native vegetation.
- Revegetation monitoring shall be conducted annually for a minimum of five years.

An annual monitoring report shall be submitted to the permitting agencies for the duration of the monitoring period no later than December 31 of the following year after monitoring

## 1.2 Project Description

The proposed project is located on the Broadway Branch of Glen Echo Creek in the City of Oakland, Alameda County. The project area is located between residential housing on Manila Ave. and commercial development on Broadway Ave. A segment of Glen Echo Creek flows through the project site. This segment is part of the Broadway branch of Glen Echo Creek, downstream of Broadway and Rockridge Creeks. The entire segment of Glen Echo Creek flows southward toward Mosswood Park and is culverted underground for the entire length except for 145 linear feet through the project site, which is located midblock between 38<sup>th</sup> Avenue and MacArthur Boulevard.

## 1.3 Affected Area and Site Conditions

The project area is located in a 145-foot daylighted section of the Broadway Branch of Glen Echo Creek between 38<sup>th</sup> Ave and Macarthur Blvd. Due to a prolonged history of soil and vegetation disturbance, no sensitive natural communities, including intact riparian habitat, occur on the project site. Potential waters of the U.S. identified within the study area total 0.020 acres (899 square feet). The creekbed, below OHWM does not support wetland vegetation.

The natural hydrology of the Glen Echo Creek is perennial, with flows related to precipitation events during winter months, and with urban nuisance flows during the late spring and summer. The daylighted portion of the creek can be characterized as a narrow, incised bank with a five-foot wide active channel. This portion of the creek is a typical urban creek with narrow and steep stream banks, and a small low flow channel. The steep slopes, especially the eastern bank do not provide preferred habitat for species that typically use riparian areas.

## 1.4 Restoration and Enhancement Goals

This restoration program presents a restoration design, implementation strategy, maintenance schedule, performance standards and criteria, and monitoring program to compensate for the habitat temporarily disturbed by the the proposed project. The specific goals of the plan are:

- Return affected areas to pre-project conditions including pre-project habitat conditions and hydrologic function;
- Stabilize slopes and prevent erosion through restoration, revegetation and other erosion control methods;
- Monitor and maintain revegetated and restored and revegetated areas to freshwater marsh and upland grassland habitat is re-established in areas affected by construction.
- Comply with regulatory agreements and permit conditons

All cleared, excavated or other areas subject to site preparation and construction disturbance will be revegetated. All planting shall be done between October 15 and February 1 to utilize

precipitation and avoid reliance on irrigation. Planting materials will consist of dormant propagules, which will maximize survival.

Revegetation and replacement plantings shall consist of locally-obtained native species that are ecologically compatible with the shoreline environment.

Revegetation monitoring shall be conducted annually for a period of five years, or until re-establishment of pre-project conditions have been documented.

An annual monitoring report shall be submitted to the responsible agencies (U.S. Army Corps of Engineers (Corps), California Department of Fish and Game (CDFG), Regional Water Control Board (RWQCB)), as required by permit conditions and for the duration of mitigation monitoring, and beginning on December 1 in the year following the first Fall after restoration.

## 1.5 Success Criteria

One of three goal of the RRPP is restore Glen Echo Creek to provide improved riparian habitat and hydrologic function within the daylighted project reach. As such, the monitoring of restoration activities and the success of the restoration activities will be evaluated against baseline conditions as described in Preconstruction Notification (PCN) submitted to the Corps, RWQCB, and CDFG for the project. The following outlines the success criteria for the revegetation and restoration mitigation component.

1. All planted vegetation should have no less than 70 percent survival rate at the end of the five-year monitoring period.
2. There should be no excessive rills, gullies, or other erosion features within the restoration areas;
3. Invasive plant species should not occupy greater than 10% of the revegetation area for the duration of the monitoring period;
4. If necessary, a properly functioning temporary irrigation system shall be installed providing hook-up to water facilities within the MSB; and
5. The mitigation ratio of plants and trees will be based on specified ratios as outlined in permits and agreements issued for the project. Typically these ratios are 1.1:1 for temporary impact to plant communities and 3:1 for mature trees that are removed. All removed vegetation will be replaced with native species as outlined in Section 2 of this document.
6. An annual five-year monitoring program will be implemented following restoration efforts to assess the success, and to provide documentation for demonstrating compliance with permit conditions.

## SECTION 2

---

# Restoration Approach

## 2.1 Restoration Monitor

Prior to implementation of this RRPP, a restoration monitor shall be retained by Kaiser Permanente. This person shall be a qualified biologist, restoration ecologist or restoration consultant who will supervise the implementation of this RRPP and provide recommendations to Kaiser Permanente if necessary on the progress of the restoration project. The restoration monitor shall be responsible for:

- Interpreting plans in the interest of a successful revegetation effort;
- Supervising site preparation including planting location and timing;
- Approving all plant materials prior to installation;
- Overseeing field placement of plants, including placement of flags (color-coded by species) denoting locations for individual plants;
- Overseeing installation, including training and directing planting crews if necessary;
- Monitoring revegetation progress and reporting to Kaiser Permanent and/or regulatory agencies, as necessary;
- Monitoring weather conditions, vehicular traffic and protection of access roads. Such monitoring will be performed in accordance with detailed construction documents and best management practices;
- Monitoring the success of bank stabilization measures;
- Providing guidance and instruction to Kaiser Permanente for ongoing maintenance to ensure the long-term successful establishment of the plantings. If necessary, the restoration monitor will train maintenance crews in the methods represented in this plan;
- Guiding remedial actions as needed to replace plants, so that performance criteria and permit conditions are met; and
- Ensuring that non-native species removal complies with all state and federal requirements and training maintenance crews in proper techniques and best management practice for weed control if necessary.

## 2.2 Plant Sources

- Plant materials local to the project region will be used. Using plants adapted to local conditions will help ensure the success of restoration and enhancement efforts, and is recognized as the most ecologically sound approach to re-establishment of native vegetation.
- Where feasible, materials will be collected on-site for propagation include cuttings from willows and seed from shrubs, trees, and herbaceous plants.
- Depending on availability, plant materials may also be collected from elsewhere in the larger Glen Echo Creek watershed, subject to approval of the restoration monitor. Permission of the property owner must be obtained prior to the collection of plant materials.
- If nursery stock is necessary, an experienced native plant nursery will be retained by Kaiser Permanente to provide locally collected plant materials for restoration plantings. Local nurseries that grow native plants on contract for specific restoration projects include:

Pacific Coast Seed, Inc.  
6144A Industrial Way  
Livermore, CA 94550  
phone (925) 373-4417  
fax (925) 373-6855

North Coast Native Nursery  
P.O. Box 744  
Petaluma, CA 94953  
phone (707) 769-1213  
fax (707) 769-1230

Cornflower Farms  
P.O. Box 896  
Elk Grove, CA 95759  
phone (916) 689-1015

Yerba Buena Nursery  
19500 Skyline Blvd.  
Woodside, CA 94062  
phone (650) 851-1668  
fax (650) 851-5565

- Ample lead-time in advance of planting is required for nurseries to acquire sufficient quantities of plant material (cuttings and seed), to propagate plants, and to cultivate the plants to be an appropriate size prior to planting. For planting in fall, a lead-time of three months is required.

Plant size at time of installation may vary according to species and the overall project implementation schedule. In general, larger plants have better survival rates than smaller plants. Therefore, as much lead-time as possible will be given for the propagation of plants for the restoration area. Sizes given in **Table 2-1** are optimal for planting, but smaller plants will be used if dictated by availability or project scheduling.

### 2.2.1 Planting Specifications

Restoration and revegetation shall include the following:

- Only trees and shrubs from **Table 2-1** will be planted. Substitutions are subject to approval by the restoration monitor;
- Planting of native trees at a density adequate to achieve a canopy replacement ratio of 3:1. On average, trees will be planted on 10 to 20 foot centers, depending on the species to be planted and the container size. For example, loss of a tree with a 25-foot canopy spread that

**TABLE 2-1  
PLANT SPECIES FOR REVEGETATION**

<b>Common Name Scientific Name</b>	<b>Planting Zone</b>	<b>Spacing</b>	<b>Quantity</b>	<b>Container Size</b>
<b>Trees (Canopy)</b>				
Big-leaf maple <i>Acer macrophyllum</i>	riparian	20 feet	1	5 gallon
Box elder <i>Acer negundo</i> ssp. <i>californica</i>	riparian	20 feet	3	5 gallon
Alder <i>Alnus rhomifolia</i>	Riparian	20 feet	3	5 gallon
Fremont Cottonwood <i>Populus fremontt</i>	Riparian	20 feet	2	5 gallon
Buckeye <i>Aesculus</i>	riparian	20 feet	1	5 gallon
<i>Total Trees (Five Species)</i>			<b>10 trees</b>	
<b>Shrubs (Understory)</b>				
California coffeeberry <i>Rhammus californica</i>	Riparian understory	5 feet	10	Dee-pot or 1 gallon
California rose <i>Rosa californica</i>	Riparian understory	5 feet	25	Dee-pot or 1 gallon
California blackberry <i>Rubus ursnius</i>	Riparian understory	5 feet	25	Dee-pot or 1 gallon
Red willow <i>Salix laevigata</i>	Riparian understory	5 feet	30	Dee-pot or 1 gallon
Snowberry <i>Symphoricarpos albus</i> var. <i>laevigata</i>	Riparian-upland transition	5 feet	12	Dee-pot or 1 gallon
American dogwood <i>Cornus sericea</i> var. <i>seicea</i>	Riparian	5 feet	4	Dee-pot or 1 gallon
Black twinberry <i>Lonicera involucrate</i> var. <i>ledebourii</i>	Riparian	5 feet	10	Dee-pot or 1 gallon
Ninebark <i>Physocarpus capitatus</i>	Riparian understory	5 feet	10	Dee-pot or 1 gallon
<i>Total Shrubs (8 Species)</i>			<b>126 plants</b>	
<b>Herbaceous</b>				
Mugwort <i>Artemisia douglasiana</i>	Riparian	3 feet	30	Liner or supercell
Meadow barley <i>Hordeum branchyantherum</i>	Upland	2 feet	75	Liner or supercell
Creeping wildrye <i>Leymus triticoides</i>	Upland	2 feet	75	Linner or supercell
Yarrow <i>Achillea milefolium</i>	Upland	3 feet	15	Deepot
Santa Barbara sedge <i>Carex barbarae</i>	Riparian	2 feet	15	Liner or supercell
California figwort <i>Scrophularia californica</i> ssp. <i>californica</i>	Riparian	5 feet	5	Liner or supercell
<i>Total Herbaceous (7 Species)</i>			<b>205 plants</b>	

covers approximately 500 square feet would be compensated at a 3:1 canopy replacement, or 1,500 square feet of planted area. At 10 to 20 foot planting centers, this translates into between 5 and 20 planted trees.

- A compensation ratio of 1:1 will be used for shrubs and non-native trees.

Plants will be obtained from a commercial nursery specializing in native plant restoration as noted above. One gallon and five-gallon and fifteen-gallon container stock of the species in **Table 2-1** is typically available with suitable advance ordering from many native plant nurseries.

Planting locations shall be in accordance with the planting plan illustrated in **Figure 2-1**. Deviations from this plan shall be in coordination with the restoration monitor, landscape architect, and the regulatory agencies.

## 2.2.2 Treatment Options

The following discussion describes the potential treatments to be applied upon completion of dam removal activities. The list of treatments is intended to be comprehensive and not all treatments may be used. The specific treatments to be used will ultimately depend upon the type and extent of habitat disturbance.

### 2.2.3 Bank Regrading

Regrading of impacted areas will be implemented immediately upon completion of dam removal. Regrading will done to specifications outlined in the 95% design drawings to achieve the final 2:1 slope. Upon completion, restoration methods will:

- Recontour the impacted area to match the 2:1 bank slope profile and compacted to 90%.

### 2.2.4 Debris Removal

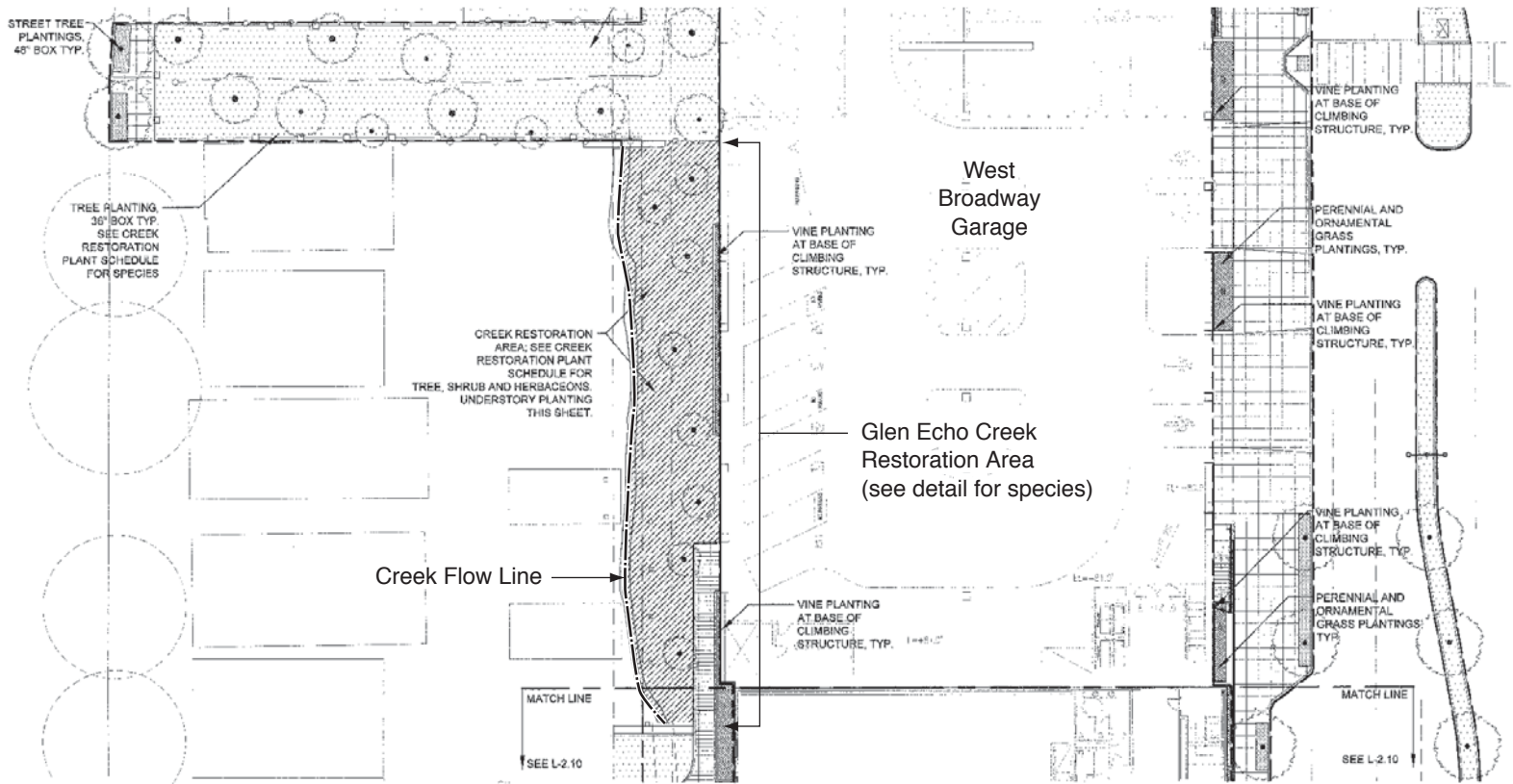
- Remove debris and waste from the project areas. This includes removal of items such as concrete, pipe, broken wood fencing, t-stakes and other debris. All debris and waste shall be removed from the site and properly disposed of properly.
- Erosion control that is no longer necessary as determined by the monitor and Kaiser Permanent, will also be removed, including silt fence, supporting stakes.

### 2.2.5 Weed Eradication

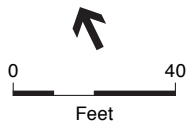
It is anticipated that the site will have a substantial growth of weeds. Elimination of the weeds will require a combination of the following methods.

The restoration monitor will assess the composition of plants growing in disturbed areas to verify that the plants are primarily non-native, and direct removal of the weed accordingly.

- *Grow and kill method:* weeds that have established on the site should be treated during the height of the growth period, prior to setting seeds. This will reduce the reproductive potential of the weed during the following year. Only use of aquatic-safe herbicide treatment is allowed near the creek. Herbicide treatment will be applied by a Licensed



1 GARAGE LANDSCAPE MATERIAL PLAN



CREEK RESTORATION PLANT SCHEDULE:

LEGEND SYMBOL	LATIN NAME	COMMON NAME	SIZE	SPACING	REMARKS
<b>TREES</b>					
	<i>Alnus rhombifolia</i>	Alder	5 gal.	20' o.c.	qty: 3
	<i>Acer macrophyllum</i>	Bigleaf Maple	5 gal.	20' o.c.	qty: 1
	<i>Alnus rhombifolia</i>	Box Elder	5 gal.	20' o.c.	qty: 3
	<i>Populus fremontii</i>	Fremont Cottonwood	5 gal.	20' o.c.	qty: 2
	<i>Asseolus californicus</i>	Buckeye	5 gal.	20' o.c.	qty: 3
<b>SHRUB UNDERSTORY</b>					
	<i>Ribesmaia californica</i>	California coffeeberry	1 gal.	8' o.c.	qty: 10
	<i>Rosa californica</i>	California rose	1 gal.	8' o.c.	qty: 25
	<i>Rubus ursinus</i>	California blackberry	1 gal.	5' o.c.	qty: 25
	<i>Salix lasiolepis</i>	Red Willow	1 gal.	5' o.c.	qty: 30
	<i>Symphoricarpos albus</i> var. <i>laevigatus</i>	Snowberry	1 gal.	5' o.c.	qty: 12
	<i>Cornus sericea</i> ssp. <i>sericea</i>	American dogwood	1 gal.	5' o.c.	qty: 4
	<i>Lonicera involucrata</i> var. <i>ledebourii</i>	Black huckleberry	1 gal.	5' o.c.	qty: 10
	<i>Physocarpus opulifolius</i>	Ninebark	1 gal.	5' o.c.	qty: 10
<b>HERBACEOUS UNDERSTORY</b>					
	<i>Artemisia douglasiana</i>	Mugwort	supercell	3' o.c.	qty: 30
	<i>Hordeum brachyantherum</i>	Meadow barley	supercell	2' o.c.	qty: 75
	<i>Leymus trichoides</i>	Crawling wildrye	supercell	2' o.c.	qty: 75
	<i>Actinoteleium</i>	Farrow	supercell	3' o.c.	qty: 15
	<i>Carex barbinata</i>	Santa Barbara sedge	supercell	2' o.c.	qty: 15
	<i>Scrophularia californica</i> ssp. <i>californica</i>	Castroville figwort	supercell	5' o.c.	qty: 5

PLANTING NOTES:

- FOR TYPICAL SIZE SPACING AND SPECIES FOR 34TH STREET AND BROADWAY AVENUE FRONTAGE PLANTINGS SEE PRELIMINARY PLANT SCHEDULE THIS SHEET AS GENERAL REFERENCE.
- SPACING FOR CREEK RESTORATION IS BASED ON AN AVERAGE. ACTUAL SPACING SHALL BE ADJUSTED IN THE FIELD TO ACCOMMODATE OTHER SPECIES. SOME SPECIES ARE TO BE PLANTED IN CLUSTERS.
- PLANT SPECIES FOR MANILA ACCESS & WEST GARAGE LANDSCAPE ARE SIMILAR TO THOSE INDICATED IN CREEK RESTORATION PLANT SCHEDULE ABOVE. SPACING AND SIZES WILL VARY PER NOTES.
- PROVIDE STAKED LAYOUT OF ALL PLANT LOCATIONS FOR REVIEW BY LANDSCAPE ARCHITECT PRIOR TO PLANTING.

SOURCE: nbj

Kaiser Permanente OMC Replacement Project RRPP . 205085

Figure 2-1  
Creek Restoration Detail

Herbicide Applicator, and shall follow the recommendations of a licensed Pest Control Advisor.

- Following the herbicide treatment, the restoration monitor will determine if dead plant material will be either (a) bagged and removed from the site if they have potentially viable seeds, or (b) cut with hand tools or weed whacker and used as mulch.

If herbicide treatment is not feasible or allowed by Kaiser Permanente, then all weeds will be cut. The restoration monitor will determine whether the cut weeds will be removed or left on-site as mulch.

- Weed control during the establishment and monitoring period is discussed under Herbivore and Weed Control.

## 2.2.6 Fine Grading

Fine grading will occur in and around areas where no vegetation was removed but where soil and other debris may deposit during dam removal activities. Using hand tools and at the direction of the restoration monitor, pull soil deposited around the base of standing trees and redistribute in the disturbed areas. To avoid damaging the fine surface roots, do not scrape below the original soil surface.

## 2.2.7 Erosion Control

Erosion control blankets, straw wattles or other appropriate erosion control methods will be used on slopes and disturbed soils to reduce rain impacts and surface erosion, and to promote vegetation establishment. **Figure 2-2** illustrates the procedures associated with placement of the blankets, which includes removal of rocks and other large clods of material from the soil surface, application of permanent seeding, and placement and anchoring of blankets.

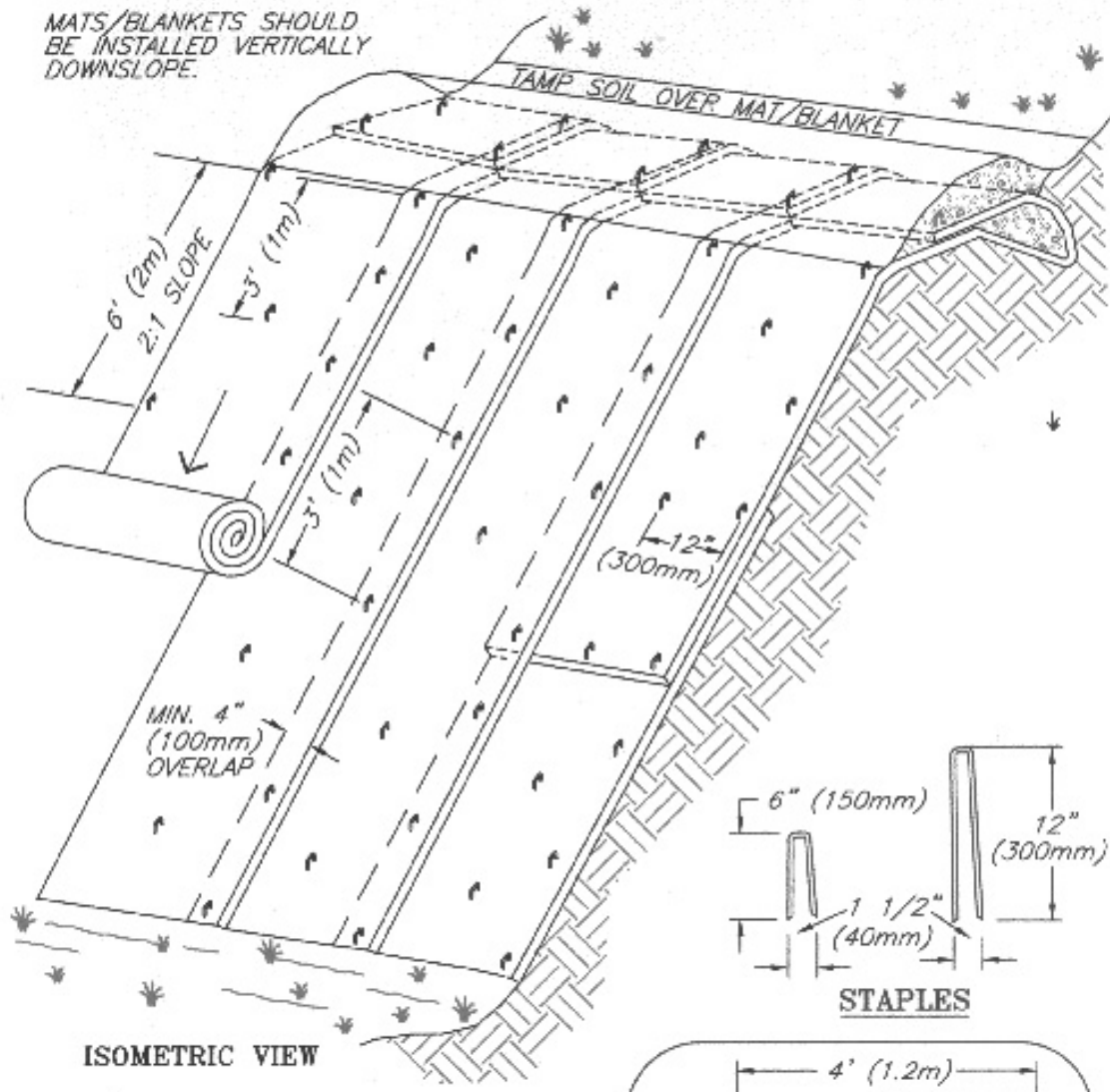
### Erosion Control Mats Specification

Erosion control mats, woven with biodegradable netting, help reduce rain impacts while also providing stability to the seed mixture and slope stabilization (**Figure 2-2**). Matting will be used as an alternative or supplement to rice straw wattles where appropriate. Matting will be placed covering the entire exposed banks, extending from about three feet beyond the top of the graded banks down to the edge of the rice straw wattle or coir log assembly by the edge of the creek channel. Mats produced from jute, coconut fiber, or sterile, weed-free straw are suitable. Non-biodegradable mats will not be used for slope stabilization. Both North American Green (SC 150 BN) and Bon Terra (CF mats) are acceptable mats, and either material may be used for slope stabilization. Mats will be used in combination with hydroseeding and fertilization as described below.

### Rice Straw Wattle Bank Stabilization Specification

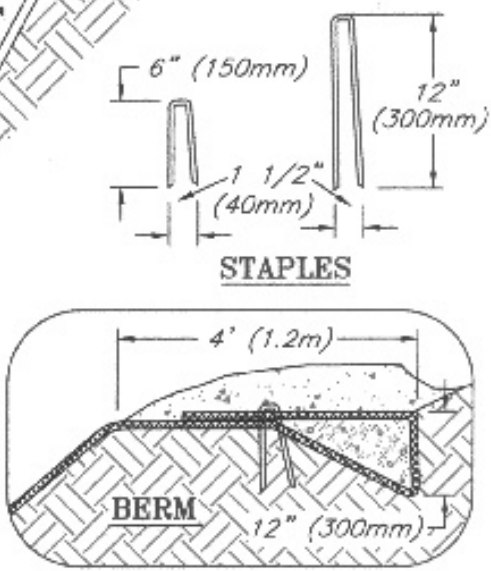
Rice straw wattles (also called coir logs) are cylindrical erosion control devices consisting of sterile rice straw or coconut fibers bound with biodegradable netting (**Figure 2-3**). They simultaneously function as erosion control devices and planting medium. They can be used to effectively stabilize graded or re-contoured slopes, including stream channels, and provide a

substrate for streamside planting. Rice straw wattles will be installed in parallel courses along the contour where directed, and according to the following instructions, and as shown on the Straw Rolls detail.



**ISOMETRIC VIEW**

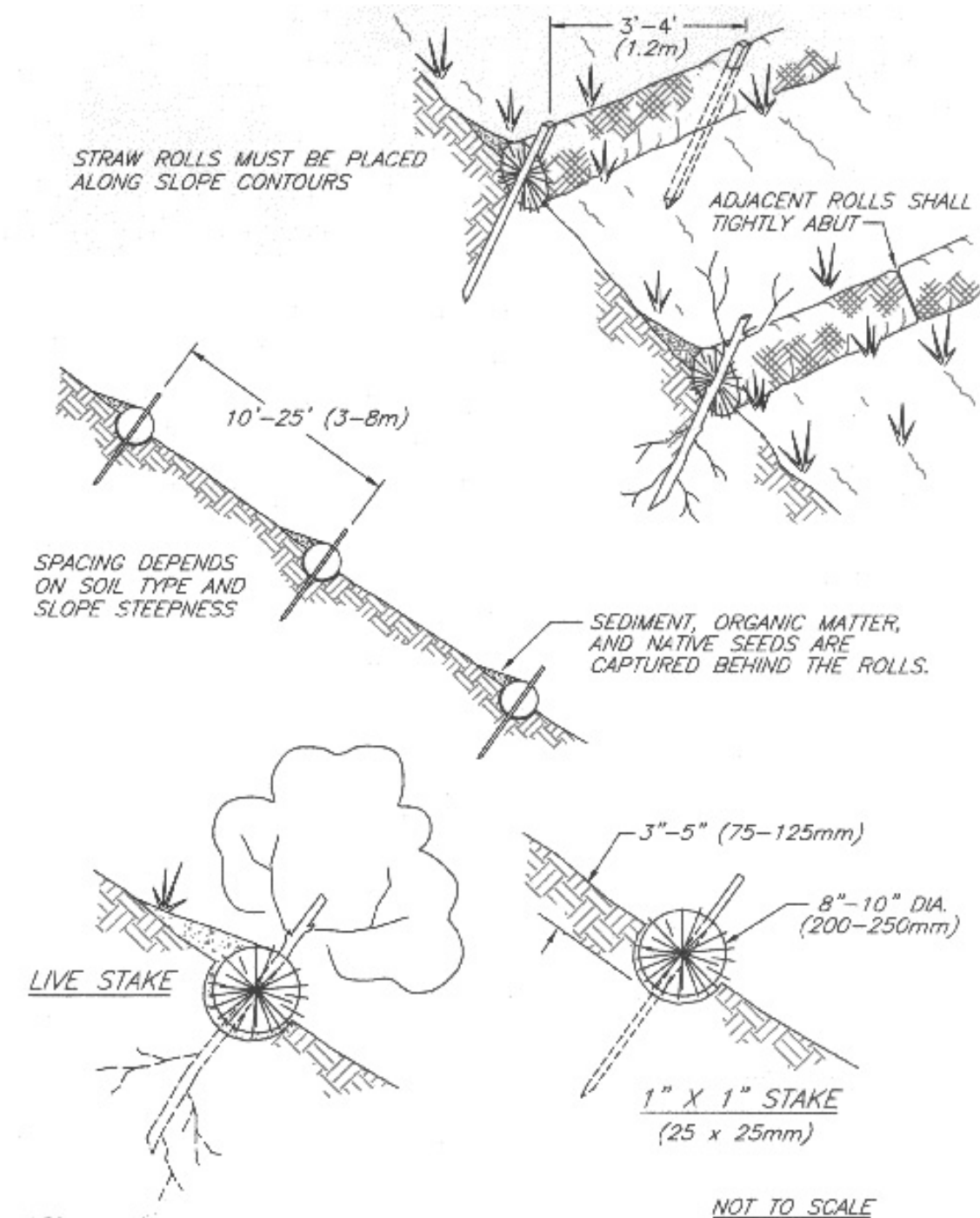
**TYPICAL SLOPE  
SOIL STABILIZATION**



NOT TO SCALE

- NOTES:**
1. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS AND GRASS. MATS/BLANKETS SHALL HAVE GOOD SOIL CONTACT.
  2. APPLY PERMANENT SEEDING BEFORE PLACING BLANKETS.
  3. LAY BLANKETS LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH THE SOIL. DO NOT STRETCH.

**Figure 2-2**  
Erosion Blankets and  
Turf Reinforcement Mats  
Slope Installation



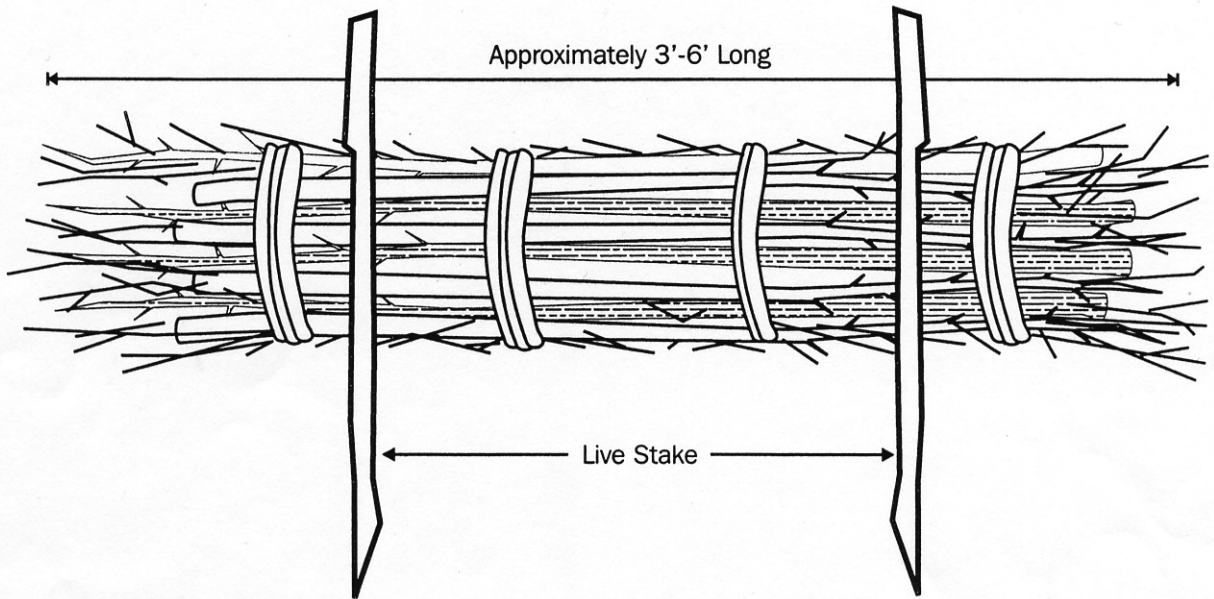
Wattles of 9 inch diameter and 25 feet in length will be placed on the contour, and will be keyed four inches into the soil surface. Parallel rows will be installed where the slope length exceeds 20 feet.

- Place log segments end to end at the base of bank/edge of stream channel; no open space shall occur between logs or where log contacts soil. A shallow trench may be necessary to excavate for this purpose;
- Securely tie log sections together thus forming a continuous barrier; the resulting log barrier should be staked, tied and anchored sufficiently to resist high winter stream flow levels;
- The ends of the log barriers should be buried such that there is a smooth transition with the streambank so as to reduce washout potential.

## Willow Wattles

For bank stabilization within the bed and banks of Glen Echo Creek, willow stakes and wattles will be installed to reduce erosion and establish vegetative cover. Willow stakes will be installed as per the specification described in Section 2.3.7, below. Willow wattles will be installed as per the following specifications:

- Dormant willow stakes will be used to construct wattles and be obtained from the site or other approved location
- Branch and stem cutting used to construct wattles will range in diameter from 3/8 to 1 1/2 inches, with stem lengths from 5 to 9 feet, depending on the location of the application. A mix of older wood and younger wood will be used.
- Willow stems for wattles will be harvested and soaked in cool water. Plants that are removed from water storage will be planted the same day to the extent feasible. The materials will be kept cool, very moist, and covered with burlap at all times until they are installed.
- When placing stems in bundles, butts will be alternated randomly. Biodegradable sisal or jute binding twine will be tied around the bundle at 1-foot intervals. The bundles should be approximately 6-8 inches in diameter and tied. Completed wattles will be 5-13 feet in length, depending on the application (**Figure 2-4**).
- Wattles will be half buried into the slope and angle-cut 2 inch by 4 inch stakes will be driven through the wattle into the slope to secure both sides of the bundles. The stakes will be 24-36 inches in length, depending on the application, and cut diagonally so that they can be driven into the soil to secure the wattles from both sides (**Figure 2-4**). Additional soil will be placed in layers to cover 75 percent of the wattle and then compacted layer by layer to ensure good plant soil contact
- Willow wattles will be installed along the water line on the creek bank where needed to prevent erosion. Wattles will overlap approximately one foot end to end to form a continuous line. Wattles will be watered thoroughly, with additional soil placed around the bundles if necessary to fill any voids.



NOTES:

1. TIES 1' ON CENTER.
2. ASSEMBLE BY ALTERNATING BUTT ENDS  
APPROXIMATELY 3" IN DIAMETER WHEN COMPRESSED.
3. COVER 65% TO 70% OF THE WATTLE WITH SOIL.

## 2.2.8 Hydroseeding and Hydromulching

Project work areas with soils exposed by dam removal activities and grading will be seeded and mulched in a three step process (following site preparation as specified per site): (1) hydraulic application of seed and mulch slurry; (2) application of rice straw covering; and (3) hydraulic application of mulch and soil stabilizer slurry. Application will occur between the end of September and the middle of October, conducting the application as close as possible to, but not after, the beginning of the rainy season. The hydraulic mixture will not be applied when rainfall is anticipated within 24 hours.

The seed blend must have a minimum of three locally native grass species. A maximum of two non-native perennial grass species is acceptable as long as the combined seed count of both species is not more than 25 percent of the total seed mix. Locally native wildflower seeds may be included in the mix. An acceptable seed mixture is presented in **Table 2-2**. Legume seed will be inoculated compatible for use with the specific legume species included in the seed mix. Two pounds of inoculant will be added for every 100 pounds of legume seed in the mix.

The mulch will be produced from natural or recycled fiber (e.g., wood chips, newsprint, etc.) and be free of synthetic materials (e.g., plastic). It will be free of factors that inhibit germination or growth and contain no more than 7 percent ash or 250 parts per million boron. The mulch slurry will be colored with a nontoxic water-soluble green dye to aid in uniform application. The soil stabilizer (tackifier) will be a processed organic adhesive in dry powder form (e.g., M-Binder, Ecotac-Sat, J-Tac).

Hydraulic equipment will be used to provide a uniform application of the seed and mulch slurry using water as a carrying agent. The seed and mulch will be mixed and applied simultaneously. The mix will be conditioned for a minimum of 15 minutes and maximum of 30 minutes before application (minimum conditioning time may vary with mulch manufacturer's specifications; seed should not rest in the water slurry for more than 30 minutes prior to application). Application will not occur when rainfall is anticipated within 24 hours. The mixture will be applied so that no gaps exist between the hydromulch matrix and the soil, and there are no holes greater than one millimeter in the matrix. The slurry will be applied at a rate of 500 pounds of mulch per acre and 21 pounds of seed per acre.

During the germination period the surface should be kept moist at all times. Thereafter, periodic watering may be necessary for seeded areas with insufficient rainfall (watering needs will be evaluated monthly for the first year, per the monitoring schedule).

- Hydroseeding will occur at all project sites within the grassland zone areas of the project.
- Planting of container stock must result in minimum damage to hydroseeded areas by use of single file foot trails to transport hand equipment and plant materials to each planting location.
- Hydroseeding will be applied to the areas that require erosion control methods or for slope stability before other vegetation is installed.
- The hydroseed mix will include species listed in **Table 2-2**.

**TABLE 2-2  
RECOMMENDED HYDROSEED MIX**

<b>Common Name Scientific Name</b>	<b>Seeding Rate (lbs/acre)</b>
Perennial Grass	
Blue wildrye <i>Elymus glaucus</i>	8
California brome <i>Bromus carinatus</i>	12.5
Meadow barley <i>Hordeum brachyantherum</i>	12
Creeping wildrye <i>Leymus triticoides</i>	5
Small-flowered melic <i>Melica imperfecta</i>	5
<b>Subtotal</b>	<b>42.5</b>
Annual grass	
Low barley <i>Hordeum depressum</i>	5
Annual fescue <i>Vulpia microstachys</i>	5
<b>Subtotal</b>	<b>10</b>
Other Herbaceous Species	
Mugwort <i>Artemisia douglasiana</i>	2.5
Willow herb <i>Epilobium ciliatum</i>	2
Sky lupine <i>Lupinus nanus</i>	4
Soft rush <i>Juncus effuses</i>	1.5
<b>Subtotal</b>	<b>10</b>
<b>Total</b>	<b>62.5</b>

## 2.2.9 Plant installation – Trees and Shrubs in Containers

The trees and shrubs will be grown in and planted from container-grown plant stock as described previously in this section. Replacement of trees removed during dam removal activities will be in accordance to the tree survey and at a minimum 3:1 ratio.

- All planting shall occur between October 1st (or the onset of the rainy season, if later) and April 1st to take advantage of winter rains and moist soil conditions.
- Planting layouts will be finalized in the field by the restoration monitor in collaboration with the revegetation contractor and Kaiser Permanente representative. Plant locations and species will be indicated with colored pin flags.
- Planting shall adhere to the minimum spacing requirements as recommended in **Table 2-1**. Quantities of each species at each revegetation site are listed in **Table 2-1**.

- All existing trees in the restoration area will be retained and protected from damage during site preparation and planting implemented as part of this plan. Plants will be arranged naturally and randomly, and will avoid regular spacing and linear arrangement.
- A compensation ratio of 1:1 will be used for shrubs and non-native trees.
- A 3-inch layer of mulch will be placed around each plant that is above the ordinary high water mark, taking care to avoid the wood crown of the plant. Mulch will be chipped bark or arbor mulch, placed in a 6-foot circle around each plant or group of plants with disturbed site soil. The mulch will help retain moisture and will also serve to control weeds around the plants.

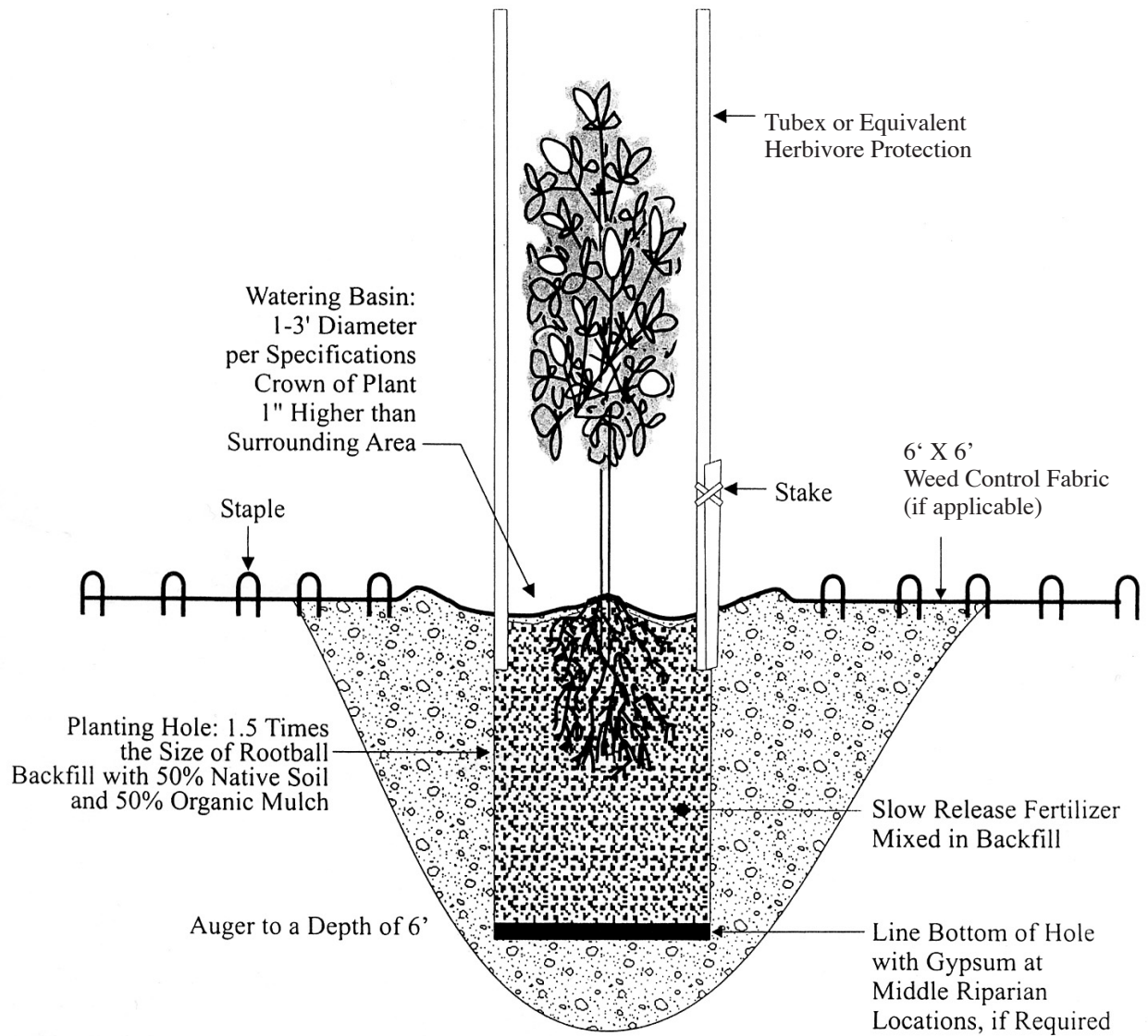
While adjustments in planting layout are possible under direction of the Restoration Monitor, minimum spacing requirements and bank position limitations must be adhered to. At the time of planting, the restoration monitor and the foreman of the planting crew will place flags to denote planting sites for individual plants.

- Planting hole depth for planting trees and shrubs shall be 1½ times deeper than the depth of the root ball; planting hole width shall be twice as wide as the width of the root ball (**Figure 2-5**). Slow release fertilizer tablets will be added to each planting hole 2 inches below the surface. Fertilizer tablets with an analysis of 13-13-13 NPK are recommended and should not be placed in direct contact with the root ball.
- The holes will be backfilled with pulverized soil from the site, maintaining the crown of the plant slightly above the grade of the soil. The top of the rootball and crown of the plant will not be covered with backfill soil, as the plant will settle after watering to meet the surrounding soil grade.
- The plants will be lightly firmed in place by hand, and a three-foot diameter watering basin will be formed around the plant. Each plant will be thoroughly watered-in, filling the basin with clean potable water. The orientation of each plant will be adjusted if necessary.

### 2.2.10 Plant Installation – Willow Stakes or Pole Cuttings

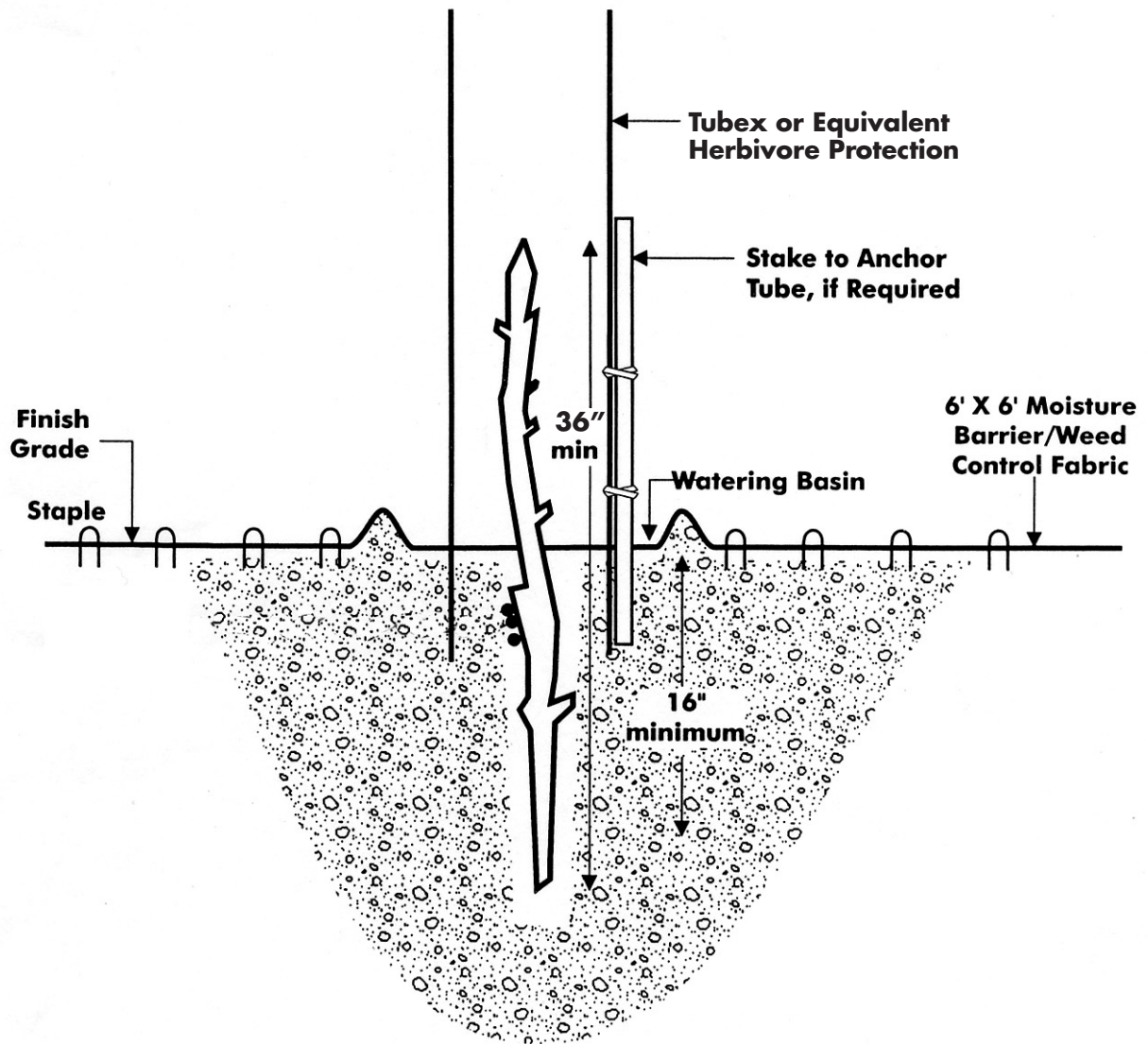
Willows will be used to restore the wetter portions of the project such as along the banks of Alameda Creek or in back water areas near dewatering sites. Cuttings will be taken from a variety of large, healthy shrubs and trees. Willows are dioecious (individuals bear either male or female reproductive structures). Therefore, care will be taken to collect and install cuttings from both male and female plants. At the time of cutting the “shoot” end of the stake should be painted with tree sealant or a 50-50 mix of latex paint and water to prevent desiccation and aid in identifying the shoot end of the stake during installation. The pole cuttings will be planted within 48 hours of cutting; root ends will be submerged in water until planting. It is recommended that a rooting hormone and fungicide be applied to the cutting base and allowed to dry prior to placing in hole.

- Live willow pole cuttings will be used in the riparian planting zone, using methods described and illustrated in **Figure 2-5**.
- Willows planted from pole cuttings must have side branches removed and bark intact.



**PLANTING NOTES:**

1. PLANTING HOLES TO BE DUG ONE AND A HALF TIMES LARGER THAN ROOTBALL.
2. PROVIDE FOUR INCH DOWNSLOPE BERM TO RETAIN WATER ON SLOPES.



**PLANTING NOTES:**

1. PLANTING HOLE TO BE 24" DEEP X 4" WIDE. SCARIFY SIDES OF HOLE.
2. BACKFILL HOLE WITH WATER-SATURATED PULVERIZED NATIVE SOIL.
3. POLE CUTTINGS TO BE ONE-HALF INCH TO TWO INCH DIAMETER CALIPER BY 48 INCHES LONG, BURY MINIMUM OF 30 INCHES IN HOLE.

- Willow pole cuttings should be a minimum of three feet in length, and should be ½ inch to 1½ inches in diameter.
- Willow pole cuttings should be driven into the ground until a maximum of six inches remains above grade. Cuttings should be taken from a variety of large, healthy shrubs and trees.
- Collect and install willow pole cuttings from both male and female plants.
- At the time of cutting willow poles, the shoot, or top end of the pole cutting should be marked with tree sealant or a 50-50 mix of latex paint and water to prevent drying out, and to aid in identifying the shoot end of the pole cutting during installation.
- Willow pole cuttings should be planted within 48 hours of cutting and the root ends kept submerged in water until planting.
- Rooting hormone and fungicide should be applied to the root end and allowed to dry prior to planting.

### 2.2.11 Plant Installation – Herbaceous Plants

Where specified, cattail and tule will be planted from plugs containing rhizomes. Plugs will be collected from adjacent work sites. A minimum of three inches of rhizome mass in addition to the aboveground parts will be collected. The restoration monitor will ensure that collections do not detrimentally reduce the density of the collected species in the donor areas. Plugs will be planted immediately following collection. Rhizomes masses should be kept moist and protected from sunlight and wind from time of collection to time of planting. Planting holes will be dug so that rhizomes are well anchored below the surface and aboveground vegetative parts are exposed. Planting holes will be backfilled with native soil without amendments.

Native perennial grasses, including California brome, purple needlegrass and blue wildrye will be planted where needed. All plugs collected or obtained from a nursery will be kept moist at all times prior to planting.

### 2.2.12 Herbivore and Weed Control

To ensure restoration success and reduce predation the following measures will be implemented:

- Plantings should be protected from browsing by deer and rodents with Vexar tubing or equivalent protection. Tree tubes are available in various sizes to correspond to the size of the plant material. Tubes with UV inhibitors should be used to decrease degradation in sunlight and increase the life of the tube. Tubes should be installed with two 1x2” stakes to hold them upright and prevent seedling or sapling damage in strong winds. For protection from deer they need to be at least three feet above ground.
- Plantings shall be mulched for weed control and to promote water retention. Mulch shall be three inches deep and shall be placed in a minimum area 1.5 times the diameter of the canopy (widest extent of branches). Mulch shall not be placed directly against plant stems

or trunks and shall be maintained until the plants are fully established, as determined by the restoration monitor.

- Weeds that occur in the planting area shall be removed by hand or by hand tools only (electric or gas powered weed-eaters may be used).
- No weeding shall occur outside of areas specified by the restoration monitor.
- Monthly weeding should be done prior to planting, in June through October, to reduce the amount of viable weed seed that is added to the soil.
- During the first year following planting, weeding should be conducted on a monthly basis from February through May, when weed growth peaks. A proactive weeding schedule, instituted early in the monitoring process, will ensure that most weeds are removed before they set seed and before they can grow large enough to pose a serious competitive threat to newly establishing native plantings, thereby reducing future infestations.
- During the first year following planting, weeding will be carried out bi-monthly from June through January, or less frequently, as determined by the restoration monitor. Weeding may not be required in some months.
- For subsequent seasons, an evaluation will be made at the time of monitoring. If it is determined that weeds are a threat to the attainment of performance standards, further weed control shall be implemented at the direction of the restoration monitor.
- All weeded plant materials shall be bagged on-site and disposed of off site in a responsible manner (i.e., at an authorized landfill or recycling-composting center). No weeded materials shall be stored on the site or allowed to spread further.

## 2.2.13 Irrigation

If required, a directed drip irrigation system will be installed to provide the newly planted woody vegetation sufficient water for a minimum of three years or until vegetation becomes established. The system shall be sufficient to provide amounts indicated in **Table 2-3** during typical dry summer weather. Watering periods and amounts during the rainy season will be adjusted according to rainfall amounts. Watering will be accomplished using either a watering truck or by hand watering.

**TABLE 2-3  
IRRIGATION GUIDELINES**

Stock size	Amount	Duration
25 gallon	8-10 gal/hr	2 hours
15 gallon	6-8 gal/hr	1.5 hours
10 gallon	6-8 gal/hr	1 hour
5 gallon	4 gal/hr	1 hour
1 gallon	2 gal/hr	1 hour

- Summer irrigation of revegetation areas will be implemented and irrigation will be supplied during the rest of the year as needed, depending on amounts and frequency of precipitation, and assessment of plant vigor conducted by the restoration monitor.
- If necessary, a temporary irrigation system will be installed at all mitigation sites to provide newly planted vegetation with sufficient water for up to two years following planting. The irrigation system will deliver water directly to new plants, and will not be of the overhead, sprinkler or spray type. Water shall not be delivered from a water truck in the manner of watering streets for dust control.
- The water source shall be either a connection to an existing nearby water source or connection to a water truck. If a nearby water source is used, the appropriate diameter pipe connection to the source will be installed. If water trucks are used, one or more appropriate connections to the different sectors of the restoration area will be specified in the irrigation system design.
- Alternatively, watering may be by hose delivery to each individual plant, either from a hose bib connection to an existing water source nearby or by connection to a water truck.
- Irrigation will be implemented on an as needed basis, from several times per week to once every two weeks depending on average temperatures. Irrigation amounts will be sufficient to promote the establishment of deep root systems so that plants can become independent of irrigation as soon as possible. Irrigation amounts will vary according to planting stock size. **Table 2-3** provides general guideline, which will be modified throughout the monitoring period according to the water requirements of individual plants.
- Irrigation shall be cut back gradually beginning in the third fall and winter season after planting to reduce and eventually eliminate plants from dependency on an artificial water source.

## 2.2.14 Site Protection

- Areas that have been restored will be clearly demarcated to protect the areas during the establishment phase and to prevent damage to the restored areas.
- Vehicular access to the planted and restored areas will be prohibited to avoid damage to plants, to prevent compaction of soil, and to prevent the proliferation of weeds in the restoration area.

## **SECTION 3**

---

# **Monitoring and Reporting**

## **3.1 Baseline Monitoring**

### **3.1.1 Post-construction Baseline Monitoring**

A post-restoration as-built baseline monitoring report will be prepared and submitted to the agencies 60-days from the end of restoration activities. The report will include existing conditions, changes in restoration design, any sites where restoration was not completed and the reasons the site was not restored. This report will set the baseline monitoring and include the following:

- A post-restoration baseline map. The map will include areas that have been restored and location of plants.
- Tag and number all trees and shrubs planted from containers using metal tags. Species, size, condition, height, and crown diameter (for trees only) will be recorded for each individual on a standardized data sheet.
- A Record of general observations regarding plant health and vigor.
- A Map of plant locations (or clusters of the same species) at a level of accuracy that will allow for relocation of individuals during subsequent monitoring.
- Establish photo points to allow future comparison and assessment (see Photo-documentation Section below) of planting conditions; mark these locations on the Baseline Map.

## **3.2 Monitoring Frequency**

Annual monitoring reports will be prepared and submitted to the agencies by December 31 of each monitoring year. Year one will be considered the first full calendar year after the completion of the restoration activities and submittal of the as-built report. The following activities will be conducted during the monitoring years:

### **3.2.1 Year 1**

- During the first year following plant installation, monitor to document wet season conditions in April or May.
- During the first year following plant installation, monitor to document dry season conditions in July or August and ensure appropriate functioning of the irrigation system.

### 3.2.2 Years 2 through 5

- In the second to fifth year after plant installation, monitoring will be conducted once a year in late spring (April-May), when all plants will be fully leafed-out, actively growing and easily identifiable.

## 3.3 Monitoring Methods

### 3.3.1 Photodocumentation

Permanent photo locations will be established during baseline monitoring and identical color photographic scenes will be taken each year. The photos can be compared to qualitatively assess changes in general site conditions as well as vegetative composition, cover, dominance, and structure. The following methods should be employed:

- During the baseline monitoring, establish up to three photo reference points at each location for future photo monitoring. Number each point with a unique identifier. Record locations and headings on as-built drawings, and record detailed written descriptions with distance and direction to permanent, readily identifiable objects.
- Conduct photo monitoring at the same time of year or during the same growth stage (i.e., in full leaf) for the plants being monitored; pictures should be taken at approximately the same time of day.
- Document photographs in the field with the following information: photograph number, photo reference point number, general direction toward object of photograph, reference points, description of surroundings or other comments that might be helpful in future relocation of the site.

### 3.3.2 Monitoring Methods – Percent Cover

Percent cover of shrub species in the revegetated areas will be estimated quantitatively using the line-intercept method.

- Vegetation transects will be established prior to planting using a *stratified random* approach, in which each planting zone is sampled at a density or frequency that is proportional to the amount of area the zone occupies.
- A sufficient number of transects to adequately assess performance of vegetation in all restoration areas will be established within the project reach. The same transects shall be used throughout the monitoring period.
- The distance that the crown of each plant, projected downwards vertically, intercepts the measuring tape will be recorded and all distances for each species added together.
- The percent cover for a species is the cumulative length of intercepts for each species divided by the length of the transect, or tape measure, multiplied by 100.

### 3.3.3 Monitoring Methods – Plant Growth Rates and Overall Health

- Height and crown diameter for each tree will be recorded to assess tree growth rates and overall health.
- Measure height directly or using standard triangulation methods.
- Measure crown diameter in two directions 90 degrees apart; crown area will be estimated using the area formula for an ellipse ( $A = \pi \times R_1 \times R_2$ ). If crown shape is highly irregular, then use other appropriate means to calculate the area.

### 3.3.4 Monitoring Methods – Percent Survival

- Survival of plants will be documented annually, and assessed as a percentage of the total plants in the restoration area. This method will also be applied to each species planted to ensure that the resulting plant community is appropriately diverse.
- Only plants required to be planted as a condition of the CDFG permit (using the specified replacement ratios) will be counted toward the survival criterion of 80 percent. Dead plants in excess of the replacement ratios will not be counted in the calculation of percent survival.

### 3.3.5 Monitoring Methods – Health and Vigor

General health and vigor of all plantings will be recorded during monitoring, including:

- Evidence of stress from excessive or inadequate water;
- Evidence of disease;
- Evidence of browsing or burrowing that is causing loss of plants;
- Evidence of erosion of topsoil or exposure of roots.

## 3.4 Annual Reports

Annual monitoring reports will be submitted each year to the permitting agencies as required. The first year's report will summarize the baseline information as well as the first year monitoring results. Thereafter, annual reports will consist of a summary of information contained in previous reports, as well as a presentation of the current year's results and discussion of any comparisons between years or trends noted.

Annual reports will include, at the minimum, the following information:

- Summary description of the monitoring methods, including data collection and analysis;
- An overview of the restoration effort, including a general discussion of site conditions, changes since previous report, and quantitative statistics (average growth by species and percentiles of cover and survival);

- Analysis of success in relation to performance standards;
- Color photographs of the revegetation areas taken from the same reference points on the ground and standardized with respect to direction, lens type, etc.;
- A map of the area with relevant features;
- Copies of all data sheets employed in the data gathering; and
- A discussion of any corrective actions needed or undertaken (including exotic plant control efforts or replanting).

### **3.5 Monitoring and Reporting Schedule**

Annual reports will be submitted to the permitting agencies by December 31 of each year for five years or as otherwise required by permits and agreements issued for the project.

The monitoring reports will evaluate the success of the project against the performance criteria. Revegetation will be considered successful for any area if, at the end of the fifth monitoring year, 80% of all riparian zone trees and shrubs planted are alive and/or 80% vegetative cover has been achieved in this zone and vegetative cover of 75% has been achieved in the transition and upland zones.

The area around the planting will be kept weed-free for most of each year. Weeding shall be carried out as described above. Plants will be watered regularly during the summer, and other prolonged periods without rainfall, for a period of two years so that plants do not experience prolonged drought stress while establishing adequate root systems. Irrigation levels are to be fine-tuned by the restoration monitor or other qualified persons based on plant requirements.

During the first year after implementation of restoration actions, all restoration areas will be inspected for significant erosion or instability prior to the storm season and then monthly during the season from October to May. Any identified unstable areas will require appropriate erosion control measures (e.g., netting, vegetation, silt fencing, straw, etc.). During the second year, the restoration area will be inspected for significant erosion prior to the storm season and once during the storm season. Appropriate erosion control measures will be applied to any identified unstable areas. During the third year, an erosion inspection will be carried out prior to the start of the storm season with erosion control measures applied to unstable areas.

The performance criteria will provide a basis for determining the need for possible remedial (corrective) actions. However, given the potential vagaries of weather patterns and other environmental conditions beyond the control of the project, failure to attain one or more of the performance criteria will not necessarily imply that the mitigation has failed. Rather, the entire set of monitoring results will provide a basis for discussion with regulatory agencies as to whether remedial actions are warranted. Despite failure to attain one or more specific performance criteria, monitoring results may suggest that the mitigated areas are developing properly, overall performance goals are being met, and that no remedial intervention would be warranted. Most

importantly the performance criteria are intended to be used and interpreted based on professional judgment of the monitoring biologists as well as regulatory agency staff.

During the five year monitoring period the success of the restoration effort shall be evaluated using standard ecological methods to assess growth and development of plant and habitat, and to compare it with the specified performance criteria.

Reference sites will be used, where feasible and necessary, to provide a means of realistically assessing performance results based on actual functioning systems. Reference sites should be used for restored drainages.

## SECTION 4

---

# Performance Criteria

The performance criteria will provide a basis for determining the need for possible remedial (corrective) actions. However, because weather patterns and other environmental conditions are beyond the control of Kaiser Permanente, failure to attain one or more of the performance criteria will not necessarily imply that the restoration has failed. Rather, the entire set of monitoring results will provide a basis for discussion with regulatory agencies as to whether remedial actions are warranted. Despite failure to attain one or more specific performance criteria, monitoring results may suggest that the mitigated areas are developing properly, overall performance goals are being met, and that no remedial intervention would be warranted. Most importantly the performance criteria are intended to be used and interpreted based on professional judgment of the monitoring biologists as well as regulatory agency staff.

During the monitoring period the success of the restoration effort shall be evaluated using standard ecological methods to assess growth and development of plant and habitat, and to compare it with the specified performance criteria.

### 4.1 Vegetation

Expected vegetation trends during the first one to two years following restoration include colonization by weeds and invasive species. The presence of invasive plants will be noted and appropriate control measures will be taken as part of the restoration plan.

The following criteria apply to requiring general revegetation restoration:

- At least 80% survival of plants of each species installed (limited to those plants required to be planted according to the replacement ratios);
- 75% cover of desirable species (i.e., not including weeds; limited to those plants required to be planted according to the replacement ratios);
- Absence of substantial cover of invasive species;
- No excessive rills, gullies or other erosion features are present within revegetation areas for each monitoring year;
- Properly functioning irrigation system (if necessary) in years one and two; and
- Survival and growth, without artificial irrigation or other supplemental water, of installed plants from years three through five.

Plants replacing individuals from the original installation that have died over the course of the monitoring period shall be monitored subject to the same criteria as the original installation for a period of five years from their date of planting.

Over planting to optimize survival percentage is permissible; however survival rate will be based on number of trees required, as specified in permits and agreements issued for the project.

## 4.2 Hydrology

The restored area will be evaluated for proper hydrologic function. Observations of rills, slumps or other erosion features will be noted and discussed in annual monitoring reports. Visual observations will also be made for evidence of increased sedimentation within the project reach.

### 4.2.1 Riparian Revegetation

The primary performance goal for restoration of Glen Echo Creek is for these areas to establish sufficient native riparian vegetation to allow for long-term succession toward increased riparian habitat quality within the daylighted project reach.

If monitoring suggests that performance criteria will not be met in accordance to the time frames and standards outlined in this RRPP or in permits and agreements issued for the project, then corrective actions will be implemented.

- If a portion of the mitigation plan fails to meet the specified criteria, Kaiser Permanente shall implement additional measures as approved by the appropriate agencies including the Corps, CDFG, RWQCB and the City of Oakland. Additional measures may include, but not necessarily limited to re-planting, monitoring, and maintenance as described in this plan until the restoration goals and performance criteria are achieved.
- Following site surveys during the monitoring period, corrective actions will be taken, if necessary, to correct deficiencies in the establishment of the revegetated area. An analysis of the cause of site failures will be made and remedial actions taken to remedy the problem if a performance criteria or final criteria is not met. The regulatory agencies and Kaiser Permanente will be notified by memorandum if any contingency maintenance measures are undertaken. Otherwise, implemented contingency measures will be discussed in the annual monitoring reports.
- Replace dead plants during fall (after October 15 or the onset of the rainy season, whichever comes first) of the year in which they died. If plants die between October 15 and December 31, replace them as soon as practicable to take advantage of winter rains.

Following installation, the contractor hired by Kaiser Permanente will be responsible for replacing any trees that die during the first winter, through the time that they leaf out in the spring. After that period, Kaiser Permanente will be responsible for replacing all other plants, as well as trees after the first spring following the initial planting.

# SECTION 5

---

## Contingency Measures

### 5.1 Introduction

If monitoring indicates that the performance criteria will not be met within the time frames and standards outlined in this RRPP or in permits and agreements issued for the project, then corrective actions will be implemented.

- If a portion of the RRPP fails to meet the specified criteria, Kaiser Permanente shall implement additional measures as approved by the appropriate agencies including Kaiser Permanente, including but not necessarily limited to re-planting, monitoring, and maintenance as described in this plan until the restoration goals and performance criteria are achieved.
- Following site surveys during the monitoring period, corrective actions will be taken, if necessary, to correct deficiencies in the establishment of the revegetated area. An analysis of the cause of site failures will be made and remedial actions taken to remedy the problem if performance criteria or final criteria are not met. Kaiser Permanente and regulatory agencies will be notified by memorandum if any contingency maintenance measures are undertaken. Otherwise, implemented contingency measures will be discussed in the annual monitoring reports.
- Replace dead plants during fall (after October 15 or the onset of the rainy season, whichever comes first) of the year in which they died. If plants die between October 15 and December 31, replace them as soon as practicable to take advantage of winter rains.

Require from the plant installation contractor a performance bond of six months to ensure survival and vigor of installed plants. Following installation, the contractor will be responsible for replacing any plants that die during the first winter and spring following planting that are not replaced through natural recruitment and establishment. After the contractor is released from the bond, Kaiser Permanente will be responsible for replacing all plants after the first spring following the initial planting.

### 5.2 Range of Contingency Measures

In the event the restored areas do not meet success criteria as outlined in this document, contingency measures will need to be implemented to maintain regulatory compliance. Contingency measures may include on-site remediation restored areas and providing additional restoration as mitigation as directed by the regulatory agencies.

## 5.2.1 On-site Remediation

On-site remediation would occur if anticipated plant survival and other success criteria were not met during any point in the monitoring period as described in this document.

Remedial actions can also include reseeded or replanting of restored habitats if it determined that the vegetation component does not meet and is unlikely to meet the vegetation component described in the regulatory permits and environmental documents prepared for the project.

The removal and/or eradication of non-native vegetation from the restoration site may be needed as an on-site remediation measure. The control of undesirable species such as yellow-star thistle, bristly ox tongue would serve to improve habitat quality within all habitats, including habitat for special status wildlife species.

## 5.2.2 Additional On-site Mitigation

Additional unimproved portions of the on-site drainage channel, particularly downstream reaches that are accessible to cattle, may additionally be considered as restoration/compensation sites if the initial site proves inappropriate or does not meet fully meet the stated performance criteria. The process of providing additional on-site mitigation will proceed essentially as outlined in this plan. The steps to this process are outlined below.

- The location of additional mitigation sites will be identified, either upstream or downstream of the primary restoration area.
- The selected sites will be evaluated to identify whether the soils and hydrology appear appropriate, and if additional soils examination is deemed necessary.
- Additional compensation wetlands will be examined for their ability to meet specific restoration goals and objectives, for example, their ability to support planted vegetation.
- A draft layout plan and restoration plan will be developed that shows the location and outline of the restoration area, and the proposed restoration activities.
- The draft compensation plan will be submitted to regulatory agencies for review and comments, and revised as necessary.
- The mitigation project will be implemented.

## 5.3 Initiating Procedures

Should the proposed restoration efforts not meet the performance criteria stated in this plan, a request to conducted additional remedial work (e.g., grading, soil addition, or seeding) will be submitted to the regulatory agencies for review. Before contingency measures are undertaken, the source of the substandard functioning will be identified and appropriate corrective actions will be taken. This may result in the resolution of the improperly functioning component and successful site functioning.

## 5.4 Responsible Parties

Contingency remediation activities in the restored areas will be the responsibility of Kaiser Permanente.

## 5.5 Review of Performance

Kaiser Permanente will notify the regulatory agencies that it has completed the remedial work within six weeks of the completion of remediation activities. As-built plans for the remedial action will be submitted by June 15 of the following year. Subsequent notification of progress will be provided in the annual monitoring reports submitted as part of the regular site monitoring activities. When the agencies determine that the restoration and any contingency actions are successful, they will notify Kaiser Permanente and confirm that their obligation has been met. At this time Kaiser Permanente will be released from further obligation provided that the conditions in the created feature meet or exceed the success criteria and all required monitoring reports have been submitted and accepted by the regulatory agencies.

## 5.6 Notification of Completion

Kaiser Permanente will notify the regulatory agencies in writing that it has implemented the proposed restoration activities within six weeks of the completion of work. Notice will also be given of completion of this restoration plan via transmittal of the final monitoring report.

Some departures are possible and the applicants reserve the right to modify plans and specifications to adjust to unanticipated subsurface conditions. As-built plans may therefore vary slightly from the pre-restoration and construction plans, but any changes made during construction will be made in response to unanticipated conditions and will be undertaken solely to increase the probability of successful plan implementation.

At the end of the fifth year of the monitoring period, Kaiser Permanente will arrange a meeting with the agencies to assess needs for additional site monitoring.

## 5.7 Agency Confirmation

Kaiser Permanente will be considered released from any further responsibilities for mitigation upon confirmation in writing from the regulatory agencies. Kaiser Permanente will be released from further obligation provided that the conditions the project site meet or exceed the success criteria and all required annual reports have been submitted and accepted by the agencies.

If the performance criteria are not fully met by the fifth year (i.e., some component of the restoration project is unsuccessful), negotiation with the agencies will be initiated to determine the need for further compensation. The agencies will retain the right to approve or deny any alternative mitigation programs offered in lieu of the present mitigation program.