

Biotic Resources Group

Biotic Assessments ♦ Resource Management ♦ Permitting

Berryessa Asphalt Recycling Plant Riparian Revegetation Project

Year 4 (2009) Monitoring Report



Prepared for:

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BERRYESSA ASPHALT RECYCLING PLANT RIPARIAN REVEGETATION PROJECT

YEAR 4 (2009) MONITORING REPORT

INTRODUCTION

The Berryessa Asphalt Plant is located in the City of San Jose, along Berryessa Road between Highway 101 and Coyote Creek (Figure 1). The Riparian Revegetation Site encompasses approximately 20,400 square feet (0.468 acre) and provides riparian mitigation plantings for Granite Rock Company's recycling center. Development of the recycling project (e.g., storm drain outlet into Coyote Creek and future recycling activities adjacent to the creek) necessitated riparian mitigation activities pursuant to the requirements of the project's Conditions of Approval (City of San Jose) and regulatory agency permits (i.e., California Department of Fish and Game [CDFG] and California Regional Water Quality Control Board [RWQCB]).

A Revegetation Plan was prepared for the project that identified the activities necessary for the establishment of riparian woodland adjacent to the recycling facility and Coyote Creek, in conformance to the approved *Conceptual Landscape Plan* (Drawing No. 22199P01-104, Thomas Reid Associates, Sept. 2004). The revegetation area is located in a 30-foot wide previously disturbed area where the revegetation will increase the riparian habitat values of Coyote Creek. All existing wetland and riparian habitat along Coyote Creek were to be retained in their existing state, except for the removal of invasive non-native plant species (i.e., giant reed, *Arundo donax*). The revegetation area is located in an approximately 30-foot wide band extending outward from the existing riparian woodland (*Berryessa Asphalt Recycling Plant Riparian Revegetation Project – Year 1 As-Built Conditions Report*, Biotic Resources Group, December 2005).

Pursuant to these plans and permit conditions, the Year 4 (2009) condition of the revegetation area (i.e., status of plants) was documented. The result of this monitoring is described in this report.

SUMMARY OF PROJECT PERMITS AND REQUIREMENTS BY AGENCY

The projects revegetation requirements are derived from the City of San Jose's and other regulatory agencies permit conditions and the need to create self-sustaining natural habitats within the projects 5-year reporting schedule. The maintenance requirements follow those outlined in the revegetation plan.

Specific revegetation plan goals include:

1. Establish mitigation plantings within a 0.468-acre area along the top-of-bank of Coyote Creek.
2. Utilize native plant materials collected from the Coyote Creek watershed.
3. Utilize an irrigation system during the plant establishment period (i.e., first 3 years).
4. Implement periodic weed control to benefit the mitigation planting area.
5. Maintain a minimum 80% survival rate of all container stock and 60% survival of willow and cottonwood cuttings during the first three years, replacing dead plants if survival rates fall below this performance standard.
6. Establish four photo stations to document progress of the revegetation.
7. Document the progress of the revegetation over a five-year period by monitoring plant survival, health, and vigor, as well as site maintenance.

8. Submit annual reports to City of San Jose, CDFG, and RWQCB by December 31 of each monitoring year.

The monitoring program for the revegetation areas is designed to ensure project compliance with applicable regulatory permits and conditions. This is to be accomplished by initiating a 3-year plant establishment maintenance program such that plant survival rates are maximized and desired habitat features are achieved. The program also includes implementation of a 2-year post-establishment period maintenance program, which also maximizes the potential for long-term plant survival and habitat features. The revegetation maintenance program includes the implementation of remedial actions on a yearly basis if plantings fail to meet performance standards. The success of the maintenance and management program are to be documented by implementing a 5-year monitoring program that documents the status of the habitat areas and reports the findings to regulatory agencies on a yearly basis.

YEAR 4 (2009) MONITORING

Native riparian plantings were installed within the designated revegetation area in October and November 2005. Central Coast Wilds, a landscape contractor, installed container plants (trees and shrubs) and cuttings of willow and cottonwood within the revegetation area as well as additional plantings around a previously installed storm drain outfall. A list of the plants specified in the Revegetation Plan is presented in Table 1. Replacement plantings were installed on site in winter 2007. In addition to the installation of two blue elderberry (*Sambucus mexicana*) plants required to meet Year 2 success criteria, additional plants were installed: five blue elderberry, six California rose (*Rosa californica*), six box elder (*Acer negundo*), and five California blackberry (*Rubus ursinus*), and three California buckeye (*Aesculus californica*).

Table 1. As-Built Conditions for Riparian Revegetation Site (2005)

Common Name	Scientific Name	Size of Propagule Installed	Quantity Specified in Revegetation Plan
Box Elder	<i>Acer negundo</i>	1-gallon	10
Fremont Cottonwood	<i>Populus fremontii</i>	Cutting	15
Willow	<i>Salix sp.</i>	Cutting	14
Blue Elderberry	<i>Sambucus mexicana</i>	1-gallon	12
California Blackberry	<i>Rubus ursinus</i>	1-gallon	20
California Rose	<i>Rosa californica</i>	1-gallon	20
Total			91

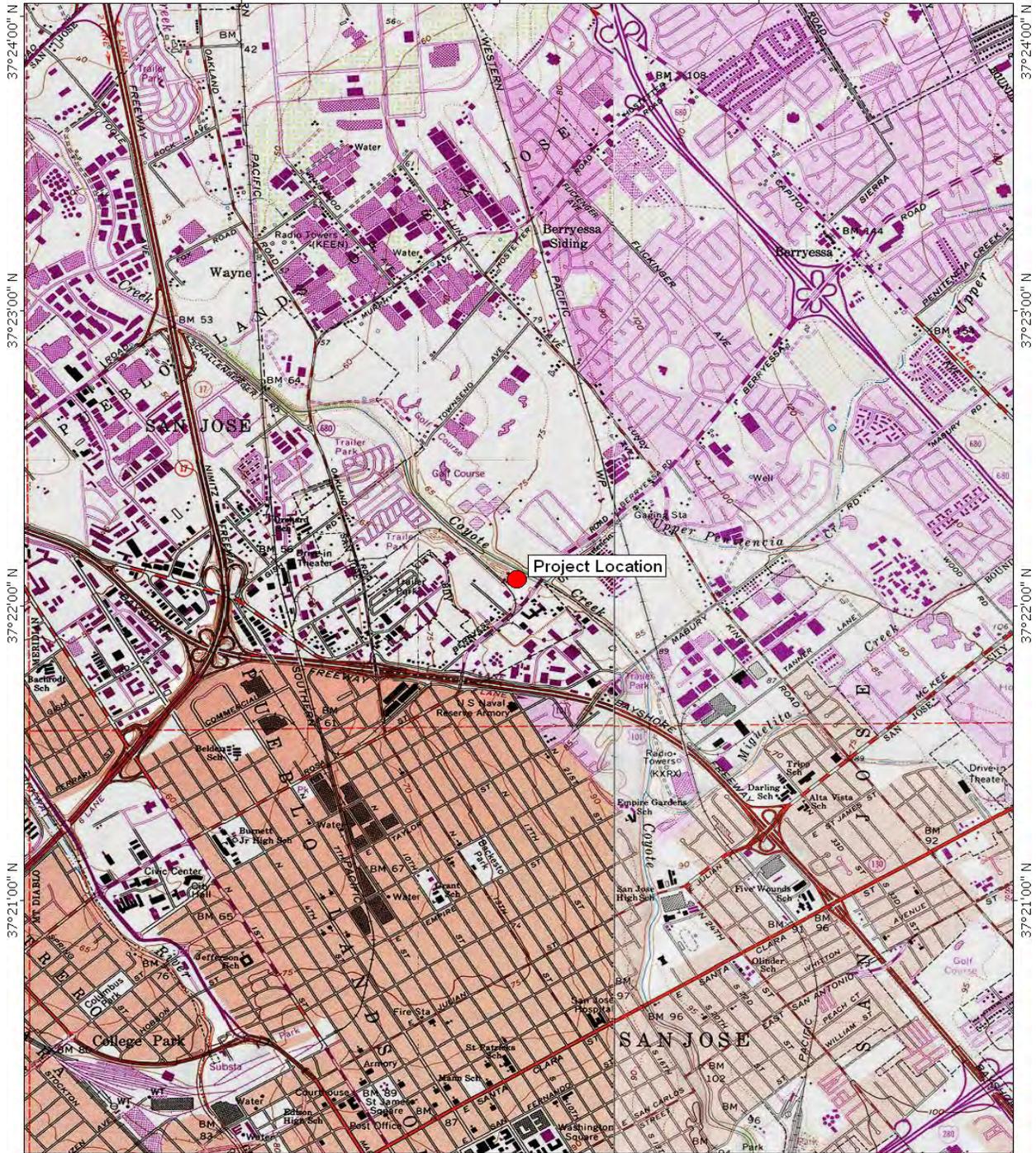
Methodology

Kathleen Lyons of the Biotic Resources Group documented the Year 4 condition of the riparian mitigation area on November 19, 2009 and the site's conformance to requirements of the *Revegetation Plan*.

Monitoring tasks included an evaluation of environmental features of the area, such as the presence of surface erosion, presence of invasive, non-native plant species, and human disturbances. The mitigation area was also evaluated as to site maintenance, such as supplemental irrigation system and weeding.

The monitoring session documented plant survival of all installed plants, as well as each plants health and vigor (i.e., presence of chlorosis, limb dieback, drought stress). The rating system used for plant health and vigor is listed on Table 2. Natural recruitment of native plant species was also noted.

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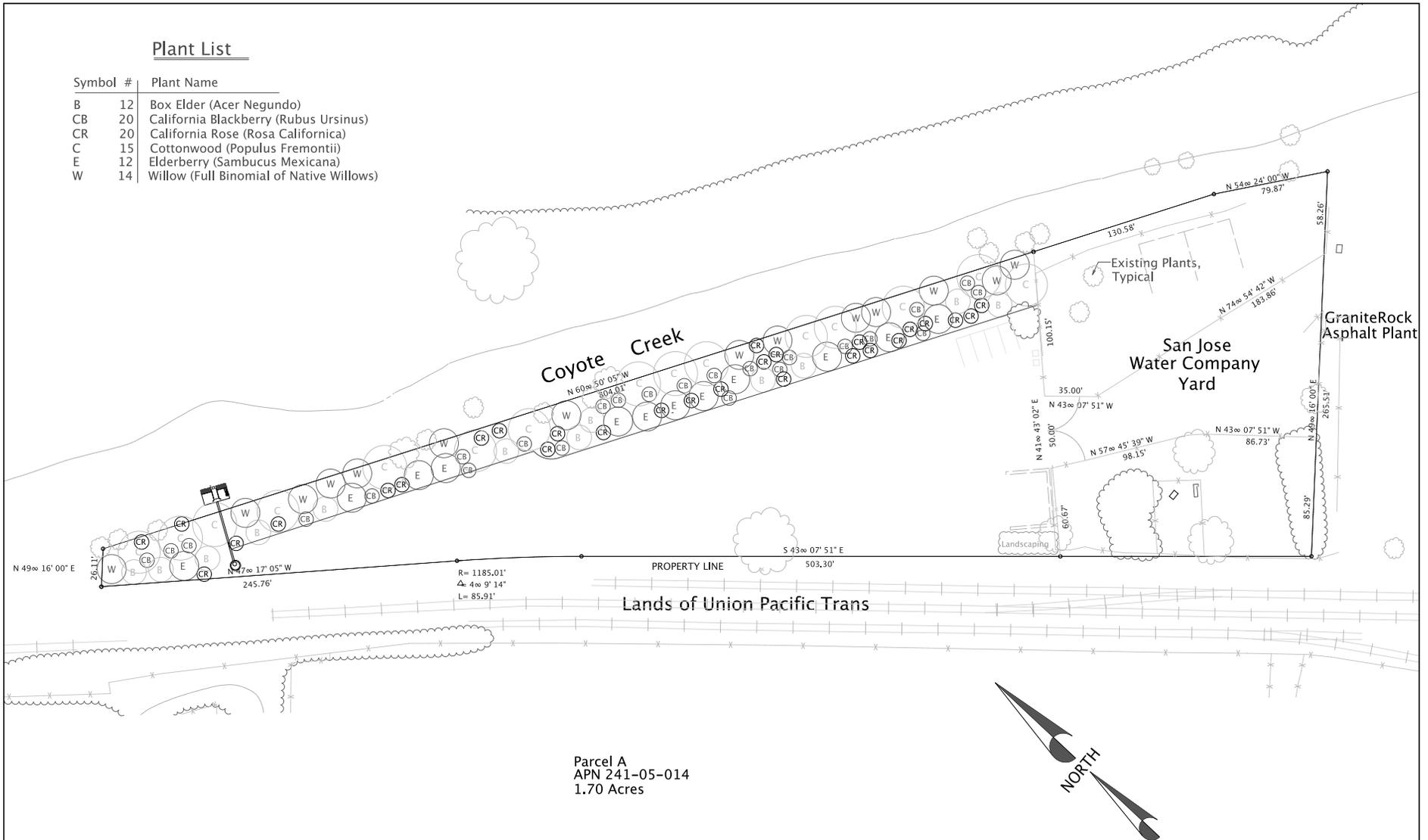
0 1000 FEET 0 500 1000 METERS 1 MILE
 Printed from TOPO! ©2001 National Geographic Holdings (www.topo.com)

Base Map: USGS Topographic Map, San Jose

<p>Biotic Resources Group 2551 S. Rodeo Gulch Road #12 ♦ Soquel, CA 95073 (831) 476-4803 ♦ brg@cruzio.com</p>	<p>Berryessa Asphalt Recycling Plant Riparian Revegetation Area</p> <p>Location Map</p>	<p>Figure 1 12/09</p>
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Plant List

Symbol #	Plant Name
B 12	Box Elder (Acer Negundo)
CB 20	California Blackberry (Rubus Ursinus)
CR 20	California Rose (Rosa Californica)
C 15	Cottonwood (Populus Fremontii)
E 12	Elderberry (Sambucus Mexicana)
W 14	Willow (Full Binomial of Native Willows)



Source: Thomas Reid Associates, 9/04

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BERRYESSA ASPHALT RECYCLING PLANT
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Figure 2
 12/09
 220-03

Table 2. Plant Health and Vigor Rating System

Code	Rating	Health Characteristics	Vigor Characteristics
4	Excellent	75-100% healthy foliage	Vigorous new growth observed throughout plant
3	Good	50-74% healthy foliage	Vigorous new growth observed only at terminal bud
2	Fair	25-49% healthy foliage	No new growth evident
1	Poor	0-24% healthy foliage	Stem dieback observed

Results

The November monitoring was conducted approximately four years after the initial plantings were installed; 105 planting sites were documented to contain live trees or shrubs.

Container Stock Plants

Box elder, blue elderberry, California buckeye, California blackberry, California rose, and snowberry plants were installed as container stock. The *Revegetation Plan* required the installation of 62 container stock trees and shrubs, with the requirement that 50 plants be alive and healthy each year (80% survival rate). At the November 2009 monitoring, the site was found to support 70 container stock trees and shrubs. The number of surviving container stock plants exceeds the required 80% survival performance standard (50 plants) due to additional plantings installed by Granite Rock in 2005 and 2007.

Pole Cuttings

Willows and Fremont cottonwoods were installed on site as dormant pole cuttings. The *Revegetation Plan* specified installation of 29 cuttings, with the requirements that 17 plants be alive and healthy each year (60% survival rate). As of November 2009, the site supports 35 willow and cottonwood pole cuttings. The additional plants reflect natural recruitment of willows and cottonwoods within the mitigation area. The number of surviving willow and cottonwood pole cuttings exceeds the 60% survival performance standard.

Plant Height and Vigor

Average tree heights ranged from 1.25 feet (California buckeye) to 9.0 feet for Fremont cottonwood. The tallest trees are cottonwoods (range in height from 3.0 feet to 23 feet) and willow (range in height from 5 feet to 15 feet). Box elders range in height from 3 feet to 11 feet, with the average height of 6.9 feet. Shrub heights range from 0.5 feet (California blackberry) to 5.5 (California rose). Plant vigor and health ratings ranged from a low of 2.9 (fair vigor and health) for blue elderberry (due to stem dieback on a few trees) to a high of 4.0 (excellent vigor and health) for California buckeye, California blackberry, and snowberry.

The Year 4 monitoring results are presented in Table 3. The trend in plant height, in feet by species, from Year 1 (2006) to Year 4 (2009) is depicted in Figure 3. The average plant height for all installed plantings increased in 2009. The average height of all Fremont cottonwood declined slightly in 2009 when volunteer plantings are included in the height data. A 4-year old Fremont cottonwood which is over 15 feet tall is depicted in Figure 4.

Table 3. Year 4 (2009) Plant Survival Data within Riparian Mitigation Area

Plant Species	Number of Plants Specified in <i>Revegetation Plan</i>	Number of Plants Alive 11/09*	Percent Survival in Year 4	Average Vigor/Health	Average Height and Range (Feet)
Trees					
Box Elder	10	7	70%	3.6	6.9 (3-11)
Fremont Cottonwood	15	20	100%*	3.7	9.0 (3.0-23)
Willow	14	15	100%*	3.9	8.9 (5-15)
Blue Elderberry	12	9	75%	2.9	3.3 (0.5-7.25)
California Buckeye	0	1	-	4.0	1.25
Subtotal	51	52	100%	-	-
Shrubs					
California Blackberry	20	13	65%	4.0	1.2 (0.5-3.0)
California Rose	20	39	100%*	3.9	3.6 (1.5-5.5)
Snowberry	0	1	-	4.0	3.5
Subtotal	40	53	100%	-	-
TOTAL	91	105	100%*	-	-

* Reflects survival of species over-planted in 2005, replacement plantings in December 2007, and volunteer recruitment of native species observed in November 2009.

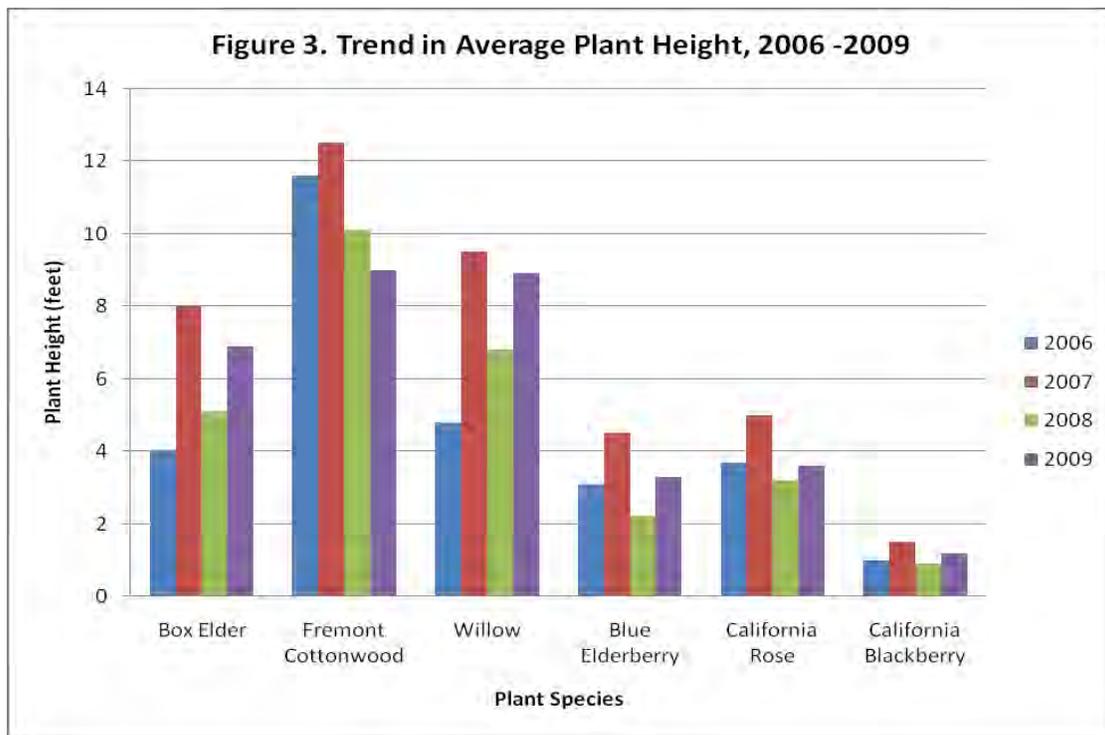




Figure 4. Fremont cottonwood exceeding 15 feet tall at Year 4, November 2009.

Some weeds were noted in and around the planting basins. White sweet clover, a non-native weed, was observed in the mitigation area in November 2009; however, the growth of this species was controlled by Granite Rock personnel in December 2009 (M. Sapia, pers, comm., December 2009). Patches of giant reed (*Arundo donax*), an invasive plant species growing within the adjacent riparian corridor, was observed within the mitigation area during the November 2009 inspection. Granite Rock personnel removed these plants in December 2009 (M. Sapia, pers, comm., December 2009).

Natural recruitment of native trees and shrubs was observed within the mitigation area. Willow and cottonwood saplings have naturally established in the swale area and coyote brush shrubs are establishing in other areas of the site. California rose plants are spreading in the swale area, as evidence by new sucker growth.

The outer (western) edge of the mitigation area was fenced with a wooden fence and no human disturbances were noted in the mitigation area.

Photo Stations

Four permanent photo stations were established as part of the As-Built Conditions monitoring. The stations are located at the northern and southern ends of the mitigation area (looking south and north, respectively) and two stations are located in the mid section of the mitigation area, with views to the southwest and northeast. These photo stations, documenting the Year 0 (as-built) and Year 4 condition of the site are portrayed in Figures 5-8.

Photo Station 1



Figure 5A. Photo Station #1, taken from southern end of revegetation area, looking northward along the top edge of Coyote Creek, December 2005.

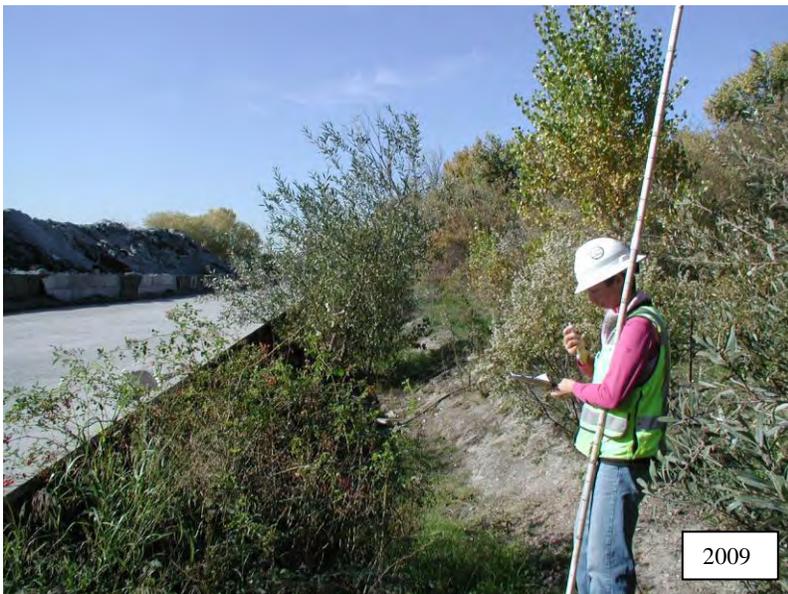


Figure 5B. Photo Station #1, taken from southern end of revegetation area, looking northward along the top edge of Coyote Creek, November 2009.

Photo Station 2



Figure 6A. Photo Station #2, taken from mid section of revegetation area, looking eastward toward top edge of Coyote Creek, December 2005.



Figure 6B. Photo Station #2, looking eastward along top edge of Coyote Creek, November 2009.

Photo Station 3



Figure 7A. Photo Station #3, taken from mid section of revegetation area, looking southward along the top edge of Coyote Creek, December 2005.



Figure 7B. Photo Station #3, looking southward along the top edge of Coyote Creek, November 2009.

Photo Station 4



Figure 8A. Photo Station #4, taken from northern end of revegetation area, looking southward along the top edge of Coyote Creek, December 2005.



Figure 8A. Photo Station #4, looking southward along the top edge of Coyote Creek, November 2009.

CONCLUSIONS AND RECOMMENDATIONS

According to the mitigation plan for the project, Granite Rock is responsible for 80% survival of container stock trees and shrubs and 60% survival of willow and cottonwood pole cuttings. As per the data collected in November 2009 (Year 4) the project meets this performance standard. Site maintenance, such as weeding and supplemental irrigation, was adequate to control invasive weeds and to promote good health of the plantings.

RECOMMENDATIONS FOR YEAR 5 (2010)

Revegetation Area Maintenance

The riparian plantings no longer require supplemental irrigation; however, if there is an unseasonal drought in 2010, the drip system could be activated to ensure plant growth and survival.

The revegetation area should continue to be weeded to reduce competition. Weeding should be focused on the tasks:

1. Remove non-native plant species growing with the planting basins of installed trees and shrubs
2. Remove any patches of giant reed that sprout within the mitigation area.
3. Weed-whip occurrences of white sweet clover that grow between the installed plants, taking care to avoid injury to installed trees and shrubs and naturally establishing native plants.

Although the mitigation site is meeting its performance standards, there are some open areas that could benefit from natural recruitment of native trees or shrubs such that a continuous canopy of plant cover can be achieved in the future. To encourage natural recruitment of plants, Granite Rock personnel could elect to spread cut stems of coyote brush (those containing seed/seed stalks) on the ground to encourage natural recruitment of shrubs within these open areas. In addition, the limbs of the fallen willows and cottonwoods should be retained on site to create microhabitats that would be conducive to natural recruitment of native plants.

Although not needed to meet plant survival rates, empty planting spots along the fence could be planted with dormant willow or cottonwood cuttings. This would increase plant cover in these open areas. Cuttings should be installed when the plants are dormant, which is typically between December 15 and January 15.

Volunteer recruitment of willow, cottonwood, and coyote brush should be encouraged. All existing volunteer shrubs and trees should be retained, even those that are growing in close proximity to planted trees and shrubs. California blackberry plants should be allowed to spread their stems.

Monitoring

The revegetation area should be monitored in fall 2010 to document the Year 5 condition of the revegetation area and document plant survival and plant growth (e.g., height, health and vigor). The survey should include collecting quantitative data and photographing the development of the revegetation plantings. Replacement plantings should be installed if plant survival of container stock plants drops below 80% for any species or if plant survival of pole cuttings drops below 60% for any species (willow and cottonwood).

Reporting

The Year 5 (2010) monitoring report should be submitted to City of San Jose, CDFG, and RWQCB at the end of the monitoring year. The report is due to these agencies by December 31, 2009.