Project Information

2005 Proposal Number: 0030

Proposal Title: **Selby Creek Stream Habitat Restoration and Riparian Revegetation Project**

Applicant Organization Name: **Bioengineering Institute**

Total Amount Requested: $**475,000**

ERP Region: Bay Region

Short Description

Proposal seeks to continue restoration efforts based on the Selby Creek Project (watershed plan) on Selby Creek in the Napa watershed. Proposed project will: gather techncial informaiton to describe the watershed, install bioengineering structures to control erosion (stablize streambanks), expand and revetetate the floodplain and create fisheries habitat. Multiple partners (RCD, Napa County Supervisors, Napa Vintners Association involved in project restoration, community outreach, and education.

Executive Summary

The Selby Creek Stream Habitat Restoration and Revegetation Project (Selby Creek Project) seeks to address, and thereby enhance, the relationship of farmers and landowners to the local environment. The Project will restore the entire length of Selby Creek in its watershed encompassing over 600 acres of land, and seeks to provide an ecologically healthy connection between the upper reaches of the watershed, Dutch Henry Creek , and the Napa River, in an area that has currently one of the remaining known steelhead fisheries in the Valley. Located in northern Napa County, California, on Selby/Dutch Henry Creek is a tributary to the Napa River which flows to San Pablo Bay. Selby/Dutch Henry Creek is a second order stream and has approximately 4.9 miles of blue line stream. The Selby Creek Project is the work of the Selby Creek Watershed Partners, (SCWP) a formally organized landowner group representing a total of 13 residential, agricultural, and business

landowners, partnering together since 2002 to “learn how to create a viable relationship between the creek as a living system and the community of farms and homes in the watershed.” The SCWP is fiscally sponsored by the Bioengineering Institute. The Project has been developed through the collaboration of a number of experts working in environmental restoration, all with experience on the Napa River, and has the support and collaboration of the Napa Resource Conservation District, the Napa County Board of Supervisors, and the Napa Vintners Association. The Selby Creek Project is a comprehensive plan to restore, stabilize, and revegetate over 224 separate sites (in 8 distinct reaches) encompassing the entire stretch of Selby Creek in the watershed. The restoration and revegetation measures proposed address several ERP priorities including construction of cost effective, low impact bioengineering structures to accomplish erosion control, expand the flood plain, create fisheries habitat and stabilize the stream banks. The vegetation component will expand a near non−existent riparian zone and prevent the establishment of additional non−native species in the watershed. The specific objectives of the Selby Creek Project are: 1) To obtain technical assistance in order to continue to gather scientific data that defines and describes the unique characteristics of the watershed and to use analysis of this data to further protect and enhance the natural environment of the watershed. 2) Use innovative bioengineering technology to stabilize banks, reduce erosion, expand floodplain and enhance habitat by expanding and enhancing riparian vegetation at 224 sites, along 8333 ft. of channel and over 16,600 feet of streambank. 3) Enhance the riparian zone, and revegetate a total of 16 acres on sites adjacent to the stream bank. 4) To establish long term monitoring procedures in order to continue to assess success of improvement measures as well as determine future activities to benefit the long term health of the watershed. 5. Identify and utilize local and regional resources to introduce and promote the Selby Creek Project to the greater Napa Valley community and provide opportunities for educational and instructional activities to landowners and the local community focused on ecosystem management principles and practices. The following outcomes are anticipated: For restoration: stream length treated: 1.51 miles; stream length

stabilized: 1.36 miles; Sediment prevented from entering the stream: 6202.4 cubic yards. For Vegetation Management: Area planted: 24 acres; with 350 trees, 1300 shrubs, and over 1000 subshrubs/perennials. The revegetation and vegetation management component occurs after stream bank measures are concluded and features removal of invasive plants, preservation and enhancement of over− story vegetation, as well as propagation and planting of native plants and grasses according to local vegetation management practices, all to improve riparian habitat and reduce erosion and flooding occurrences. During Project implementation, Acorn Soupe, an environmental educational organization, will work in tandem with the Napa RCD and in−place project experts and teach the concepts of water quality, stream bank stabilization, native and invasive plant species, watersheds, and preserving local habitat to local children grades 1−12. The Community Outreach component is designed to encourage further public participation in decision−making and to promote respect for sustainable uses that protect our interdependent ecosystems, introducing appropriate and effective management of our agricultural lands.

SELBY CREEK STREAM HABITAT RESTORATION AND RIPARIAN REVEGETATION PROJECT

A. PROJECT DESCRIPTION

1. PROBLEM

The Selby Creek Stream Habitat Restoration and Riparian Revegetation Project (Selby Creek Project) seeks to address, and thereby enhance, the relationship of local farmers and landowners to the local environment. The Project will restore the entire length of Selby Creek in its watershed encompassing over 600 acres of land, and seeks to provide an ecologically healthy connection between the upper reaches of the watershed, Dutch Henry Creek and Biter Creek, and the Napa River, in an area that has currently one of the remaining known steelhead fisheries in the Valley.

Location Description:

Selby/Dutch Henry Creek is located in Napa County, California and is a tributary to the Napa River which flows to San Pablo Bay. Selby/Dutch Henry Creek is a second order stream and has approximately 4.9 miles of blue line stream according to the USGS Calistoga 7.5 minute quadrangle. Dutch Henry Creek drains a watershed of approximately 5.8 miles. (A location map for Selby/Dutch Henry Creek can be found on the following website: « www.jokela-arts.com/selbycreekproject ») Elevations range from approximately 240 feet at the confluence to about 2,280 feet in the headwaters area. The upper section flows intermittently in a steep-walled canyon with a fair cover of conifer and brush. As the stream drops in elevation, the canopy becomes patchy, consisting of oak, alder, willow, and bay with long open stretches in between. After Dutch Henry Creek crosses the Silverado Trail, where local property owners refer to it as Selby Creek, the stream channel is either mostly broad and shallow or incised with eroding banks. There are a still few reaches with good canopy and bank cover. The watershed is owned primarily by private landowners, but road access exists along the Silverado Trail, Larkmead Lane, and a small road that fronts the stream from the Silverado Trail to the headwaters area. Only one landowner pumps from the creek. That pump is close enough to the Napa River it doesn't draw the creek down.

Description of Existing Conditions:

Over the past century, the Napa Valley has been rapidly transformed into a vineyard landscape with grape growing emerging as the primary use of land within the valley, the majority along the Napa River and its 48 tributaries. Additionally, urban sprawl has brought roads and other changes into previously undisturbed areas of the watershed. Most of the streams in the northern watershed are ephemeral; flowing for only part of the year in the lower reaches and retaining water in isolated pools in the higher, more protected reaches. Both of these conditions are limiting factors for steelhead fisheries. Current recommendations are to undertake pool enhancement projects as well as to

utilize bioengineered structures such as boulder cross channel weirs and live revetments in conjunction with stream bank stabilization methods to both improve habitat and decrease sediment load.

The management plan, completed in 1998 by the Napa County RCD, entitled the "Napa River Watershed Owner's Manual–An Integrated Resource Management Plan" features suggested stream habitat measures that are also consistent with the proposed Selby Creek Project, including increasing stream bank canopies, reducing sedimentation and reintroduction of native plants and grasses for erosion control.

In 2000, the Napa County RCD (with funding from the California Department of Fish and Game) also developed a Northern Napa River Watershed Management Plan, including the Selby Creek/Dutch Henry watershed. This plan is focused on establishing geomorphic and ecological functions, processes and characteristics to enhance stream habitat conditions and recommends that Selby/Dutch Henry should be managed as an anadromous, natural production stream, while improving fisheries habitat.

Agricultural Management Problems:

In the recent past, the local Napa streams, including Selby Creek, have been managed by farmers primarily interested in flood control, along with the view that less vegetation resulted in less pest management problems for their farming activities. The current conditions in the Selby Creek watershed were created by in-channel problems resulting as farmers bull-dozed the creek to create a more efficient conveyance ditch. Except in a few locations, the riparian zone is virtually non-existent.

Repair and enhancement of the watershed requires cooperation from a large number of landowners, some utilizing their land for agriculture, others strictly as residential properties. In the Selby Creek watershed there are 14 individual landowners with the vast majority of included acreage designated agricultural. They are now willing to see the stream brought back to ecological balance and to be managed in the future in that fashion, recognizing that the long term health of their farms are dependent on the health of the ecosystem. (Aerial views of the Selby Creek Reaches 1-8 can be viewed on the following website: « www.jokela-arts.com/selbycreekproject »)

How Watershed Problems Are Addressed In Project:

The voluntary cooperation of individual landowners in a vision to restore the health of an entire watershed and focus their efforts to identify and utilize local available resources, (including the participation of the Napa Resource Conservation District, as well as the Napa Board of Supervisors) is a strategy that the Selby Creek Watershed Partners (SCWP) believe will contribute to the successful management of the watershed for long term health and benefits to the entire ecosystem. In practical terms, it streamlines an often difficult process for individuals in planning for and implementation of restoration and revegetation activities as well as application for necessary permits and the costs associated.

In 2003 the SCWP was formerly organized as a watershed group, they developed a mission statement and sought the assistance of the Napa County RCD Watershed Coordinator to help identify resources and develop a plan of action. The group has formed to "learn how to create a viable relationship between the creek as a living system and the community of farms and homes in the watershed." In 2004, the SCWP commissioned the "Survey of Channel and Streambank Conditions with Prescriptions to Restore

and Revegetate the Selby Creek Watershed in Napa County" This document addresses over 224 separate problem sites on Selby Creek, and recommends specific bioengineering prescriptions for erosion control and repairing damaged stream banks and also includes a revegetation and vegetation management plan for each site as well. The bioengineering and revegetation recommendations found in this survey are the on-the-ground activities for which funding is requested in this application. A significant result of the Project will be to greatly improve the passage of migrating Salmonids into the perennial pools of the upper Dutch Henry Watershed. (A current illustration of the Upper Dutch Henry watershed and photo documentation of problems found in Selby Creek Reaches 1-8 can be viewed on the following website: « www.jokela-arts.com/selbycreekproject »)

All of the landowners (13) have signed access agreements for the duration of the project and post project monitoring. In addition, they have also signed a ten year riparian maintenance agreement with stipulations regarding their participation in irrigation and vegetation management.

[1.] GOALS AND OBJECTIVES

Specific to the watershed conditions, in the middle reaches of the Selby Creek project, the bed of the channel is wide, flat, and undefined. Most of the year, flows go underground in this stretch and return to the surface downstream, where a low flow channel is well defined and the channel is not so wide and flat. Through the installment of various structures (such as live willow siltation baffles; opposing, alternating, and individual boulder wing deflectors; and cross-channel v-weirs), the Selby Creek project will narrow and define a low flow channel in this stretch, thus enhancing the continuity of surface flows and the structural bed characteristics required for fish passage. The enhancement of riparian canopy through native plantings and the installment of bioengineering structures (such as live willow siltation baffles, live willow brush mattress, live woven willow revetment walls, and boulder wing deflectors with live vegetation layers) will both increase shade cover and lower temperatures in Selby Creek, potentially restoring functional habitats to allow natural species to thrive.

The installment of various habitat structures (such as digger logs, boulder wing deflectors with root balls or logs, and cross-channel vortex weirs) will increase pool habitat/resting areas and the presence of in-channel large woody debris. Streambank stabilization structures (such as boulder bank protection with live sprigging, live woven willow walls, live willow brush mattresses, boulder wing deflectors, and live willow cluster plantings) and structures that catch and store in-stream sediments (such as live willow siltation baffles, deep cluster planting, boulder wing deflectors, and cross-channel vortex weirs) will limit the amount of sediments entering the stream building and stabilizing terraces, thus increasing pool and gravel quality.

The Selby Creek Project has five major task components, (1-5 below), with all permitting, construction, and revegetation/planting activities to be completed during the first three years. Thereafter, the Project will continue to address the Monitoring Plan developed for the Project for

a minimum of two additional years. On the basis of the results of the completed five year construction/management strategy, the SCWP will determine how to continue in a long term management process for the watershed. At this time, landowners have all signed an agreement to participate in a ten year (post construction) maintenance and monitoring plan.

PROJECT GOALS:

1) Collect additional scientific data that further defines and describes the unique characteristics of the Selby Creek Watershed.

2) Utilize bioengineering technology to stabilize banks, reduce erosion, expand floodplain and enhance habitat at 107 sites, along 8,333 ft. of channel and over 16,600 feet of stream bank.

3) Revegetate a total of 16 acres on 117 sites adjacent to the stream with 350 trees, 1300 shrubs, and over 1,000 sub-shrubs/perennials. (Goals 2&3 combined will have a significant effect on improving the migration path to the upper canyon with its year around pools, and will provide a riparian canopy where little or none has existed before.)

4) Establish long term monitoring procedures in order to continue to assess success of improvement measures and determine future activities to benefit the long term health of the watershed.

5) Identify and utilize local and regional resources to introduce and promote the Selby Creek Project to the greater Napa Valley community and provide opportunities for educational and instructional activities on ecosystem management principles and practices to participating landowners and the local community.

OBJECTIVES:

(1) Data Collection and Permitting:

a. Prepare a large, display size, plan view map, with approximate parcel boundaries, overlays of sites, reaches 1-8 and GPS locations of sites flagged along the Creek and establish photo points.

b. Prepare a longitudinal profile of Selby Creek portion below Silverado Trail, using the County LIDAR dataset. This, along with existing cross sections, will be used to monitor changes and/or improvements to channel morphology.

c. Prepare and submit all permits as needed.

(2) Bioengineered Construction:

a. Complete the site-specific Selby Creek Workplan featuring 8 reaches and 107 sites with bioengineering measures. Construction will occur over a 16 week period; begin in year one, completed in year two .

(A Summary Plan view of the Selby/Dutch Henry Creek Reaches 1-8 and Site Plans for each of the Selby Creek Reaches 1-8 can be viewed on the following website: « www.jokela-arts.com/selbycreekproject »)

(3) Vegetation Management:

a. Establish program with Napa County RCD, Circuit Riders, and North Coast Native Nursery to propagate seed stock.

b. Consult with Napa County RCD, independent consultant, and the landscape architect (sub-contractor Ann Baker) to determine parameters of monitoring program for determining the success of revegetation measures as well as any modifications, if needed, to the revegetation management plan.

c. Support Acorn Soupe (sub-contractor) with implementation of curriculum based program for K-12 children to participate in the field with seed propagation as well as other vegetation management activities. A complete 5-year curriculum has been designed by Acorn Soupe and approved by the SCWP.

d. Plant a total of 16 acres of vegetation across the 117 sites, as specified in the measures prescribed for each site in the Selby Creek Streambank Stabilization and Revegetation Survey.

e. Seed approximately 8 acres combined across the 224 sites with native grasses and perennials.

f. Establish and maintain drip irrigation system across 16 acres of vegetation as needed on newly planted sites.

g. Together with Napa County RCD, Acorn Soupe, landscape architect, conduct landowner workshops to introduce riparian plants, irrigation practices and vegetation management techniques and to give landowners a greater understanding of the Project and how they will participate in vegetation management.

h. Establish photo documentation of before, during and after at revegetation sites and document changes, modifications in vegetation management strategy.

See Appendix A (pg. 22) and Appendix B (pg. 25) following the narrative to see details of: Native Species for Vegetation and a list Plant species found along Selby Creek)

(4) Education and Outreach:

a. As desired by SCWP, coordinate with Acorn Soupe, 3-6 community days for children and landowners covering topics which may include bioengineering techniques, revegetation and riparian plant selection, irrigation and maintenance requirements, plant propagation and seed collection.

b. For landowner and community outreach: Establish web page on the Napa Valley Watershed Information Center and Conservancy and progressively update throughout project period, providing up to date project status, resource information, and a communications link between participating landowners, project sponsors, and other interested parties.

c. In collaboration with the Napa RCD, provide educational and instructional activities on watershed topics to landowners in a series of presentations on creek geomorphology, fish biology, and riparian issues, as requested.

d. Implement the Acorn Soupe classroom and field curriculum. *Several activities are planned involving K-12 classes as part of a multidisciplinary curriculum designed to interface with the Project activities throughout the entire three years of construction and planting as well as two years of post construction monitoring. Students will participate in the field, assisting with seed collecting and propagation, stream monitoring activities, and on-the ground revegetation tasks. In addition, Acorn Soupe will assist the SCWP with development of outreach materials to the landowners and will also assist with

the SCWP web page to be included on the Napa Valley Watershed Information Center's website.

(5) Project Monitoring:

a. For the bioengineered sites, collaborate with the Napa County RCD and other consultant(s) to establish parameters of monitoring program, set GPS and photo documentation points, and establish protocols to measure success of bioengineering measures as well as long term management issues. Prepare a written document to report results from monitoring in years 2&3 and propose additional management strategies to be implemented post construction in years 4&5.

b. Establish measurement criteria and monitor Selby Creek Watershed for water quality and fish presence. Report results to project participants and funding agencies.

c. Utilize the longitudinal profile prepared for the Selby Creek portion below Silverado Trail and cross sections of Reaches 1-8 (completed and on-file) to monitor changes and/or improvements to channel morphology.

d. For the revegetation/planting sites, prepare a written report which includes, but is not limited to the following: a description of the revegetation plan describing invasive plant removal methods used, and an inventory of the number, species, and location of plants, seeds planted. Include photo monitoring of major sites. Describe long-term management approach with parameters for measuring effectiveness and provide modifications in the vegetation management strategy. Highlighting 6-8 restoration areas, what the intent of the measure was, and a means for measuring its success. Distribute the monitoring report to all participating agencies, the local Napa RCD, sub-contractors and the SCWP.

[1.] CONCEPTUAL MODEL

As discussed earlier, all activities are within the context of addressing problems in the entire watershed, among cooperating landowners, utilizing their individual resources, access to federal and state funding, and expertise available from local and regional environmental agencies and professionals, focused on the understanding that a balanced ecological system with healthy streams and riparian areas will result in healthy farms and communities.

Overall the restoration and revegetation measures proposed feature cost effective, low impact live plant based bioengineered structures to accomplish erosion control, create a more complex and diverse channel connected to an expanded flood plain, create fisheries habitat and stabilize/revegetate the stream banks. The riparian revegetation and vegetation management component occurs after stream bank measure are concluded and features removal of invasive plants, preservation and enhancement of over-story vegetation, as well as propagation and planting of native plants and grasses according to local vegetation management practices, all of which will improve riparian habitat and reduce erosion and flooding problems. An example of this is where the plan is to remove old wire fencing with debris fill behind it and replace with a Live Willow Brush Mattress. The mattress will not only stabilize and revegetate the streambank but the dense stand of live willow branches will, besides creating riparian habitat and cooling shade, act as a filter preventing entrained debris from

entering and depositing within the vineyard itself. This makes habitat improvement simultaneous with a cost saving to the farmer, (no need to hand remove flood debris.) (See in Appendix C, pg. 27 following the narrative for a summary detailing the conceptual approach to addressing the specific stream and riparian conditions in each of the eight reaches of the Selby Creek Project.)

Approaches to Planting:

We see two basic approaches to restoring the creek vegetation: area planting and the use of prescribed burning and seeding. The general approach of the survey revegetation prescriptions is the area planting. Erosion, grading, soil degradation, and removal of native vegetation have disturbed many areas of the creek. In order to get some vegetation value back into certain sections of the creek within a five to ten year time frame, we would restore degraded soils with very light applications of mulch and organic amendments, then install plantings with temporary drip irrigation systems or driwater cells (packages of non toxic water holding polymers that gradually decay and release stored water). This would be for areas we identify as future tree and shrub areas.

The second approach using prescribed burn and seeding is intended for small areas of the grassland and scrub dominated sections of bank. Modern fire suppression techniques have eliminated fire as an agent of regeneration and nutrient redistribution in natural areas throughout California. Many Californian plants are fire adapted, needing fire for seed germination, to eliminate competition, or to stimulate crown sprouting. There are several reasons to use this approach. First, it is less cost and effort intensive. Second, it will reduce the seed bank of non native weedy plants. Third it will cause germination of dormant, fire dependent seed. Fourth, it will release nutrients bound up in plants and redistribute them evenly in a way that promotes a strong stand of native bunch grasses. These fires would be small, permitted, separated from housing and vineyard areas by firebreaks, and conducted in the appropriate season with supervision. Using prescribed fire and then reseeding with native grassland species is the best and most cost effective way to restore grassland and scrub areas. (For more information on prescribed fire see Biswell, Harold, Prescribed Burning in California Wildlands Management, University of California Press, 1989.)

Proximity to Vineyards:

Our general approach is to define an edge between the vineyard and the riparian environment and limit the migration of herbicides, pesticides, fertilizers, and vineyard weeds into the riparian area. Planted levees, hedgerows, seeding vineyard avenues with perennial grasses, and tree plantings can all accomplish these objectives. When there is a narrow strip of riparian vegetation at the top of bank, we like to install dense native plantings in a row that create an insectary for beneficial insects. These insectary hedgerows are low, 18”-6’ tall and mixed with shrubs, perennials, grasses and herbs. The diversity of insects supported by these hedgerows can reduce vineyard pests through predation. By grassing vineyard avenues, we can create a filter strip that controls dust, erosion and nutrients leaving the vineyard and provides a good year round surface for vehicles. Vineyard ditches can carry a lot of sediment and nutrients into the creek and we support vegetating these with grasses and controlling their erosion.

4. APPROACHES AND SCOPE OF WORK

(1) Data Collection and Permitting:

Approach: The Project Director of Bioengineering Associates will coordinate the activities of technical staff of the Napa RCD and sub contractors (Green Valley Engineering, O'Connor Environmental Inc., Ann Baker, Landscape Architect) to gather additional baseline scientific data, plan review, and development of monitoring program. These activities will provide information, as necessary, for the permitting process. Funding rewarded to the SCWP from Napa County District Attorney's mitigation funds ($50,000) will support most of these activities, which will be completed prior to start-up of construction.

Deliverables:

a. A large visually attractive map of the entire Selby Creek Watershed and proposed Project to be displayed at an agreed upon public location in Napa Valley.

b. A longitudinal profile of Selby Creek portion below Silverado Trail, using the County LIDAR dataset, complementing existing representative profiles for each of the Selby Reaches 1-8.

c. Permit applications, as required, completed and submitted for agency review and approval.

(2) Bioengineered Construction

Approach: See Appendix D, pg. 34 following the narrative for The Selby Creek Workplan for bioengineered construction and revegetation, featuring the 8 reaches and a total of 224 separate sites to be addressed as part of the project. Each site is located, specific current conditions described, and bioengineered prescriptions as well as revegetation prescriptions to be applied to each site are detailed. Construction will be completed in years 2&3 of the Project by sub-contractor Bioengineering Associates, Inc.

Deliverables:

Construction Deliverables	# of Sites	Total Length	Number of Structures
Boulder Bank Protection with Sprigging (Mainly: Willow, Alder, and other riparian species)	16	684	N/A

Construction Deliverables	# of Sites	Total Length	Number of Structures

Boulder Bank Protection to Save Large Stand of Oaks	1	40	N/A
Individual and Alternating Boulder Wing Deflectors	26	N/A	65
Root Balls Incorporated into Boulder and Large Woody Debris Habitat Structures	2	N/A	2
Digger Log Boulder Wing Deflectors	5	N/A	5
Boulder Wing Deflectors with Live Vegetation Layers	2	N/A	12
Opposing Boulder Wing Deflectors	1	N/A	2
Cross Channel V-Weirs	22	N/A	22
Live Willow Brush Mattress with Boulder Toe	9	578	N/A
Cobble Barbs to Protect Seedlings	1	N/A	13
Reorganize Cobble and Small Boulders to Enhance Channel Conformation	1	72	N/A
Pull Back Bank to Increase the Stream’s Flood Plain Access	2	124	N/A
Lower Levee to Increase the Stream’s Flood Plain Access	4	1114	N/A
Reshape Bank to Increase the Stream’s Flood Plain Access	1	305	N/A
Plant Large Trees within Bare Area of Existing Large Boulder Bank Protection	1	N/A	50

Live Willow Siltation Baffles	14	223	69
Boulder Armor/Root Pack Threatened Mature Canopy Trees	18	N/A	18
Geotextile Bank Stabilization with Mulch	2	124	N/A
Repair and Add Live Vegetation to Damaged Wire Gabions	1	96	N/A
Remove Instream Fencing, Dumped Concrete & Other Debris	6	459	N/A
Deep Cluster Plant Live Willow	2	46	67
Stabilize Incoming Drainage	1	N/A	1
Live Woven Willow Walls	3	205	N/A

(3) Vegetation Management:

Approach: (See the Selby Creek Workplan in Appendix D, pg. 34 following the narrative for site by site details). Planting activities will be implemented within the first year of the Project with collection of native seed and propagation of plants. After construction in year two, sites will be planted and maintained for at least two years beyond completion of the three year Project. This gives us an opportunity to adapt our plantings and management practices as we gain increased experience with the site. Additionally, the level of community and involvement and participation in the project has been very high and this bodes well for the long term health and vitality of the creek. In our experience, when the landowners are more actively involved in the planning and maintenance of the riparian restoration this enables a broader and more complex revegetation project. Ultimately it's the landowners that sustain and support the restoration plantings. Greater participation and commitment on their part allows the planting design to depend less on robust pioneering plants to revegetate the site and to incorporate more of the sensitive and rare species that need greater attention to thrive and reproduce.

Deliverables:

a. Program established to propagate seed stock with Napa RCD, Circuit Riders, and North Coast Native Nursery.

b. Monitoring program designed and set-up for determining the success of revegetation measures, years 2, 3, 4 & 5.

c. Photo documentation of before, during and after vegetation sites with documented modification in vegetation management strategy.

(4) Community Education and Outreach:

Approach: The purpose of the SCWP is to join local landowners together to learn how to create a viable relationship between Selby Creek as a living system and the community of farms and homes in the watershed. As stated by their organization, "In one sense the creek is the repository, the expression of the geological and hydrological record of how we treat the land. In another, it is a living and powerful agent of change, facilitating floods and erosion, cool breezes and a powerful, thrashing steelhead community annually migrating upstream."

Through the proposed Selby Creek Project, Acorn Soupe will work in tandem with the Napa RCD and other project experts and teach the concepts of water quality, stream bank stabilization, native and invasive plant species, watersheds, and preserving local habitat to both students and landowners. In addition, students will perform restoration activities on Selby Creek, including native plantings to the improved riparian habitat corridor and monitor the survival rates of those plants. Students will also visit and engage in other restoration activities in the Napa River watershed as part of this experience. Activities will include plant and animal identification, lessons on life cycles, watersheds, and stewardship along and art and journal writing to record progress at Selby Creek.

The Community Outreach and Education component of this environmental education program is to encourage public participation in decision-making and to promote respect for sustainable uses and protection of our interdependent ecosystems, appropriate and effective management of our agricultural lands which will ultimately rely on informed and educated decision-makers and resource users. The Community Outreach and Education component is designed to establish an efficient model for expanded public education and outreach and enable Acorn Soupe to continuously expand its scope and reach for environmental education in the community. (See Appendix E, pg. 62 following the narrative for Acorn Soupe's curriculum for the Selby Creek Watershed.)

Deliverables:

a. For educational program established by Acorn Soupe for children grades 1-12, a report submitted each year to document activities, participation, and outcome for each curriculum based event.

b. Written outreach materials generated by Napa RCD, Acorn Soupe, SCWP and other participants with summary report detailing distribution & outreach to landowners and local community members.

(5) Project Monitoring:

Approach: The Monitoring Plan will be developed during the preconstruction period in collaboration with the Project consultants/sub contractors and technical staff of Napa RCD. It will include GPS site identification, photo documentation of before, during and after activities, and other site specific monitoring protocols. The Monitoring Plan will document changes and modifications at all

construction and planting sites and will include water data and yearly counts for fish, birds, and insects. For plants, there will be an inventory of the number, species, and location of plants.

Deliverables:

a. Written monitoring plan and yearly following reporting on construction and vegetation management submitted to participating agencies, sub-contractors, and other identified environmental interests. Years 1 (written plan),2 & 3 follow-up reports.

5. PERFORMANCE EVALUATION

(1) Data Collection and Permitting: Expected Quantitative results:

a. All permits, as necessary, obtained for implementation of Selby Creek Workplan.

(2) Bioengineered Construction: Expected quantitative results:

a. Stream length treated/assessed/stream bank stabilized (in miles):

Treated: 1.51 miles

Assessed: 1.58 miles

Stabilized: 1.36 miles

b. Sediment prevented from entering the stream (volume in cubic yards):

6202.4 cubic yards

(3) Vegetation Management: Expected Quantitative Results:

a. Trees planted (number):

Trees planted 350

Shrubs planted 1380

Sub shrubs planted 1000

b. Area planted/preserved/assessed (in acres): 24 acres

(4) Community Education and Outreach: Expected Quantitative Results

a. Public meetings: 3-6 landowner workshops & public outreach presentations as scheduled with NRCD, Acorn Soupe and SCWP on topics to be determined. (Estimate of 15-25 attendees each meeting)

b. (6) workshops (each year for 3 years) on Selby Creek with Acorn Soupe and based on curriculum specific to Selby Creek for children and landowners on topics to be determined. (40 attendees at each workshop.)

c. Students or participants trained in watershed-based curriculum: 1000 students in Napa and Sonoma Counties exposed to Selby Creek watershed curriculum content in 3 year period.

(5) Monitoring: Expected Quantitative Results

a. Photo documentation before, during and each year after (minimum two years) at GPS established points to document changes and modifications at all construction and revegetation/planting sites.

b. Inventory of the number, species, and location of plants, seeds planted.

c. Yearly update & report on survival rate, effectiveness and total plant cover, including management approach for reseeding and/or replanting as necessary, each year for five years.

Overview of Project Timeline:

Year One: Data Collection & Permitting
Begin construction
Begin collection & propagation of seeds
Begin educational program

Year Two: Complete construction
Begin revegetation
Continue educational program

Year Three: Complete revegetation
Establish monitoring Program Begin project monitoring

6. FEASIBILITY

The stated goal of the SCWP is to involve 75% of the people living and working alongside Selby Creek and 50% of the people living and working in the watershed in developing a local community approved stewardship plan. There efforts have been successful in that all the landowners are involved in achieving the long term management goals. This is best illustrated by their willingness to all sign access agreements for the proposed work, as well as 10 year maintenance plans to monitor and adapt management strategies as necessary.

In addition, the SCWP have reached out to the Napa County Resource Conservation District for their support and technical advice, as well as seeking the input of a number of other local groups focused on environmental quality in the community. Significant among these is the Napa County Board of Supervisors, (the Napa Valley Watershed Information Center and Conservancy) and the Napa Vintners Association.

Furthermore, the implementation team, managed by Bioengineering Institute on behalf of the SCWP, has a greater likelihood of success because all the major sub-contractors committed to performing the Project tasks and activities have worked together individually and collectively on similar projects, both in Napa Valley and elsewhere in Northern California, including Bioengineering Associates, (a design and construction firm), Green Valley Engineering (engineering review and permitting), Ann Baker, (a landscape management company),O'Connor Environmental (geology, hydrology, geomorphology), and staff scientists/technicians from the Napa RCD.

Regarding the bioengineered technology that is the chief technology in restoration activities, all the structures and techniques are found in the California Department of Fish and Game's Salmonid Stream Habitat Restoration Manual and has been incorporated successfully in numerous similar projects on the Napa, Russian, Eel and Garcia Rivers and tributaries in Northern California. Our Project Director is one of the authors, (see page xvi of the manual.)

Significant contributions toward the education and outreach component have also already been applied to the Selby Creek Project. Acorn Soupe has submitted to SCWP a written

grades 1-12 curriculum based on the specifics of the Project. They have also developed a five year implementation plan for student participation and local community outreach.

7. DATA HANDLING AND STORAGE

Data collected during the Selby Creek Project will be computer based, and will be tied to the GPS points established at each site of the Project. The data, including photographic records, will be collected by individual sub-contractors and organization participants and will be transferred to the Bioengineering Institute, responsible for overall management of the Project, including authorship of report(s) and monitoring follow-up. The reports will be distributed electronically to all project participants with a hard copy master document also available upon request. Access to the information will enable participants to further distribute the information to their individual constituencies via the world wide web and other electronic delivery tools such as power point and e-mail attachments.

8. INFORMATION VALUE

The Selby Creek Partners have initiated a number of actions to develop a comprehensive knowledge base that is specific to the watershed and that can be augmented during implementation of their long term watershed management strategy. The already completed Stream Survey, scientific measurements and oversight at each stage of project implementation, as well as substantial post project monitoring will provide a complete restoration picture for evaluation. Coupled with the active participation of landowners and community groups, a model for local watershed management that unites the interests of farmers, residential owners, and commercial entities to establish a mutually beneficial healthy ecosystem. Because the SCWP represents all interests along the Creek, this is a unique opportunity for observing and measuring the practice and effects of their collaboration toward achievement of long term management goals. In addition, the commitment of landowners and other local environmental agencies to the goals of the Project will serve as a platform for sharing the information developed with other agencies and organizations with similar goals.

9. PUBLIC INVOLVEMENT AND OUTREACH

This project is a unique opportunity for the local community in that the partnership created and the roles of each participating organization represents a unique opportunity for cooperation between large and small farmers and residential landowners to achieve common goals for preservation and enhancement of a valuable local resource. As described, there is broad community support and genuine excitement concerning implementation of the Selby Creek Stream Habitat Restoration and Revegetation Project.

There is a strong and active community partnership in the Selby Creek Project:

a. The Selby Creek Watershed Partners (SCWP) will devote time and resources to ensuring local landowner participation and will help facilitate numerous outreach and educational activities planned during the five year project period.

b. The Napa County Resource Conservation District will allocate staff time, resources, and

their funding to assist in all phases of the project, including technical expertise and oversight, education and outreach activities, as well as provide specific services such as mapping.

c. The Napa Resource Conservation District has been involved with the local citizen of Selby Creek since the formation of the Selby Creek Watershed Partners in 2002, attending several of the local meetings, providing needed background information, specific environmental data, and assistance with formulating the parameters of the Selby Creek Watershed Survey, which is the basis of the current Selby Creek Project design and restoration strategy. They have participated in the planning and design of the project, including working with the SCWP to educate local landowners and introduce the benefits of watershed based habitat management. The Napa RCD will continue and expand their involvement in the project, providing services in the technical/scientific area as well as specific education and outreach activities to participating landowners and the local community.

Recently, indicative of their support, the Napa RCD notified the SCWP of their opportunity to access $50,000 in Napa County District Attorney's mitigation funds now earmarked for the Selby Creek Watershed Project and will be used to further collect and document scientific data prior to Project implementation and for development of a long term monitoring strategy.

d. Acorn Soupe, a non-profit environmental organization has designed a k-12 Environmental Education Program that will be offered to students during the five years of the Selby Creek Project. Acorn Soupe has also designed a community education component featuring the Selby Creek Project. The Program will be implemented with other partnering organizations in the Napa Community. See letter of support uploaded with grant application.

e. The Watershed Information Center and Conservancy (a committee of the County of Napa Board of Supervisors) will host the SCWP website and provide other resources for community education and outreach. They are "committed to working closely with local watershed stewardship groups to support restoration and land use practices that will ultimately improve the quality of the Napa River." See letter of support uploaded with grant application.

f. The Napa Valley Vintners Association will also utilize their electronic network to introduce and update the community on the Selby Creek Project design and implementation Local organization participation and utilization of their resources will help reduce project costs. In addition, active participation at this level will continue to be crucial to long term management of the watershed. There is a solid commitment by all participants to work together to achieve their goal to restore and enhance the Selby Creek watershed. See letter of support uploaded with grant application.

B. APPLICABILITY TO CALFED BAY-DELTA PROGRAM AND ERP GOALS, AND PRIORITIES FOR THIS SOLICITATION

1. ERP PRIORITIES

a. The management practices addressed in the Project are:

-Erosion Control

-Riparian restoration in agricultural landscape

b. The habitat enhancements will occur in a watershed of the Napa River, a priority area identified in the ERP Priorities.

c. The comprehensive Selby Creek Stream Habitat Restoration and Riparian Revegetation Project addresses multiple priorities of the Ecosystem Restoration Program including: (1) improvement of ecological functions and increasing habitats to support sustainable populations of diverse and valuable plant and animal species, in particular benefiting MSCS covered wildlife and fish; (2) rehabilitation and expansion of the riparian area, providing a buffer for restored habitats from adverse effects of encroaching incompatible development; (3) clear out nonnative invasive species and prevent the establishment of additional nonnative invasive species in the watershed. In addition, the Project will also benefit and strengthen the SCWP: (4) facilitating obtaining permits that supports agricultural management activities benefiting MSCS-covered wildlife and fish and assisting with development of a long term strategy for sustaining the health of the entire ecosystem.

d. The Selby Creek Streambank Stabilization and Riparian Restoration Project will positively impact many species of plants and animals in the Napa River watershed. Assuming that the Selby Creek project area falls under the "Valley/Foothill Riparian Habitat" zone, potential (evaluated) species benefited include the greater western mastiff-bat, ringtail, riparian brush rabbit, least bell's vireo, bald eagle, Alameda whipsnake, giant garter snake, little willow flycatcher, bank swallow, western yellow-billed cuckoo, white-tailed kite, golden eagle, California yellow warbler, yellow breasted chat, long-eared owl, Cooper's hawk, osprey, double-crested cormorant, black-crowned night heron, great blue heron, great egret, western pond turtle, foothill yellow-legged frog, California red-legged frog, Northern California black walnut, and slough thistle. The Selby Creek project will benefit these and other species by increasing the riparian canopy, limiting the sediment delivery to the stream, removing invasive species, and diversifying bed and bank morphology.

The increase and diversification of riparian canopy will engender many benefits for species in and around the watershed. Many species require the dense vegetation, shade, and shelter that a healthy riparian zone offers, and as of now (pre-project), Selby Creek has a severe lack of such qualities. Species such as the riparian brush rabbit, the yellow-breasted chat, and the California yellow warbler require thickets of willow and other native riparian shrubs and trees in order to survive and prosper. In some reaches of Selby Creek, such thickets are non-existent, and streambanks are relatively bare; the Selby Creek project aims to revegetate these areas with a diverse and appropriate range of native riparian species, and in doing so, the project aims to both augment existing populations and invite back populations that may have been forced to relocate in the past.

By limiting the delivery of fine sediments to the Selby Creek (and therefore, the Napa River) watershed and diversifying channel morphology, the Selby Creek project will both improve existing habitat and create new habitat in the channel. Many bioengineered habitat and bank stabilization/revegetation

structures will be installed in Selby Creek. Some structures, such as live willow siltation baffles, slow water along the streambanks, protect the toe of an eroding slope, capture sediment, and create brackish zones on the edges of the channel. Such zones are key habitat areas for many species, including many of the aforementioned species of frogs and birds. Other structures, such as boulder wing deflectors and vortex weirs, create the crucial pool habitat required by the Salmonid and other fish species present in the watershed. Such structures also define a low-flow channel, which fish and other aquatic species require as a crucial corridor to the upper and lower watershed. The Selby Creek watershed, in its current state, lacks the diverse range of morphological features and riparian qualities necessary for it to support and maintain the many populations that reside there; the Selby Creek Streambank Stabilization and Riparian Restoration Project will initiate the processes that will create a healthier and more functional ecosystem.

e. In addition, the Selby Project addresses in the following ways a number of other priorities as stated in the Ecosystem Restoration Program guidelines:

1. Matching funds: There is a 58 % match of funds for the Project. Landowners will provide hard cash to the Project as well as in-kind contributions. In addition, several of the landowners have been identified to participate in USDA conservation programs, including EQIP, as well as the WHIP and Napa County Flood Control Program, providing funding to individual farmers and/or landowners. A grant has been received by the Napa RCD and additional funding requests are currently pending.

2. Durable projects: Landowners have agreed to a 10-year monitoring plan and have established priorities and goals for long term watershed management in the Selby Creek Watershed survey recently completed by SCWP.

3. Appropriate scale: The Selby Creek Project will address problems along the entire length of stream banks of the lower watershed, with all (13) landowners have signed access agreements for the proposed activities.

4. Locally-based partnerships that benefit private landowners: The SCWP has the collaboration of the Napa RCD, Napa Board of Supervisors, and the Napa Vintners (as well as well recognized environmental organizations (Acorn Soupe), and will continue to seek out other partners to meet their goal for long term sustainability of a healthy, functioning ecosystem.

5. Multiple objectives: This project improves the habitat for fish as well as birds, small mammals, and insects that will inhabit the newly established riparian area, while also addressing erosion and vegetation management problems. It will ultimately lead to improved land use practices and water quality and as a major tributary, it has the potential to contribute to the eventual delisting of the Napa River as an impaired water body.

2. RELATIONSHIP TO OTHER ECOSYSTEM RESTORATION ACTIONS OR PROGRAM INVESTMENTS

The Selby Creek Project complements other ecosystem restoration activities in the Napa River watershed as identified in the Napa River Watershed Owner's Manual –An integrated Resource

Management Plan (Napa County RCD 1998) which features suggested stream habitat measures that are consistent with the Project scope of work, including increasing stream bank canopies, reducing sedimentation and reintroduction of native plants and grasses for erosion control.

Furthermore, related to findings made in the Napa River Basin Limiting Factors Analysis (Stillwater Sciences, 2002), the Project focuses upon issues of sedimentation by minimizing sediment delivery to the creek through the use of bioengineering's plant based techniques, which use live plants as the basic tools of erosion control that will greatly increase the filtering of agricultural runoff moving through a largely expanded and revegetated flood terrace, while reducing bank erosion at all sites.

In 2000, the Napa County RCD (with funding from the California Department of Fish and Game) developed a Northern Napa River Watershed Management Plan, including the Selby Creek/Dutch Henry watershed. This plan is focused on establishing geomorphic and ecological functions, processes and characteristics to enhance stream habitat conditions and recommended that Selby/Dutch Henry should be managed as an anadromous, natural production stream, while improving fisheries habitat.

In 2004, the SCWP commissioned the "Survey of Channel and Streambank Conditions with Prescriptions to Restore and Revegetate the Selby Creek Watershed in Napa County" This document addresses over 224 separate problem sites on Selby Creek, and recommends specific prescriptions and also includes a revegetation and vegetation management plan for each site as well. The bioengineering and revegetation recommendations found in this survey are the on-the-ground activities for which funding is requested in this application.

In addition, since 2000, the co-sponsors of this Project, (the Napa County RCD and the SCWP) have engaged in assessment activities in the Selby Creek watershed, gathering data in order to develop specific recommendations for restorative actions. As mentioned earlier, the Napa RCD recently awarded $50,000 to the SCWP for the purpose of continuing to collect and document watershed specific scientific data that will further refine elements of the long range management plan for the watershed.

3. ADDITIONAL INFORMATION FOR LAND ACQUISITION(S)

As of December, 2004 all of the participating landowners have signed access agreements for permission to enter onto real property. The term of the agreement is (5) years for work performance and 10 years for maintenance, inspection, and monitoring purposes. Access (with prior notification) is granted to all sub-contractors working with Bioengineering Institute, the Napa County RCD, California Department of Fish and Game, and any other agencies providing technical assistance, funding, and resource support. An original of each signed agreement is in the SCWP master file. A copy of the text is uploaded as documentation of landowner access.

C. QUALIFICATIONS AND ORGANIZATION

The Bioengineering Institute is a California based non-profit (501©(3) organization governed by a board of five professionals working in the field of environmental restoration.

The aim of Bioengineering Institute is:

-To identify, promote and facilitate opportunities for progressing the philosophy, principles, and practices of working with Nature to benefit the health or rivers and riparian zones.

-Education both in schools and in professional practice is a primary interest of the Institute.

-We endeavor to utilize the best scientific understanding and cooperation with authorities, landowners, and the wider community to achieve watershed protection strategies which are economically viable, socially and ecologically sustainable.

-We undertake outreach and networking with organizations and individuals having similar objectives. Our view is to identify and share best management practices, which will influence decision-making to the benefit of the river environment.

The SCWP have signed a resolution requesting the Bioengineering Institute to fiscally sponsor this funding application, and they have requested that the Institute receive and manage any grant funds awarded for the Selby Creek Stream Habitat Restoration and Riparian Revegetation Project. In doing so, the Institute agrees to receive funds on behalf of the SCWP, establish and manage an account for disbursement of the grant funds, as agreed upon and directed by the contracts executed with the funding entities, and with full transparency and review of SCWP. Filing of all required reporting documents will be the responsibility of Bioengineering Institute and before submission, reports will be submitted to SCWP for review and approval. (A copy of the SCWP resolution is uploaded in the grant forms.)

The SCWP has an appointed director authorized to represent the group for contractual and legal documents and requirements, as well as to interface with the Bioengineering Institute on fiscal management procedures. In addition, the group has appointed a part-time Project Outreach Manager, serving as an interface between all sub-contractors and individual landowners (on-site), as well as coordinator of community outreach and education activities.

Bioengineering Associates, Inc., has a well-established working relationship with SCWP as they has been actively involved in surveying, planning and permitting activities for the restoration project, having been hired by the group for such purpose. Bioengineering Associates is the leading design and construction firm for bioengineered projects in Northern California. Chief Bioengineer, Evan Engber, has served as Project Director, and will continue in that role for the proposed Project. As Project Director, Mr. Engber will coordinate the work of all sub contractors and participating resource agencies responsible for implementation tasks and activities, including Matt O'Connor, O'Connor Environmental Inc.; Damon Morelli, PE, Principal, Green Valley Engineering and Ann Baker, Landscape Architect, (all have worked professionally with Mr. Engber and Bioengineering Associates.) The region's staff of the California Department of Fish and Game, the Napa RCD, the State Regional Water Quality Board, and NOAA Fisheries are all familiar with Evan Engber, Chief Bioengineer, and the stream restoration work of Bioengineering Associates in the Napa, Russian, Eel and Garcia watersheds of Northern California. The Napa RCD has also appointed two staff members to serve as (1) RCD Project Liaison and (2) RCD Educational Outreach Coordinator, who will also work under the direction of the Project Manager to implement specific Selby Creek Project tasks. They will also work directly with landowners and

local community members on outreach and community education activities associated with the Project.

Additional Information on Project Participants:

Bioengineering Associates, Inc.: Engineering contracting firm, licensed in California, (Class A License #599522) is specializing since 1984 in watershed restoration using live building systems. Principal, Evan Engber, became acquainted with individual members of the Selby Creek Watershed Partners while working to restore specific sites on the Napa River at Larkmead Vineyards, receiving funding from both the California Department of Fish and Game and the Napa County Flood Control District. After learning of the SCWP goal to look at the larger picture in the watershed to restore and enhance the Selby Creek habitat, he collaborated with Ann Baker, Landscape Architect, to complete a comprehensive survey of the Selby Creek Watershed in 2004. Bioengineering Associates will perform the in stream bioengineering construction will a fully trained supervisory staff and experienced crew of technicians, also overseeing the work with other sub contractors and independent consultants as needed to complete the Selby Creek Project workplan.

Ann Baker Landscape Architecture specializes in ecological design and native plant restoration. Principal, Ann Baker, is currently licensed in California and Oregon. Project work in Oregon has focused on site design of schoolyard, residential and mixed use developments with special expertise in the ecological treatment of water in the urban environment. She has developed expertise in bioswales, ecoroofs and rainwater harvesting. Project work in California has centered on creek restoration with new work in winery landscapes. Ann has a Master's Degree in Landscape Architecture from UC Berkeley, and has 15 years experience in vegetation management and restoration in the Bay Area of Northern California. She grew up in Marin and Napa Counties and has a deep affinity for these landscapes.

Matt O'Connor, OEI (O'Connor Environmental Inc.) is broadly trained in earth sciences, including wildland hydrology and fluvial geomorphology. His academic training includes a B.S. Environmental Earth Sciences, Stanford University, M.S., Wildland Resource Sciences, University of California, Berkeley, Ph.D., Forest Hydrology, University of Washington. His professional experience spans 15 years; he has worked exclusively as a self-employed consulting professional for the past 10 years. Dr. O'Connor has conducted intensive quantitative investigations of hydraulics and sediment transport by streams and rivers, watershed-scale sediment source investigations, and sediment routing analyses in Washington, Montana, Oregon and California. Dr. O'Connor is Registered Geologist #6847 in the State of California.

Damon Morelli-PE, Principal with Green Valley Consulting Engineers, has extensive experience with local stream bank restoration projects ranging from stream bank bioengineering principles as outlined in the California Salmonid Stream Habitat Restoration Manual, to the required 1600 stream alteration permits required by the California Department of Fish and Game. In 2004, Damon consulted to Bioengineering Associates as project engineer for a bank restoration project on a 1200 foot section of the Russian River at Asti, providing engineering review of the design, blueprints and assistance with permitting required for multiple agencies, including NOAA Fisheries, Sonoma County Permit and

Resource Board, and the California Department of Fish and Game. In 2005, he performed a channel elevation survey for Bioengineering Associates, mapping another Russian River Project and providing the data for a HEC-RAS analysis done by OEI. Also in 2005, he provided design review and blueprinting for a Bioengineering Associates, Inc. project on private property along the Napa River.

Acorn Soupe: McCormick Sanctuary, Inc., a 501(c)(3) public benefit corporation, was formed March 2000 to provide regional support for environmental education, habitat restoration, and stewardship projects on public and private lands in Napa and Sonoma counties. The formation of this non-profit organization was inspired by a 1000-acre land donation of the historic McCormick Ranch by family heirs Babe McCormick Learned and Sandra Learned Perry, in conjunction with the Sonoma County Agricultural Preservation and Open Space District (SCAPOSD). The land is protected under a "forever wild" easement administered by the Sonoma County Open Space District and the California Department of Parks and Recreation.

McCormick Sanctuary conducted informal environmental education programs beginning in 1997. In September 2000, after identifying the community need for these types of programs, Acorn Soupe was established - a formal innovative educational program that promotes increased environmental awareness of youth through hands-on learning experiences and stewardship projects. Acorn Soupe partners with national, state and local agencies, as well as corporations and private landowners to provide resources and sites for restoration projects. Partners include the California State Parks, U.S. Army Corps of Engineers, Trout Unlimited, Napa County Resource Conservation District, Natural Resource Conservation Services, the Napa County Farm Bureau and Ag in the Classroom, The Land Trust of Napa County and Connolly Ranch, Jane Goodall's Roots and Shoots Program, and a host of local businesses and landowners.

Other Conservation Programs:

In addition, as Project Manager, Bioengineering Associates will interface with the local USDA EQIP and WHIP (Wildlife Habitat Improvement Program) Programs, having had extensive experience working with farmers throughout Northern California who have received funding from these agencies for their stream restoration projects, including projects located in the Napa, Russian, Eel and Garcia River watersheds. These funds, when available to the project by qualifying landowners, will be used strictly according to their program guidelines, specifically, for labor and equipment expenditures for on-the ground construction activities.

There are no for seen problems regarding principal participants' ability to complete work within the projected timeline, as they are all professionals who have worked successfully on projects with Bioengineering Associates. There are no apparent conflicts of interest to discuss.

D. COST

(1) Budget tasks and funding:

The Selby Creek Project has been divided into four distinct sections, all of which could be preformed independently and funded separately, although as a whole they are a comprehensive approach to reestablishing a healthy ecosystem. They are: (1) Data Collection and Permitting;

(2) Bioengineered Construction; (3) Vegetation Management; and (4) Post Project Monitoring. The local community outreach and education component of the Project is inter-related to any of these four sections, as activities, as planned, are on-going throughout the duration of the Project.

(2) Project Cost Share and Matching funds Projection:

The total cost of the first three years of the Selby Creek Project is $ 1,139,831. This is the total amount required for data collection and permitting; bioengineered construction, and Vegetation Management tasks; education and outreach; and the first two years of monitoring as described in this project proposal for funding from CALFED's Ecosystem Restoration Program. A breakdown of income and cost share is as follows:

The CALFED Ecosystem Restoration Program Funding Request is: $ 475,000.

SCWP in-kind funds: $ 80,467

Includes 10 hours per week for the first three years dedicated as the SCWP Outreach Manager; value of time and expenses devoted to landowner communications; landowner map provided by the RCD, and value assigned to donated materials (rock and logs on-site), the use of a tractor, debris removal, and labor donated for seed propagation and planting by participating landowners.

SCWP participating landowners cash support: $ 73,127.65

Based upon an up to 10% maximum (of project costs*) available cash match pledged by landowners participating in the Project, totaled from match requirements for EQIP, WHIP, or Napa County Flood Control Program funding programs, (*approximately $113,983 possible.) Also includes $25,000 contributed by the SCWP for planning, survey and design.

SCWP landowner grants for Project tasks: $ 120,000

Includes estimate of funds available to eligible farmers from the Napa County Flood Control Program, as well as EQIP and WHIP funds. The watershed group has surveyed landowners and have identified (5) who would qualify for funds and are willing to proceed with applications upon securing of grant funding to be used as match for work to be performed on their real property.

Napa County District Attorneys Mitigation Funds: $ 50,000

A grant to the SCWP for data collection and scientific review

(awarded 12/05)

Napa RCD cash match for Project activities: $ 7,700

Committed in 12-04 for specific data collection and monitoring costs; (does not include in-kind technical services also provided by RCD staff.)

Other (current) pending funds:

Application to the California Department of Fish and Game $ 333,537

Completed 3-05; pending notification

Estimate total of matching funds and landowner contributions: $ 664,831

(3) Long Term Strategy:

The SCWP has identified additional sources for grant funding all of which they intend to apply for in 2005, and as necessary in the years beyond during Project implementation. They are:

(a) CALFED's Watershed Program, Proposition 50, Chapter 7 program: For education and public outreach activities; landowner training and participation in watershed management and monitoring. This program will be applied to after securing on-the-ground implementation funding.

(b) California State Water Resources Control Board, 2005-06 Consolidated Grants Program, including applications for the Agricultural Water Quality Grant Program, Nonpoint Source Pollution Implementation Program.

(c) The participating landowners have agreed to actively support the Project, and will continue to raise money for the Project through the SCWP as well as identify additional areas of in-kind support, such as labor necessary for monitoring, seed gathering, water for irrigation, to name a few possible areas of contributions. Clearly, based on contributions made to date by members of the SCWP, the landowners have evidenced a commitment to support the implementation of the proposed restoration, vegetation, monitoring, and community educational activities.

E. COMPLIANCE WITH STANDARD TERMS AND CONDITIONS

Bioengineering Institute (as fiscal sponsor of the SCWP) is willing and able to comply with the terms of the sample ERP grant agreement template and has complete and full understanding of the standard grant agreement terms.

F. LITERATURE CITED

(1)Survey of Channel and Streambank Conditions with Prescriptions to Restore and Revegetate the Selby Creek Watershed in Napa County. (Prepared for the Selby Creek Watershed Partners by Bioengineering Associates and Ann Baker, Landscape Architect, July 2004.

(2)California Salmonid Stream Habitat Restoration Manual, State of California Resources Agency, Department of Fish and Game, Third Edition, Volume II, February 2002.

(3)CALFED Bay-Delta Program: Ecosystem Restoration Program Plan, July 2000.

(4)Habitat Inventory Report, Dutch Henry Creek(A. Rowser, V. Gekov, M. Philips with supervision and analysis by Napa Resource Conservation District staff and the California Department of Fish and Game (2001)

(5)Whole-basin Snorkel Count for Steelhead Trout in the Napa Watershed, California, Dr. T.C. Dewberry, Restoration Ecologist, Ecotrust (in Collaboration with the Friends of the Napa River)

(6) Historical Distribution and Current Status of Steelhead (Oncorhynchus mykiss), Coho Salmon (O. Kisutch), and Chinook Salmon (O. tshawytscha) in Streams of the San Francisco Estuary, California. Robert A. Leidy, U.S. Environmental Protection Agency, Region 9 and Gordon S. Becker and Brett Harvey, Center for Ecosystem Management and Restoration, Oakland, California.

(7) California Department of Fish and Game, Stream Survey, Dutch Henry Creek, November, 1958.

(8) Northern Napa River Watershed Plan, authored by the Napa Resources Conservation District in conjunction with funding from the California Department of Fish and Game, 2002.

G. NONPROFIT VERTIFICATION

The Bioengineering Institute IRS non-profit 501©(3) Determination is attached in the appendix F, pg. 66.

APPENDIX

LIST OF DOCUMENTS FOUND ON WEBSITE: « www.jokela-arts.com/selbycreekproject »)

(Not included in narrative because of file size limitations)

1. Selby Creek Watershed Location Map
2. Aerial view of Selby Creek sites
3. Photo of Dutch Henry Creek
4. Photo Overview of Problems found in Selby Creek Reaches 1-8
5. Summary Plan view of all sites
6. Site Plans for Selby Creek, Reaches 1-8

LIST OF ATTACHMENTS TO NARRATIVE (IN ORDER AS FOLLOWS):

APPENDIX A: Selby Creek Native Species for Revegetation:
(non or minor PD host species)

Trees:

Alder, *Alnus rhombifolia*
Pacific Madrone, *Arbutus menziesii*
California Buckeye, *Aesculus californica*; Mid to upper bank
Valley Oak, *Quercus lobata*; Mid to upper bank
Coast Live Oak, *Quercus agrifolia,* Upper and top of bank
Scrub Oak, *Quercus dumosa* or *Q. durata*
Calif. Black Walnut, *Juglans californica var. hindsii*
Chokecherry, *Prunus virginiana var. demissa*, Mid to upper bank
Oregon Ash, *Fraxinus latifolia*, Mid to upper bank
Ponderosa Pine, *Pinus ponderosa*
Grey Pine/Foothill Pine, *Pinus sabiniana*
Red Willow, *Salix laevigata*
Yellow Willow, *Salix lasiolepis*

Vines & Shrubs:

Dutchman’s Pipe Vine, *Aristolochia californica; Upper bank/top of bank*
Toyon, *Heteromeles arbutifolia*; Upper bank and top of bank
Spice Bush, *Calycanthus occidentalis; Mid to upper bank*
Creek Dogwood, *Cornus glabrata, Mid bank to top of bank*
Gooseberry, *Ribes californicum, R. menziesii.; Shade, top of bank*
Wild Rose, *Rosa californica; Mid to upper bank*
Birchleaf Mountain Mahogany, *Cercocarpus betuloides var. betuloides*
Manzanita, *Arctostaphylos manzanita;* top of bank
Coyote Bush, *Baccharis pilularis consanguinea,* top of bank
Buckbrush/Blueblossom, *Ceanothus cuneatus, Ceanothus spp.; Top of bank*
Buckwheat, *Eriogonum spp.; Top of bank*
Monkeyflower, *Mimulus aurantiacus and Mimulus spp.; Top of bank*
Snowberry, *Symphoricarpus rivularis, ; Mid to upper bank*
Sage, *Salvia sonomensis.; Top of bank*
Coyote Mint, *Monardella spp.; Top of bank*
California Fuschia, *Zauschneria californica; Top of bank*
Silktassel,*Garry fremontii; top of bank*
Wild Cucumber/Manroot, *Marah spp.*
Chamise, *Adenostema fasciculatum*
Lotus spp.
Perennials
Primrose, *Oenothera elata, O. glazioviana; Top of bank*
Yarrow, *Achillea millefolium; Top of bank*
Milkweed,*Asclepias spp.: Top of bank*
Penstemon, *Penstemon heterophyllus.; Top of bank*

Iris macrosiphon,; Top of bank
Gumweed, *Grindelia hirtsula; Mid to upper bank*
Potentilla glandulosa; Top of bank
Red Columbine, *Aquilegia formosa*
Aster, *Aster chilensis, Aster spp.;* Top of bank low, wet spots
Soap Root, *Chlorogalum pomeridianum,* Upper bank under Oaks
Woodland Strawberry, *Fragaria vesca;* Upper banks
Yerba Buena, *Satureja douglasii;* Upper banks
Sneezeweed, *Helenium ssp.*
Sunflower, *Helianthus spp.*
Wild Celery, *Lomatium spp.*
Phacelia spp.(several)
Bee Balm, *Scrophularia californica*
Senecio spp.
Blue Eyed Grass, *Sisyrinchium bellum*
Clovers, *Trifolium spp.*
Everlasting, *Gnaphalium canescens*

Grass and Sedge Plugs

Deer grass, *Mulenbergia andina, M. rigens; top of bank*
Blue rush, *Juncus patens, Juncus effuses, Juncus spp.; toe of bank*
Santa Barbara Sedge, *Carex barbarae; toe to mid bank*
Creeping Wild Rye, *Leymus triticoides; toe of bank*

Grass Seed

Bentgrasses, *Agrostis ssp.*
Melic *Grasses, Melica californica, Melica imperfecta; Upper banks under oaks*
Idahoe Fescue, *Festuca idahoensis;top of bank*
Red Fescue, *Festuca rubra; mid bank to top of bank*
Calif. Meadow Barley, *Hordeum brachyanthemum; upper to top of bank*
Blue Wild Rye, *Elymus glaucus; low to upper bank*
Big Squirreltail, *Elymus multisetus; low to upper bank*
Calif. Brome, *Bromus carinatus; upper bank*
*Ca*lif. Oat Grass, *Danthonia californica; mid to upper bank*

Needle grasses, *Nassela pulchra, N.lepida, N. cernua; top of bank*
Pine Blue Grass, *Poa secunda secunda; top of bank*
June Grass, *Koeleria micrantha,*
Creeping Wild Rye, *Leymus triticoides*
Grass and Perennial Mixes
(subject to change with site conditions)
Understory Mix: Upper and Top of Bank under Oaks
25% Elymus glaucus

15% Nassela lepida
30% Melica torreyana
10% Melica californica
5% Achillea millefolium
5% Trifolium fucatum
5% Gilia capitatum
5% Collinsia heterophylla

Grassland Mix: Top of Bank

20% Festuca idahoensis
20% Nassela pulchra
15% Nassela cernua
20% Poa secunda secunda
5% Clarkia unguiculata, C. purpurea
5% Eschscholzia calif.
5% Lupinus albifrons.
5% Grindelia hirtsula
5% Achillea millefolium

Floodplain Mix: Middle and Lower Banks

30% Elymus glaucus,
30% Leymus triticoides
30% Agrostis exarata
5% Trifolium fucatum
5% Grindelia hirtsula

Annual and Perennial Wildflowers from Seed

Yarrow, *Achillea millefolium; top of bank*
Calif. Poppy, *Eschscholzia californica; top of bank*
Bull Clover, *Trifolium fucatum; mid to upper bank*
Bee Balm, *Scrophularia californica; mid to upper bank*
Horkelia californica; upper bank
Miner's Lettuce,*Montia perfoliata; upper bank*
Phacelia californica, Phacelia spp.; top of bank
Brodiae spp.

Fire Weed, Willowherb, *Epilobium angustifolium, Epilobium spp.*
Chinese Houses, *Collinsia heterophylla; upper to top of bank*
Baby Blue Eyes, *Nemophila menziesii*; upper to top of bank
Wind Poppy, *Stylomecon heterophylla; upper to top of ban*
Globe Gilia, *Gilia capitata*
Farewell to Spring, Elegant Clarkia, *Clarkia purpurea, C. unguiculata*
Baby Blue Eyes, *Nemophila menzies*
Sky Lupine, *Lupinus nanus*

APPENDIX B:

Plant Species Found Along Selby Creek

Pioneer Species	Seed collected	
Trees		
Quercus agrifolia	Coast Live Oak	yes
Quercus lobata	Valley Oak	
Arbutus menziesii	Pacific Madrone	
Pinus sabiniana	Grey Pine	
Pinus ponderosa	Ponderosa Pine	yes
Acer macrophyllum	Big Leaf Maple	yes
Sambucus cerulea/ S. mexicana	Blue Elderberry	yes
Aesculus californica	California Buckeye	yes
Umbellaria californica	California Bay Laurel	
Juglans californica hindsii	Calif. Black Walnut	
Populus fremontii	Fremont Cottonwood	yes

Salix lasiandra	Yellow Willow	yes
Salix lasiolepis	Arroyo willow	yes
Salix laevigata	Red Willow	yes
Fraxinus oregana	Oregon Ash	yes

Shrubs and Vines

Quercus dumata	Shrub Oak	
Ceanothus cuneatus	Buckbrush	yes
Rubus californica	Calif. Blackberry	yes
Arctostaphylos glandulosa	Comon Manzanita	
Cercocarpus betuloides var. betuloides	Mt. Mahogany	yes
Erioganum nudum	Naked Buckwheat	yes
Mimulus aurantiacus	Bush Monkeyflower	yes
Symphoricarpus alba var. laevigatus	Snowberry	yes
Vitis californica	Wild Grape	
Aristolochia californica	Dutchman’s Pipe	
Epilobium canum	Hummingbird Flwr	yes
Adenostema fasciculatum	Chamise	yes
Artemesia douglasiana	Mugwort	
Prunus virginiana var. demissa	Chokecherry	

Garrya elliptica	Coast Silktassel	
Lonicera hispidula		
Monardella villosa	Coyote Mint	
Baccharis salsifolia	Mulefat	
Brickellia californica	Calif. Bricklebush	yes
Heterotheca oregana	Or. False Goldenaster	yes
Salvia	Sage	
Ribes sp.	Gooseberry	
Cornus glabrata	yes	
Ferns, Sedums		
Pellaea andromedifolia	Coffee Fern	
Cystopteris fragilis	Bladder Fern	
Pentagramma triangularis	Goldenback Fern	

APPENDIX C: Reach 1: Silverado Trail to 500 Linear Feet

Channel Characteristics: Channel Slope -1.14%

30’ wide channel, 11’ deep, with 1:1 bank slopes.

Just upstream of this reach, Dutch Henry and Biter Creeks converge, and then rush through the culvert under the Silverado Trail. The flow velocity is quite high coming through the culvert. The upland watersheds are steep and there is no opportunity for the flows to spread out prior to reaching the culvert. The channel runs straight out from the culvert for about 500 feet in a confined channel with no access to flood plains. This means higher flows cannot spread out and dissipate their energy which is carried downstream to the first large bend in the creek at 900 Linear Feet.

This produces a reach downstream of the culvert that is shaped like a giant bathtub in cross section. The bed of the stream is 30’ wide and the banks slope up at a 1:1 slope or greater. The channel depth is 11’ at the culvert outlet, then 8’ at 210 Linear Feet. Judging by the exposed tree roots, the channel has incised 4-7’ during the life span of the trees. As a result of these channel and flow characteristics, many of the large trees in this reach are being actively undermined or already have been lost.

The bank soils consist of loosely consolidated cobble and sandy clay loam. When the toe of the slope is eroded, the upper bank tends to erode away at a fairly vertical angle. There is very sparse bank vegetation due to the vertically eroded cobble face. The top of bank vegetation is better with a narrow corridor of over story trees shading the creek from both sides and some diversity of shrub species. Interestingly, there is a high concentration of Mountain Mahogany on the left bank in particular as well as Valley Oak, Coast Live Oak and Grey Pine.

Prescriptions

Bioengineering: In this reach we established three goals: preserve existing trees, prevent further channel incision, and stabilize the banks, especially at the toe. We would have liked to devise a more diverse set of prescriptions to dissipate the energy of flood waters, but due to the confined nature of the channel, there was little opportunity.

We have recommended cross channel weirs on 150 Ft. intervals to prevent further incision. The weirs stabilize the bed of the stream and by preventing down cutting stabilize much of the bank toe. The weirs consist of rocks placed across the stream from bank to bank which arc upstream in the center. This arc focuses the flow to the center like a lens causing deposition on the upstream side of the weir and a scour pool on the downstream side, center channel. There is deposition downstream of the weir along the outside protecting the toe of the downstream banks. The pool formed in the center acts to dissipate erosive flow energy. The weirs were positioned to protect existing trees and recruit sediment. At other sites of eroding trees, boulders were placed about tree roots to defend them from further erosion.

Revegetation: In this reach we primarily sought to establish more vegetation on the stream bank and replace what species have been lost due to disturbance in the top of bank vegetation. As the bioengineering structures stabilize the banks and recruit sediment, there will be an opportunity to do a second round of plantings closer to the bank toe. We used plants that we found well represented onsite like Bush Monkeyflower, California Fuschia, and Blue Wild Rye, and also species that we found only one or two remnant plants. Some of the more delicate species we found like Goldenback Fern will be able to spread themselves slowly as the banks become more stable.

Transition 500-600

A transition reach is an area where the characteristics of one reach change gradually to the characteristics of the next reach. In some cases there is no transition area and the change is abrupt as in the change from reaches 5 to 6, 6 to 7 and 7 to 8.

Reach 2: 600-1200 Linear Feet

Channel Characteristics: Channel Slope -1.05-1.33%

20'-25' wide channel, 4-5' deep, with 2:1 bank slopes.

In this reach the stream begins to recover from the flows downstream of the culvert. The channel depth is 5' and there is more bank vegetation. A levy appears on the right bank, and another on the left bank which confines flows and disconnects the creek from the floodplains. The floodplains are low terraces that allow floodwaters to spread out and their erosive energy to dissipate. They are also areas where floodwaters are stored, groundwater is recharged and diverse channel vegetation develops.

There is a section of the right bank between 450 Linear Feet –900 Linear Feet where the bank is stable and the existing vegetation is fairly well developed. Opposite this on the left bank, the bank has been graded into a uniform embankment with some construction debris and very little remnant vegetation. The vineyard planting is very close to the top of the bank.

Starting at Linear Feet 900 the creek enters its first major bend downstream of the culvert. There is extensive erosion of the right bank, very nearly to the edge of the vineyard road. Cobbles appear to have been graded up from the creek bed to protect the bank from further erosion, but they are loosely assembled and unstable. At the left bank, there is a 20' wide flood terrace that has been cut off from the creek by a 2' levy. Behind this levy, one can see what looks like a secondary channel, but is probably the original elevation of the flood plain. At the end of the reach the thalweg or centerline of the stream flow points directly at the Damske bank that has been heavily armored with large rip rap.

The vegetation in the section from 900-1200 has become extremely sparse. There are 1-2 trees on the right bank (south side) to shade the creek and few shrubs to help stabilize the banks.

Prescriptions

Bioengineering: In this section we had several challenges: we wanted to dissipate some flood energy by

restoring access to a floodplain, stabilize the right bank between 900-1200 while decreasing the acceleration of the water along this rocky bend, and re-direct/reduce the impact of the creek on the Damske bank at 1200 Linear Feet. Ideally, we'd like to lower the left bank levy and use this material to help define a low flow channel while providing a low terrace for high flows to spread out on. The right bank will have constructed, vegetated boulder wing deflectors. These wing deflectors will stabilize the toe of the right bank and soften and push the thalweg back to the center of the stream. When the thalweg gets re-aligned, the vector of the stream no longer points directly at the Damske rip rap bank, but Points down stream.

Revegetation: One primary goal for this reach is to provide shade for the stream, and a second is to establish bank vegetation that will control erosion and provide habitat diversity in the long run. Our third goal is to restore the original vegetation types to the extent possible given changes to soils and bank configuration.

Judging from a 1940 aerial photo, it appears that this portion of the creek was well vegetated with trees in an open woodland or more dense riparian woodland configuration. Today the left bank lacks tree cover almost the entire length. The bank has been graded and there is a vineyard planted close to the top of bank. For this reason we are limited in the choice of trees and shrubs that will thrive in this location and fit in the available space. We propose to plant fast growing Ash and Cottonwood along the lower bank to form a pioneer canopy and shade the stream. Next we propose planting pioneer species shrubs and perennials into the bank between the rocks. A row of beneficial insectary plants (flowers all seasons) along the top of bank would be an ideal edge between the vineyard and the riparian area because it would benefit both.

On the right bank from foot 450-900 our primary approach is to enhance native grasses and wildflowers. The native grasses and wildflowers of the creek have largely been lost to disturbance and competition from European annual grasses and herbaceous weeds. Open grassy banks, meadows and floodplains dominated by grasses were once an important component of the creek ecosystem. Most of the native grasses are perennial bunch grasses that grow a larger and more stable root ball than annual grasses and provide the matrix vegetation that supports a broad array of wildflowers. Restoring the grassland component of the creek ecosystem will take some persistence and patience, and would benefit from the use of small prescribed burns to reduce non native grass and weeds and stimulate seed germination from fire dependent species.

There is a windrow of cobble along the top of the right bank that separates the creek bank from an open top of bank area and radiates heat. Particularly on the creek's right bank there are long windrows of vineyard cobble and creek cobble that in many instances do not appear necessary for flood protection. In general we propose to establish optimal levee heights in areas where they are necessary to protect the vineyard, but to reconstruct these levees so that they are capable of supporting diverse vegetation and become part of the creek environment rather than a distinct barrier. We think that we might find interested vendors for the field cobbles in the landscape and construction industry.

On the right bank from 900 to 1200 the row of planted Boulder Wing Deflectors will pro-

vide immediate bank vegetation. Establishing a row of trees 20’ on center at the top of bank will provide critical shade for the creek from the southern exposure. Shade over the creek reduces water temperature and substantially improves the fishery.

Transition 1200-1450

Reach 3: 1450-2030 Linear Feet

Channel Characteristics: Channel Slope -.94%

15’-25’ Channel, 9’ deep, with 2:1 bank slope.

This is a widely variable reach that appears to have been managed with grading and levies. The slope of the streambed drops below 1% and sediment can build up in the streambed that may cause the stream to change direction or leap its banks. There are two areas of terrace fill that disconnect the stream from flood plains and increase pressure on the opposite bank: The first is at 1450-1740 on the right bank, the second at 1700-2000 on the left bank.

A large area of remnant Oak Woodland persists on the left bank from 1450-2050 that demonstrates what the climax vegetation of this stream reach may have looked like. This woodland and the grass terraces around it can be improved through vegetation management to remove invasive exotic plants and increase native plant stands and diversity.

On the right bank, there are long sections with very little tree cover to shade the stream and maintain lower water temperatures especially along the rip rap section from 1740-1958.

Prescriptions

Bioengineering: There is a balancing in this section of the need to disperse flood waters, and the need to maintain channel capacity through sediment transport downstream. We can observe that the very wide sections of stream fill with cobble, and the narrow sections without any flood terraces cause bank erosion.

We propose to remove portions of the levy and terrace fill and re-establish flood plains while structuring a low flow channel. The low flow channel would be approximately 17’ wide with terraces 12-24 inches high and up to 20’ wide on one or both sides. The low flow channel will transport sediment downstream and maintain the thalweg inside the existing stream corridor. Essentially we are creating a managed stream corridor based on a natural model. We haven’t room to let the stream create its own natural channel form, and we don’t want to armor every bank and create problems of water quality, flood, and extremely low spring flows downstream.

Re-establishing the flood plains will spread a large portion of the floodwaters out over a terrace, slowing the water and allowing a percentage to infiltrate into the soil. This will decrease erosive pressure on the opposite bank. The floodwaters that are infiltrated into the terraces slowly percolate out into the stream or down into the groundwater. This supports a longer period of time when the channel holds water. Riparian vegetation cleans and filters the water via bacteria active at the plant roots. Studies have shown that rivers are dependent on their tributaries for water quality because of the greater soil and plant interactions with smaller amounts of water.

Revegetation: In this reach of the stream there is a great stand of remnant Oak Woodland on the left bank, and a nice large terrace on the right bank. We can enhance these areas by removing exotic plants like the Acacia and increasing the percentage of native grasses and wildflowers and establishing a greater diversity in the shrub layer.

There is a portion of rip rap on the right bank where we would like to establish trees for shade by planting larger trees in some of the interstices between the rocks and some at the top of bank.

Transition: 2030-2200 Slope: -1.78%

Reach 4: 2200-2600 Linear Feet

Channel characteristics: Channel Slope -1.01%

6’ Deep, 15’-20’ wide, with 3:1 – 4:1 bank slopes.

Reach 4 we call “Maple Alley.” Dotted along its length are tough old Big Leaf Maples that define the channel and hint of a by-gone era of more abundant water in the creek. This reach though less wide than many other sections and with a low gradient (1%) has relatively few erosion sites and no build up of sediment in the channel. The main difference between this reach and the ones just above and below are the large trees that appear to stabilize the channel configuration in a healthy balance. We can emulate these patterns on other sites.

Prescriptions

Bioengineering: The primary issue in this reach is to protect the old Maples and Ponderosa Pines from root erosion. These trees are largely growing in the channel rather than on the banks. We will defend them with Boulder Wing Deflectors that are wedge shaped structures of rock placed along the bank and out into the flow.

Revegetation: In this reach we are enhancing the vegetation that is already there by adding some over-story trees, thickening stands of shrubs, and restoring native perennials, grasses and wildflowers.

Transition 2600-2800

Reach 5: 2800-4100 @ Larkmead Bridge

Channel Characteristics: Channel Slope -1.08%

Channel bed width: 20’-60’, depth 5’-6’, and bank slopes: 1:3-1:6.

In this reach the channel is very broad without a clear low flow channel in many areas. Parts of the channel appear to have been managed by dozing the cobble up on the stream banks. In general, the left bank has few erosion problems, mostly small scarps, but the right bank has been heavily managed for bank erosion and flood control. Much of the right bank in this reach has a cobble levee structure of varying height and width at the top of bank and in some places wire gabion baskets.

There is a section between 3450 and 3600 where the channel configuration is excellent. In this section there is a well-defined low flow channel and terraces up to 20’ in width about 3’ higher in elevation than the low flow channel bed.. This allows the stream to spread out and lose erosive force in a flood. There is a lot of vegetation on these terraces that stabilize them. We have proposed some techniques to introduce this vegetation in other reach areas.

Prescriptions

Bioengineering: In this reach we plan to establish a low flow channel in important sections, protect endangered trees and repair a low cut scarp. We want to assess the height and function of the levees and see if they can be re-shaped into a forms and soils improved so that they will better support vegetation. A focused effort on vegetating this reach will dissipate flood energies, infiltrate floodwaters, improve soils, and stabilize the banks.

Revegetation: A primary goal for this reach is to increase tree plantings throughout but especially on the southern (right bank) side of the creek, and to reduce water temperatures and evaporation. Planting sparsely vegetated low terraces will increase channel stability and provide diverse habitat as well as shade. We would like to work with the levee materials and side slopes to make them more hospitable to plants by reducing steep slopes and improving soils. We need to establish a lot of pioneering plants in this reach that can accommodate the dry, hot environment.

Reach 6: 4100-6000

Channel Characteristics: Channel Slope -.79%

Width: 20'-30'; Depth 4.5 – 6.5'; Bank slopes 1:1-5:1.

This reach, from the Larkmead Bridge downstream, is straight, uniform and narrow, and most likely has been channelized. The left bank, and much of the right bank are heavily armored with either stacked boulders or cobble filled revetment walls. The wire revetment structures are generally failing at the toe and like the rip rap provide little habitat and shade for the creek.

Floodwaters accelerate through this reach because there is little floodplain terrace area and sparse bank vegetation to provide roughness to interfere with flow velocity.

There are some areas with healthy native vegetation on the right bank and throughout the reach wild rye grasses and blue rushes appear scattered along the toe of the banks.

Prescriptions

Bioengineering: Transverse and cross channel structures will improve bank stability and increase channel diversity to the great benefit of fish. Turbulence at the tips and center of these structures will absorb some of the erosive force of high flows that appear to be having an impact downstream.

Revegetation: Establishing more vegetation here will lead to cooler water and less evaporation. The Ash and Cottonwoods would be placed in and around the lower bank boulders on the left bank, and Oaks and Grey Pine can be planted along much of the right bank. It is important to preserve and augment the toe grasses and rushes that have become established here.

As the vineyards are close to the top of bank on both sides of the creek, it would enhance the habitat to provide a dense planting of native plants along the edge of the road that would separate the vineyard from the creek. This can be done with a dense planting of native shrubs, perennials, and greases that support beneficial insects and keep vineyard weeds, amendments and foliar sprays out of the creek.

Reach 7: 6000-7500 Linear Feet

Channel Characteristics: Channel Slope: -.69-.78%

Channel bed width: 10' – 25', depth: 4'-6'; Bank slopes 1:1-5:1.

This reach of the creek has some diverse habitat and channel form but is heavily impacted by the straight reach just above it. At 6000 linear feet there are two large slabs of concrete that lie directly in line with the long straight channel upstream. The stream flow deflects right off these large slabs and starts a pattern of strong short meanders, almost a zig-zag, which not only creates diverse channel form but also significant erosion areas. There are flood terraces on both banks that appear slightly too high in elevation to dissipate flood waters. Willow appears on the creek in this reach, stabilizing the banks in areas but confining the channel flow in others. This willow will need to be managed.

Prescriptions

Bioengineering: Stabilize eroding banks and re-connect the creek to the extant flood

plans via cross channel weirs. Harvest willow shoots to plant in bioengineered structures. Repair erosion control structures that are being undercut by the stream.

Revegetation: Develop flood plain plant communities and increase creek shading with tree plantings on both banks. Create a strong edge to the vineyards with native plants that create an insectary for beneficial insects. Restore damaged soils and remove invasive exotic Vinca Major and Himalayan Blackberry. Develop a management approach to the willows that will balance channel capacity and bank stability and encourages the development of climax plant communities.

Reach 8: 7500-8350 Linear Feet; Confluence with Napa River

Channel Characteristics: Channel slope: 1.24%

Channel bed width: 15', Channel depth: 13'; Bank slopes: 1:1 – 2:1.

In this reach the creek transforms into a deeper channel with a very high percentage of canopy cover, highly eroded banks, and more persistent flows. Himalayan Blackberry is very abundant here, which is an indicator of damage and disturbance. The channel is quite incised, probably in response to the incision of the Napa River. This incision has eroded the channel bed down to clay soils in the bottom half of the reach. Still there is a density of vegetation and habitat greater than most other stretches of the creek and a large remnant natural area on the right bank between the creek and the Napa River.

Prescriptions

Bioengineering: The challenges here are to stabilize the banks and the channel bed to restore spawning and sheltering areas for salmonids. Cross channel weirs will be used at intervals to raise the base elevation, stopping the down cutting and trapping spawning gravels. Placement of boulders and large fallen live wood will create bank stabilizing habitat structures for fish.

Revegetation: In this reach there is less need to establish large trees but a greater challenge removing the exotic Vinca and Himalayan Blackberry and re-establishing native vegetation on those banks. Both the Vinca and the Blackberry are on the list of top five host species for Blue Green Sharpshooters and Pierce's Disease that is deadly to vines. Pierce's disease has had a significant impact in the portion of the Larkmead Vineyard between the creek and the Napa River.

We will aim to establish diverse under story vegetation adapted to shade, that will stabilize the soils and resist further re-colinization of the Vinca and Balckberry. There will be a greater need for channel maintenance in this reach to repair storm damage to banks and provide good channel capacity for flood waters.

APPENDIX D:

Selby Creek streambank Stabilization and Revegetation Survey Winter 2003-04

By: Evan Engber, Principal, Bioengineering Associates, Ann Baker, Landscape Architect

Left or Right streambank referenced facing downstream abbreviated LB and RB

0ft. Begins at Silverado Trail.

Site #	Station Dist. (ft.)	Existing Condition	Existing Exotic Plant Removal	Bioengineering Prescription	Revegetation
1	RB 0-40 P#1044	Vertical cut in streambank 4-10' high below culvert outlet at Silverado Trail. Evaluate culvert for fish passage.		Stabilize with 1/4-1/2 ton boulders (Boulder Streambank Protection) at base with Willow & Coyote Brush sprigging in interstices.	Seed Coyote Brush Baccharis pilularis Blue Wild Rye, Ely glaucus onto soil a between boulders.
2	RB 55	Grey Pine undercut.		Stabilize with Boulder Wing Deflector 13' base 13', height 3', 8' thick. (15 yds)	

3	LB 0-26 P#1045	Vertical cut in streambank 4-8’ high.		26 feet <u>Boulder Streambank Protection</u>. Use 1/4-1/2 ton boulders with rooted cuttings in interstices.	Plant Coyote Brush rooted cuttings at bottom, Wild Rose middle, Snowberry top.
4	LB 52-60	Valley Oak undercut. If it falls, upper streambank and terrace erosion will occur.		<u>Boulder Wing Deflector</u> to protect tree and preserve streambank, built in a "V" shape with tree at center 8’ base and sides of "V" 6’ each. 2’ high. (10 yds)	
5	LB 26-108 P#1048	Vegetation summary: in this section the top of bank is well vegetated, but the lower banks are cobbley and sparsely vegetated.	Remove Tree of Heaven, an invasive exotic plant from China, which suckers extensively and seeds prolifically.		Plant 3 Mountain Mahogany with Vi Honeysuckle , 5 California Fuchsia, California Brickleb at toe with 200 Creeping Wild Rye plugs at 1’ on cente minimum.
6	RB 61-108 P#1046	Vertical cut streambank 6’.		<u>Boulder Streambank Protection.</u> 47’ to a 4.5’ height with rooted cuttings.	Wet season plantin 15 rooted cuttings Coyote Brush as pioneering species toe with boulder protection. Use driwater cells for supplemental wate Pack in ample soil placement. Use bu bags to protect soil

7	RB 55-108	Vegetation summary: in this section the top of bank is well vegetated, but the lower banks are cobbley and sparsely vegetated.		Plant 5 Ash near to and seed Blue Wild
8	X 108	Longitudinal profile 1.14% Some large boulders in stream can be used in weir. Eroding streambanks. Two Oaks threatened.	Construct Cross Channel V-Weir between two Valley Oak trees (30 yds) to be cabled together.	1 year after bioengineering, establish 25 plugs I Rush at base of roc with 25 plugs Cree Wild Rye at each e weir structure in ar accruing sediment. Plant Bush Monkeyflower, Mountain Mahogar California Fuchsia upper streambank each, both sides.
9	LB 108-166	Revegetation: in this section the top of bank is well vegetated, but the lower banks are cobbley and sparsely vegetated.		Plant Blue Rush an Creeping Wild Rye toe and continue B Monkeyflower, Coy Mint and Californi Fuchsia plantings u streambank. Seed grasses for Oak und story at top of bank with 1 Coast Silk Tassel, 2 Mountain Mahogany.

10	RB 166 P#1050	Stump detached from streambank. Can force high flows into streambank.	Pull stump down into stream and cable to boulders as part of Boulder Wing Deflector. 12’ base, 10’ height, 3’ thick. (10 yds)	
11	LB 166	Streambank erosion above low flow channel margin.	Stabilize with low profile Boulder Wing Deflector 8’ base, 9’ height, 2’ thick. (10yds)	
12	RB 108-200	Vegetation Summary: Sparse vegetation on bank due to near vertical face and cobbly soils. Oaks and Pines at top of bank.	See above lines 6,8,10 for all Bioengineering this stretch of right streambank.	Use 12 OR False Goldenaster, 200 B Wild Rye plugs. Tr winter plantings of Deer Grass plugs to evaluate for future.
13	RB 221 P#1051	Stump in creek deflecting flows to opposite low boulder wall.	Stabilize large root ball with 5 yards of boulders.	
14	LB 223-234 P#1052	Extremely low rock wall. Eroding bank downstream.	Sprig existing boulder wall with live willow cuttings. Place Boulder Streambank Protection on 11-foot eroding bank just downstream.	Sprig upper Left B boulders with roote cuttings of Coyote Brush.

15	LB 249-257 P#1053	Tree undercut.		Boulder Wing Deflector at tree (5 yds).	
16	RB 200-300	Vegetation Summary: Steep stoney streambank with Under Story Fern, Monkey flower, Wild Rye. Good Pine canopy establishing.	Remove Invasive Fennel.		Seed open areas aft fennel removal wit Phacelia, Blue Wil Rye, Calif. Brome. Plant Blue Rush af bioengineering stabilizes streamba and creates sandy t
17	LB 200-300				Vegetate with Ribe calif., Wild Rose, Snowberry, Coyote Mint and Yerba Bu on midstream bank Creeping Wild Rye plugs@ toe. Top of streambank, plant I Monkeyflower, California Primros with California Fuc and seed Yarrow w Under Story Grass

18	RB+ LB 300-310 P#1054	Eroding streambanks on both sides. Right Bank Pine tree threatened.	Cross Channel V-Weir (central boulders at grade, cabled together) to protect tree, stabilize streambanks and increase channel diversity and sediment/ bed load transport ability (22 yds).
19	RB 319-325 P#1055	Undercut Pine.	Boulder Wing Deflector at Pine (5 yds).
20	X 367 P#1056	3 undercut Pines in a row on Right Bank starting at 367. Upper streambank will collapse if they fall.	Boulder Wing Deflector on Right Bank (10 yds).
21	RB 367-419 P#1057	Eroding streambank. Existing Toyon and 2 Scrub Oak collapsing into streambank.	45 feet Boulder Streambank Protection. Cross Channel V-Weir at Valley Oak to connect to BSP (20 yds).

22	LB 300-400	Vegetation summary: This bank has over story Oaks but the the understory is largely with non-natives.	Remove Fennel. Limit spread of invasive grasses with timed mow-ing/removal/prescribed burn.		
23	RB 300-400	Scrub Oak under Pines.	Remove Tree of Heaven. (Invasive exotic)		Plant Creeping Wil Rye at base. On up bank plant 3 Scrub 3 Toyon.
24	RB 419-460 P#1059	Eroding streambank.		41 feet Boulder Streambank Protection to a 4 foot height.	Seed boulders w/ acorns and buckeye
25	LB 400-437 P#1060	4’ eroding scarp.		Live Willow Mattress, 37 feet, Boulder toe.	
26	LB 440-500	Sparsely vegetated top of bank.			Plant 3 container o and burlap Valley C 25’ on center with Ceanothus cuneatu on center and Chan interspersed. Start plantings low + mi bank 20’ on center Coyote Brush 9’ or center.

27	X 517 P#1910	Transition to broad featureless channel begins here. Bed load and sediments drop out in this reach due to greater width/lower flow velocity.	Cross Channel V-Weir 24’ long with streambank protection: 6’ base, 8’ height, 1.5’ thick (30 yds). Weir to be cabled, central boulders placed at grade. The following series of V weirs will focus stream flow in channel center, protecting streambanks and increasing transport velocity.
28	RB 460-800 P#1911	Fairly decent streambank section here with good representation of native trees and shrubs.	

29	LB 440-900 P#1912	Partially rip rapped streambank with concrete pieces and large boulders randomly placed. Existing Deer Broom Lotus which is a good indicator species of the chaparral edge.	Remove Thistle.	Re-organize boulder placement, regrade for planting. Build 10 small Boulder Wing Deflectors for Maples, Sycamore at toe with instream large boulders (3 yds per deflector).	Plant Maples and A 20’ on center on lo third of streambank Ash at toe with roc protection. Plant vineyard insectary border of Deer Gra Ceanothus, Califor Fuchsia, Sage with seeded Needlegrass Fescues,Yarrow, Phacelia and Deer Lotus for some to c down over rocks w time. Protect Buckwheat and spr site collected seed prepared seed beds Establish Blue Wil Rye in pockets on l bank, and Creeping Wild Rye between rocks at toe.
30	X 667	See Site 27		Cross Channel V-Weir (40 yds), cabled, central boulders at grade.	
31	RB 830-900 P#1913	3’ scarp developing at streambank where thalweg hits toe.		Pull back bank to a 2:1 slope, mulch, seed, jute net, and plant.	Plant Oregon False Goldenaster in jute Spreading rush as w as seed mix: Blue W Rye, Creeping Wild Rye, Red Fescue.

32	X 900 P#1914	See Site 27	Cross Channel V-Weir, 40 yds rock, supplement with existing onsite rock. Attach to Left Bank 8’ base, 10’ height, 2’ thick. Right Bank 10’ base, 14’ height, 2’ thick. Cable together, central boulders at grade.	
33	RB 900- 1200 P#1915	Cobble from streambank has been pushed up on streambank to create an unstable, very hot and dry bank with zero canopy and little vegetation.	Seven Boulder Wing Deflectors with layered in cuttings or rooted plants, 50-60’ on center. Move thalweg toward center.	Plant Valley Oak ar Grey Pine 30’ on center, large contai or ball and burlap w driwater cells. Esta Coyote Brush, OR False Goldenaster i Boulder Wing Deflectors. One ye later plant between deflectors Blue Wil Rye, Creeping Wil Rye, Oregon False Goldenaster, Coyot Bush

34	LB 900-1200 P#1916	Small levee of graded cobbles, cutting off the floodplain and small secondary channel from main channel. This increases pressure on the opposite streambank and the Damske rip rap downstream.	Remove Fennel @ 1100-1200’.	Reconnect stream to floodplain and floodplain channel by lowering levee to create low terrace. See existing cross section. New cross section to be designed, designate disposal site for cut material.	Top of streambank four Valley Oak, ar Mountain Mahogar Immediately after regrading (early fal seed native grasses wildflowers on regr floodplain areas (Floodplain Grass I and protect with co netting. Preserve/enhance n Phacelia, Gallium, Mint, and Buckwhe
35	RB 1200-1300	Gray Pine & 1 Coast Live Oak on upper dry bank with very rocky soils. Beginning of fill material in high, irregular levee.		Consider removal of upper portions of levee fill which is higher than opposite rip rap by several feet. To create terraced streambank that releases pressure on Left Bank.	Regrade streamban remove excess fill v saving existing larg trees. Further analy of cut amount and s disposal location. A to plantings: 3 Ceanothus, 3 Cham 1 Coast Live Oak, 1 Bush Monkeyflowe Muhlenbergia, and Upland Grassland I

36	LB 1200-1451 P#1917 P#1918	Rip rap armor 8’ high; drops down to 4.5 ’ low in center of reach. Fill site on Right Bank bench adds to streambank pressure in larger storm events.		Goal to increase sh on creek and vegeta over rocks to cool radiant heat effect. Stake Willow cuttin at toe. Drop Bucke Walnut, Acorns int rock interstices insi burlap sack w/ soil pack around sack w soil/gravel mix.
37	LB 1320 P#1919	Boulder armor is undermined.	Place 1yard of large toe rock beneath tree.	

38	RB 1345-1650	Large irregular fill on streambank, very cobbly in places, and 2-3 low spots with large existing trees. The berm created by the fill disconnects the creek from it's floodplain which is up to 40' wide and extends back to the vineyard avenue. This floodplain can be reconnected to the creek without endangering the vineyard, by pulling back berm to the fenceline and making the floodplain available to the creek for flood dissipation.	Create low flood plain terrace. Extend 4-6' from toe of the bank and create 12'" high terrace extending back 9' with slight gradient up to streambank. Grade rest of slope 3.5:1 and move rock pile levee back against fence.	During grading pro existing trees with temporary fencing barrier. Plant Cham (7), Ceanothus (7), Mountain Mahogan (7) 12' on center Pr to planting use prescibed burn to eliminate non-nativ grasses. On re-grad bank establish Monkeyflower, California Fuchsia, Coyote Mint (some shade) in clusters. A seed Grassland Mix the toe of bank, wh connects to low ter trench in rooted cuttings of Bush Monkeyflower and plugs of Creeping W Rye.
39	LB 1400 P#1920	Rip rap bank very hot and dry with zero free canopy.		Stake Willow cuttin at toe. Drop Bucke Walnut, Acorns int rock interstices wit mulch/soil cover.

40	LB 1451-1600 P#1921	Large meadow habitat area with a toe scarp.		Series of 3 Boulder Wing Deflectors (10 yds each) 18’ in length from streambank to create a low flow channel 17’ wide and then disperse greater flows onto Left Bank floodplain. Cross Channel V-Weir at downstream end of site (30 yds, cabled).	Hand grade out lev top of bank. Seed collected wildflowe and grasses, preser Brodiae. Area is a priority for controll burns and seeding t enhance native gras and wildflowers. Grassland mix with modification for wetter/lower spots.
41	RB 1650-1740	Cobbly bank with many non natives and low density of vegetative cover.	Remove Fennel, Scotch Broom.		Cluster midbank plantings of Califor Fuchsia. Seed OR I Goldenaster, Calif. Phacelia. At the top streambank plant 5 trees: of Coast Live Oak Valley Oak, an Grey Pine w/ driwa cells.
42	LB 1600-1700 P#1922	Rocky, loosely piled streambank, good top of streambank vegetation, but poor streambank vegetation.			Streambank plantin of pioneering plant Coyote Brush, Red Bush Monkeyflowe Ceanothus cuneatu Chamise. Plant trees/shrubs in burl sack with rock to protect soil area. Se native clovers and grasses on sterile g with Elegant Clark

43	LB 1700-2000 P#1923	Stable streambank needs diverse shrub plantings. Small levee cuts off floodplain.		Remove small rock levee and incorporate materials into flood terrace. Stabilize with 15 willow Brushes, 12-18" high and 6’ long.	Preserve existing b wildflowers and he Pearly Everlasting, California Poppies Elegant Clarkia. Us control burn or tim mowing to establis native grasses and wildflowers. Plant trees: Coast Live C Valley Oak, and Bi Leaf Maple at back edge of meadow to establish greater ed separation from vineyard
44	LB 1600-2050 P#1924	Diversity of vegetation indicates how other areas on the upper valley reaches may have looked prior to disturbance. Reconnect this area to periodic flooding to provide great recharge area. Some evidence of flood channel carving within woodland.	Remove Acacia.	Woodland area set back from streambank.	Remove Acacia an protect seedling tre and shrubs. Chip Acacia branches (h in N) and use as we barrier around emerging Oaks. Pla bulbs, herbs, shrub beds and seed open areas with Upland Grass Mix asap to prevent weed invas

45	RB 1740-1958	Riprap on streambank.	Green up rip rap with strategic large tree plantings and shrub plantings at toe. Construct 5 Deflectors with cobble fill and boulder exterior layered with rooted cuttings 20-30’ on center (15 yds each).	Plant on Oregon As 15’ on center stagg along mid to top of streambank. Initial provide irrigation c driwater cells. Use degradable pots or burlap sacks to reta soils in high flows. Ceanothus species rock interstices as r crop. Provide 2-3 y old Ponderosa Pine trees 15’ on center beyond rip rap at to streambank.
46	LB 1880	Secondary channel on left side, good flow in thalweg moving larger cobbles.		

47	LB 1900-2030, RB 1958-2030 P#1926	Left Bank streambank cobble levee leaves old flood plain largely disconnected. Secondary channel on interior Left Bank curve 1830-2030. Cobble building up between two channels, acceleration along right bank.		Starting at 1900 ft, LB, establish Six, 12’ long Baffles with live materials on both sides. Push thalweg to center. Blend small levee material into streambank. On right bank, construct four baffles starting at 1958 ft.	Incorporate rooted cuttings into trenches/baffles: Coyote Brush, Bricklebush, Helen Willow. Add Clark Poppies, Sisyrinchi native grasses to streambank.
48	RB 1958-2030 P#1925	End riprap, start streambank of piled bed load material.		In addition to Bioengineering prescribed above, remove levee materials above the necessary elevation and place this material at the furthest area of the upper bank terrace by the vineyard fence.	Revegetate the grad area with 1 each: C Live Oak, Valley O Big Leaf Maple 30 center. Establish Manzanita, Chamis and Ceanothus shru 9’ on center. Seed Grassland Mix und Oaks with Gilias ar Chinese Houses an plant clusters of De Grass plugs with Clarkia on bank be
49	LB 2030 P#1927 P#1283 P#1928	Channels come together at 1st NRCS rock barb. Channel at Left Bank outside of curve.		Rock barb bottom rocks too small, moving, fabric exposed. Trench in below and replace with 3 big boulders in trench.	

50	RB 2030-2100 P#1286 P#1284	Streambank graded and seeded but losing toe material.	Excavate 4 baffles perpendicular to stream flow and plant rooted cuttings off revegetation list. Lay a few larger stones on upstream end of these baffles to protect toe plantings.	Establish rooted cuttings in trenches False Goldenaster v Coyote Brush, and with Creeping Wild Rye. On upper 1/2 bank, plant 3 Big L Maple 30’ on cente and 3 Mountain Mahogany 12’ on center. Seed Purple Foothill Needle Gr Pine Blue Grass, California Brome a Clarkia, Poppies an Sisyrinchium.
51	RB 2196 P#1929	Maple with insufficient rock armor.	Cross Channel V-Weir at Maple (2196’) (30 yds), to be cabled,with central boulders at grade.	
52	RB 2100-2200	Rock pile on bank made up of field cobbles separates streambank vegetation.		Pull back rock pile vineyard avenue ed and plant trees and shrubs: 3 Valley Oa Mountain Mahogan Chamise, 3 Ceanot 15 Bush Monkeyflo and Grassland Seed mix.

53	LB 2229-2241	Erosion around tree roots.	Boulder Wing Deflector around Maple (6 yds) 12'base, 13'height to preserve tree and streambank.	Plant 25 Creeping V Rye plugs behind deflector after sand build up.
54	RB 2238-2246	Erosion around tree roots.	Boulder Wing Deflector (4 yds). Armor roots between tree and streambank.	
55	RB 2235-2300	Decent riparian vegetation to enhance.		Add 2 Big Leaf Ma from onsite seed so and 3 Scrub Oak at of streambank. Establish Bush Monkeyflower and California Fuchsia mid-upper streamb
56	RB 2289	2.5' eroding streambank scarp.	Boulder Wing Deflector (5 yds) 9' base, 9' height to move stream flow away from streambank	
57	LB 2200-2300	Decent riparian vegetation to enhance.		Add plantings: 1 C Live Oak, 6 Coyote Brush, 1 Valley Oa
58	RB 2316	Exposed tree roots.	Protect Ash tree with Boulder Armor (4 yds)	Good tree recruitm this section mark/protect during bioengineering.

59	LB 2330 P#1288	Riprap streambank begins.		Create Opposing Boulder Wing Deflectors (4 yds each)	
60	LB 2355	Metal pipe on bank.			
61	LB 2300-2400	For a portion of this section the bank is covered in rip rap, but other sections are only somewhat erosive and just needing additional plantings.			Plant 3 Mountain Mahogany at top o bank. Selectively remove/replace rip to plant 5 Monkeyflower, 7 Buckwheat and 9 California Phacelia
62	RB 2300-2400	Eroding streambank toe.	Remove Fennel.	-	Planting after streambank is stabilized: 2 Big L Maples, 5 Ceanoth Bush Monkeyflowe California Fuchsia.
63	RB 2412	Eroding streambank.		Boulder Wing Deflector (8 yds) 10’ base, 9’ height to move channel off streambank.	

64	LB 2400-2500	Section of bank well vegetated with trees.	Remove Fennel.		Add under story sh and grasses in an insectary hedgerow of streambank inclu Buckwheat, Ceano Manzanita, Chamis Deer Grass and Foo Needle Grass.
65	RB 2412-2500 P#1287	4’ scarp appears stable with nice terrace behind.			Plant Oaks, Grey P and Maples 20’ on center and establish shrubs 12’ on cente Chamise, Ceanothu Monkeyflower. Tim mowing and seedin increase native gras & wildflowers. Use Grassland Mix.
66	LB 2469 P#1289	Streambank erosion with exposed Maple tree roots.		<u>Boulder Wing Deflector</u> at Maple, 9’ base, 12’ height, 10 yds.	
67	RB 2500 - 2665	10-20’ wide terrace needs plantings.	Remove Star Thistle.		Focus on native gra and wildflower establishment. Plan additional toe shrub (Monkeyflower; Co Brush). Add tree plantings: 3 Valley Oak, 1 Coast Live O 1 Big Leaf Maple a back of terrace 5’ f vineyard avenue.

68	LB 2500-2600				Establish more nati grasses and herbs/wildflowers o terrace (Floodplain Mix). On top of streambank plant: 3 Leaf Maple, 9 each California Fuchsia, Sage, Manzanita, 2 plugs Deer Grass.
69	LB 2600 P#1290	Large live fallen Grey Pine lying along streambank.	Remove Star Thistle	Boulder Armor roots to prevent stream flow from outflanking the tree and eroding streambank (10 yds) 6' base, 14' height, 2 'thick.	Seed native grass a wildflower mix abo rock installation. U Story Mix with adjustment for Pine
70	LB 2600-2730	Sparsely vegetated streambank.			Focus on restoring shrub and grassland components. Prior planting do control burn in spring to re competition from n native grasses. See warm season grasse herbs and wildflow In fall plant Monkeyflower in streambank, with Mountain Mahogan top of bank, Coyote Brush at toe. After planting seed cool season grasses with straw mulch.

71	RB 2730 P#1931	Grey Pine with soil eroding from roots.	Armor with Boulder Wing Deflector (12 yds). 15’ base, 10’ height.	
72	LB 2730-2900 P#1932	Well formed terrace with small levees continues to Left Bank 3187. Good opportunity for flood terrace restoration with native grasses, herbs, wildflowers.		For entire terrace, f on enhancing terra grasslands and shru interface. Protect California Fuchsia, Buckwheat, Pearly Everlasting and spr Establish Deer Gra with plugs on viney border to filter wee seed with native insectary: Manzani Coyote Brush, Eve Primrose, Monkeyflower, California Fuchsia Control burn and se Idaho Fescue, Purp and Foothill Needl Grass, Annual Lup Poppies, Chinese Houses and Gilia in terrace grass areas. Plant Dutchman’s P Vine under existing Oaks.

73	RB 2800-2896 P#1291	Partially failed gabions.	Remove Himalayan Blackberry.	Creative cutting and re-wiring of gabions. Fill with rooted cuttings in burlap to protect root ball soil.	Regrade cobble lev beyond gabions, ad soil, amendments. 6 large size Grey P with 9 Chamise, 9 Manzanita. Burn th and seed Purple an Foothill Needle Gr with Wildflower se
74	X 2900 P#1292 P#1501	Threatened Maple and Grey Pine on opposite streambanks.		Install Cross Channel V-Weir, 30 yds, cabled, central boulders at grade, 25’ across to Grey Pine opposite Maple. 8’ base, 6’ height on Left Bank, 12’ base, 8’ height on Right Bank. Protect trees, center the flow, increase channel conveyence.	
75	RB 2900-3028	Levee 3’ made of cobbles.			Plant 12 each Calif Phacelia, Bush Monkeyflower, and California Fuschia between gabions ar levee with 3 large Valley Oak inside c levy and 5 Grey Pi outside of levee.

76	LB 2900-3000	2.5’ Toe scarp.			Plant Monkeyflowe Coyote Brush and I Wild Rye at toe. Pl Mountain Mahogar with clusters of Buckwheat.
77	X RB/LB 3028	Right Bank Maple undercut, start Left Bank levee 3.5’.		Install Cross Channel V-Weir (40 yds).	Note Buckwheat or bank. Spread!
78	RB 3028-3200	Levee with concrete chunks.			Plant Ash from cre selection along toe levee 12’ on center Plant trees directly downstream from Bricklebush. Grade berm and seed Foo Needle, and Pine B Grass with Elegant Clarkia.
79	LB 3000-3187	End of Left Bank terrace area.			Continue strategy o developing native grass/herbs/wildflo with Mountain Mahogany and Buckwheat and De Grass closer to vine avenue.
80	LB 3187	Huge berm from highway construction materials 5’ high by 18’ wide.	Remove Acacia and chip onsite.		Protect existing shr and add 3 Ponderos Pine and 3 Chamis 20 Buckwheat, 24 I Grass.

81	RB 3173-3300	Right Bank flood terrace begins 8-12? high, vegetated with Horsemint. Levees on both sides. Without the levees the cross section would be fairly wide and flat across this channel reach causing the stream to flood the banks here.	6 Live Willow Siltation Baffles to stabilize terraces. Mix of Coyote Brush in with Willows.	Monkeyflower plan on terrace above baffles, and Ash in burlap sacks 30' on center. Seed Floodp Mix lightly and use Creeping Wild Rye plugs in sand pocke
82	LB 3173-3300	Small flood terrace on Left Bank as well.	Install 4 Boulder Wing Deflectors at 40' intervals (15 yds each).	Protect Monkeyflow in streambank. Plan Ash trees 20 on ce and plant them just downstream of Horsemint plants to provide protection strong flows.
83	LB 3250	End berm.		
84	3280 LB	Thalweg hits the streambank here. Cut vertical streambank with undercut Pine trees.	Construct Boulder Wing Deflector (10 yds) 8' base, 5' height, 15' thick, to move thalweg away from streambank and protect trees.	

85	3300 LB	Large leaning Pine tree with roots exposed.		Construct Boulder Wing Deflector (10 yds) 8’ base, 4’ height, 18’ thick to move thalweg away from streambank and protect tree.	
86	RB 3300 - 3550	Large cobble pile from clearing under bridge. 200’x 12’ at top.			Remove windrow c creek bank materia possible and regrad levee to optimal height/width. Plant Ponderosa Pine and Grey Pine with Ceanothus and Coy Brush as pioneer species on reconfig levee. Plant terrace front of levee with Coyote Brush, Blue Wild Rye, and Monkeyflower. Phacelia further up bank.
87	RB 3200-3600	Good terrace forming here. Depositional with vegetation on the increase.			Continue plantings line above.
88	LB 3300-3350	3 Pines vulnerable at toe of old levee fill.	After stabilizing toe, remove Acacia and revegetate area.	Reshape materials into three planted Baffles.	Plant Coyote Brush Monkeyflower in baffles. Seed Phace and Grasslands mix berm.

89	LB 3350-3390	Bank has lost toe: 18" to 30" scarp.		Continue planted Baffles (3 more) 18’ on center.	Plant 3 Mountain Mahogany, 3 Silkta at top of bank. Plan Silver Lupines, Bus Monkeyflower, Primrose, Willow h on bank. Preserve existing Snowberry spread in shaded ar using mulch and irrigation (tempora irrigation only.)
90	LB 3390-3500	3 large Poison Oak stands, 2 Grey Pine, Coast Silktassel.	Good place to do controlled burns on Eurotrash grasses to establish natives and wildflowers.		Control burn, plant Silktassel, 9 Gooseberry, 200 Mulenbergia, and s Dry Grassland Mix
91	LB MID RB 3300 - 3600 P#1502	Channel is broad, flat and shallow to 3500’. The stream has gained power here (ft. 3500) to shape a low flow channel and terraces.		Use excavator or dozer along this reach to shape the channel to match the x section at ft. 3475. Maintain this configuration with a series of Live Siltation Baffles along both terraces at 40’ intervals: 6 on LB, 6 on RB.	Use Willow as temporary planting siltation structures Coyote Brush, Monkeyflower, Blu Wild Rye and Big Squirreltail and plu
92	LB 3390-3500	Left Bank 3 large Poison Oak stands, 2 Grey Pine, Coast Silktassel.	Good place to do controlled burns on Eurotrash grasses to establish natives and wildflowers.		Plant 3 Silktassel, 2 Bush Monkeyflowe 200 Deer Grass plu and seed wildflowe

93	RB 3400-3500	Large berm with gabions in front, concrete piled on top. Straight section of thalweg.	Remove Fennel.		Grade berm to angl repose. Cover with sheath of top soil. I Ceanothus 10’ on center as a soil buil Use plugs of Deer Grass along vineya edge. Plant 5 Valle Oak large size cont or ball and burlap v driwater cells, and Grasslands mix.
94	RB 3500-3600	Large levee berm continues.	Remove concrete at top of levee.		Check optimal leve height and spread o so levee can be pla Use excavator to di planting holes and Ponderosa and Gre Pine and Valley Oa 35’ on center.
95	LB 3500-3600	Inside bend.			Develop flood terra grasses using contr burn and then seedi with Flood Plain G Mix. Plant trees ba vineyard edge 5 Co Live Oak, 6 Silktas
96	RB 3600-3800 P#1504	Outside of bend. Maple eroding at toe. Same levee but streambank more narrow.		Boulder Armor Maple (4 yds rock)	Plant 6 Maples, and Cottonwoods at toe

97	RB 3653 P#1503	Dumped concrete and bed springs.	Pull concrete and bed springs.	
98	LB 3600-3730	Well formed terrace needs planting.		Develop flood terra grasses with contro burn and seeding F Terrace Grass Mix. Plant trees at top of streambank: 3 Vall Oak, 2 Ash.
99	LB 3760	Boulder streambank protection ends here.	Hand rock tree on LB.	
100	3800	Starting point above bridge.		
101	RB 3800-3900	Inside bend. Terrace forming.		Grade to improve b for planting. Flood grasses and forbs o terrace, Ceanothus on both toes of leve Grey and Ponderos Pine trees 20’ on ce on top of levee.

102	LB 3800-4100	Three Boulder Deflectors		At each of three boulder deflectors, and amend soils to loosen clay at top o bank. Mulch with composted yard de Add to plantings: 3 Valley Oak, 6 Mou Mahogany 23 Grey Pine, 3 Silktassel a seed combo Grassland/Under S Oak Grass Mixes o of bank.
103	LB 3813	Recently installed boulder deflector. Toe rock is moving in high flows.	Use a few larger boulders (2 yds) at the toe of these structures. Cut away exposed erosion control fabric and key tip boulders in below gradient.	
104	LB 3849	Recently installed boulder deflector. Toe rock is moving in high flows.	Use a few larger boulders (2 yds) at the toe of these structures. Cut away exposed erosion control fabric and key tip boulders in below gradient.	

105	LB 3888	Recently installed boulder deflector. Toe rock is moving in high flows.	Use a few larger boulders (2 yds) at the toe of these structures. Cut away exposed erosion control fabric and key tip boulders in below gradient.	
106	LB 3800	Armored with geo-textile netting and seeded with erosion control mix.		
107	RB 3813-4100	Piled river cobble with indication of erosion. Native plants almost absent. 18" scarp developing 3950-4020. Left Bank deflectors are pushing flow against Right Bank.	Add 3 Boulder Wing Deflectors on LB (12 yds each) downstream of previously placed BWD's. Key into streambank and substrate. More stable than on erosion fabric. Add 6 BWD's to RB, on 40 ft intervals (12 yds each).	Reshape berm. Pla trees on vineyard si of berm: Valley Oa Ponderosa Pine and Grey Pine 30' on ce Plant front of berm Bush Monkeyflowe Phacelia, Coyote B Deer Grass. Seed reshaped berm with Drylands Grass Mi
108	RB 3970	Significant erosion; approximate 2' scar.	Right Bank Boulder Wing Deflectors will end this problem. With Opposing Boulder Wing Deflectors creating more confined center channel, expected increased flow velocities should help push bed load through bridge aperture.	

109	LB/RB 4008-4096	Erosion under geo-textile fabric; fabric hanging loose, ending at bridge.		See site 107.	
110	4124 P#1429	Downstream side of bridge.			
111	RB 4124-4300 P#1428	Failing wire revetment with concrete chunks. Two existing Manzanita.	Remove Acacia.	Remove wire, reshape streambank, stabilize toe with boulders and wrap Erosion Control Blanket up streambank.	Plant 3 Valley Oak top of streambank. 5 Manzanita. Plant of Ceanothus, Deer Grass, Coyote Min Sage.

112	LB 4124-4500	Bank entirely rip rapped with vineyard avenue close to top of bank. Only 3-5’ wide planting strip on top of rip rap for top of bank plantings.			Plant Cottonwoods toe 25’ on center, A 40’ on center slight higher where holes rocks. Establish Creeping Wild Rye with coir wrapped cobble/plug plantin Plant California Fuchsia, Sage, Sed between rocks. Use Grey Pine 35’ on c at top of streamban with Common Manzanita, and Mountain Mahogar 12’ on center. Use Buckwheat, Phacel Yarrow, Deer Grass Evening Primrose, Bush Monkeyflowe and Sage to create insectory row and w barrier at top of ba
113	RB 4124-4178	Wire fencing has failed. There is some erosion. Stability is due to concrete rubble.	Remove remaining wire fencing and concrete rubble. Replace with Boulder Streambank Protection to 4’ elevation (54 ft). Rebuild upper streambank with channel bar material, stabilized with Erosion Control Blanket.		Plant boulder inters with Ash and Cottonwood 20 ’ o center. Revegetate of erosion control blanket with Califo Fuchsia, Willow H Seed Flood Plain G Mix with Clarkia.

114	LB 4124	Heavy rock armor.		Left streambank ne Ash and Cottonwoo planted between ro gaps at water edge.
115	RB-LB 4178-4460	Right Bank wire revetment has stream cobble and gravel pushed against it.	Eight alternating <u>Boulder Wing Deflectors (7 yds each)</u> to protect streambanks, increase meanders, center the thalweg, accelerate bed load transport and create pool and shelter habitat for migrating salmonids. Four deflectors on each side, middle two deflectors to have digger logs installed (Cabled together). Cross Channel V-Weir at downstream end of site, cabled, low slung (1 ft height).	

116	RB 4300-4450		Remove Fennel.		Existing Wild Rye, Clarkia and Coast I Oak seedlings need protection. In other areas blade back le to create broader planting area. Use small excavator to create planting hole Common Manzanit and Grey Pine at to bank and seed Und Story Grass Mix pl Blue Pine Grass wi Yarrow.
117	RB 4400	End of revetment wall.			
118	LB4400	Eroding cobble streambank.		This section covered by prescription at Site #116.	Plant Ash 30’ on ce and Blue Rush at to interstices. Plant California Fuschia Phacelia at top of b to fall over rocks.
119	RB 4450-4490	Good vegetative cover with multi layers of existing plants.	Remove 2 Fennel clusters.		Preserve mixed California Fuschia Coyote mint. Add Phacelia with plugs Idaho Fescue and container plants of Silver Lupine arou

120	LB 4450	Oregon Ash cluster present here indicates access to water table.			
121	RB 4400-4600	Streambank needs riparian trees. Poison Oak cluster 4515 to 4545.	Remove Fennel.		Plant trees at top of streambank: 3 Grey Pine, 3 Coast Live 3 Valley Oak, 4 Or Ash. Shrubs: 9 Common Manzanit Use a control burn deplete non native grasses and establis Grasslands seed mi
122	LB 4500	Drainage enters creek.		Reorganize local rocks into weir structure.	Weir structure will spread flow and all for plantings to add water quality (runn Establish Creeping Wild Rye and Blue Wild Rye at toe wi Idaho Fescue at top bank.

123	LB 4501-4800 P#1432	Heavy rock armor-6’ elevation. Narrow top of bank area.	Plant riparian trees toe and among bou gaps where possibl along this reach. Establish row of insectary plants at t of bank for habitat to separate vineyar from stream with w barrier. Plant Deer Grass plugs in clus of 9-18 with Bush Monkeyflower. Oth clusters of Buckwh and Phacilia with I Fescue. Seed Grass Mix in other areas Poppies, Evening Primrose and Yarro
124	RB 4501-4800	4’ elevation.	
125	LB 4600 P#1432	Elevation 6’.	
126	RB 4600	Elevation 4’.	

127	RB 4700-4920 P#1430 P#1431	Failing wire fencing, stream flow is getting behind it. Streambank here is three feet lower than Left Bank. All flooding will be into Right Bank vineyard.		Replace fencing with Live Willow Brush Mattress (220 ft) set in boulder filled toe trench. This will stabilize/revegetate streambank and act as a filter to prevent debris from entering vineyard during floods. Cross Channel V-Weir at downstream end (20 yds rock, central boulders at grade, cabled) to hold grade.	Preserve/transplant natives in this secti Establish Valley Oa and Coast Live Oak such that there are story trees approximately of 3 center.
128	RB 4920	Thalweg directed against this streambank.		Reshape streambank; if possible preserve native plants. Remove fence and metal debris. Boulder Streambank Protection where necessary for a total of 50 feet (mainly in areas where metal rubble is removed), live planting in all interstices.	Preserve/transplant native plants when reshaped. Seed gra areas with Grasslan Mix.
129	LB 4800	Armor ends; started at 4501; thalweg switches to Right Bank.			

130	LB 4800-5070	Small terrace at inside of bend.			Control burn and se Floodplain Grass M with some Blue Ru and Creeping Wild plugs. Add Coyote Brush and Monkey Flower on bank. O of bank plant 3 Val Oak and seed with Under Story Grass In open areas betw Oaks plant 75 Deer Grass, 30 Bush Monkeyflower, 8 ea Ceanothus, and 9 Common Manzanit
131	RB 4930-5070 P#1433 P#1434	Streambank behind revetment wall is almost entirely metal rubble.	Remove Fennel, Scotch Broom.	See prescription for Site 128.	To Right Bank 500 only: Plant Grey Pi Coast Live Oak alternating 25’ on center, and add shr Ceanothus and Common Manzanit the top of streamba 12’ on center. Pres or transplant Monkeyflower and Moss on bank.

132	RB 5000-5070	Revetment wall ends; thalweg switches to Left Bank.	Remove Fennel.		Slightly grade bank smooth out levee. S Grassland mix on b and plant: 1 Coast Oak. Protect existi Manzanita and especially the Dutchman's Pipe V on last three revetm posts. Preserve Mi Lettuce as well.
133	LB 5070-5340 P#1435	Cobble filled revetment wall begins; bottom of wall is failing & cobble falling out.		Six (6) Boulder Wing Deflectors :7 yds each, 12' wide, 6' base, 4' streambank height; taper to tip rock keyed in @ gradient level. Place deflectors @ 5070, 5110,5150,5190,5230,5270	Establish Creeping Wild Rye and Blue Rush in sand depos between deflectors. Plant Valley Oak, C Pine, Coast Live O 30' on center at top bank.
134	RB 5100-5225	18'w x 1-2'H terrace begins. Good planting location.	Remove Fennel.		Plant riparian trees on center: 1 Valley Oak,1 Coast Live C 2 Oregon Ash 1 California Buckeye Bay. Plant shrubs 8 center inclusive of: Toyon, Coyote Bru Ceanothus, Bush Monkeyflower. Bur off non-native gras before planting and seed Floodplain Mi

135	RB 5180	New species of Phacelia on streambank.			Collect for seed or starts.
136	RB 5225-5315	Creeping Wild Rye established in sandy toe.	Remove Nutsedge.		Use Creeping Wild and Blue Rush in c fabric wraps along to get established. Anchor with long p rock.
137	RB 5270			Boulder Wing Deflector, 7 yds rock.	
138	RB 5315				Protect little fern in streambank.
139	RB 5325	Coast Live Oak with Blue Elderberry.			
140	RB-LB 5340	Large Live Oak; streambank is eroded around Oak.		Cross Channel V-Weir at Oak tree to stabilize streambanks, protect tree and increase channel diversity. (25 yds rock, cabled)	Protect and increas existing Blue Rush add Coyote Brush a toe.
141	LB 5350 P#1436 P1437	Failing fence to 5460'.		Pull fence, mulch, seed, jute net. Boulder Streambank Protection along toe (100 ft X 3 ft tall).	

142	LB 5340-5600	Narrow, rip rapped streambank has Creeping Wild Rye at the toe and Blue Rush.		Increase Blue Rush enhance Wild Rye toe. Plant Grey Pin with clusters of California Fuchsia Deer Grass top of streambank with Primrose and seede Grassland Mix. Establish mid streambank Cottonwood and A boulder interstices don't shade out Creeping Wild Rye toe.
143	LB 5450	Streambank and root area erosion at Pine tree.	Cross Channel V-Weir at Pine tree to stabilize streambanks, protect tree and increase channel diversity. (25 yds rock)	
144	LB/RB 5400		Boulder Wing Deflector with Digger Log, 10 yds rock.	

145	RB 5400-5450	Erosion behind failed revetment wall; channel measures 25’ wide x 10’ top of streambank x 4.5’ streambank height.		Protect existing California Fuchsia clump 3’ x 10’ @ 5 Add 1 Valley Oak, Bush Monkeyflowe California Fuchsia, Goldback fern. Pla Manzanita on outsi berm. Preserve Creeping Wild Rye Blue Rush at toe.
146	RB 5450-5550 P#1438		Remove Fennel.	Preserve Coast Liv Oak, transplant seedlings nearby. Preserve Moss, and Creeping Wild Rye toe.
147	LB 5540	Wire revetment wall ends.		Preserve Creeping Rye at toe and lowe streambank.
148	LB 5568 - 5982 P31438	Boulder armor. 4’ to top of streambank.		Plant Buckeye, Coa Live Oak and Ash among rock. Rock mostly one boulder thick so pull mediu size boulders, plant saplings and replac boulder.
149	RB 5568	Mostly stable with some vegetation.		

150	RB 5630	Cluster of small Live Oaks with exposed roots.		See prescription at ft. 5540m (Site147) to 5956 (Site 152)	
151	RB 5650-5750				Plant: 1 Coast Live Oak, 50 Bush Monkeyflower, 2 Buckeye, 50 Deer Grass, 20 Pearly Everlasting, 8 Manzanita, 9 Calif Fuchsia. Existing Poison Oak ok.
152	LB/RB 5540-5956	Measures 30’ wide @ 5630. Very straight, flat cobble gravel channel with no geomorphic diversity	Remove Fennel, Dock.	Series of 15’ alternating Boulder Wing Deflectors ending at 5956; approximately 50’ apart; place one at 5630 on Right Bank to protect oaks. Eight total, 12 yds each.	Preserve/transplant Creeping Wild Rye Blue Rush at toe. R Bank 5575 Aquatic Brooklime.
153	LB 5800-5870	Boulder armored streambank.			Continue Cottonwo Ash plantings 35’ c center at toe with Creeping Wild Rye Define top of streambank insecta Deer Grass, Bush Monkeyflower, California. Fuchsia Long Petaled Iris, Phacelia.

154	RB 5800-5950		Remove Dock.		Plant Dutchman's B Vine in shade unde Oak and Monardell with Melic grass. A 12 Bush Monkeyflo on streambank, 8 Oenothera on top. Creeping Wild Rye toe.
155	LB 5870-5970	Remove Dock.			Plant Blue Rush @ 1 each Valley Oak, Coast Live Oak. Buckeye.
156	RB 5950-5988	Remove Tree of Heaven.			Plant Bush Monkeyflower on streambank with 3 Oregon Ash. Protec Miner's lettuce und trees.
157	RB 5988-6030		Remove Tree of Heaven when Miner's lettuce is dormant in late summer.	Remove levee here. Junction of Larkmead, BV farm avenues. Room to flood without damaging vineyard.	Plant lots of Deer Grass, Slender Hai Grass, Danthonia California. Create v meadow, vernal spo
158	LB 5975-6100		Remove Dock, Nut Sedge.		Plant row of 7 trees Valley Oak, Grey P Coast Live Oak. Sp Miner's lettuce und Oaks.

159	LB 6000 P#1439	Large cement slab.		Preserve Prunus Virginiana Demissa here.
160	LB 6027	Eroding Coast Live Oak.	Armor with Boulder Wing Deflector, 7 yds rock.	
161	RB 6050	1st Native Willow on stream.		
162	LB 6052	Large Oak growing in water. Massive erosion between trunk and streambank	Boulder Wing Deflector around eroding roots of Oak to stabilize streambank and maintain high quality habitat pool just past oak (7 yds).	
163	LB 6030-6125	Bare eroding streambank.	Armor bare eroding streambank between sites 162 and 164 with 18’ x 6’ Live Willow Mattress with boulder toe (24 ft of mattress).	Preserve Oaks and preserve Iris 6085 a Bay seedling 6090.
164	LB 6076	Young Oak with streambank erosion.	Boulder Wing Deflector at tree, 5 yds.	
165	RB 6136-6400 P#1440	Pre-existing boulder streambank protection.		Plant Cottonwoods Alders in space between boulders.

166	LB 6136-6400	2-3’ cobble terrace.	Remove Fennel, Star Thistle.		Establish Creeping Wild Rye, Blue Wi Rye, Bush Monkeyflower, and Horsemint. Plant 5 Buckeye on top of streambank and insectary shrubs an grasses for vineyar buffer.
167	LB 6370	Grey Pine with California Fuschia, Monkeyflower, Clarkia.			Preserve this area.
168	RB 6400	Spreading Ash tree.	Shade out Arroyo/Silver Willow.		Establish Deer Gra patch 6410-25. Pla three Ash, Californ Fuschia on cobble streambank.
169	LB 6400-6460 P#1441	Terrace forming here with fine grained deposition.		Construct four 12’ Live Willow Siltation Baffles to vegetate and stabilize terrace and prevent erosion of Cottonwood cluster just downstream.	
170	RB 6450-6500	Area with Buckeye and Creeping Wild Rye in sandy toe.	Remove Arroyo Willow, Poison Hemlock (Pierce’s Disease host.)		Spread Red Fescue protect Buckeye seedlings, replant Dutchman’s Pipe V Protect Coast Live seedlings.

171	RB 6460	Vegetated with a variety of shrubs and willows.			Plant 5 Coast Live
172	RB 6520	Large Oak threatened by erosion around roots.		Replace lost soil with Boulder and Cobble Armor to preserve this canopy oak.	Plant shaded streambank with Snowberry, Santa Barbara Sedge, Creeping Wild Rye
173	RB 6500-6700	Large flood terrace.	Remove Willow upstream tip. Remove Mustard, Broom, Blackberry.		Blue Wild Rye, Creeping Wild Rye look good on terrac edge. Establish mo grasses with Firewe Add to hedgerow a avenue: Gooseberr Monardella, Achill wildflowers, grasse from seed.
174	LB 6500-6540	Large Oak with streambank erosion.	Remove Nutsedge.	Boulder Streambank Protection for Oak (40 ft). 2’ x 3’ toe trench and up 3’. Excavator to place toe rock, hand rock above.	Remove Vinca on streambank (Pierce vector). Replant ar with Creeping Wild Rye, Blue Rush in wrap. Establish Snowberry, Dogwo and Wild Rose furt up streambank.

175	LB 6540 - 6623	Streambank erosion to near vertical.	Live Willow Brush Mattress (80 ft in length), boulder toe.	Add plantings unde oaks this section of Melic grasses, Smilacina racemos alternate), Snowber Coyote Mint, and E Balm.
176	LB 6623- 6648	Failing woven willow wall.	Repair first 25’ with quarry boulder toe trench. 1/4-1/2 ton boulders (5 yds). Hand rock with local cobble behind wall.	
177	LB 6648- 6698	Woven willow wall too far gone to repair.	Replace with Live Willow Brush Mattress (50 ft). Use in-channel gravel and cobble to rebuild streambank for mattress.	
178	LB 6700	Endangered Oak tree.	Boulder Armor roots of oak with boulder wing deflector; 10’ base x 5’ high (10 yds).	Preserve or replace of bank Wild Rose Snowberry.
179	LB 6697- 6726	Streambank erosion.	Stabilize/revegetate with a Live Woven Willow Wall (30 ft) after deflector.Use local cobble for fill.	
180	LB 6789			

181	RB 6789-6829	Stream flow has begun to outflank old Willow.		Deep Plant Willow Clusters on 3’ centers; plant in 10’ band.	
182	LB 6790-6848	Eroding near vertical streambank.		Live Woven Willow Wall (60 ft). Use local cobble for fill.	
183	LB 6848-6878	2 endangered Oaks with extensive eroded root systems.		Boulder Streambank Protection;30 ft long, 5’ high x 3’ thick. Fill in upper area of exposed roots with cobble.	
184	RB 6875	Ribes viburnifolium.			Remove Ribes viburnifolium (non-native). Add Creeping Wild Rye plugs under willow
185	LB 6878-6903		Remove Nutsedge and Himalayan Blackberry.	30 ft Live Willow Brush Mattress and boulder toe trench.	Seed more wildflow Gilias, Chinese Ho Lupines.

186	RB 6900-7025	Rip rap streambank.			Protect Coast Live seedlings. Plant Wi and Cottonwood st at toe interstices. P California Fuschia, Coyote Mint mid-u streambank interst with Idaho Fescue, Purple Needle Gras Yarrow, Poppy and Lupines.
187	LB 7000-7100		Remove Nutsedge, Himalayan Blackberry, Nightshade, Vinca.		Add Blue Rush to t plants. Understory Grass Mix (50% sh Plant 2 Buckeye
188	LB 7100-7130 P#1442	Endangered old canopy tree.		Boulder Bank Protection 30' to 5' high.	
189	RB 7145-7202	Old Willow canopy with eroding streambank.		60 ft Live Willow Brush Mattress; 8' wide with boulder toe; end at old canopy and armor roots with Cross Channel V-Weir (30 yds, cabled).	7100-7200 3 Valley Oak @ top of streambank with B Wild Rye Under St and Melic grass. Pl Chokecherry.
190	LB 7165-7215 P#1445	Streambank erosion.		50 ft Live Willow Brush Mattress; 4' wide with boulder toe.	

191	LB 7115-7380		Remove Arrowhead Weed, Vinca, Lawn Grass.		Plant lots of Snowb Wildrose, Dogwoo (root cuttings from Larkmead plants), Manroot. Plant bar to lawn grass along fenceline: Toyon, a Dogwood.
192	RB 7200-7300	Little Oak grove.			Improve Under Sto with plugs of Melic grass and plantings Coyote Mint.
193	LB/RB 7245 P#1444	Left Bank erosion. Backyard and fence endangered. Monitor.			
194	RB 7300-7500	Large historical flood terrace.	Control burn Eurotrash Grasses.		Establish grass seed plugs after control in old floodplain meadow, and plant perimeter Californi Black Walnut to cr interior meadow environment. Plant sandy terrace and streambank full wit rushes and Creepin Wild Rye
195	RB 7340-7400 P#1443	Long, shady terrace with 6’ cut vertical streambank.		Four 12’-15’ Live Willow Siltation Baffles on RB terrace, placing last @ 7400.	Plant Twinberry between baffles aft siltation begins.

196	RB 7456-7486	30’ W x 30’ sandy bar before old ancient Willow.	Remove Fennel.		
197	LB 7400-7600	Blackberry possibly hiding erosion.	Remove Himalayan Blackberry.		Plant upper half of streambank with 8 25’ on center. Plan and upper streamba with Creeping Wild Rye and Santa Barb Sedge and 2 large Valley Oak at top o streambank.
198	LB 7470	Large old canopy Willow with multiple exposed roots.		Willow cluster plants 6’ x 12’ wide band to cause sediment deposition among the exposed roots.	
199	LB 7560	Mid-channel root ball dividing flow and forcing it against stream banks		Leave root ball in place. Build two Baffles between root ball and left bank to avoid back-cutting and build terrace.	Where culvert com use coir logs to stab toe with Blue Rush plantings and Creep Wild Rye above.
200	RB 7594	Willow wall bare in spots.	Remove Himalayan Blackberry, Vinca.	Wall fairly stable. Cluster plant areas that lack vegetation.	Add to plantings ab revetment: 5 Spice Bush, Blue Wild R from seed., Creepin Wild Rye plugs and Santa Barbara Sedg plugs. Protect Buck seedlings.

201	RB 7649	Old stump.	Rock pack in root ball (by hand). Cross-channel V-weir (25 yds) to go between root ball and opposite bank. To be cabled.	
202	RB 7705-7725 P#1446 P#1447	10’ high vertical eroding streambank	Install Boulder Streambank Protection to 9’ height. Shade tolerent species in interstices	Install rooted cuttin of Spicebush and Dogwood..
203	LB-RB 7735 P#1448	Fallen tree causing cross-channel debris jam.	Remove log, build Boulder Wing Deflector on Right Bank; 7 yds of 1/4-1/2 ton boulders.	
204	RB 7735 - 7875	Bare clay on lower streambanks.		
205	RB 7800	Bare streambank eroded to clay.	Build Log and Boulder Wing Deflector to move channel scour off the streambank. 7 yards 1/4-1/2 ton boulders; use wood from debris jam. Cross-channel V-weir to go 40’ downstream of deflector (20 yds). To be cabled.	

206	LB 7600-7700	Massive Willow grove with encroaching Himalayan Blackberry.	Remove Himalayan Blackberry before it gets well established.		Plant tree and shrub hedgerow at top of streambank 7600-7 6-8 Valley Oak and Bay, lots of spicebu and Chokecherry. P Balm, Miner's lettu Santa Barbara Sedg
207	LB 7700 - 7895	Well defined cobble and sand terrace, vegetated with Himalayan Blackberry.	Remove Himalayan Blackberry, Vinca.		Plant Black Fruited Sedge, Common R on terrace with Creeping Wild Rye Plant Spicebush, W Rose, Dogwood, Snowberry on mid-upper streamb with False Solomon Seal or other spread herbaceous cover.
208	LB 7900 - 7930 P#1481 P#1482 P#1483 P#1485	Metal well casing from channel bottom to top of bank with severe bank erosion for 30' downstream.		<u>Boulder Streambank Protection</u> 30' long x 7' high with all interstices sprigged.	
209	MID 7915 P#1487	Fallen tree and trapped debris forcing flow against right streambank.		Remove mid-channel cluster. Cross-channel V-weir (25 yds). To be cabled.	

210	RB 7900 P#1484	Eroding root mass on vegetated point.		-	
211	RB 7930 P#1486	Thalweg against eroding streambank with considerable exposure of roots from upper riparian trees.		15’ x 8’ base Boulder and Live Willow Log Deflector to move flood flows off eroding streambank and create fish habitat (10 yds).	
212	MID 7985 P#1488	Mid channel live Willow rootball and trunk deflecting flows against right streambank.		Remove Willow and use live in construction at Right Bank 7930.	
213	LB 7930 - 8010	Well defined terrace covered in Blackberry.	Remove Himalayan Blackberry 80’ x 60’.		Dogwood growing down in sandy terra Plant Santa Barbara Sedge, Creeping W Rye, Snowberry, Spicebush, Dogwo where invasives removed.
214	RB 8010	Severely eroding root mass of canopy trees on streambank point.		Boulder Armor lower root mass with 15 yds boulders and stabilize upper area with 3-20’ Live Willow Siltation Baffles to prevent high flows from outflanking the root mass.	

215	LB 8015 - 8122 P#1489	15’ vertical bare eroding streambank with endangered Oak cluster at 8060.	Boulder Streambank Protection to 4’ high with sprigging in interstices.	
216	X 8060 P#1490	Eroding Oak cluster perched on stream bank. If toppled it will create large hole in streambank.	Cross Channel Boulder V-Weir 20 ft across and 10 x 5 up Left Bank, 5 x 5 on Right Bank. This will increase support for Oaks and encourage deposition of gravel behind the weir to cover scoured clay channel bottom (25 yds). To be cabled.	
217	RB 8010 - 8060	Large fallen Willow blocking channel.	Remove willow and use as live material in other structures.	Top of streambank plant Local Gooseb selection, Red Fesc
218	X 8125	Channel downcutting trend continues to and through clay.	Cross Channel Boulder V-Weir 25 ft across and 6 x 6 up Left Bank, 10 x 4 on Right Bank to reverse downcutting and recruit gravel (25 yds). To be cabled.	
219	LB 8173 P#1491	Fallen Bay tree with increased streambank erosion behind root ball.	Cut bay tree out of creek. Boulder Streambank Protection on eroded bank (20’ long to 7’ height).	

220	RB 8150-70		Remove Himalayan Blackberry 20’ x 10’.		Replace with Santa Barbara Sedge, Dogwood, Spicebu Snowberry, Miner’ lettuce, Buckeye, B Ash.
221	RB 8185 P#1492	Large Bay tree cluster with undercut eroding roots.	Remove Vinca on top of streambank.	Armor with Live Woven Willow Wall: to be built in two tiers around tree, and one tier after tree. 115 ft of total wall to be built.	Revegetate grove to streambank with Snowberry, Santa Barbara Sedge.
222	RB 8235-8255 P#1493	Bare eroding streambank.		Protect with Live Willow Brush Mattress 6’ wide with boulder toe. Cross-channel V-weir just downstream of mattress (25 yds). To be cabled.	
223	LB 8335 P#1494	This area is messy and evolving with large amounts of drift debris and good vegetation. Stream flow drops into deep pool area of Napa River.	Remove plastic garbage.		Plant Alder at toe o streambank away f drift masses.

224	LB Up-stream Napa River P#1495	8’ cut streambank and dense mid channel vegetation.	Remove Black Locusts and Arundo Donax.	Install 3 Live Willow Siltation Baffles well keyed into vertical streambanks to deflect flow and build up lost terrace soils.	Large area to reveg with Oaks, Bay and Under Story 1+ acr

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APPENDIX E: ACORN SOUPE CURRICULUM

Selby Creek Watershed Partners

Acorn Soupe’s Environmental Education Component to

DWR - Urban Streams Restoration Program

Introduction

An important component to the Selby Creek Urban Streams Restoration Program is environmental education. In collaboration with a local, nonprofit organization, Selby Creek Watershed Partners proposes to collaborate with Acorn Soupe to provide environmental education and community outreach on this urban stream restoration program.

In order for young people to establish a sense of responsibility towards the future health of the planet, it is fundamental that they be able to interact with, appreciate, understand, and participate in being stewards of their local wilderness areas. In Napa and Sonoma counties there are only a few easily accessible public parks, limiting the amount of time the average individual connects with wilderness. *As a result, there is a significant unmet need to ensure that young people of this region have the opportunity to learn about the natural environment, regardless of their socioeconomic backgrounds or proximity to wilderness areas.* It is imperative that we invest in the future of the North Bay’s natural resources and wilderness areas by encouraging a sense of environmental responsibility and stewardship ethic in the region’s youth.

Through Acorn Soupe, students gain an understanding and appreciation for natural ecosystems. They interact with their peers and adults in a cooperative setting while having a positive impact on the local environment. We expect that the experience gained from the Selby Creek Urban Streams Restoration Program will instill in the children a stewardship and environmental ethic that will last their lifetime.

Acorn Soupe currently works with over 1000 children in the Napa and Sonoma counties and will likely include these or newly enrolled children as part of this urban stream restoration program. The environmental education component of this urban stream restoration program has two objectives:

1. 1. ***K-12 Environmental Education Program.*** Year-long, multi-year Environmental Education program offering students five experiences per year for five years.

- 2. ***Community Outreach and Education.*** Develop outreach materials to educate and involve the community in the Selby Creek restoration and raise overall watershed consciousness.

K-12 Environmental Education Program. Through the proposed Selby Creek Urban Streams Restoration Program, Acorn Soupe will with work in tandem with in-place project experts and teach the concepts of water quality, stream bank stabilization, native and invasive plant species, watersheds, and preserving local habitat. Students will perform restoration activities on Selby Creek, including native plantings to the improved riparian habitat corridor and monitor the survival rates of those plants. Students will also visit and engage in other restoration activities in the Napa River watershed as part of this experience. Activities will include plant and animal identification, lessons on life cycles, watersheds, and stewardship along and art and journal writing to record progress at Selby Creek. Four principal objectives for the K-12 Environmental Education Program are outlined as follows:

- 1) **Provide Year Long Program.** Provide local educators with an exciting and engaging year long, multi-year environmental education program. In order for an educational experience to make a long-term impact on the ideologies of its participants, it is necessary that it span over a long period of time, as opposed to a one-time event. The Selby Creek Urban Streams Restoration Project is structured to integrate into the teachers' yearlong curriculum and span five years. *A minimum of 100 children per year will be involved in this project.*

- 2) **Provide Multidisciplinary Curriculum.** Provide a multidisciplinary curriculum, locally relevant, that works within California State Department of Education content standards in science, math, language arts, social studies and creative arts for grades K-8. As a result of focus groups and a written survey of Napa County educators, Acorn Soupe found there was no yearlong environmental education program that focused on the local Napa County environment. Working with K-12 teachers, the Acorn Soupe staff facilitates classroom environmental education instruction with the goal of each session to make environmental concepts more understandable and meaningful through a variety of teaching and learning techniques. Acorn Soupe curriculum includes lesson plans and activities that are thematic in approach and interweave science, creative arts, language arts, social studies, mathematics, and sensory awareness to create a broad learning experience. Curricula is provided to all teachers to encourage reinforcement outside of the Acorn Soupe experience.

- 3) **Provide Structured Classroom and Field Educational Experiences.** Provide outdoor experiences at Selby Creek and other sites within the Napa River Watershed for students, which focus on establishing one's sense of place and connection to the natural environment through learning and experiential activities. Through two in-class sessions and three site visits, over the course of the academic year, each participating classroom will emphasize the themes of sense of place, regional natural and cultural history, ecological interconnectedness, and stewardship, with a particular focus on the local habitat restoration at Selby Creek in St. Helena. Students complete the annual program by participating in stewardship projects that include native tree and shrub planting, watershed monitoring, non-native plant species eradication, and litter removal.

- 4) **Provide Program and Student Evaluation.** Participating educators and the Program Coordinator will conduct a process and an outcome evaluation. The process evaluation will provide information on the interaction of the program components (in-class sessions followed by field experiences and finally a classroom wrap-up) to determine the effectiveness of each component's design and implementation. The process evaluation will aid in the determination of new components and any modification required to improve the program. The outcome evaluation will test the effectiveness of the experiential and lesson plan/activity strategies on increasing the awareness of and changing the behaviors of the participants. The assessment tools will include journals, student portfolios, and participant interviews. Program staff will gather baseline data at the initial in-class session. The compilation of the data at the end of the year will provide the final outcome evaluation, which will test the program's effectiveness based on participants' increase in environmental knowledge and awareness, appreciation of natural communities, increased environmental-friendly actions and increased academic performance.

Community Outreach and Education. The Community Outreach and Education component of this environmental education program is to encourage public participation in decision-making and to promote respect for sustainable uses and protection of our interdependent ecosystems, appropriate and effective management of our agricultural lands which will ultimately rely on informed and educated decision-makers and resource users. The Community Outreach and Education component is designed to establish an efficient model for expanded public education and outreach and enable Acorn Soupe to continuously expand its scope and reach for environmental education in the community.

- 1) **Public Education & Awareness Through Publication**: Acorn Soupe will expand the size and develop the scope of the organization's newsletter to include public education and awareness. The longer publication would include educational content and profile public awareness. Public awareness will also be raised through Acorn Soupe's participation and leadership in the Environmental Education Coalition of Napa County and showcased on the Napa County Watershed Information Center website.

- 2) **Increased Public Outreach**: Acorn Soupe will increase its target audience by increasing public outreach in Napa County. Currently, the agency maintains a mailing list of 2000 contacts. Through support of the Selby Creek Urban Stream Restoration Program, Acorn Soupe will purchase mailing lists to target the valley region and will network with other agencies to share mailing lists. Acorn Soupe will target 5,000 contacts in the Napa Valley through the program term.

Tasks And Deliverables

Task ID	Task Name	Start Month	End Month	Personnel Involved	Deliverables
1	Project Administration	1	36	Engber, Evan Kathleen, Martin	June 2006 – June 2009 Signed contract with funding entity; Signed contracts with sub–contractors; quarterly &annual reports; written and distributed; Final report to funding &participating agencies.
2	Data collection &permitting	1	12	Engber, Evan Ann, Baker Matt, O'Connor Damon, Morelli, P.E. Hadhazy, Lara	June 2006 – June 2007 Selby Creek Watershed Map Longitudinal profile of Selby Creek hyrodological data &other data (to be determined) Monitoring Plan for construction Monitoring plan for vegetation management Permits, as required for construction
3	Bioengineered Construction	10	28	Engber, Evan	June 2007 – August 2008 Boulder Bank Protecton: 724

					ft. Alternating Boulder Wing Deflectors: 65 Root balls converted to habitat structure:2 Digger Log Wing Deflectors: 5 Boulder wing deflectors:12 Opposing Boulder deflectors:2 Cross Channel V-Weirs: 22 Live Willow Brush Mattress: 578 ft. Cobble barbs: 13 Reorganize cobble &small boulder: 72 feet Pull back bank to increase flood plain access: 124 ft. lower levee to increase flood plain access: 1114 ft. Reshape bak to increase flood plain access: 305 ft. Large trees planted for bank protection: 50 Live willow siltation baffles: 223 ft (69) Boulder armor: 18 geotextile bank stabilization 124

					ft. repair of damaged wire gabions: 96 ft. Remove instream fencing, concete &debris: 459 ft. Deep Cluster planting: 46 ft Stabilize incoming drainage:1 Live woven willow walls:total 205 ft on 3 sites.
4	**Revegetation &Management**	**3**	**36**	**Engber, Evan Ann, Baker Phillips, Angelina**	**September 2006–June 2009 Seed propagation program established Written Monitoring program for vegetation including: Inventory of number, species, and location of plants, seeds planted. Total Trees planted: 350 Total Shrubs planted: 1380 Total sub–shrubs planted: 1000 Total area planted in acres: 24**
5	**Eduction and Community Outreach**	**3**	**36**	**Engber, Evan Ann, Baker**	**September 2006–June 2009 Written materials to landowners**

				Phillips, Angelina Hadhazy, Lara	Public meetins: 3–6 landowner/public workshops Meeting attendess: 15–25/meeting 2 classes per year=6 classes for up to 1000 students and 3 site visits per year=9 site visits by students taught associated curriculum annual report on student activities, participation &curriculum overview
6	Monitoring &Reporting	1	36	Engber, Evan Ann, Baker Phillips, Angelina	June 2006 – June 2009 GPS &photo documentation points for each site photo documentation of before, during and after at each site (minimum 2 years after completion) Monitoring Plan report to document changes and modifications at all construction and vegetation planting sites, each year after

					completion of construction and planting components. Yerly upate on survival rate, effectivenss and total plant cover, each year after planting.

Proposal Number
Proposal Name

Detailed Budget Breakdown by Task and by Fiscal Year

Applicant Name

Personnel											
Bioengineering Institute Project Manager:includes benefits	$ 78,000.00	$ 52.00	500	$ 26,000.00	$ 52.00	500	$ 26,000.00	$ 52.00	500	$ 26,000.00	
Outreach Manager Selby Creek Watershed Partners: inc. benefits	$ 52,500.00	$ 35.00	500	$ 17,500.00	$ 35.00	500	$ 17,500.00	$ 35.00	500	$ 17,500.00	
Napa RCD Project Liaison:includes benefits	$ 6,180.00	$ 51.50	40	$ 2,060.00	$ 51.50	40	$ 2,060.00	$ 51.50	40	$ 2,060.00	
Napa RCD Educational Outreach:includes benefits	$ 6,798.00	$ 51.50	44	$ 2,266.00	$ 51.50	44	$ 2,266.00	$ 51.50	44	$ 2,266.00	
	$ -	$ -		$ -	$ -		$ -	$ -		$ -	
	$ -	$ -		$ -	$ -		$ -	$ -		$ -	
	$ -	$ -		$ -	$ -		$ -	$ -		$ -	
	$ -	$ -		$ -	$ -		$ -	$ -		$ -	
	$ -	$ -		$ -	$ -		$ -	$ -		$ -	
	$ -	$ -		$ -	$ -		$ -	$ -		$ -	
	$ -	$ -		$ -	$ -		$ -	$ -		$ -	
Personnel Subtotal	**$ 143,478.00**			**$ 47,826.00**			**$ 47,826.00**			**$ 47,826.00**	
										-	
[1/] Benefits as percent of salary				$0.00			$0.00			$0.00	
Personnel Total (salary + benefits)	**$143,478.00**			**$47,826.00**			**$47,826.00**			**$47,826.00**	
Other Costs	**Total All Years**			**Total Year 1**			**Total Year 2**			**Total Year 3**	
Operating Expenses: (ex: seed, plant materials, irrigation supplies, software, office supplies, etc)	$ -			$ -			$ -			$ -	
2/ Travel and Per Diem	$ -			$ -			$ -			$ -	
3/ Equipment	$ -			$ -			$ -			$ -	
	$ -						$ -			$ -	
4/ Sub-Contractor	$ -			$ -			$ -			$ -	
4/ Sub-Contractor	$ -			$ -			$ -			$ -	
4/ Sub-Contractor	$ -			$ -			$ -			$ -	
4/ Sub-Contractor	$ -			$ -			$ -			$ -	
Other Costs Subtotal	**$ -**			**$ -**			**$ -**			**$ -**	
[5/]Overhead Percentage (Applied to Personnel & Other Costs)	5%			$ 2,391.30			$ 2,391.30			$ 2,391.30	
Total Costs for Task One	**$ 150,651.90**			**$ 50,217.30**			**$ 50,217.30**			**$ 50,217.30**	

1/ Indicate your rate, and change formula in column immediately to the right of this cell

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4/ Please list each subcontractor and amounts (if subcontractor not selected yet, use function like "ditch construction subcontractor")

5/ Indicate rate in column immediately to the right of this cell; and provide a description of what expenses are covered by overhead. If overhead is > 15% must provide justification

Proposal Number
Proposal Name

Detailed Budget Breakdown by Task and by Fiscal Year

Applicant Name

BUDGET FOR TASK TWO	TOTAL AMOUNT TASK 2 All Years	Year 1 Amount per hour	Year 1 Number of Hours	Year 1 Total Amount for Year 1	Year 2 Amount per hour	Year 2 Number of Hours	Year 2 Total Amount for Year 2	Year 3 Amount per hour	Year 3 Number of Hours	Year 3 Total Amount for Year 3
Personnel										
Chief Bioengineer: includes benefits	$ 7,200.00	$ 90.00	80	$ 7,200.00			$ -			$ -
Napa RCD staff ctechnical consultants:includes beneftis	$ 27,600.00	$ 60.00	460	$ 27,600.00	$ -		$	$ -		$ -
	$ -	$ -		$ -	$ -		$ -	$ -		$
	$ -	$ -		$ -	$ -		$ -	$ -		$
	$ -	$ -		$ -	$ -		$ -	$ -		$ -
	$ -	$ -		$ -	$ -		$ -	$ -		$ -
	$ -	$ -		$ -	$ -		$ -	$ -		$ -
	$ -	$ -		$ -	$ -		$ -	$ -		$ -
	$ -	$ -		$ -	$ -		$ -	$ -		$ -
	$ -	$ -		$ -	$ -		$ -	$ -		$ -
	$ -	$ -		$ -	$ -		$ -	$ -		$ -
Personnel Subtotal	**$ 34,800.00**			**$ 34,800.00**			**$ -**			**$ - -**
										-
[1/] Benefits as percent of salary				$0.00			$0.00			$0.00
Personnel Total (salary + benefits)	**$34,800.00**			**$34,800.00**			**$0.00**			**$0.00**
Other Costs	**Total All Years**			**Total Year 1**			**Total Year 2**			**Total Year 3**
Operating Expenses: (ex: seed, plant materials, irrigation supplies, software, office supplies, etc)	$ -			$ -			$ -			$ -
2/ Travel and Per Diem	$ 1,260.00			$ 1,260.00			$ -			$ -
Permit Fees	$ 15,000.00			$ 15,000.00			$ -			$ -
Matt O'Connor, OEI	$ 15,000.00			$ 15,000.00			$ -			$ -
Damon Morelli, Green Valley Engineering	$ 19,980.00			$ 19,980.00			$ -			$ -
Survey & Design	$ 25,000.00			$ 25,000.00			$ -			$ -
4/ Sub-Contractor	$ -			$ -			$ -			$ -
4/ Sub-Contractor	$ -			$ -			$ -			$ -
Other Costs Subtotal	**$ 76,240.00**			**$ 76,240.00**			**$ -**			**$ -**
[5/]Overhead Percentage (Applied to Personnel & Other Costs)	5%			$ 5,552.00			$ -			$ -
Total Costs for Task Two	**$ 116,592.00**			**$ 116,592.00**			**$ -**			**$ -**

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4/ Please list each subcontractor and amounts (if subcontractor not selected yet, use function like "ditch construction subcontractor")

5/ Indicate rate in column immediately to the right of this cell; and provide a description of what expenses are covered by overhead. If overhead is > 15% must provide justification

BUDGET FOR TASK THREE	TOTAL AMOUNT TASK 3 All Years	Year 1 Amount per hour	Year 1 Number of Hours	Year 1 Total Amount for Year 1	Year 2 Amount per hour	Year 2 Number of Hours	Year 2 Total Amount for Year 2	Year 3 Amount per hour	Year 3 Number of Hours	Year 3 Total Amount for Year 3
Personnel										
Chief Bioengineer:includes benefits	$ 36,000.00	$ 90.00	300	$ 27,000.00	$ 90.00	100	$ 9,000.00	$ -		$ -
Construction Supervisor: includes benefits	$ 45,305.00	$ 65.00	600	$ 39,000.00	$ 65.00	97	$ 6,305.00	$		$ -
Rock Tech:includes benefits	$ 34,850.00	$ 50.00	600	$ 30,000.00	$ 50.00	97	$ 4,850.00	$ - -		$

Proposal Number
Proposal Name

Detailed Budget Breakdown by Task and by Fiscal Year

Applicant Name

Vegetation Tech:includes benefits	$ 21,750.00	$ 50.00	400	$ 20,000.00	$ 50.00	35	$ 1,750.00	$ -		$		
	$ -			$ -			$ -	$ -		$	-	
Labor: includes benefits	$ 103,175.00	$ 25.00	3750	$ 93,750.00	$ 25.00	377	$ 9,425.00	$ -		$		
	$ -	$ -		$ -	$ -		$ -	$ -		$	-	
	$ -	$ -		$ -	$ -		$ -	$ -		$	-	
	$ -	$ -		$ -	$ -		$ -	$ -		$	-	
	$ -	$ -		$ -	$ -		$ -	$ -		$	-	
	$ -	$ -		$ -	$ -		$ -	$ -		$	-	
Personnel Subtotal	**$ 241,080.00**			**$ 209,750.00**			**$ 31,330.00**			**$**	**-**	
											-	
[1/] Benefits as percent of salary				$0.00			$0.00			$0.00		
Personnel Total (salary + benefits)	**$241,080.00**			**$209,750.00**			**$31,330.00**			**$0.00**		
Other Costs	**Total All Years**			**Total Year 1**			**Total Year 2**			**Total Year 3**		
Quarried Rock: 2803 tons @ 41.25/ton; cobble: 38 tons @41.25; 3 logs @500	$ 118,758.00			$ 118,758.00			$ -			$	-	
days @ 100/	$ 31,700.00			$ 22,800.00			$ 8,900.00			$	-	
Landowner & agency certificates of insurance	$ 3,000.00			$ 3,000.00						$	-	
Equipment rental: 4WD flatbed dump truck	$ 30,000.00			$ 25,000.00			$ 5,000.00			$	-	
Equipment rental: Excavator w/thumb	$ 104,550.00			$ 90,000.00			$ 14,550.00			$	-	
Equipment rental: 4WD Backhoe w/thumb & frontloader	$ 54,000.00			$ 49,500.00			$ 4,500.00			$	-	
Other supplies: cable, adhesives, netting, stakes & fencing	$ 12,540.00			$ 12,540.00						$	-	
other equipment: chainsaw & auger rock & log drills & equip. transport	$ 4,952.00			$ 4,307.00			$ 645.00			$	-	
Other Costs Subtotal	**$ 359,500.00**			**$ 325,905.00**			**$ 33,595.00**			**$**	**-**	
[5/]Overhead Percentage (Applied to Personnel & Other Costs)				$ -			$ -			$	-	
Total Costs for Task Three	**$ 600,580.00**			**$ 535,655.00**			**$ 64,925.00**			**$**	**-**	

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4/ Please list each subcontractor and amounts (if subcontractor not selected yet, use function like "ditch construction subcontractor")

5/ Indicate rate in column immediately to the right of this cell; and provide a description of what expenses are covered by overhead. If overhead is > 15% must provide justification

		Year 1			Year 2			Year 3		
BUDGET FOR TASK FOUR	**TOTAL AMOUNT TASK 4 All Years**	**Amount per hour**	**Number of Hours**	**Total Amount for Year 1**	**Amount per hour**	**Number of Hours**	**Total Amount for Year 2**	**Amount per hour**	**Number of Hours**	**Total Amount for Year 3**
Personnel										
Irrigation Tech:includes benefits	$ 30,000.00	$ 50.00	450	$ 22,500.00	$ 50.00	150	$ 7,500.00	$ -		$ -
Revegetation Supervisor:includes benefits	$ 15,000.00			$ -	$ 60.00	125	$ 7,500.00	$ 60.00	125	$ 7,500.00
labor for seed collection:includes benefits	$ 8,000.00	$ 40.00	100	$ 4,000.00	$ 40.00	100	$ 4,000.00	$		$ -
labor for revegetation:includes benefits	$ 68,675.00	$ -		$ -	$ 25.00	1373	$ 34,325.00	$ 25.00	1374	$
	$ -	$ -		$ -	$ -		$ -	$ -	-	$ 34,350.00
	$ -	$ -		$ -	$ -		$ -	$ -		$
	$ -	$ -		$ -	$ -		$ -	$ -		$ -
	$ -	$ -		$ -	$ -		$ -	$ -		$ -
	$ -	$ -		$ -	$ -		$ -	$ -		$ -
	$ -	$ -		$ -	$ -		$ -	$ -		$ -
										-
										-

	$ -	$ -		$ -	$ -		$ -	$ -		$
Personnel Subtotal	**$ 121,675.00**			**$ 26,500.00**			**$ 53,325.00**			**$ 41,850.00**
										-
1/ Benefits as percent of salary				$0.00			$0.00			$0.00
Personnel Total (salary + benefits)	**$121,675.00**			**$26,500.00**			**$53,325.00**			**$41,850.00**
Other Costs	**Total All Years**			**Total Year 1**			**Total Year 2**			**Total Year 3**
trees, shrubs, sub-shrubs, & grass /wildflower seed	$ -			$ -			$ -			$ -
2/ Travel and Per Diem	$ 25,000.00			$ -			$ 25,000.00			$ -
3/ Equipment: disc, no till drill, tractor	$ 17,000.00			$ -			$ 17,000.00			$ -
Revegetation supplies: netting, weed cloth, straw bales	$ 18,100.00			$ -			$ 14,000.00			$ 4,100.00
Irrigation supplies: tubing, spprinkler, fittings	$ 12,000.00			$ -			$ 10,000.00			$ 2,000.00
transportation: all crews 4500 mi x.42/	$ 1,890.00			$ 1,260.00			$ 630.00			$ -
4/ Sub-Contractor	$ -			$ -			$ -			$ -
4/ Sub-Contractor	$ -			$ -			$ -			$ -
Other Costs Subtotal	**$ 73,990.00**			**$ 1,260.00**			**$ 66,630.00**			**$ 6,100.00**
5/ Overhead Percentage (Applied to Personnel & Other Costs)	5%			$ 1,388.00			$ 5,997.75			$ 2,397.50
Total Costs for Task Four	**$ 205,448.25**			**$ 29,148.00**			**$ 125,952.75**			**$ 50,347.50**

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4/ Please list each subcontractor and amounts (if subcontractor not selected yet, use function like "ditch construction subcontractor")

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BUDGET FOR TASK FIVE	**TOTAL AMOUNT TASK 5 All Years**	**Year 1** Amount per hour	**Year 1** Number of Hours	**Year 1** Total Amount for Year 1	**Year 2** Amount per hour	**Year 2** Number of Hours	**Year 2** Total Amount for Year 2	**Year 3** Amount per hour	**Year 3** Number of Hours	**Year 3** Total Amount for Year 3
Personnel										
	$ -	$ -		$ -	$ -		$ -	$ -		$
	$ -	$ -		$ -	$ -		$ -	$ -		$
	$ -	$ -		$ -	$ -		$ -	$ -		$ -
	$ -	$ -		$ -	$ -		$ -	$ -		$ -
	$ -	$ -		$ -	$ -		$ -	$ -		$ -
	$ -	$ -		$ -	$ -		$ -	$ -		$ -
	$ -	$ -		$ -	$ -		$ -	$ -		$ -
	$ -	$ -		$ -	$ -		$ -	$ -		$ -
	$ -	$ -		$ -	$ -		$ -	$ -		$ -
	$ -	$ -		$ -	$ -		$ -	$ -		$ -
	$ -	$ -		$ -	$ -		$ -	$ -		$ -
Personnel Subtotal	**$ -**			**$ -**			**$ -**			**$ - -**
										-
1/ Benefits as percent of salary				$0.00			$0.00			$0.00
Personnel Total (salary + benefits)	**$0.00**			**$0.00**			**$0.00**			**$0.00**

Other Costs	Total All Years			Total Year 1			Total Year 2			Total Year 3
Map production	$ 2,000.00			$ 2,000.00			$ -			$ -
2/ Travel and Per Diem 4500mi @ .42	$ 1,890.00			$ 630.00			$ 630.00			$ 630.00
Landowner Communications	$ 3,000.00			$ 1,000.00			$ 1,000.00			$ 1,000.00
Acorn Soupe	$ 30,000.00			$ 10,000.00			$ 10,000.00			$ 10,000.00
4/ Sub-Contractor	$ -			$ -			$ -			$ -
4/ Sub-Contractor	$ -			$ -			$ -			$ -
4/ Sub-Contractor	$ -			$ -			$ -			$ -
4/ Sub-Contractor	$ -			$ -			$ -			$ -
Other Costs Subtotal	**$ 36,890.00**			**$ 13,630.00**			**$ 11,630.00**			**$ 11,630.00**
5/Overhead Percentage (Applied to Personnel & Other Costs)	5%			$ 681.50			$ 581.50			$ 581.50
Total Costs for Task Five	**$ 38,734.50**			**$ 14,311.50**			**$ 12,211.50**			**$ 12,211.50**

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		Year 1			Year 2			Year 3		
BUDGET FOR TASK SIX	**TOTAL AMOUNT TASK 6 All Years**	**Amount per hour**	**Number of Hours**	**Total Amount for Year 1**	**Amount per hour**	**Number of Hours**	**Total Amount for Year 2**	**Amount per hour**	**Number of Hours**	**Total Amount for Year 3**
Personnel										
	$ -	$ -		$ -	$ -		$ -	$ -		$
	$ -	$ -		$ -	$ -		$ -	$ -		$
	$ -	$ -		$ -	$ -		$ -	$ -		$ -
	$ -	$ -		$ -	$ -		$ -	$ -		$ -
	$ -	$ -		$ -	$ -		$ -	$ -		$ -
	$ -	$ -		$ -	$ -		$ -	$ -		$ -
	$ -	$ -		$ -	$ -		$ -	$ -		$ -
	$ -	$ -		$ -	$ -		$ -	$ -		$ -
	$ -	$ -		$ -	$ -		$ -	$ -		$ -
	$ -	$ -		$ -	$ -		$ -	$ -		$ -
	$ -	$ -		$ -	$ -		$ -	$ -		$ -
Personnel Subtotal	**$ -**			**$ -**			**$ -**			**$** - **-**
										-
1/ Benefits as percent of salary				$0.00			$0.00			$0.00
Personnel Total (salary + benefits)	**$0.00**			**$0.00**			**$0.00**			**$0.00**
Other Costs	**Total All Years**			**Total Year 1**			**Total Year 2**			**Total Year 3**
Vegetation replanting	$ 5,000.00			$ -			$ -			$ 5,000.00
Photo documentation	$ 7,500.00			$ 2,500.00			$ 2,500.00			$ 2,500.00
Construction Monitoring & reporting 2 years	$ 7,000.00			$ -			$ 2,500.00			$ 4,500.00
Ann Baker, vegetation monitoring & report	$ 7,000.00			$ -			$ 3,500.00			$ 3,500.00

4/ Sub-Contractor	$ -			$ -			$ -			$ -
4/ Sub-Contractor	$ -			$ -			$ -			$ -
4/ Sub-Contractor	$ -			$ -			$ -			$ -
4/ Sub-Contractor	$ -			$ -			$ -			$ -
Other Costs Subtotal	**$ 26,500.00**			**$ 2,500.00**			**$ 8,500.00**			**$ 15,500.00**
[5/]Overhead Percentage (Applied to Personnel & Other Costs)	5%			$ 125.00			$ 425.00			$ 775.00
Total Costs for Task Six	**$ 27,825.00**			**$ 2,625.00**			**$ 8,925.00**			**$ 16,275.00**

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4/ Please list each subcontractor and amounts (if subcontractor not selected yet, use function like "ditch construction subcontractor")

5/ Indicate rate in column immediately to the right of this cell; and provide a description of what expenses are covered by overhead. If overhead is > 15% must provide justification

		Year 1			**Year 2**			**Year 3**		
BUDGET FOR TASK SEVEN	**TOTAL AMOUNT TASK 7 All Years**	**Amount per hour**	**Number of Hours**	**Total Amount for Year 1**	**Amount per hour**	**Number of Hours**	**Total Amount for Year 2**	**Amount per hour**	**Number of Hours**	**Total Amount for Year 3**
Personnel										
	$ -	$ -		$ -	$ -		$ -	$ -		$
	$ -	$ -		$ -	$ -		$ -	$ -		$
	$ -	$ -		$ -	$ -		$ -	$ -		$ -
	$ -	$ -		$ -	$ -		$ -	$ -		$ -
	$ -	$ -		$ -	$ -		$ -	$ -		$ -
	$ -	$ -		$ -	$ -		$ -	$ -		$ -
	$ -	$ -		$ -	$ -		$ -	$ -		$ -
	$ -	$ -		$ -	$ -		$ -	$ -		$ -
	$ -	$ -		$ -	$ -		$ -	$ -		$ -
	$ -	$ -		$ -	$ -		$ -	$ -		$ -
	$ -	$ -		$ -	$ -		$ -	$ -		$ -

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-

Total Project Budget Summary by Task and by Fiscal Year

Note: This budget summary **automatically links** to the costs and totals on the **"Budget Detail"** worksheet.
DO NOT CHANGE FORMULAS OR ENTER NUMBERS INTO ANY CELLS EXCEPT THE SHADED CELLS for "Cost Share" and "Other Matching Funds"

BUDGET SUMMARY	Total Amount for Year 1	Total Amount for Year 2	Total Amount for Year 3	Total Amount for All Years
Total Costs for Task One	$ 50,217.30	$ 50,217.30	$ 50,217.30	$ 150,651.90
Total Costs for Task Two	$ 116,592.00	$ -	$ -	$ 116,592.00
Total Costs for Task Three	$ 535,655.00	$ 64,925.00	$ -	$ 600,580.00
Total Costs for Task Four	$ 29,148.00	$ 125,952.75	$ 50,347.50	$ 205,448.25
Total Costs for Task Five	$ 14,311.50	$ 12,211.50	$ 12,211.50	$ 38,734.50
Total Costs for Task Six	$ 2,625.00	$ 8,925.00	$ 16,275.00	$ 27,825.00
Total Costs for Task Seven	$ -	$ -	$ -	$ -
Total Costs for Task Eight	$ -	$ -	$ -	$ -
Total Costs for Task Nine	$ -	$ -	$ -	$ -
Total Costs for Task Ten	$ -	$ -	$ -	$ -
Total Costs for Task Eleven	$ -	$ -	$ -	$ -
Total Costs for Task Twelve	$ -	$ -	$ -	$ -
Total Costs for Task Thirteen	$ -	$ -	$ -	$ -
Total Costs for Task Fourteen	$ -	$ -	$ -	$ -
Total Costs for Task Fifteen	$ -	$ -	$ -	$ -
Total Costs for Project Tasks	$ 748,548.80	$ 262,231.55	$ 129,051.30	$ 1,139,831.65
1/Cost Share	$139,460	$493,908	$ 31,464.00	$ 664,831.65
2/ Other Matching Funds	$ -	$ -	$ -	$ -

1/ *Cost share funds* are specifically dedicated to your project and can include private and other State and Federal grants. Any funds listed in this line must be further described in the text of your proposal (see Chapter 3, Section D, of the PSP document)

2/ *Other matching funds* include other funds invested consistent with your project in your project area for which the ERP grant applicant is not eligible. Any funds listed in this line must be further described in the text of your proposal (see Chapter 3, Section D, of the PSP document)

Environmental Compliance

CEQA Compliance

Which type of CEQA documentation do you anticipate?
− none *Skip the remaining questions in this section.*
X negative declaration or mitigated negative declaration
− EIR
− categorical exemption *A categorical exemption may not be used for a project which may which may cause a substantial adverse change in the significance of a historical resource or result in damage to scenic resources within an officially designated state scenic highway.*

If you are using a categorical exemption, choose all of the applicable classes below.

− Class 1. Operation, repair, maintenance, permitting, leasing, licensing, or minor alteration of existing public or private structures, facilities, mechanical equipment, or topographical features, involving negligible or no expansion of use beyond that existing at the time of the lead agency's determination. The types of "existing facilities" itemized above are not intended to be all−inclusive of the types of projects which might fall within Class 1. The key consideration is whether the project involves negligible or no expansion of an existing use.

− Class 2. Replacement or reconstruction of existing structures and facilities where the new structure will be located on the same site as the structure replaced and will have substantially the same purpose and capacity as the structure replaced.

− Class 3. Construction and location of limited numbers of new, small facilities or structures; installation of small new equipment and facilities in small structures; and the conversion of existing small structures from one use to another where only minor modifications are made in the exterior of the structure. The numbers of structures described in this section are the maximum allowable on any legal parcel, except where the project may impact on an environmental resource of hazardous or critical concern where designated, precisely mapped, and officially adopted pursuant to law by federal, state, or local agencies.

− Class 4. Minor public or private alterations in the condition of land, water, and/or vegetation which do not involve removal of healthy, mature, scenic trees except for forestry or agricultural purposes, except where the project may impact on an environmental resource of hazardous or critical concern where designated, precisely mapped, and officially adopted pursuant to law by federal, state, or local agencies.

– Class 6. Basic data collection, research, experimental management, and resource evaluation activities which do not result in a serious or major disturbance to an environmental resource, except where the project may impact on an environmental resource of hazardous or critical concern where designated, precisely mapped, and officially adopted pursuant to law by federal, state, or local agencies. These may be strictly for information gathering purposes, or as part of a study leading to an action which a public agency has not yet approved, adopted, or funded.

– Class 11. Construction, or placement of minor structures accessory to (appurtenant to) existing commercial, industrial, or institutional facilities, except where the project may impact on an environmental resource of hazardous or critical concern where designated, precisely mapped, and officially adopted pursuant to law by federal, state, or local agencies.

Identify the lead agency.
California Department of Fish and Game
Please write out all words in the agency title other than United States (Use the abbreviation "US".) and California (Use the abbreviation "CA".).

Is the CEQA environmental impact assessment complete?
No.

If the CEQA environmental impact assessment process is complete, provide the following information about the resulting document.

Document Name

State Clearinghouse Number

If the CEQA environmental impact assessment process is not complete, describe the plan for completing draft and/or final CEQA documents.

An Environmental Project Questionnaire has been completed and submitted to the California Department of Fish and Game as part of a proposal for partial funding of the Selby Creek Stream Habitat Restoration and Riparian Revegetation Project. If funding is received, Dept. of Fish and Game will be the lead agency for CEQA and the project will be reviewed and permitted as part of the Programmatic Regional General Permit for California Department of Fish and Game's Anadromous Fisheries Restoration Grant Program and includes the Army Corp, NOAA Fisheries, California Regional Water Quality, and

U.S. Fish and Wildlife Services.

NEPA Compliance

Which type of NEPA documentation do you anticipate?
X none *Skip the remaining questions in this section.*
– environmental assessment/FONSI
– EIS
– categorical exclusion

Identify the lead agency or agencies.

Please write out all words in the agency title other than United States (Use the abbreviation "US".) and California (Use the abbreviation "CA".).

If the NEPA environmental impact assessment process is complete, provide the name of the resulting document.

If the NEPA environmental impact assessment process is not complete, describe the plan for completing draft and/or final NEPA documents.

Successful applicants must tier their project's permitting from the CALFED Record of Decision and attachments providing programmatic guidance on complying with the state and federal endangered species acts, the Coastal Zone Management Act, and sections 404 and 401 of the Clean Water Act.

Please indicate what permits or other approvals may be required for the activities contained in your proposal and also which have already been obtained. Please check all that apply. If a permit is *not* required, leave both Required? and Obtained? check boxes blank.

Local Permits And Approvals	Required?	Obtained?	Permit Number (If Applicable)
conditional Use Permit	–	–	
variance	–	–	
Subdivision Map Act	–	–	
grading Permit	–	–	
general Plan Amendment	–	–	

specific Plan Approval	**–**	**–**	
rezone	**–**	**–**	
Williamson Act Contract Cancellation	**–**	**–**	
other	**–**	**–**	

State Permits And Approvals	**Required?**	**Obtained?**	**Permit Number (If Applicable)**
scientific Collecting Permit	**–**	**–**	
CESA Compliance: 2081	**–**	**–**	
CESA Complance: NCCP	**–**	**–**	
Lake Or Streambed Alteration Agreement	**X**	**–**	
CWA 401 Certification	**–**	**–**	
Bay Conservation And Development Commission Permit	**–**	**–**	
reclamation Board Approval	**–**	**–**	
Delta Protection Commission Notification	**–**	**–**	
state Lands Commission Lease Or Permit	**–**	**–**	
action Specific Implementation Plan	**–**	**–**	
SWRCB Water Transfer Approval	**–**	**–**	
other	**–**	**–**	

Federal Permits And Approvals	**Required?**	**Obtained?**	**Permit Number (If Applicable)**
ESA Compliance Section 7 Consultation	**–**	**–**	
ESA Compliance Section 10 Permit	**–**	**–**	
Rivers And Harbors Act	**–**	**–**	
CWA 404	**–**	**–**	
other	**–**	**–**	

Permission To Access Property	**Required?**	**Obtained?**	**Permit Number (If Applicable)**

permission To Access City, County Or Other Local Agency Land Agency Name	**–**	**–**	
permission To Access State Land Agency Name	**–**	**–**	
permission To Access Federal Land Agency Name	**–**	**–**	
permission To Access Private Land Landowner Name **(1) Larkmead Vineyards;(2) Robert Johnson; (3)Jan Noble; (4)James G. Johnson, G.P., (5)Christina Moghadam; (6)Duckhorn Wine Company; (7) W. Sloan Upton; (8) Laurie Shelton; (9) Leilani S. Gray; (10) Beaulieu Vineyards; (11) Thomas Trainor; (12)Ron Citron); (13) Connie Damskey**	**X**	**X**	

If you have comments about any of these questions, enter them here.

There are 13 landowners listed above and participating in the Selby Project. All have signed access agreements on file with the watershed group, SCWP.

Land Use

Does the project involve land acquisition, either in fee or through easements?
X No. *Skip to the next set of questions.*
– Yes. *Answer the following questions.*

How many acres will be acquired by fee?

How many acres will be acquired by easement?

Describe the entity or organization that will manage the property and project activities, including operation and maintenance.

Is there an existing plan describing how the land and water will be managed?
– No.
– Yes. *Cite the title and author or describe briefly.*

Will the applicant require access across to or through public or private property that the applicant does not own to accomplish the activities in the proposal?
– No. *Skip to the next set of questions.*
X Yes. *Answer the following question.*

Describe briefly the provisions made to secure this access.

Signed access agreements from all landowners participating in the Selby Creek project have been obtained and our part of the Selby Creek Watershed Partner's files.

Do the actions in the proposal involve physical changes in the current land use?
X No. *Skip to the next set of questions.*
– Yes. *Answer the following questions.*

Describe the current zoning, including the zoning designation and the principal permitted uses permitted in the zone.

Describe the general plan land use element designation, including the purpose and uses allowed in the designation.

Describe relevant provisions in other general plan elements affecting the site, if any.

Is the land mapped as Prime Farmland, Farmland of Statewide Importance, Unique Farmland, or Farmland of Local Importance under the California Department of Conservation's Farmland Mapping and Monitoring Program?
X No. *Skip to the next set of questions.*
– Yes. *Answer the following questions.*

Land Designation	Acres	Currently In Production?
Prime Farmland		**–**
Farmland Of Statewide Importance		**–**
Unique Farmland		**–**
Farmland Of Local Importance		**–**

Is the land affected by the project currently in an agricultural preserve established under the Williamson Act?
– No. *Skip to the next set of questions.*
X Yes. *Answer the following question.*

Is the land affected by the project currently under a Williamson Act contract?
X No. *Skip to the next set of questions.*
– Yes. *Answer the following question.*

Why is the land use proposed consistent with the contract's terms?

Land in the Selby Creek Watershed is registered under the Williamson Act and designated as agricultural preserve.The local Napa County Planning Dept. will be contacted and a review of proposed restoration activities requested. As there is no change in land usage, it is not anticipated that the Project will violate local rules.

Describe any additional comments you have about the projects land use.