GOLD RIDGE
RESOURCE CONSERVATION DISTRICT

Salmon Creek Supplemental Environmental Project **Revised 6/15/2016**

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Background

The Gold Ridge RCD's focus in the Salmon Creek watershed for over a decade has been to design and implement projects to support the recovery and restoration of the watershed's coho salmon population. Coho recovery in Salmon Creek has been limited by a variety of factors, including excessive sediment loading, which degrades both spawning and rearing habitat, and inadequate summer flows for juvenile fish survival and passage. Both of these conditions work to impair the function of the Salmon Creek estuary, and both also cause water quality impairment (PCI 2006, GRRCD & PCI 2010). Reduction of sediment and improvement of summer instream flows are identified as priority coho recovery actions in the National Oceanic and Atmospheric Administration (NOAA) Central Coast Coho Recovery Plan (NOAA 2012), which prioritizes the identification and remediation of upland sediment sources, as well as reduction of summer water diversion through the construction of off-channel water storage. The RCD's efforts in these areas have been supported by a number of federal and state agencies, including NOAA, the California Department of Fish and Wildlife, California Department of Water Resources, State Coastal Conservancy and others. As over 95% of the Salmon Creek watershed is privately owned, we have partnered with many private landowners throughout the watershed on the implementation of recovery and restoration projects.

We are submitting this revision of the Salmon Creek SEP in response to requests made by North Coast Regional Water Quality Control Board (NCRWQCB) and State Water Resources Control Board (SWRCB) staff following a field review of project sites in the winter of 2015-16.

Program overview

The Salmon Creek Supplemental Environmental Project (SEP) will comprise two projects designed to improve summer instream flow and reduce sediment loading in Salmon Creek and its tributaries: construction of a rainwater catchment system to reduce water diversion from the Salmon Creek mainstem via the Bodega Water Company (BWC) system, and an erosion prevention project on a tributary of Coleman Valley Creek, a major Salmon Creek subwatershed.

The Gold Ridge RCD intends to implement the SEP using the same methods and protocols as we employ for grant-funded projects. Project design and implementation will be planned and directed by RCD staff to ensure the most efficient use of limited funds and verify that all project goals are addressed.

Project design and permitting

Design for the rainwater catchment project (#1 below) is complete. Once funding is in place, construction can start upon receipt of building permits from the County of Sonoma, and once CEQA compliance has occurred and appropriate documentation is filed. Construction-ready plans for this project were submitted with an earlier version of this scope document.

Design for the erosion control project (#2 below) has not yet started, and will be funded through the SEP, along with project construction.

Preparation of permit applications for both projects, as well as consulting and coordinating with permitting agencies, will be the responsibility of the RCD, and permit fees and staff time for permit application submission are included in the detailed SEP budget below.

Construction

RCD staff will perform direct oversight of implementation of the rainwater project, and will supervise a consultant in oversight of implementation of the erosion prevention project. Construction contracting will be governed by internal RCD contracting and bidding rules. Each project will include construction monitoring, as well as project effectiveness monitoring.

Project management

The RCD will be responsible for management of the SEP, including all project-specific and program cost accounting and reporting. Staff will review all consultant and contractor invoices, and compose and submit SEP invoices. Invoices will be submitted to the discharger no more frequently than monthly, and each invoice will be accompanied by a progress report. Progress reports will be submitted on a quarterly basis during periods when no invoices are submitted. Each progress report will contain details of the expenditures included in the invoice and a summary of overall progress to date, and will note when project milestones have been reached during the reporting period.

At the conclusion of project activities (including monitoring), a final project report will be prepared and submitted. The report will include the following as applicable:

- Project description and timeline

- Project design report
- Summary of project implementation, including design adjustments or changes, obstacles encountered, etc.
- Final as-built construction drawings (if final construction differs from design)
- Final budget, including project-specific cost accounting
- Monitoring summary, including pre- and post-work photos

A proposed SEP budget by project is included at the end of this document, as well as a breakdown of projected expenditures by task for each project. Please note that the numbers in this budget are estimated, and that actual costs for construction will not be known until we award contracts for project construction components. The erosion project is not yet designed, so at this point it is impossible to reliably estimate costs. Estimated costs for this project are therefore preliminary and are based on an assumed design approach which may change as design progresses and further site investigation occurs.

The Gold Ridge RCD is subject to an annual federal A133 single audit. The RCD will agree to an independent audit of all SEP expenditures if requested by the State Water Board.

Rationale and benefits

The operating and design principles for both types of projects included in the SEP are straightforward. The rainwater project is designed to replace water that is currently diverted from Salmon Creek during the summer dry season via the BWC system with water that is collected and stored during the winter rainy season. The proposed project is part of a long-term effort begun in 2009 to reduce dry season water diversion in Salmon Creek using this basic approach – the Gold Ridge RCD has implemented 17 such projects to date, and we continue to identify and plan additional projects. With improvements in flow come benefits to water quality, including higher levels of dissolved oxygen and lower water temperatures. Increased summer flows allow juvenile fish to move to more favorable habitat, and allow downstream movement toward the estuary late in the season. Higher flows in the mainstem provide additional water to the estuary, improving its function as habitat.

The benefits of any single streamflow improvement project are difficult to measure. There are many diversions, both small and large, along the mainstem of Salmon Creek, and because each water year is different in terms of amount, intensity and timing of precipitation, measurable year-over-year improvements in streamflow are not necessarily to be expected. The RCD and our agency partners recognize that this is a

long-term process, and we expect to see incremental improvements in both streamflow and water quality over a period of years to decades.

Erosion prevention projects lead to improvements in salmonid habitat by stabilizing sites of active erosion, thereby reducing the volume of sediment delivered to Salmon Creek and its tributaries. These reductions allow winter streamflows to flush out fine sediments already in the stream, improving a number of habitat parameters. In addition, erosion prevention projects provide water quality benefits by reducing turbidity and decreasing the duration of elevated turbidity during and after high-flow events. When addressing stream channel incision or gully formation, erosion prevention projects also improve both wet and dry season streamflows by protecting the alluvial aquifer adjacent to the channel, whether it is a gully or a stream.

Project descriptions:

I. Rainwater Catchment Project

Project address: 525 Salmon Creek Road, Bodega, CA 94922
APN: 103-100-043
Owners: Fred Johnson and Anna Kovina
Phone: (707) 876-3172
Email: fred.johnson@ey.com, fairynectarfarm@gmail.com

Description: The project consists of the construction of two rainwater storage tanks and associated water collection, conveyance and distribution infrastructure, and will reduce water demand on the Bodega Water Company (BWC) system, which extracts water primarily from a shallow well adjacent to Salmon Creek. The project will collect and store a volume of rainwater sufficient to satisfy the irrigation and livestock demand of this small agricultural operation for the period of May through October of every year (the "period of use"), which has been estimated at approximately 75,000 gallons. The property is an equestrian facility which historically has had the highest water use of any single site on the BWC system. It is under new ownership, and the owners are in the process of converting it to a farm focusing on permaculture-based sustainable agriculture. The rainwater project will collect water from the roofs of the residence and three outbuildings on the site. It will be designed so that it captures the target volume of water during all water years, including a severe drought year (which we define as 25" of rainfall – the long-term average for Bodega is 39").

Project design work is complete, and designs and a designer's cost estimate are attached. Funding sources and amounts are detailed in the attached budget.

Project controls: The Gold Ridge RCD utilizes several methods to ensure that our water conservation efforts in the Bodega Valley (including this project) result in reduced demand for water from Salmon Creek.

1. Forbearance agreement. As part of the scoping and design of each project, we work with the landowner to identify specific uses for which stored rainwater is intended to satisfy demand. We then determine the approximate water demand for each use, either through analysis of metering records or through application of standard evapotranspiration and/or water need values to irrigated areas and/or numbers of livestock, usually in combination with landowner estimates. For this project we are relying heavily on the owners' estimates, primarily because of the ownership change described above. From this process we arrive at a target water collection and storage volume, which becomes the basis of system design. Upon completion of design, we draft and sign a forbearance agreement with the landowner in which they agree to forbear from using Salmon Creek water (either via the BWC system, shallow alluvial wells or direct diversion) for the identified purposes for the term of the agreement (generally 15 or 20 years). The agreement goes into effect upon completion of system construction, and is recorded on the deed to the property to ensure that it will remain in effect should a change of ownership occur. A copy of a standard draft forbearance agreement is attached.

2. Metering. The Gold Ridge RCD has entered into a Memorandum of Understanding with the Bodega Water Company in which BWC agrees to make water meter records for properties participating in our program available to the RCD and our partners. Through analysis of this data, we verify reductions in summer water use after project completion on each property when compared to historical use. We also install a water meter on each rainwater system we construct to verify that the water is being used and to assist the landowner in determining the optimal rate of use for their site.

3. Monitoring. In conjunction with our water conservation program in the Salmon Creek watershed, the RCD has been conducting monitoring of both streamflow and specific water quality parameters in the Bodega Valley reach since 2010. Monitoring efforts are focused on the stream reach adjacent to the BWC well, and are governed by a monitoring plan originally drafted as part of a grant agreement with the National Oceanic and Atmospheric Administration that commenced in 2009. We conduct continuous monitoring of stream depth, water temperature, dissolved oxygen and specific conductivity at three locations on this reach from May through October of each year. Data analysis is contracted to a consultant (when funding is available). All water years are different, and streamflow through a single dry season is affected by the amount, timing and

intensity of rainfall throughout a water year, as well as other factors such as weather and antecedent streamflow and groundwater conditions. In light of this, the stated goal of our program is to realize improvements in both streamflow and specific water quality parameters over time, as projects come on line, and we consider a realistic estimate of this time scale to be decadal.

Rainwater projects constructed as part of the Gold Ridge RCD's water conservation efforts on properties receiving water from the BWC system are intended to impact streamflow and water quality immediately and over the long term by reducing extraction from BWC's shallow well. In partnership with the RCD, BWC is also in the process of designing a large water storage tank that will allow the cessation of all dry season water extraction from this well, which will be required as a condition of BWC's appropriative water right. Implementation of rainwater catchment system projects on properties supplied by BWC reduces the total volume of water that will be necessary to store in this tank, thereby making the project more technically and financially feasible and more likely to occur within a reasonable time frame. More information on the status and background of the BWC water right application can be made available if necessary.

Permits: The project will require two Sonoma County building permits (one for each water tank). No water right is required for this project. The project is categorically exempt from CEQA under CCR Title 14, Chapter 3, Article 19, Section 15303: New Construction or Conversion of Small Structures. A Notice of Exemption will be filed by the Gold Ridge RCD.

Oversight: Oversight of earthwork and site preparation will be provided by RCD staff. Oversight of water tank construction will be provided by the water tank provider, under supervision of RCD staff.

Project success criteria: Project success will be evaluated by analysis of water meter data. Readings of both the BWC meter and the RCD rainwater system meter are collected monthly by BWC staff and provided to the RCD (per our MOU). The specific project success criterion is the reduction of monthly dry season water use (during the May through October period of use) to levels substantially below historical use for this site and in line with expected household demand for a family of three. The RCD will analyze metering data for a total of three years following project construction, 2017, 2018, and 2019.

Schedule		
Activity	Time period	Milestone
Permitting	8/2016 - 11/2016	Building permit acquisition
Contracting	8/2016 - 9/2016	Contract award

Construction	9/2016 - 8/2017	Construction completion
Monitoring	Summer 2018 - summer 2019	Final monitoring data analysis
Reporting	Spring 2020	Final project report

Ideally we would like to construct the project before the winter of 2016-17, but the lead time required for Sonoma County permit acquisition and water tank fabrication might push construction into 2017. Should construction be completed before the winter of 2016-17, we will commence monitoring work during the summer of 2017.

II. Erosion Prevention Project

Project address: Browder Ranch – 17220 Coleman Valley Road, Occidental, CA 95465
APN: 073-290-002
Owners: Gerry Browder (408) 796-9189 cell, laserdie@yahoo.com
Greg Browder (202) 473-0339 cell, gbrowder@worldbank.org
Seanna Browder seanna206@gmail.com
Ranch phone: (707) 874-2372

Project description: The scope of this project has been revised at the request of NCRWQCB and SWRCB staff. The project originally entailed the stabilization of a large and expanding gully system, reconstruction of a failed ranch road crossing, and realignment of the ranch road around the gully site. Upon site review, several changes to the project were requested, including an expansion of the project scope to encompass two other gully sites (south and east gullies) adjacent to the original project site, removal of the road-related project components, and redesign of the project to meet a 100-year flow standard. Because the timeline for SEP approval is unknown and additional design and permitting work would be required, the requested changes were not acceptable to the landowners. After extensive discussions with RCD staff, the owners agreed to participate in the SEP on the basis of the following:

1. The original gully and road crossing project will be permitted and implemented by the landowners as designed with no funding from the SEP. GRRCD requested that the design engineer review the hydrologic, hydraulic and rock sizing calculations and assumptions to determine whether the project as designed met the 100-year flow standard. The engineer determined that they met the higher standard, and we can provide documentation to this effect if requested.
2. Design, permitting and implementation of a project to address the south and east gullies, located adjacent to the original project site, will be included in the SEP. The south and east gully stabilization project design will meet a 100-year recurrence interval flow standard.
3. The project schedule will be revised to reflect the additional time needed for design, permitting and implementation.

4. All stabilized gully sites, as well as the entire riparian corridor within the Browder property, will be fenced to exclude cattle. Exclusion fencing is part of a larger conservation project the landowners are working to implement with the assistance of the Natural Resources Conservation Service, and a map of the fencing plan can be provided upon request.
5. Riparian revegetation is planned for the original gully and road project site, and will be included as a design component of the south and east gully stabilization project.

The revised SEP erosion project includes the south and east gullies, which are adjacent to both the channel of a tributary of Coleman Valley Creek and the original gully and road project sites. The south gully has been rapidly incising and headcutting in response to lowered base level resulting from incision of the stream channel to which it drains. This gully measures approximately 150 feet in length, averages roughly 30 feet in width with an overall drop of 16 feet from the head to the mouth (accounted for by several active headcuts). The gully grew headward by approximately 20 feet between our initial survey in 2014 and the spring of 2016, and subsidiary gullies have started to form on both banks. The south gully has delivered an estimated 600 cubic yards of fine sediment to Coleman Valley Creek over the past decade, and we expect it to remain very active for the foreseeable future. The south gully does not convey streamflow; unchanneled surface flow enters it at the head, but most of the flow in the gully is derived from emergent groundwater. Both discharge and flow energy are relatively low, so a combination of armoring with relatively small rock, slope protection using erosion control methods and aggressive revegetation are the preferred methods for stabilizing the site.

The east gully measures approximately 250 feet in length, has an average overall width of 35 feet and drops a total of 17 feet from its head to its outlet. Like the south gully, it does not convey streamflow, but is watered through a combination of dispersed overland flow and emergent groundwater. The east gully is less active and lies at a lower gradient than the south gully. Because of this the preferred approach to stabilizing the site is to utilize spoil material derived from the original gully and road project to fill most of the gully, and to install two rock grade control structures to prevent future erosion. In addition to drastically reducing or eliminating sediment production on the site, this approach will prevent shallow groundwater from emerging, retaining additional moisture in the alluvial aquifer adjacent to the stream.

The total area of ground disturbance for the project is projected to be 0.5 acres, but this number is preliminary because design work has not yet been started. As noted above, this project will include a revegetation component, and the original gully and road

project will occur in conjunction with a riparian revegetation effort and installation of livestock exclusion fencing to further stabilize and protect the site.

Monitoring: Erosion prevention projects are designed to have a direct and immediate impact on winter water quality, reducing the volume of fine sediment delivered to the stream and thus to downstream areas. Reduction in turbidity during high flow events is the most obvious immediate impact on water quality following successful implementation of such a project. But measuring improvement in turbidity requires a robust existing monitoring program, with an abundance of continuous pre-project measurements taken during a variety of high-flow events. In the absence of such data, the most reliable method for measuring project performance is by repeated post-implementation inspection of the project site, along with repeat photo documentation of the project from established photo points, to ensure that project components are performing as designed. Monitoring will be performed annually, and as appropriate following high-flow events.

Permits: The following permits will be required for this project:

Department of Fish and Wildlife 1602 Streambed Alteration Agreement
Regional Water Board CWA Section 401 Water Quality Certification
US Army Corps of Engineers CWA Section 404 Dredge/Fill Permit

Because both sites are in gullies, rather than stream channels, it is possible that USACOE will decline jurisdiction over the project. In this event a 404 permit will not be required.

Although the site lies within the range of the California red-legged frog, it is unlikely to contain CRLF habitat. The Gold Ridge RCD will conduct a CRLF habitat survey, but it is likely that we will proceed with the project without ESA take coverage. We will avoid take by timing the work to occur during late summer/early fall (the driest time of the year), and will erect temporary CRLF exclusion fencing to ensure that no frogs can enter the site once a presence/absence survey has occurred. Should CRLF be found on the site, we will initiate ESA consultation with the US Fish and Wildlife Service through the US ACOE (and halt work if this occurs during construction).

Sonoma County grading ordinance requirements are covered by the RCD's exemption for conservation projects. The project is categorically exempt from CEQA under CCR Title 14, Chapter 3, Article 19, Section 15333: Small Habitat Restoration Projects. A Notice of Exemption will be filed by the lead agency, the North Coast Regional Water Quality Control Board.

All permitting for this project will be the responsibility of the Gold Ridge RCD.

Oversight: Construction oversight will be provided by Eric Austensen of Streamline Engineering, under the supervision of RCD staff.
Project success criteria: The criterion for project success is documented stability of all treated areas of the site, as demonstrated by photo documentation and inspection showing no further significant erosion from the treated areas for a period of three years following completion of construction (the winter of 2017-18 through the winter of 2019-20).

Schedule		
Activity	Time period	Milestone
Design	10/2016 - 3/2017	Design completion
Permitting	4/2017 - 8/2017	Acquisition of all required permits
Contracting	6/2017 - 7/2017	Contract award
Construction	8/2017 - 10/2017	Construction completion
Monitoring	Winter 2017-18 - Winter 2019-20	Final monitoring data analysis
Reporting	Spring 2020	Final project report

Contracting and construction
Construction of both projects will be open for bidding by qualified contractors according to RCD contracting rules, and the RCD will assemble a bid package, solicit bids and select a contractor. Because of this, actual project expenses may not be equal to estimated expenses as outlined in the attached budget.

References
Gold Ridge Resource Conservation District and Prunuske Chatham, Inc., 2010. *Salmon Creek Integrated Coastal Watershed Management Plan.*
National Oceanic and Atmospheric Administration, 2012. *Recovery Plan for the Evolutionarily Significant Unit of Central California Coast Coho Salmon.*
Prunuske Chatham, Inc., 2006. *Salmon Creek Estuary: Study Results and Enhancement Recommendations.* Prepared for Salmon Creek Watershed Council and Occidental Arts and Ecology Center.

Gold Ridge Resource Conservation District

Salmon Creek Supplemental Environmental Project Budget

		Rainwater Project		Erosion Project		Totals	
RCD staff	Rate	Number	Cost	Number	Cost	Number	Cost
Executive Director	$ 112.00	5	$ 560.00	11	$ 1,232.00	16	$ 1,792.00
Lead Scientist	$ 107.00	60	$ 6,420.00	118	$ 12,626.00	178	$ 19,046.00
Project Manager	$ 101.00	58	$ 5,858.00	106	$ 10,706.00	164	$ 16,564.00
Conservation Planner	$ 97.00	6	$ 582.00	11	$ 1,067.00	17	$ 1,649.00
Ecologist	$ 100.00	0	$ -	44	$ 4,400.00	44	$ 4,400.00
Project Assistant	$ 84.00	8	$ 672.00	12	$ 1,008.00	20	$ 1,680.00
Total RCD staff		***137***	***$ 14,092.00***	***302***	***$ 31,039.00***	***439***	***$ 45,131.00***
Operating expenses							
Engineering design					$ 7,505.00		$ 7,505.00
Subcontractors			$ 24,000.00		$ 39,743.00		$ 63,743.00
Water tanks			$ 93,000.00				$ 93,000.00
Rock					$ 38,170.00		$ 38,170.00
Other materials					$ 20,350.00		$ 20,350.00
Engineer oversight					$ 7,600.00		$ 7,600.00
Permits			$ 4,000.00		$ 1,600.00		$ 5,600.00
Total operating expenses			***$ 121,000.00***		***$ 114,968.00***		***$ 235,968.00***
Project totals			**$ 135,092.00**		**$ 146,007.00**		**$ 281,099.00**
Funding sources							
Suspended liability amount			***$ 122,992.00***		***$ 134,510.00***		***$ 257,502.00***
Landowner cost share			$ 12,100.00		$ 11,497.00		$ 23,597.00
Totals			**$ 135,092.00**		**$ 146,007.00**		**$ 281,099.00**

Gold Ridge Resource Conservation District
Salmon Creek Supplemental Environmental Project
Budget by task

Tasks	Rainwater Project	Erosion Project
Design	$ -	$ 10,327.00
Permitting	$ 5,982.00	$ 11,488.00
Contracting	$ 1,562.00	$ 1,973.00
Construction	$ 122,012.00	$ 114,364.00
Monitoring	$ 1,790.00	$ 3,709.00
Reporting	$ 3,746.00	$ 4,146.00
Project totals	***$ 135,092.00***	***$ 146,007.00***