2018 Annual Report

Central Valley Disadvantaged Community Water Quality Grants Program

February 20, 2019

Photos courtesy of Program grantees Tuolumne River Trust (top) and Self-Help Enterprises (bottom)

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Photos courtesy of Program grantee Sierra Stream Institute.

Program Overview

2018 marked the fifth year for the Rose Foundation for Communities and the Environment (Rose Foundation) to administer the Central Valley Disadvantaged Community Water Quality Grants Program. Since inception, funding from 14 Administrative Civil Liability (ACL) settlements have been received. This has enabled the Rose Foundation to fund a total 27 Supplemental Environmental Projects (SEPs), totaling over $2.3M.

Complying with the State Water Resources Control Board Policy on Supplemental Environmental Projects effective as of May 3, 2018, please accept this Annual Report of projects completed in 2018, and projects that have achieved 25% completion or more. From SEPs approved and initiated in previous years, 18 projects were active in 2018. Nine projects were fully completed, one achieved 75% completion, six met their 50% completion milestones, and two are expected to complete their first milestones of 25% in the coming months.

In addition to reporting on these specific projects, we are very pleased to announce the launch of the **Los Angeles Community Water Justice Grants Program.** We are in the process of developing a 2019 Pilot List from a total of 24 proposals received. Following on the heels of the update to the State Water Board SEP Policy months ago, this latest development shows that Region Five's partnership with the Rose Foundation to steer SEP funding towards disadvantaged communities continues to be an influential model.

As we submit this current report, we emphasize that the Central Valley Disadvantaged Community Water Quality Grants Program is fully ready for additional SEPs. The most recent SEPs were received in 2017. Funding from those SEPs has been fully placed with community-based organizations, and this report describes some of the tremendous progress these groups have made on clean water issues, especially in the Sacramento and Fresno regions. However, the Grants Program did not receive any SEPs in 2018. There are a number of very worthy organizations on the 2018 Project List with urgent and compelling proposals. As we move into 2019, we are working with all of these unfunded organizations to update their projects and roll them over to the 2019 Project List, which will also have number of new organizations as well. We look forward to the opportunity to help them get the necessary funding to implement these projects.

Active SEPs in 2018

This section describes all SEPs that were active in 2018, which were awarded in past years and that performed or completed work in 2018. The chart summarizes the status of each project. Following the chart, we briefly profile grantees that have achieved particularly significant results. The appendix section contains full reports from every grantee listed in order of completion. Two projects (marked with an asterisk *) are currently in progress, but has not yet reached the next completion milestone, or have a corresponding report.

Organization	Discharger	Status
1. Self-Help Enterprises	Rakkar	100%
2. South Yuba River Citizens League	Triangle Properties	100%
3. El Quinto Sol de America	Southern California Edison/ Shaver Lake	100%
4. Leadership Counsel for Justice and Accountability		100%
5. Center on Race Poverty & the Environment		100%
6. California Indian Environmental Alliance	City of Galt	100%
7. California Rural Legal Assistance, Corporation	California Resources Corporation	100%
8. California Product Stewardship Council	City of Sutter Creek	100%
9. Madera Coalition for Community Justice	CMO, Inc.	100%
10. Rural Community Assistance Corporation		50%
11. California Rural Legal Assistance, Corporation *		25%
12. Central Sierra Environmental Resource Center	Deuel Vocational Institution (DVI)	75%
13. California Product Stewardship Council		50%
14. Environmental Justice Coalition for Water		50%
15. The Sierra Fund		50%
16. Tuolumne River Trust		50%
17. The Streams Institute		50%
18. California Indian Environmental Alliance *		25%

SEPs 100% Complete

Nine SEPs were fully completed in 2018

Self-Help Enterprises

DAC Engagement in Regional Water Planning for Madera County Area of San Joaquin River Basin Region

$29,619 | 14 months

Region: Fresno

ACL Order R5-2016-0533

This project improved DAC participation in IRWM activities by working directly with DACs and IRWM to build capacity, foster relationships, address current barriers, and minimize future barriers and support development of ground water sustainability projects. Two DWR-funded DAC studies recommended intentional engagement of DACs to improve their participation in ground water management at both the local community and broader regional levels. The project implemented the relevant recommendations of the DWR-funded DAC studies to foster engagement of DACs in the Madera region. The Project objectives were to: 1) engage DACs and the IRWM group in defining participation and project development challenges related to local, regional and sustainable ground water supply and management, (2) work with DACs and the IRWM group to develop plans to utilize future DAC engagement funds; 3) build capacity and foster working relationships, 4) address local IRWM barriers and provide recommendations to minimize these future barriers; and 5) support development of water projects that lead to sustainable local and regional ground water management.

South Yuba Citizens League

Growing Green: Reducing WQ Impacts from Marijuana Grows in the Yuba River

$46,500 | 12 months

Region: Sacramento

ACL Order R5-2016-0537

SYRCL's Growing Green Program focuses on promoting education about water quality and watershed health to cannabis farmers in the Yuba watershed. Disadvantaged communities (DACs) were the focus of this project and through specific outreach to DAC areas in the watershed through collaboration with the Nevada County Cannabis Alliance that targets farmers who farm in these communities, and through three webinar videos that will reach farmers who may not be willing or able to attend in person workshops or have access to outreach materials. SYRCL conducted outreach, held five BMP workshops, and disseminated educational materials to local farmers and interested community members in. Three cannabis BMP webinars (see below) were created and are available online for free. The goal is for the webinars to reach a widespread audience and have a large impact on the ongoing issue of water waste and pollution sourced from unregulated cannabis farms. While the project focus area is the Yuba watershed, the expectation is that the videos will be applicable to communities and watersheds throughout California's Central Valley and beyond – thus magnifying the impacts of the project. The full report provides information about specific deliverables associated with both the workshops and the BMP videos.

El Quinto Sol
Water and the Right to Know
$50,000 | 12 months
Region: Fresno

ACL Order R5-2016-0535

This project conducted public education about water quality in the four communities of Tooleville, Plainview, Tonyville and Lindsay (which includes the community of El Rancho). Outreach was locally tailored to provide the individualized tools that each community needs in order to have a deep understanding of the water quality issues they face and to increase participation in their local water boards in an effort to have community members engaged in their own water systems. Along with the Water and The Right to Know program, the project gave residents the opportunity to strengthen the bridge between decision makers, agencies and community.

Leadership Council for Justice and Accountability
Septic Conversion and Consolidation Project
$120,000 | 24 months
Region: Fresno

ACL Order R5-2016-0535

This septic to sewer and drinking water consolidation project helped (1) eliminate failing septic systems by advocating for and facilitating projects that connect DACs to public wastewater systems and (2) address drinking water contamination by advocating for consolidation of drinking water systems. The project was launched in the communities of Lanare and Cantua Creek, in Fresno County and Matheny Tract, Soults Tract and Loan Oak in Tulare County where failing septic systems and inadequate drinking water systems impact the health of the aquifer, health of residents, and the sustainability of communities. LCJA partnered with community-based organizations, local government and other stakeholders in these areas to develop and implement community driven septic to sewer and drinking water consolidation campaigns.

Center for Race Poverty & the Environment
South San Joaquin Valley Watershed Improvement Programs: Promoting Community Participation
$215,000 | 24 months
Region: Fresno

ACL Order R5-2016-0535

Many communities in the South San Joaquin Valley (Allensworth, Alpaugh, Arvin, Delano and Lamont) face significant drinking water contamination from arsenic and nitrates, suffer from poor water quality and are faced with expensive treatment options. Lower water tables resulting from the CA drought pull in higher levels of nutrients like arsenic and nitrate from ground water, affecting well water and other sources of potable water. Through this project CRPE provided fact sheets and information to community residents on common contaminants found in Valley water supplies such as nitrates and arsenic. CRPE also trained community residents on possible solutions and treatment options to prevent future contamination and clean-up existing contamination. They worked with three predominately

low-income communities of color in the San Joaquin Valley: Arvin, Lamont, and Allensworth, and secured several water benefits:

- Engaged in 5 monthly meetings on water projects, water issues and capacity building.
- Helped communities increase access to funding technology, and technical experts to help improve water quality in three San Joaquin Valley Communities.
- Helped communities oversee the construction and testing of five new wells to ensure they achieve community goals for safe, clean, affordable drinking water.

California Indian Environmental Alliance

Safer Subsistence Fishing: Cache Creek Basin to Sacramento River

$43,245 |12 months

Region: Sacramento

ACL Order R5-2016-0566

The goal of this project is to create a model for identifying and securing safe fishing locations in the Cache Creek Watershed east from Clearlake into the Sacramento River. This will result in cleaner water quality standards to levels that will support continued fish consumption at or near cultural subsistence rates and provide safer places for cultural practices within the watershed. This project is related to CIEA's related Tribal Engagement in Integrated Regional Watershed Management Plans and Basin Plan Amendments. Specifically, it will provide updated information for the Central Valley Region in the Westside, Sacramento River, San Francisco Bay Delta and Mountain County IRWMs wherein CIEA works closely with Tribes and will provide guidance to watershed restoration projects. This project will also show that the goal of securing safer fishing locations is obtainable and that families can have local alternatives and be healthful in their own traditional territories in California. The project has made substantial progress towards its goal of providing an alternative and preferable method of assessing and remediating locations based on California Tribes' and community needs. The four components of this program 1) Rank waters in this area by cleanest locations 2) Fill data gaps, 3) Develop further cleanup plans and identify sources to fund this work and will begin to 4) Protect this portion of the watershed utilizing existing state programs and distribute fish consumption advisories.

California Rural Legal Assistance Corporation

CRLA's Water Quality Planning and Well Rehabilitation Project in Del Rey

$43,942.50 / 18 months

Region: Fresno

ACL Order R5-2016-0567

Funds helped California Rural Legal Assistance, Corporation, Corp. (CRLA) support the unincorporated Fresno County community of Del Rey in its efforts to understand the extent of TCP contamination in its drinking water, mitigation and remediation efforts, to equip residents in robust public participation, and to work with the Del Rey Community Services District (CSD) in encouraging public participation. Additionally, CRLA developed the report *Meaningful Participation in Drinking Water Remediation: Best Practices for Public Engagement and Inclusion to Address Water Contamination in Environmental Justice Communities*, which primarily focuses on increasing resident participation in the remediation process, improving the relationship between the public water systems and the community, and maximizing resident satisfaction with remediation strategies. The practices identified in this report can

be applied to all types of drinking water remediation and are not limited to 123 TCP contamination. They can be applied to community involvement in both urban and rural communities. As the State Water Board already approved enforceable TCP Maximum Contaminant Level (MCL) at 5ppt (parts per trillion) CRLA made progress with TCP remediation efforts and prepared residents to actively participate. Residents have shown an increased rate of civic engagement through their attendance at CSD meetings. They are knowledgeable of their rights to be informed and involved in the water remediation processes and are eager to be involved.

California Product Stewardship Council

Sustainable Medication Take Back for Amador County
$38,875 |18 months

Region: Sacramento

ACL Order R5-2017-0507

This project expanded the award winning "Don't Rush to Flush, Meds in the Bin We All Win!" (DRTF) program developed by the California Product Stewardship Council (CPSC) with funding from previous Rose Foundation grants. DRTF protects water quality by establishing safe and convenient medication collection sites and promoting their use to the public in lieu of flushing or trashing medications. During the two-year grant, the California Product Stewardship Council (CPSC) sited the first four permanent medicine take-back bins in Amador County, protecting water quality by collecting 567 lbs. of medications that could have otherwise been flushed down the toilet or drain. Staff held one ribbon-cutting event, which was attended by local elected officials; gave three presentations; secured an additional $10,500 of in-kind funding to cover the medicine disposal costs; was featured in the local newspaper once and radio station twice; and received more than 600,000 impressions utilizing print, radio and digital media. All Amador County residents were helped by this project, as the region previously lacked any physical locations to properly dispose of their unwanted controlled medication. CPSC developed partnerships with four community entities including organizations that represent disadvantaged communities such as First 5 and the Child Abuse Prevention Council.

Madera Coalition for Community Justice

Madera Community for Sustainable Water
$27,900 / 12 months
Region: Fresno

ACL Order R5-2017-0534

Fund helped build capacity in Madera County to establish an organizational framework to ensure water security both in terms of quality and quantity by inculcating a collective consciousness and sense of ownership, responsibility and accountability in impacted and under-served communities. These efforts built on the organization's ongoing advocacy and education work in land use and air quality both locally and regionally. In that connection, a focus to this project focus was youth leadership development as a key component to the community awareness, education and advocacy. The project also addressed the issue of water security and management using a four-prong approach: (1) awareness, through planning and participation opportunities; (2) education; (3) community supplemental public input that reflects their practical experiences, attitudes and beliefs; and (4) communities

input to decision-making before policies are made. The project conducted outreach, dissemination of informational flyers and materials, and convened and facilitated community workshops and training sessions for members of DACs. The thrust of the project to mobilize the community was twofold: (1) empower community members to become informed and active participants in local, regional and state water-related processes, including taskforces on watershed planning and protection, upgrading of water system, improving community infrastructure and remediating septic pollution and other contaminants, and (2) establish a cadre of youth watershed stewards trained in the fundamentals of protecting, restoring and improving our surface and groundwater through a 8 week course (5 classes and 3 field visits).

SEPs 75% Complete

Central Sierra Environmental Resource Center
Water in the Balance – Four Key Actions
$140,000 | 24 months: June 2017 – June 2019
Region: Sacramento

ACL Order R5-2017-0530

CSERC made strong progress during the third quarter of the grant period. CSERC staff (1) continued to sample water quality in mountain and foothill streams, monitoring more than 40 meadows and assessed countless miles of roads to locate resource damage; (2) provided evidence of watershed issues of concern to the Forest Service and to the Central Valley Regional Water Board developed through ongoing watchdog monitoring; (3) served as key water advocates in four collaborative stakeholder groups, advocating for balanced forest and watershed health; and (4), raised public awareness about watershed issues through contacts with the media, public events, online articles, and their website's educational games for kids. CSERC surpassed project goals for water sampling, watershed watchdog monitoring, stakeholder collaboration, and raising environmental awareness. They also presented a training for teachers at a Forest Institute and continued to provide free online Nature Games for Kids, which received over 100,000 unique views already this year.

SEPs 50% Complete

Six SEPs were 50% in 2018.

Rural Community Assistance Corporation
Arsenic-free drinking water for Central Valley DACs
$93,000 | 12 months: June 2018 – July 2019
Region: Fresno

ACL Order R5-2017-0534

Supports the implementation of a Point of Use (POU) program to provide safe drinking water to Central Valley disadvantaged communities. Initial outreach is being done in Caruthers and Riverdale in Fresno County - both designated DACs with primary and secondary water contaminant issues. This program is replicating RCAC's work in Arvin on the largest POU program ever to be funded by the State Water Resources Control Board. RCAC's POU program takes place in conjunction with Agua4All, an innovative campaign to increase access to and consumption of safe drinking water in low-income rural areas The primary geographic area consists of the disadvantaged communities of Caruthers and Riverdale in Fresno County.

RCAC has subcontracted this project to Self Help Enterprises (SHE) due to their strong presence in the Central Valley and already established relationship with the communities served through this project. SHE is working with the Riverdale Joint Unified School District and the fairgrounds in Caruthers to install water bottle filling stations. This project will help students and staff at the Riverdale Joint Unified School District and community members in Caruthers. The proposed project will include stations in Riverdale and stations with point-of-use (POUs) in Caruthers. In Caruthers, the water has arsenic so POUs will be installed along with the water bottle filling stations.

California Product Stewardship Council

Sustainable Medication Take Back for the Sacramento Valley

$200,000 | 24 months: October 2017 – October 2019

Region: Sacramento

ACL Order R5-2017-0530

The California Product Stewardship Council (CPSC) has established nine medicine take-back bins that collected 1,389 lbs. of medications protecting water quality from meds that could have been flushed. Staff promoted the bins to the public using the "Don't Rush to Flush" messaging achieving 1,035,555 impressions through a variety of media including movie theatre ads. CPSC partnered with five local community groups and provided educational materials such as flyers, whiteboard videos and model language for websites and newsletters to share with residents. CPSC staff have given four presentations to healthcare industry, child protection, opioid safety and law enforcement groups and hosted an informational booth at the Annual Recycling Exposition. The PR campaign targets disadvantaged communities by producing outreach materials in both English and Spanish, utilizing a multimedia approach to provide access to residents of every socioeconomic status, and putting med bins where they are most needed.

Environmental Justice Coalition for Water

Realizing the Human Right to Water for Sacramento Valley Disadvantaged Communities

$100,000 | 18 months: October 2017 – October 2019

Region: Sacramento

ACL Order R5-2017-0530

The funding helps EJCW build on past Rose Foundation support to expand watershed education and water justice capacity building projects into Butte, Shasta, and parts of Siskiyou Counties. Upper Sacramento Valley communities are currently more isolated from the statewide Human Right to Water discourse than other water-disadvantaged communities. By engaging communities in the Upper Sacramento Valley EJCW is advancing the following: 1) disadvantaged community identification and water quality needs assessment; 2) community outreach and education in disadvantaged communities; 3) community participation in watershed planning; and 4), technical assistance to disadvantaged communities, including the creation of community advocacy resources and organizing tools. This project's overarching goal is to empower low-income and people-of-color communities in the Upper Sacramento Valley with the objective of building capacity for local and regional water justice campaigns and the achievement of watershed health through education, building relationships, and developing sustainable projects. EJCW has completed a data analysis and mapping and needs assessment for both Sacramento and Yolo Counties that can be used as a visual aid and guide for community engagement as it relates to

disadvantaged communities water quality, quantity, climate change resiliency, and fish health for beneficial uses. EJCW has also summarized the various interviews conducted throughout the grant period with stakeholders regarding their observations about water-related challenges and needs in the counties.

The Sierra Fund

Building an Integrated Regional Water Management Collaborative Serving the CABY Region

$199,962 / 24 months: October 2017 – October 2019

Region: Sacramento

ACL Order R5-2017-0530

During this reporting period, The Sierra Fund (TSF) built capacity to identify and involve local under-represented populations, especially Spanish-speakers and Tribes, in activities that address their water quality, access needs, and environmental health exposures. SEP funds allowed TSF to retain a Tribal Consultant who actively participates in Integrated Regional Watershed Management (IRWM) group meetings, specifically the Cosumnes, American, Bear, Yuba (CABY) IRWM and in the DWR-mandated Disadvantaged Community Involvement Program (DACIP). This ensures that tribal priorities are incorporated into the CABY Plan Update (underway) and the DAC Needs Assessment. In addition, TSF's bilingual Environmental Justice Community Organizer has conducted outreach to Spanish speakers and low-income residents of Grass Valley to learn about water and environmental health concerns and provided tools to confront these challenges. In 2018, the Office of Environmental Health Hazard Assessment (OEHHA) released an updated fish consumption advisory design. With the objective of improving local Spanish-speaking and Tribal DAC communities' understanding of mercury in fish through Post-It Day 2018, TSF ordered permanent sets of fish consumption advisories to post at a number of lakes managed by long-term supporters of the project. Permanent advisories were installed at four of the eight reservoirs, extending the life of this important public health message and maximizing volunteer effort.

Tuolumne River Trust

Youth in Action: Stewardship, Action and Leadership

$100,000 | 24 months: October 2017 – October 2019

Region: Sacramento

ACL Order R5-2017-0530

Supports the improvement of water quality in the Tuolumne River as it flows through one of the most disadvantaged neighborhoods in Modesto utilizing a two-pronged approach by: 1) actively engaging local residents and businesses in pollution prevention and cleanup activities; and 2), increasing water literacy. Work completed during the grant period will benefit public health as well as California's defined beneficial uses. TRT built on baseline water quality information by recruiting monitoring teams from the Airport Neighborhood (AN) to add two neighborhood monitoring sites to their existing monitoring program as a means of increasing awareness of water quality issues and empowering residents to be part of the solution to improving water quality at their local swimming holes. So far, the Airport Neighborhood leaders are gaining momentum. They have taken increasingly impactful leadership roles that directly affect water quality of the Tuolumne River. From submitting a

letter to the editor in response to a misinformed and offensive local media article to teaching others (including youth) how to participate in water quality monitoring activities, the Airport Neighborhood residents are active and eager to stay involved. In addition to the Airport Neighborhood, community residents throughout Modesto are stepping up to improve the quality of the Tuolumne River, the parks it flows through, and the communities it sustains. Also. Through river and community clean-ups and education through hands-on recreation and learning, Modestans are taking ownership of the health of their community slowly but surely. Some highlights from the reporting period include 5 water quality monitoring activities, 10 river clean ups, and 581 volunteer participants, and 13 educational presentations.

The Sierra Streams Institute

Citizen Science in Disadvantaged Communities for Bear River Watershed Improvement

$122,000 | 24 months: October 2017 – October 2019

Region: Sacramento

ACL Order R5-2017-0530

The Bear River Watershed, home to several disadvantaged communities, has been severely impacted by historical and present-day mining, industrial chemical discharges, agricultural chemical runoff, sewage spills, invasive species, and aquatic and terrestrial habitat degradation. The 2015 Lowell Fire brought a new threat of post-fire erosion across 2,304 acres in the Bear's upper watershed. This project is an effort to improve planning and restoration project development in the Bear River watershed through baseline monitoring of the watershed, in collaboration with citizen scientists and watershed stakeholders. The primary activities and accomplishments for the project to date include:

- Development of a Monitoring Plan to guide monitoring and survey efforts.
- Recruitment and training of citizen scientists to assist with monitoring and surveys.
- Collection of 12 months of water quality data (10/2017 - 10/2018).
- Collection of macroinvertebrate and algae data in June and October 2018.
- Completion of wildlife and vegetation surveys for Year 1.
- Award of a grant to develop restoration prioritization models for the watershed.
- Development of restoration projects with BYLT, USFWS, CDFW.

SEPs expected to be 25% Complete

California Indian Environmental Alliance

Safer Subsistence Fishing in the Sacramento River

$150,000 | 36 months: October 2017 – October 2020

Region: Sacramento

ACL Order R5-2017-0530

The goal of CIEA's Safer Subsistence Fishing: Sacramento River Project is to create a model for identifying and securing safe fishing locations in the Central Valley, Cache Creek Watershed east from Clearlake into the Sacramento River. This will result in cleaner water quality standards to levels that will support continued fish consumption at, or near cultural subsistence rates and provide safer places for cultural practices within the watershed. This

project is related to CIEA's work on Tribal Engagement in Integrated Regional Watershed Management Plans and Basin Plan Amendments (enabled by the City of Galt SEP). Specifically, this project will provide updated information for the Central Valley Region in the Westside, Sacramento River, San Francisco Bay Delta and Mountain County IRWMs wherein CIEA works closely with Tribes and will provide guidance to future watershed restoration projects. This project will also show that the goal of securing safer fishing locations is obtainable and that families can have local alternatives and be healthful in their own traditional territories in California. The project will provide an alternative and preferable method of assessing and remediating locations based on California Tribes' and community needs. The four components include: 1) Rank waters in this area by cleanest locations; 2) Fill data gaps; 3) Develop further cleanup plans and identify sources to fund this work; and will begin to 4) Provide findings to regional Tribes and distribute safer fish consumption advisories.

California Rural Legal Assistance
Water Quality Planning and Well Rehabilitation
$93,930 | 24 months: pending start date
Region: Fresno

ACL Order R5-2017-0534

Funding will build on the progress made under the California Resources Corp. SEP to help achieve clean drinking water in Mendotta and West Park, disadvantaged farmworker communities in south Fresno County. These community's drinking water is contaminated with the highly toxic fumigant pesticide 1,2,3-trichlopropane (TCP), a byproduct of soil fumigants used in agricultural production. TCP is known to cause liver and kidney damage, blood disorders and cancer in animals. The State Water Board has released a preliminary finding that the MCL will be set at 5 parts per trillion. In the meantime, the California Environmental Protection Agency has set a Public Health Goal for TCP at 0.7 parts per trillion and the California State Water Resources Control Board has established the current notification level for TCP at 5,000 parts per trillion. The project will engage in two major types of activities: (1) analysis and development of the remediation study, monitored through a technical advisory committee comprised of community residents; and, (2) community engagement and education. Ensuring meaningful community engagement will include facilitating and encouraging community participation in Community Service District processes, providing training and technical assistance.

Appendix: Final and Quarterly Reports

Rose Foundation DAC Engagement in Regional Water Planning for Madera County Area of San Joaquin River Basin Region

Final Report

February 1, 2017 – March 1, 2018

Over the grant period, Self-Help Enterprises (SHE) was able to utilize funding awarded through this grant to improve Disadvantaged Community (DAC) participation in regional water management planning and groundwater sustainability planning. Tasks completed by this grant included attending monthly meetings, developing educational materials, conducting outreach, hosting an educational groundwater tour, recruiting DAC residents to serve on advisory committees and supporting the development of DAC engagement and water quality project proposals.

Through these efforts, we were able to educate DACs, increase DAC representation in water planning, and support the scoping of projects and drafting of funding proposals that improve DAC participation in water planning with an emphasis on groundwater conditions in rural disadvantaged communities.

Deliverable: Attend IRWM and SGMA meetings – Encourage and Support DAC Participation

Over the course of the grant period, SHE staff attended monthly meetings of the Madera Regional Water Management Group/representing Fairmead when they were not present. SHE used these meetings to talk about DAC water needs and available funding opportunities to improve DAC engagement.

SHE also attended several meetings of local Groundwater Sustainability Agencies (GSAs) and worked with Madera County's Public Works Director and the Water and Natural Resources Director to discuss the county's efforts to address DAC water needs, and engage DACs in the implementation of the Sustainable Groundwater Management Act (SGMA). Through these conversations, we learned that the County of Madera was going to be establishing several advisory committees to support Groundwater Sustainability Plan (GSP) development efforts within the subbasins that the county is involved in, i.e. Madera, Chowchilla and Westside.

As a result, SHE worked with County staff and other local non-profits to encourage DAC representatives to apply to serve on the soon to be established advisory committees. As a result, five (5) DAC representatives were appointed to the advisory committees.

Educational Materials and Groundwater Tour

On May 27, 2017, an education water tour titled, "Madera County Small Communities Water Tour" was held in Madera County. The tour included stops in the small communities of Parksdale, La Vina, Parkwood and Fairmead. The primary objectives of the tour were to provide local water managers, community residents and local decision makers, an opportunity to learn about regional water management programs, common water needs and opportunities to work together and promote shared solutions. In order to provide community residents an introductory to the regional water management

programs (IRWM and SGMA), SHE invited Jeannie Habben of the Madera Regional Water Management Group (Madera RWMG), to provide information about her Group and opportunities for communities to engage in the IRWM process. Representatives from the County of Madera were invited to speak about the County's efforts to comply with SGMA. SHE collaborated with the Madera RWMG to develop a bilingual educational factsheet on the Madera RWMG. SHE also developed a bilingual SGMA brochure. Both the factsheet and brochure were distributed at the tour.

Deliverable: Finalize DAC engagement plans with at least two IRWM groups (if funding has been made available as expected).

Proposition 1 DAC Involvement Grant Program – Proposal for the San Joaquin River Funding Area

SHE worked with the San Joaquin River funding region, and in particular with the Madera RWMG to support the development of a scope of work and budget for the Proposition 1 DAC Involvement (DACI) grant program. The DACI grant program is designed to improve DAC involvement in IRWM planning efforts, identify DAC water related needs and to fund project development activities such as preliminary engineering design, environmental documents. A total of $3.1 million is available, as a non-competitive grant to the region for these purposes but they must agree on single applicant, and jointly develop a proposal.

SHE supported the development of the proposal by organizing and participating in at least five (5) in-person meetings, several conference calls with the seven participating IRWM Regions and the Department of Water Resources and by assisting with the drafting of the proposal.

The funding area agreed to allocate half of the available funding to each of the individual IRWM regions based on the total population and the percentage of DAC's within each to develop and implement projects that improve water resources management for DACs. The Madera RWMG was awarded $148,000 and has agreed to utilize their funds to develop three projects.

Project 1: A two-year DAC Engagement and capacity-building program to build DAC capacity and ensure sustainable and meaningful DAC engagement in regional water management activities in the Madera IRWM region.

Project 2: Design a Regional Water Quality Private Well Testing program for low-income households relying on individual private wells and seek funding to implement the program.

Project 3: Water Meter Assessment. The assessment will include evaluating meter options for four selected Madera County Maintenance Districts or Service Areas containing DACs (CSA 3 – Parksdale, MD 28 – Ripperdan, MD36 – Eastin Arcola and MD 37 – La Vina).

The remaining funds available to the funding region, will fund a comprehensive funding area needs assessment, cover grant proposal development, administration and coordination expenses and activities that will build self-sufficiency in DACs, advance project planning in DAC areas, and provide direction for future projects benefitting DACs.

Proposition 1 Sustainable Groundwater Planning Category 1 - SDACs funding Proposal

SHE utilized a portion of these funds to seek additional funding sources to continue and expand technical assistance programs for severely disadvantaged communities needing to comply with SGMA. In early November 2017, SHE submitted a Prop 1 Sustainable Groundwater Planning (SGWP) Category 1, SDAC funding grant application to the Department of Water Resources requesting $1 million to establish a multi-disciplinary technical assistance program to assist severely disadvantaged communities (SDACs) to participate in groundwater sustainability planning. SHE will use this now approved funding, to provide the following services: 1) community outreach and education, 2) direct community assistance, 3) support development of Groundwater Sustainability Plans (GSPs) and communication plans, and 4) fund project development, planning, and procurement of professional services. This technical assistance program will serve SDACs located within critically overdrafted or high-medium priority groundwater basins within SHE's service area (eight San Joaquin Valley Counties: Stanislaus, Merced, Madera, Mariposa, Fresno, Tulare, Kings and Kern).

EXPENDED TO DATE

From:
Self-Help Enterprises
P.O. Box 6520
Visalia, CA 93290

Bill To:
Rose Foundation for Communities
and the Environment
Attn: Tim Little
1970 Broadway, Suite 600
Oakland, CA 94612-2218

Invoice #	Date Description	SHE Acct#	SHE Project
ROSEMAD - 14	March 2018		CD.ROSEMAD
			End Date: 03/1/18

Description: DAC Engagement in Regional Water Planning for Madera County

		Amount
Personnel		
- Salaries and Benefits by Charge Rate	See Page 2	$2,461.68
Direct Expenses		
	Subtotal:	$2,461.68

Budget:	$	29,619.00
Payment Requested:	**$**	**2,461.68**
Payment Requested to Date:	$	29,651.98
Remaining Balance:	$	(32.98)

Please Submit Payment to:
Self-Help Enterprises
PO Box 6520
Visalia, CA 93290

Thank you

Approved for Submittal

Date

Self-Help Enterprises

Rose Foundation for Communities and the Environment
DAC Engagement in Regional Water Planning for Madera Co.

Emp #	Employee		Hours	Rate	Charge
0011	Paul Boyer, CD Dept. Director	Salary and Benefits		$119.57	$0.00
0452	Jessi Snyder, Manager I	Salary and Benefits		$95.95	$0.00
0500	Eddie Ocampo, Manager I	Salary and Benefits		$90.17	$0.00
0511	Maria Herrera, Manager I	Salary and Benefits	12.5	$93.27	$1,165.88
0499	Sue Ruiz, CD Specialist II	Salary and Benefits		$83.63	$0.00
0513	Juan Cano, CD Specialist II	Salary and Benefits		$73.50	$0.00
0514	Abigail Solis, CD Specialist II	Salary and Benefits		$79.21	$0.00
0561	Maria Salazar, CD Specialist I	Salary and Benefits		$64.49	$0.00
569	Sal Alhomedi, CD Specialist I	Salary and Benefits	19	$68.20	$1,295.80
0541	Cecilia Vela, Project Tech I	Salary and Benefits		$62.76	$0.00
			31.50		

Total Charges: $2,461.68

NAME: Maria Herrera page 1 of 1 MONTH: March YEAR: 2018

SIGNATURE

1st Half X 2nd Half

OVERTIME HOURS ____

ID# 511

PAYMENT [ ] or TIME OFF [ ]

Paul Boyer 3/15/2018

WORK HOURS ____
HOLIDAY ____
VACATION ____
SICK ____
OTHER ____
TOTAL HOURS ____

		PROP 1																
PAY CODE		SWRCBTAG 1	SWRCBTAG1	SWRCBTAG1	CD CONTRACT	CD CONTRACT	CD CONTRACT	CD CONTRACT	RCDI 15	DOL	CD CONTRACT	CD CONTRACT	CDRoseMAD					
PROJECT		Sultana	Monson	Okieville	CD.DWS	CD CONTRACT	CV Salts	CA Water Commission	~~RCDI MATCH~~	SGMA	CD Chuck	CD.WOODCUR	MAD IRWM					
JOB #		Water	Water	Water			WIC			RCDI MATCH	RCDI Match			Holiday	Vacation	Sick	*	Total (/page)
1	16					1.5			2.5	2.5								6.5
2	17								4	2.5	1.5							8
3	18	Sat.																0
4	19	Sun.																0
5	20						1.5		3.5	1.5	2							8.5
6	21								5	3.5	1.5							10
7	22	1				1.5			3		3							8.5
8	23					1			2.5		2.5							6
9	24								4	3	1							8
10	25	Sat.																0
11	26	Sun.																0
12	27					3			1.5		1.5	1	1					8
13	28						1		3.5	1.5	2							8
14	29							1	4	1	3	1						10
15	30								4		4							8
	31																	0
TOTAL		1	0	0	0	7	2.5	1	37.5	15.5	22	2	1	0		0		89.5

PINK=SALARY GREEN=RH BLUE=TH *CODES: LA=LEAVE OF ABSENCE JD=JURY DUTY WC=WORKERS COMP CV=CORP. VAC. NW=NON-WORK

NAME: Maria Herrera page 1 of 1 MONTH: March YEAR: 2018

SIGNATURE

1st Half 2nd Half X

OVERTIME HOURS ____

ID# 511

PAYMENT [ ] or TIME OFF [ ]

Paul Boyer 3/30/18

WORK HOURS ____
HOLIDAY ____
VACATION ____
SICK ____
OTHER ____
TOTAL HOURS ____

		PROP 1																
PAY CODE		SWRCBTAG 1	SWRCBTAG1	SWRCBTAG1	CD CONTRACT	CD CONTRACT	CD CONTRACT	CD CONTRACT	RCDI 15	DOL	CD CONTRACT	CD CONTRACT	CDRoseMAD					
PROJECT		Sultana	Monson	Okieville	CDDWRTC	CD CONTRACT	CV Salts	CA Water Commission	RCDI MATCH	SGMA	CD Chuck	CD.WOODCUR	MAD IRWM					
JOB #		Water	Water	Water	DWR Mon		WIC			RCDI MATCH	RCDI Match			Holiday	Vacation	Sick	*	Total (3page)
1	16								1		1.5		6					8.5
2	17	Sat.																0
3	18	Sun.																0
4	19								1		1		2.5			3		7.5
5	20							3	2		2							7
6	21							10										10
7	22						0.5		4	2	2							8.5
8	23				1				3	3								7
9	24	Sat.																0
10	25	Sun.																0
11	26						1		1.5	1.5						4		8
12	27						1		3	1.5	1.5		1					8
13	28					4			2		2							8
14	29								3		3		2					8
15	30													8				8
	31																	0
TOTAL		0	0	0	1	4	2.5	13	20.5	8	13	0	11.5	8		7		88.5

PINK=SALARY GREEN=RH BLUE=TH *CODES: LA=LEAVE OF ABSENCE JD=JURY DUTY WC=WORKERS COMP CV=CORP. VAC. NW=NON-WORK

NAME: Sal Alhomedi page 1 of 2 MONTH: March YEAR: 2018

1st Half 2nd Half X

SIGNATURE *Sal Alhomedi*

OVERTIME HOURS ____

ID# 569

PAYMENT [ ] or TIME OFF [ ]

APPROVED ____/____/____

WORK HOURS ____
HOLIDAY ____
VACATION ____
SICK ____
OTHER ____
TOTAL HOURS ____

PAY CODE			CD CONTRACT	CD CONTRACT	CD CONTRACT	RCDI 15	DOL	CSWRC TAG 1											
PROJECT			CDRoseMAD	CD.WOODCUR	CD Chuck	RCDI MATCH	SGMA	Planada 5292											
JOB #			MAD IRWM		RCDI Match										Holiday	Vacation	Sick	*	Total (2page)
1	16				4	4													8
2	17																		0
3	18																		0
4	19		2		3	3													8
5	20				4	4													8
6	21		2		3	3													8
7	22				4	4													8
8	23		3		2.5	2.5													8
9	24																		0
10	25																		0
11	26																8		8
12	27		4		2	2													8
13	28		2		3	3													8
14	29		2		3	3													8
15	30		4		2	2													8
	31																		0
TOTAL		0	19	0	30.5	30.5	0	0	0	0	0	0	0	0	0	0	8	0	88

PINK=SALARY GREEN=RH BLUE=TH *CODES: LA=LEAVE OF ABSENCE JD=JURY DUTY WC=WORKERS COMP CV=CORP. VAC. NW=NON-WORK

Growing Green: Reducing Water Quality Impacts from Marijuana Grows in the Yuba Watershed

Final Report B (100%)

Project Contact: Rachel Hutchinson, River Science Director, rachel@yubariver.org

Project Overview

SYRCL's *Growing Green* Program focuses on promoting education about water quality and watershed health to cannabis farmers in the Yuba watershed. Disadvantaged communities (DACs) were the focus of this project and through specific outreach to DAC areas in the watershed (Figure 1), through collaboration with the Nevada County Cannabis Alliance (https://www.nccannabisalliance.org/) that targets farmers who farm in these communities, and through three webinar videos that will reach farmers who may not be willing or able to attend in person workshops or have access to outreach materials.

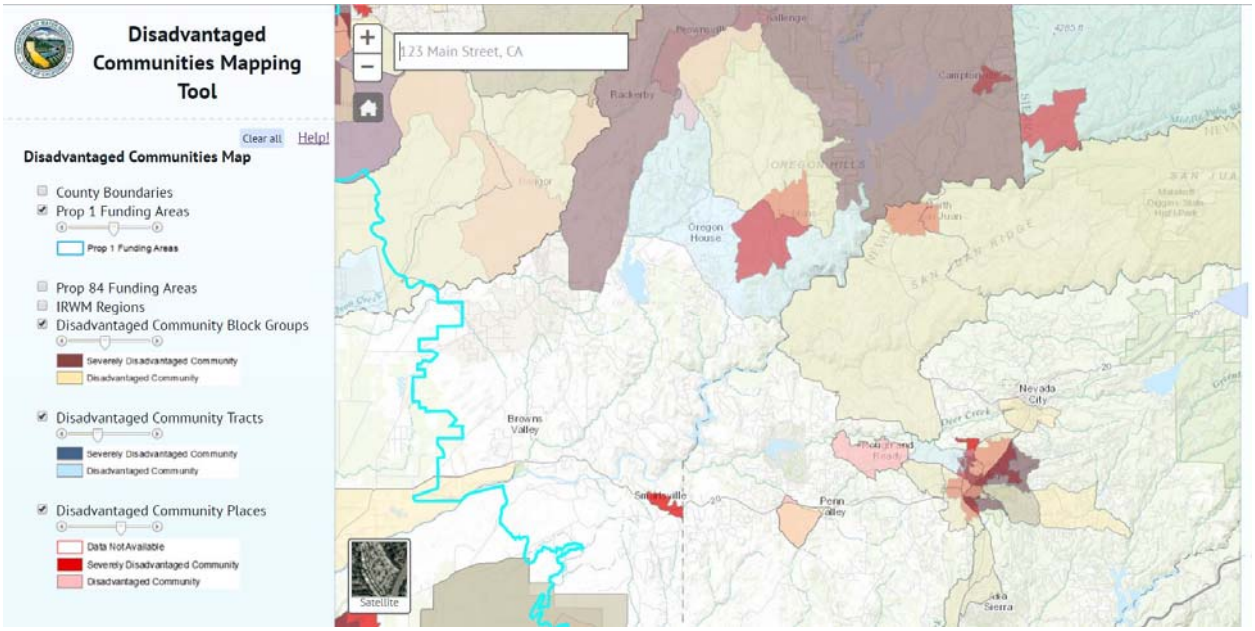


Figure 1. Disadvantaged Communities within the Project Area.

SYRCL conducted outreach, held five BMP workshops, and disseminated educational materials to local farmers and interested community members in 2017. Three cannabis BMP webinars were created, which are available for free online. We hope that the webinars will reach a widespread audience and have a large impact on the ongoing issue of water waste and pollution sourced from unregulated cannabis farms. While the project focus area is the Yuba watershed, we expect that these videos will be applicable to communities and watersheds throughout California's Central Valley and beyond. This report provides information about specific deliverables associated with both the workshops and the BMP videos.

Deliverables

Workshops

We completed an all-day workshop on April 30, 2017 and four evening workshops through the summer of 2017. All five workshops were recorded and videos of each workshop are available on SYRCL's Youtube channel https://www.youtube.com/user/yubariverpeople/videos and on SYRCL's website: http://yubariver.org/issues/cannabis/workshop-videos/. Outreach and informational

materials were provided at each workshop. The workshops were promoted via Facebook posts, SYRCL's enewsletter, articles in The Union newspaper, postering around Nevada City, Grass Valley, and the San Juan Ridge, and through our partnership with Nevada County Cannabis Alliance (Attachment 2). A general description of each workshop is provided below:

APRIL 30: Growing Green for the Yuba, all day workshop

The April 30th all-day workshop was SYRCL's 3rd annual and had around 60 participants and about 10 speakers from across California (see Figure 1). The event was held at the Love Building in Grass Valley, CA and was attended by around 80 people. Video of the workshop presentations are available on SYRCL's Youtube channel. http://yubariver.org/issues/cannabis/workshop-videos/

JUNE 13: Ecological Perspectives on Forest Management

WHEN: Tuesday, June 13, 4:00 – 6:00 pm
WHERE: Holbrooke Hotel, 212 W. Main Street, Grass Valley, CA

Greg Porter with Porter Engineering, Inc. and **Zeno Acton** of Acton Arboriculture offer theories and solutions for erosion control and ecologically-minded perspectives on how to improve and maintain plant, tree and vegetation health through proper forest management, participants will gain insights into how to manage a sustainable grow. 10 attendees. http://yubariver.org/issues/cannabis/workshop-videos/

JULY 11: Water Conservation and Delivery Systems

WHEN: Tuesday, July 11, 4:00 – 6:00 pm
WHERE: Holbrooke Hotel, 212 W. Main Street, Grass Valley, CA

John Whalin with Sierra Plumbing Supply provides simple-solutions and cost-effective suggestions on water system improvements that can be easily implemented in your garden. **Trey Sherrell,** Environmental & Regulatory Compliance Consultant, formerly with the Central Valley Water Quality Control Board provides an update on recent regulatory changes. 12 attendees.
http://yubariver.org/issues/cannabis/workshop-videos/

OCTOBER 19: Looking Toward Compliance: Water Catchment for a Healthy Yuba

WHEN: Thursday, October 19, 4:00 – 6:00 pm
WHERE: Holbrooke Hotel, 212 W. Main Street, Grass Valley, CA

Karuna Warren, environmental engineer with WaterNow offers sound advice on best management practices and provides accessible solutions for rainwater harvest, usage, storage and the compliance process provides simple-solutions and cost-effective suggestions on water system improvements that can be easily implemented in your garden. 15 attendees.
http://yubariver.org/issues/cannabis/workshop-videos/

NOVEMBER 16: Healthy Soil for Less: Making the Most of Your Site

WHEN: Thursday, November 16, 4:00 – 6:00 pm
WHERE: Holbrooke Hotel, 212 W. Main Street, Grass Valley, CA

Brian Chaplin, Wade Laughter and Krsna Bryant, local farmers who are seasoned in soil amending and passionate about protecting the Yuba River watershed, share their wealth of soil-building knowledge and offer sound advice on best management practices. Learn from their experiences how to prevent overuse of water, reduce the need for excess nutrients, and protect your plants from pests all while protecting your pocket book. 30 attendees. http://yubariver.org/issues/cannabis/workshop-videos/

Films

Sundown West (http://www.sundownwest.com/) was chosen as the film maker for the Growing Green Webinars and workshops and completed all filming during the summer months of 2017 (Attachment 3). The filmmaker suffered an unfortunate kayak accident in September 2017, resulting in multiple surgeries and a delay in production. Attachment 4 contains scripts and questions that were used during the filming process. SYRCL's partnership with Nevada County Cannabis Alliance was crucial towards securing filming locations and farmers to participate in this stage of the project. Films are available on SYRCL's Youtube channel https://www.youtube.com/user/yubariverpeople/videos.

Film topics:

Video 1: Brian and Medicine Box

Growing Green for the Yuba: Soil Management for Healthy Plants and a Healthy Watershed

Link: https://youtu.be/lq_Lb4WDDpI

Intro: This video shows how to create a sustainable soil system, with minimal use of soil and water for a greenhouse grow.

- **Less is more**, four inches of topsoil is enough.
- Create a living **soil infusion mat.**
- Know your soil: **adjust** for imbalances as needed.
- Treat the **farm as a whole system**, rather than individual plants.
- **OMRI**: Organic Materials Review Institute: www.omri.org

- Learn more at **yubariver.org**
- More **videos** at youtube.com/yubariverpeople

Video 2: Wade Laughter

Growing Green for the Yuba: A Minimalist Approach to Healthy Soil

Link: https://youtu.be/a1lhwncsPlI

Intro: This video demonstrates a minimalist approach to creating a diverse and sustainable soil system by adding nutrients through compost and mulch.

- **Less is more.**
- Add **mulch** to reduce evaporation and water use.
- Feed your plants by building and adding **compost**, not by adding nutrients.
- Chicken manure, kitchen, vegetable & garden waste, and woodchips mixed together will create a soil that is rich with **microorganisms.**
- Control **pests** with comfrey, nettle and horsetail. This works to slow insects and promote plant vitality.
- **Companion planting** draws pests away (bush beans).
- **Lasagna Composting**: the process of layering compost and mulch to create healthy soil.
- Learn more at **yubariver.org**
- More **videos** at youtube.com/yubariverpeople

Video 3: Krsna & Govinda

Growing Green for the Yuba: Retain and Conserve Water

Link: https://youtu.be/gc-mj49q8x4

Intro: This video shows how to build soil to retain and conserve water, reduce evaporation, and prevent runoff.

- Learn how your soil holds water and how much evaporation is taking place, then make **smart choices** about how to adjust watering.
- **Smart irrigation controllers** monitor weather and adjust for you.
- **Permaculture** is a system of agricultural principles centered around simulating or directly utilizing the patterns observed in natural ecosystems.
- **Hugulkultur** is a technique that utilizes **no-dig raised beds** loaded with organic material, nutrients, and air pockets to hold moisture, build fertility, and maximize surface area.
- **Integrated Pest Management (IPM)** focuses on long-term prevention of pests through a combination of techniques such as habitat manipulation.
- Companion planting invites **beneficial bugs**
- Learn more at **yubariver.org**
- More **videos** at youtube.com/yubariverpeople

Attachment 1. Timeline and Deliverables

Timeline & Deliverables			
Milestone	**Tasks**	**Deliverables**	**50% Status Report**
25% complete—Months 1-3.	1. Recruit speakers and hold 1 BMP workshop that focuses on water quality impacts of cannabis farming. 2. Conduct outreach to local community and DACs on BMPs for cannabis famers. 3. Select topic for 2 BMP webinars. 4. Select filmmaker for BMP webinars.	• 1 BMP workshop. • Disseminate outreach and educational materials at 2 DAC locations about water quality BMPs for small farmers (e.g. discharge regulations, erosion control, etc.). • Topics for BMP webinars. • Contract with filmmaker • Update phone call on project progress with funder.	• Completed April 30, 2017. • Materials are available at Nevada County Cannabis Alliance meetings and, at SYRCL outreach booths, and at SYRCL GG4Yuba Workshops • Complete. • Complete. • Complete.
50% complete—Months 4-6.	1. Recruit speakers and hold 1 BMP workshop that focuses on water quality impacts of cannabis farming 2. Conduct outreach to DACs on BMPs for cannabis famers. 3. Identify interviewees and schedule interviews and farm location for BMP webinars.	• 1 BMP workshop. • Disseminate outreach and educational materials at 1 additional DAC location about water quality BMPs for small farmers (e.g. discharge regulations, erosion control, etc.). • List of interviews and dates of interviews. • Update report submitted to funder.	• Completed June 13, 2017. • Materials are available at Nevada County Cannabis Alliance meetings and, at SYRCL outreach booths, and at SYRCL GG4Yuba Workshops • Complete. • Complete.
75% complete—	1. Recruit speakers and hold 1 BMP workshop that focuses on water quality	• 1 BMP workshop. • Half day event, Growing Green.	• Complete.

Months 7-9.	impacts of cannabis farming. 2. Hold a half day event, called "Growing Green" and invite multiple guest speakers. 3. Conduct outreach to DACs on BMPs for cannabis famers. 4. Complete all filming for 2 BMP webinars.	• Disseminate outreach and educational materials at 1 additional DAC location about water quality BMPs for small farmers (e.g. discharge regulations, erosion control, etc.). • Complete all interviews and filming needs for 3 BMP webinars. • Update phone call on project progress with funder.	• Complete, full day event. • Materials are available at Nevada County Cannabis Alliance meetings and, at SYRCL outreach booths, and at SYRCL GG4Yuba Workshops • Complete. • Complete.
100% complete—Months 10-12.	1. Recruit speakers and hold 1 BMP workshop. 2. Conduct outreach to DACs on BMPs for cannabis famers. 3. Complete all editing and finalize 3 BMP webinars.	• 1 BMP workshop. • Disseminate outreach and educational materials at 1 additional DAC location about water quality BMPs for small farmers (e.g. discharge regulations, erosion control, etc.). • Release 3 BMP webinars to the public. • Hold workshop on cannabis BMP at 2017 Wild and Scenic Film Festival. • Post film on Youtube and Vimeo. • Promote film using social media and local and statewide networks. • Final report submitted to funder.	• Complete • Materials are available at Nevada County Cannabis Alliance meetings and, at SYRCL outreach booths, and at SYRCL GG4Yuba Workshops • Complete • Video release party expected summer 2018. • Complete. • Expected Summer 2018. • Complete.

Ongoing Tasks	1. Recruit speakers and hold quarterly BMP workshops that focus on water quality impacts of cannabis farming. 2. Promote webinar films on social media and to other NGO's and groups organized around cannabis farming (like California Growers Association, etc.). 3. Collaborate with local advocates and decision-makers who are shaping policy regarding cannabis cultivation. 4. Continue to fundraise for additional support for Cannabis BMP education and outreach.		1. Complete. 2. In progress. 3. In progress. 4. In progress.

Attachment 2. Outreach Graphics and press

Growing Green for the Yuba

Looking Toward Compliance: Water Catchment for a Healthy Yuba

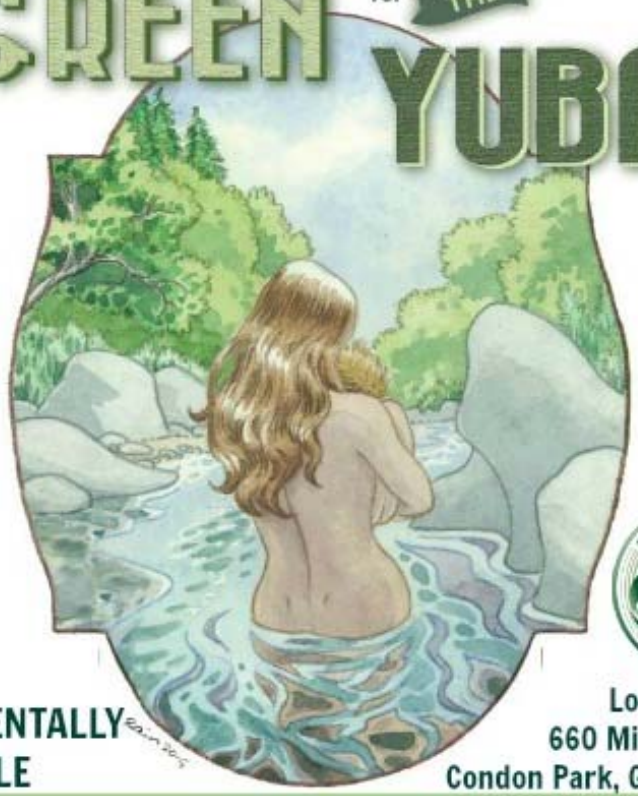
FREE workshops on environmentally responsible cannabis cultivation

Thursday, Oct. 19
4:00-6:00
The Holbrooke Hotel, Grass Valley

GROWING GREEN for THE YUBA

SUNDAY
APRIL 30
9:30am - 4:30pm

FREE



FREE

AN ALL-DAY WORKSHOP ABOUT ENVIRONMENTALLY RESPONSIBLE CANNABIS CULTIVATION

Love Building
660 Minnie Street
Condon Park, Grass Valley

GROWINGGREENFORTHEYUBA.ORG

Attachment 3. Photos from Production

Attachment 4. Growing Green Script

Growing Green for the Yuba
BMP Videos

<u>SYRCL Overview</u> (Debra)

Growing Green for the Yuba is a presentation of the South Yuba River Citizens League. This work is paid for by the Rose Foundation for Communities and the Environment and the Central Valley Water Resources Quality Control Board.

[use Yuba footage here]

The South Yuba River Citizens League is a watershed based non-profit organization that serves to unite the community to protect and restore the Yuba River watershed. Our scientists and concerned community members recognize that the overuse of chemical pesticides and herbicides, diversion and storage of water, and alteration of the terrain and vegetation lead to pollution and algae blooms in our streams and rivers, the poisoning of wildlife, and the loss of late season stream flow. SYRCL works to educate and inspire the community to engage in sustainable and ecologically sound cannabis cultivation in the Yuba watershed.

[use Yuba footage plus b roll footage from farms here]

One way we can protect the watershed is by reducing the amount of water, nutrients, and pesticides that are used. Many farmers in this watershed and beyond are implementing best management practices for cannabis already. This video showcases farmers that are implementing good practices that protect the environment.

Video 1: Healthy Soil Grows Healthy Plants

Soil Specific intro (Mo): Farmers use many techniques to optimize watershed health and crop production. How we prepare and treat the soil is a key component to growing in an environmentally friendly way. Today we are going to visit two farms, set up using totally different methods, where environmentally friendly practices are being used every day.

[farm intro]

Introduce Mo: “Hi I’m Mo and I’ve been monitoring water quality in the Yuba River Watershed for two years. I am here today to learn about environmentally friendly farming practices that protect our watershed”

@Medicine Box: “I’m here today with Brian at a farm on the San Juan Ridge in Nevada County where they are employing best management practices to grow with the Yuba watershed in mind”

@Wade Laughter: “We are at Wade’s Farm to learn more about how he uses different soil techniques on his organic farm”

[interviews with footage of operation playing intermittently in background-TBD]

QUESTIONS:

1. Can you tell us a little about your farm and what your main goals are here? (why did you choose to grow cannabis)
2. How do you see your farm in the context of the ecosystem/watershed/Yuba River?
3. Today we want to focus on your soil, how do you prepare your soil so that it takes care of your plants and protects the environment? [prepare 3 main points as a response; Wade: please discuss “lasagna” effect]
4. What nutrients do use to feed your plants? (assumed answer is none!) [prepare 1-3 main points]
5. Do you test your soil? And if you do, how do you amend your soil to solve any potential issues? [prepare 2 examples: e.g ph adjustment, microbiome?]
6. What is the biggest mistake you have ever made with your soil?
7. How does compost feed your plants? (for Wade)
8. How do the plants survive in so little soil and what is the benefit of this style of farming [for Brian]?
9. How do you protect your plants from pests?
10. How does building your soil using this method or a method like this help reduce the amount of water you need? [wade: organic material, water holding capacity]

[end interview…show leaving farm?]

Video 2: Using Water Responsibly

Water Specific intro (Mo): Farmers use many techniques to optimize watershed health and crop production. Water delivery is a key component to growing in an environmentally friendly way. Today we are going to visit a farm where environmentally friendly practices are being used every day.

[farm intro]

Introduce Mo: “Hi my name is Mo and I’ve been monitoring water quality in the Yuba River Watershed for two years. I am here today to learn about environmentally friendly farming practices that protect our watershed”

“I’m here today with Govinda and Krsna at their Nevada County farm where they are employing best management practices to grow with the Yuba watershed in mind”

[interviews with footage of operation playing intermittently in background-TBD]

QUESTIONS:

1. Can you tell us a little about your farm and what your main goals are here? (why did you choose to grow cannabis)
2. How do you see your farm in the context of the ecosystem/watershed/Yuba River?
3. Today we want to focus on water, what methods do you use to ensure your plants receive adequate water without using more than is necessary? [prepare 3 main points as a response; storage, delivery, retention]
4. How do you deal with changes in the weather? [prepare 1-3 main points]
5. How do you build your soil to retain water?
6. How does building your soil using this method or a method like this help reduce the amount of water you need? [organic material, water holding capacity]
7. What is the biggest mistake you have ever made with water delivery?
8. How do you protect your plants from pests?

[end interview…show leaving farm]

Growing Green for the Yuba: Final Financial Report

		Task 1: Webinar		Task 2: Outreach		Total	Actuals 5/18/18	Remaining	% Remaining
Personnel	Rate	Hours	Total	Hours	Total				
Executive Director	$ 79.00	30	$ 2,370.00	40	$ 3,160.00	$ 5,530.00	$ -	$ 5,530.00	
Science Director	$ 60.00	55	$ 3,300.00	75	$ 4,500.00	$ 7,800.00	$ 12,317.50	$ (4,517.50)	
Hydrologist	$ 55.00	20	$ 1,100.00	20	$ 1,100.00	$ 2,200.00	$ 9,389.69	$ (7,189.69)	
Communications Director	$ 60.00	20	$ 1,200.00	29	$ 1,740.00	$ 2,940.00	$ 784.81	$ 2,155.19	
Outreach Manager	$ 55.00	100	$ 5,500.00	150	$ 8,250.00	$ 13,750.00	$ 11,716.82	$ 2,033.18	
Outreach Coordinator	$ 30.00	30	$ 900.00	45	$ 1,350.00	$ 2,250.00	$ 2,250.00	$ -	
Total		***255***	***$ 14,370***	***359***	***$ 20,100.00***	***$ 34,470.00***	**$ 36,458.82**	**$ (1,988.82)**	**-6%**
Program Expenses									
Photocopying			$ -		$ 200.00	$ 200.00	$ 200.00	$ -	
Printing					$ 800.00	$ 800.00	$ 800.00	$ -	
Graphic Design					$ 535.00	$ 535.00	$ 535.00	$ -	
Website Design					$ 200.00	$ 200.00	$ 200.00	$ -	
Video & Editing			$ 10,000		$ -	$ 10,000.00	$ 8,130.00	$ 1,870.00	
Total			***$ 10,000***		***$ 1,735.00***	***$ 11,735.00***	**$ 9,865.00**	$ 1,870.00	**16%**
Other Expenses									
Supplies			$ -		$ -	$ -	1732.64	$ (1,732.64)	
Lab Fees			$ -		$ -	$ -		$ -	
Mileage/Travel			$ 100		$ 195.00	$ 295.00	$ 187.25	$ 107.75	
Outreach Materials						$ -		$ -	
Total			***$ 100***		***$ 195.00***	***$ 295.00***	**$ 1,919.89**	$ (1,624.89)	**-551%**
Total Rose Foundation Request			**$ 24,470**		**$ 22,030.00**	**$ 46,500.00**	**$ 48,243.71**	**$ (1,743.71)**	**-4%**

El Quinto Sol de America

115 N. Elmwood Ave, PO Box 1366, Lindsay, CA 93247
www.elquintosoldeamerica.org

Tel: 559.562.3060
Info@elquintosoldeamerica.org

Water and The Right to Know
Interim Report
October 1, 2017 – December 31, 2017

Goal 1: Increase knowledge and participation of community residents in their local water systems

Deliverables:

1. Have at least one new member appointed to their respective water boards in the communities of Tooleville and Plainview. In the communities of Tonyville and El Rancho, appoint one representative each to attend City Council meetings pertaining to water issues and then report back to their *comite*.
2. Final report submitted to Rose Foundation.

Ongoing:

1. Facilitate one monthly meeting per community focused on their local water boards, along with one regular *comite* meeting a month, for a total of 24 meetings per quarter.

Progress:

1. In the communities of Plainview and Tooleville, one new member who received training was voted onto each Water Board. In the communities of Tonyville and El Rancho, community members (2 from each community) volunteered to be the unofficial Community Liaison between the Lindsay City Council and their respective communities and gave updates to the rest of the *comite* during monthly meetings. They have agreed to continue performing this duty for the *comite.*

Ongoing: Organizer has facilitated 2 meetings per month/per community, for a total of 24 meetings. All of the meetings have been concentrated on water issues specific to each community.

Goal 2: Establish new and further develop relationships with community partners

Deliverables:

1. Organizer will attend a minimum of three partner organization meetings per quarter, for a total of at least 12 over the course of a year
2. Final report submitted to Rose Foundation

Progress:

a. Organizer attended 12 partner organization meetings per quarter, for a total of 12 over the course of a year. Partner organizations included Self Help Enterprises, AGUA Coaltion and Community Water Center, Public Works Department of the City of Lindsay and Leadership Council.

Obstacles: Our biggest challenge over the course of the year has been retention of water board members after they have received training and voted onto a board. Many community residents do not

want to serve on the water board because it often comes with additional, often times unforeseen, duties that community members do not want to take on. This relates to another challenge: finding and training qualified members. One of the biggest obstacles to becoming a water board member is the requirement of owning property in the community. Many community residents are renters and as such cannot serve or have a vote as a water board member. This significantly reduces the pool of people who we can then tap into to train as a board member.

Additional Information:

- 4 community members were asked to present at the WIN Conference in Visalia, CA on how water quality affects their lives, how they confront the problem and how they go about elevating the issue in order to garner attention from their elected officials.
- We have continued to strengthen the relationships with community members so they are willing to talk to us about the issues they face and know that we will do whatever we can in order to help resolve these issues.

- One story we would like to highlight is that of a group of women: Consuelo Andrade, Florencia Ramos, Ernestina Gomez and Aracely Contreras. When these women began participating in water related events, they were shy and unwilling to participate further than saying their name. But after receiving technical and leadership trainings, they are now the loudest advocates for their communities. Community members now look to them for answers when they have questions. They are unafraid to speak with elected officials, such as Supervisor Crocker, because they know that if they do not raise their voices that no one else will speak up for them. Not only did these ladies speak at the WIN Conference, they also spoke at the Women's Conference EQS hosted in March, which was attended by women who are currently in public office, such as Laura Cortes (Lindsay City Council Member).

  One of our long-term goals as an organization is to ensure a healthy environment for all of the communities that we work in, including access to clean water. Our work with water boards is to ensure that current and future board members are better informed and can make knowledgeable decisions regarding their water systems that will reap the most benefit to the community and the environment. We feel that having with the help of the Rose Foundation, we have been able to make progress towards finding long-term solutions to the problems that plague the unincorporated areas of Tulare County.

El Quinto Sol de America
Water and the Right to Know
Budget Updates

Item	Amount	25%	50%	75%	100%
Salary	$30,000.00	$7,500.00	$7,500.00	$7,500.00	$7,500.00
Travel (gas stipend for organizer. $150/month for 12 months)	$1,800.00	$450.00	$450.00	$450.00	$450.00
Educational Materials	$3,700.00	$924.99	$1,057.34	$824.84	$892.83
Meeting Expenses (location rental, water and snacks for each meeting)	$3,000.00	$450.00	$479.12	$739.65	$1,331.23
Member Stipends (in the event that a community member needs to travel, we would give them a small stipend to offset their loss of wages)	$1,000.00	$150.00	$150.00	$500.00	$200.00
Travel (to cover the costs of transporting community members to meetings, trainings, etc)	$3,000.00	$750.00	$750.00	$750.00	$750.00
Indirect costs	$5,000.00	$1,249.98	$1,250.02	$1,249.98	$1,250.02
Fiscal Sponsor Fee (5% of grant total)	$2,500.00	$624.99	$625.01	$624.99	$625.01
Total:	$50,000.00	$12,099.96	$12,261.49	$12,639.46	$12,999.09

Septic Conversion and Consolidation Project

Central Valley Disadvantaged Community Water Quality Grants Program 2

Leadership Counsel for Justice and Accountability

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FollowUp Form

Instructions

All grantees are required to submit a grant report that describes the work funded by the grant. Unless otherwise noted in your grant contract, your report should contain both a narrative description of activities performed and a financial statement showing how grant funds were spent. You should also provide copies of any deliverables produced during the grant period.

Rose Foundation's policy for the Central Valley Grants Program is that grant reports are due two weeks after the end of each quarter, and final report upon one month after project completion. For example, if your grant period is 24 months, you'll have three quarterly interim grant reports, one every six months, and a final grant report due 25 months from the start of the grant.

Your specific reporting dates and any special reporting requirements are identified in your Grant Contract.

If you have a multi-year grant, please note that Rose Foundation must receive your interim grant report before disbursing grant installments.

If you have any questions about reporting and/or installments, please contact your Program Officer, Laura Fernandez or call (510) 658-0702.

Basic Information

Project Name

Name of Project

Septic Conversion and Consolidation Project

Grant Period*

Please indicate the start date of the grant period for which you are reporting on

11/01/2016

Amount Awarded

$120,000.00

Area(s) of Emphasis*

Environmental Health & Justice
Water Resources / Watershed Protection

Water Quality Monitoring Categories

Well Rehabilitation or Replacement
Pollution Prevention
Pollution Awareness

Environmental Health & Justice Categories

Toxics

Timeline, Deliverables, & Achievements

Please refer to the template instructions below to fill out the Timeline and Deliverables table. In the document, identify all key deliverables and achievements for the completed milestones of this report, and tie them into the project timeline.

To submit project timeline, deliverables, and achievements:*

1) Click Here to download the Timeline & Deliverables template.
2) Fill out the document with all relevant information. You may refer to the chart that you previously submitted and copy your timeline accordingly.
3) Re-submit the document back to this question.

Rose 100% Report Final.pdf

Narrative

Brief Summary*

Please summarize the overall impact of the project so far in terms of activities and accomplishments.

Questions to consider for the project summary: Who/what was helped by the project? What water quality benefits occurred?

The San Joaquin Valley is home to hundreds of unincorporated communities and neighborhoods that lack basic infrastructure for safe drinking water and adequate wastewater services. Small drinking water systems typically do not have the resources to treat water for arsenic, nitrate, or other contaminants that taint their water supply. Further, many homes and communities have no public drinking water or wastewater service, instead relying on private wells and septic systems that too are vulnerable to contamination and failure, respectively. While several communities are located far from cities and larger service providers, most are within a few miles or far less of city boundaries or other service providers, and likely candidates for consolidation or service extension to secure sustainable, affordable, and safe drinking water and wastewater services. These are the small systems and communities that are the focus of this project.

Impact Narrative*

Please describe the impact of the work you conducted with the grant funds. In addition, please describe any unanticipated outcomes, challenges, or other changes that occurred during the project's duration. Please include any lessons learned and/or advice for other organizations facing similar circumstances.

This project had a tremendous local and statewide impact on access to drinking water and wastewater access in the San Joaquin Valley. In the San Joaquin Valley we have made progress on several consolidation projects form the community outreach stage through implementation, and our local work has impacted state policy discussions such that consolidation of both drinking water and wastewater service has become a higher priority for both state decision-makers and state-level advocacy among diverse stakeholders. We did not anticipate the length of the process necessary for successful completion of consolidation projects, but now engaged in twice the number of consolidation projects than when we began this project.

As discussed in further detail below several projects have received funding and/or are in the midst of feasibility studies pursuant to our anticipated progress. In addition to these successes, we are making progress on the following projects:

Fairmead/Chowchilla (wastewater) - This year the city of Chowchilla decided to conduct their own feasibility study of a wastewater consolidation project with Fairmead. Potential consolidation between Fairmead and the city of Chowchilla is dependent upon the feasibility study currently underway. We continue to work with the state water resources control board and the High Speed Rail authority to secure funding for design and construction.

Tombstone Territory/Sanger (drinking water and wastewater) - We have completed extensive outreach in both Tombstone Territory to assess interest consolidating with nearby Sanger's drinking water and wastewater service. There is significant interest among several Tombstone Territory residents for consolidation however some homeowners, including absentee landowners, do not want to connect to Sanger's water or wastewater system. We will continue to work with community leaders to identify alternative consolidation strategies.

Lanare (drinking water) - We continue to support an open and participatory process for creating Lanare's new drinking water system. The system is slated to go online this month, and we will be helping with a community celebration to inaugurate this huge achievement and the perseverance and strength of Lanare's community leaders.

Hilltop (Kern County) - We have recently identified a community interested in consolidation for wastewater in Kern County - "Hilltop" or Fuller Acres. It is an unincorporated area in southeastern Kern County - east of Bakersfield and north of Lamont. Hilltop residents are currently reliant on septic tanks. We are working with the community to identify and assess consolidation options.

Soults Tract/Lone Oak/City of Tulare (wastewater) - We heard concerns related to septic tank failure through the course of work on drinking water in Soults Tract and Lone Oak. We worked with Self Help Enterprises to conduct sewer interest surveys to assess resident interest and opportunity. Surveys have been completed and tabulated. We are currently working with community leaders and partners to identify a lead applicant for grant funding to complete a feasibility analysis.

City of Fresno fringe communities - Our work in unincorporated neighborhoods just outside the City of Fresno has revealed several neighborhoods just outside city limits interested in or engaged in drinking water and/or wastewater consolidation. Those neighborhoods are both entirely or partially reliant on domestic wells and septic systems and several have started working on or exploring consolidation campaigns.

Delhi (Drinking Water and Wastewater) - As a result of multiple community meetings, community residents in Delhi have expressed strong support in extending sewer and water services to the homes currently using private wells and septic systems. Recent water testing indicated high levels nitrates exceeding state levels. We continue to engage community in consolidation strategies. We are collaborating with community leaders, the local water district and wastewater district), and the State Water board to discuss consolidation opportunities.

Statewide Advocacy in Support of Local Projects

Challenges continue to persist at a local level. These include lack of resources, political will, policy limitations and limited technical, managerial and financial capacity to design and implement projects. Community leaders have long testified and educated state decision makers of local challenges that prevent access to safe and affordable drinking water and wastewater. A few years ago, we were successful in passing SB 88 which gave unprecedented authority to the State Water Resources Control Board to order consolidation of public water systems when it is feasible for large public water systems to serve failing public water systems in disadvantaged communities. This year, the state legislature expanded SB 88 to include authority to order extension of service to communities reliant on domestic wells. This change in policy will allow communities like Tombstone Territory, currently reliant on domestic wells, to consolidate with nearby City of Sanger. To address, technical, managerial, financial capacity, the Legislature also approved policy to allow the State Water Board to appoint administrators to help manage public water systems in disadvantaged communities.

To address challenges related to failing septic systems, we were successful in educating decision makers which resulted in passage of SB 1215. This policy also builds on SB 88 as it gives authority to Regional Water Quality Control Boards to order extension of service by public wastewater systems to communities reliant on dilapidated septic systems. This effort provides major opportunities for communities like Matheny Tract, Lanare, and Tombstone Territory to connect to nearby wastewater services.

Comment:

"Lanare (drinking water) - We continue to support an open and participatory process for creating Lanare's new drinking water system. The system is slated to go online this month, and we will be helping with a community celebration to inaugurate this huge achievement and the perseverance and strength of Lanare's community leaders." --> Grantee Spotlight

Did the grant fund water quality monitoring?*

If the grant did fund water quality monitoring, please include and specify the type of Quality Assurance / Quality Control (QA/QC) procedures that were followed in the question below.

No

Financials

Financials*

Please refer to the line item budget you submitted in your Application Attachments and prepare a corresponding financial statement that shows how the grant funds were actually expended. If there were any variances in any items over 10%, include a brief explanation for the variance. You may paste your financial statement into this section, or include it as an attachment.

2039 100% Financials.pdf

Attachments

Please attach or provide a link to any significant deliverables produced with grant funds, such as reports, videos, etc. You may also include other materials such as newsletters, media clippings, or photos that will help us better understand the work you performed under the grant. Please understand that the system limits file sizes - therefore, a few key examples are better than numerous photos or clippings.

Significant Deliverables*

If you produced a report, video, or other significant deliverable with this grant, you may attach it here or paste a URL box below. Use the text box to briefly describe your significant deliverables.

2018.30.11_BestPractices.pdf

Newsletters, Media, Photos or Other Attachments

You may attach additional documents or publications here or paste a URL into the text box below. Use the text box to briefly describe your significant deliverables.

https://www.newsdeeply.com/water/articles/2018/06/11/dozens-of-water-systems-consolidate-in-californias-farming-heartland

https://www.buzzfeednews.com/article/laurageiser/this-is-what-its-like-to-live-with-toxic-tap-water-in

Newsletters, Media, Photos, or other Attachments

You may attach additional documents or publications here or paste a URL into the text box below. Use the text box to briefly describe your significant deliverables.

Rose Attachments.pdf

With support from this grant and other funding, we created the following attachments - a median household income survey for Delhi, an interest survey for Soults Tract, and factsheets for AB SB 1215 and AB 2501. No Rose Foundation dollars were spent on lobbying, but the work done supported by this grant informed our state level advocacy.

File Attachment Summary

Applicant File Uploads

- Rose 100% Report Final.pdf
- 2039 100% Financials.pdf
- 2018.30.11_BestPractices.pdf
- Rose Attachments.pdf

Septic Conversion and Consolidation Project

Amount Awarded: $ 120,000

Narrative:

Ongoing Tasks:

Tasks 1 and 2:

1. *Community outreach and organizing/Monitor and engage communities in implementation of conversion or consolidation process.*
2. *Continued engagement in conversion and consolidation projects up to and following completion.*

We have continued to engage residents in project development and implementation in each community and in our related regional and statewide advocacy. Our local organizing and education has expanded into new communities. The following is a summary of our continued outreach and engagement activities in target communities:

Matheny Tract, Tulare County: Leadership Counsel continues to lead educational and outreach efforts to engage communities regarding potential sewer consolidation with the City of Tulare. Updates on the potential wastewater project, and obstacles to its completion, are included in every Matheny Tract Committee meeting and we have continued to canvassed the entire community multiple times to increase engagement and ensure that the entire community is updated on project status. The City of Tulare has raised several obstacles to project implementation and completion so we have begun to work with the community to develop a strategy to address the City's recalcitrance. See below.

Soults Tract, Tulare County: We have continued to work hand-in-hand with community residents and the Soults Tract Mutual Water Company board to negotiate agreements with the City of Tulare on the wholesale arrangement and pending consolidation arrangement. We have also continued community outreach and engagement related to a potential wastewater project.

Lone Oak Tract, Tulare County: We have continued to engage community to conduct a joint committee with Soults Tract to address wastewater needs. We have coordinated with Self Help Enterprises to conduct outreach in Lone Oak Tract to expand engagement.

Fairmead, Madera County: We continue to conduct broad community outreach and education on a potential wastewater project in the community, and we continue to attend monthly community meetings to provide updates on a potential sewer project including updates on negotiations with the High-Speed Rail Authority regarding sewer and infrastructure investments. Verbal negotiations with High Speed Rail are near completion, and we remain hopeful for consolidation with the City of Chowchilla through continued conversation with City staff.

Cantua Creek and El Porvenir, Fresno County: We continue to conduct door-to-door outreach to ensure participation in broad community meetings where we provide updates on progress toward

completion of plans for a drinking water project and facilitate communication between county staff and community residents. We have dedicated meetings to reviewing the plans for the project to ensure that community residents are engaged in project design and implementation. While our focus has been a drinking water project, we also continue to work with residents to address concerns regarding the wastewater treatment facility.

Rexland Acres and Greenfield, Kern County: We continue to continue to inform residents of Rexland Acres and Greenfield of advancements in the project, as Self Help Enterprises conducts the engineering study.

Lanare, Fresno County: We continue to discuss the potential wastewater project and potential consolidation with Riverdale at most monthly community meetings.

Tombstone Territory, Fresno County: We continue to meet monthly in the community and engage additional residents through outreach and surveys. Community leaders have developed significant momentum with respect to drinking water consolidation, septic conversion, and negotiation with nearby Sanger. Consistent community engagement at community meetings and at City Council meetings has been critical in moving potential projects forward.

Tooleville: Tulare County: We continue to meet regularly with the mutual board and the community as a whole to advocate for and negotiate a consolidation with the City of Exeter. Community engagement continues to expand, diversify and strengthen in Tooleville and resident engagement in negotiations with the City of Exeter has grown significantly during the past several months.

3. *Build on relationships with local (Lanare Community Services District, Riverdale Public Utilities District, Soults Tract Mutual) and regional government agencies (Fresno LAFCO, Fresno County, Tulare LAFCO, Tulare County, City of Tulare, relevant agencies in other counties) to ensure collaboration throughout the process and facilitate project success.*

We continue to meet regularly with local and regional agencies to support our drinking water/wastewater work generally and to support and facilitate specific projects. We continue to work closely with LAFCO in both Tulare and Fresno to ensure LAFCO policies and decisions facilitate – and do not undermine – consolidation projects.

In Lanare, we meet regularly with the Lanare CSD and City of Riverdale staff to encourage increased cooperation on drinking water and wastewater.

We work extensively with the City of Sanger and Fresno County to further consolidation projects in Tombstone Territory, in particular drinking water consolidation. We have met with Sanger staff and Tombstone residents, met with elected officials along with Tombstone residents, and testify along with Tombstone residents at Sanger city council meetings. As a result of our community engagement and work with the City they have shown a willingness to consider a consolidation project. We have also continued to engage the County Supervisor in the area to keep him engaged in apprised of our collective progress.

In Cantua Creek and El Porvenir, we continue to meet regularly with Fresno County staff and the Supervisor to advance the drinking water project and wastewater treatment facility upgrades. Regular communication with county staff in particular has in turn improved communication between community residents and the county, and has helped us stay up to date on project progress.

In Soults Tract, we have continued communication with the City to begin work on consolidation agreement for drinking water as the next step after the wholesale agreement which is already in place.

In Soults Tract, Lone Oak Tract, and Matheny Tract, we have continued to communicate with city and county staff to overcome barriers that the City has presented to the consolidation projects. We regularly communicate with city elected officials to engage them on promoting a regional wastewater service project and have testified in public hearings at the City of Tulare alongside community residents to continue to push the project forward.

We are hopeful that the City of Exeter will agree to move forward on a collaborative effort to consolidate with Tooleville Mutual. As noted above, we continue to meet regularly with the Tooleville Mutual Water Company to support their engagement on advocating for and negotiating a consolidation agreement with Exeter.

4. *Build on relationships with state level agencies to identify and address funding and other barriers to septic to sewer conversion and drinking water consolidation.*

We have continued to work with the State Water Resources Control Board to address both systematic statewide barriers and local barriers to consolidation. At the local level, we have worked closely with local staff from the Division of Drinking Water (State Water Board) to facilitate and support drinking sustainable water projects, including consolidation. We have worked particularly closely with Water Board staff to confront financial and political barriers in Cantua Creek and El Porvenir, Tooleville, Lanare, Delhi, and Soults Tract. We have regular meetings – generally monthly – with State Water Board staff to discuss strategies to move these projects forward in a way that responds to community priorities. In addition to these conversations and meetings, we meet monthly by phone with the technical assistance program staff to review the drinking water and wastewater projects we are working on statewide.

We also work with both local and statewide staff at the State Water Board and the Department of Water Resources to identify funding sources for projects and identify and address systemic and policy barriers to sustainable drinking water and wastewater projects. We are working especially closely with the Department of Water Resources in Tombstone, the High-Speed Rail Authority in Fairmead, and the Water Resources Control Board in in Matheny Tract to fill potential funding gaps.

We are also in ongoing communication with the Division of Drinking Water and Division of Financial Assistance to identify systems and statewide barriers to sustainable drinking water and wastewater projects. Through our work and through collaboration with the State Water Board we have identified policy and financing tools that, if available, could support more effective drinking water and wastewater projects.

November 2017 – April 2018 Tasks

1. *Finalize funding application for conversion and/or consolidation project in identified communities.*

The funding application for the drinking water project in Cantua Creek and El Porvenir has been submitted to the State Board and is in its final stages of review. In addition, Fresno County submitted funding applications to support repairs and maintenance of the wastewater treatment facilities in Cantua Creek and El Porvenir.

2. *Initiate conversion and/or consolidation project in at least one additional community.*

We have launched drinking water and wastewater consolidation projects in the households in Delhi (Merced County) that are outside the service boundaries of the Delhi County Water District. We have conducted substantial outreach, begun surveying the community, and have begun conversations with the Delhi County Water District to discuss service extension/consolidation options.

3. *Phone check in with Rose Foundation.*

Complete.

November 2017 – April 2018 Deliverables

1. *At least one additional completed feasibility study with community input included in the study.*

Feasibility studies were initiated in Lanare for wastewater service and in Tombstone Territory for drinking water. Residents will continue to engage in this process.

The City of Chowchilla is expected to complete the feasibility study for the potential sewer consolidation project with Fairmead in summer 2018. Residents will review the feasibility studies and provide input as necessary.

2. *Funding application(s) submitted for implementation of a septic conversion or consolidation project in Lanare, Soults Tract, Lone Oak Tract, and/or Matheny Tract (at least one funding application submitted).*

A funding application was submitted to the Department of Water Resources for the extension of drinking water services from Sanger in Tombstone Territory in April 2018.

3. *1-2 local government decisions authorizing conversion and/or consolidation.*

The City of Sanger has agreed to collaborate with Self Help Enterprises and Leadership Counsel on the feasibility study to assess opportunities for extending drinking water services to Tombstone Territory.

The Delhi Community Services District is amenable to considering a drinking water extension and wastewater extension project to residents outside their boundaries.

Riverdale PUD expressed interest in providing management services to Lanare's drinking water system – though not consolidation, still a step toward collaboration.

We continued to meet with the City of Exeter to discuss the city council making a decision to move forward with drinking water consolidation for Tooleville and are hopeful that we will move forward with a collaborative project.

4. *Conversion and/or consolidation campaign launched in at least one additional community.*

We have launched drinking water and wastewater conversion projects in Delhi, Merced County. A priority for community residents, we have gained approval from the State Water Resources Control Board to pursue these projects under Prop 1. We have initiated conversations with the Delhi County Water District for conversion/extension of service.

May 2018 – October 2018 Deliverables

1. *At least one completed septic conversion and/or drinking water consolidation project.*

Soults Tract is receiving safe drinking water through a wholesale agreement from the City of Tulare. Negotiations are underway and funding is reserved for full consolidation in which Soults residents will receive water directly from Tulare as customers of the City of Tulare's water system. Completion of full consolidation should happen by Spring 2020.

Furthermore, with the passage of SB 1215, the sewer campaign for consolidation between the city of Tulare and community of Matheny Tract will now become eligible for an order of consolidation by mid-year of 2019.

2. *Funding application(s) submitted for at least one additional septic conversion or drinking water consolidation project in Lanare, Soults Tract, Lone Oak, and/or Matheny Tract.*

Tooleville/Exeter - Funding is available for continued analysis of drinking water options in the community of Tooleville which is working toward a drinking water and an additional application funding for construction and design will be submitted once feasibility is completed in 2019.

Matheny Tract/City of Tulare (wastewater) - Funding was initially reserved for the community of Matheny Tract's sewer consolidation; however, noncompliance from the city did not allow for applications to be submitted. If a consolidation order is issued under SB 1215 funding will be made available for a construction grant.

Lanare/Riverdale (wastewater) - Self-Help Enterprises has turned in the feasibility study application to assess wastewater alternatives for Lanare. Proposed alternatives include potential consolidation with nearby Riverdale. Self-Help Enterprises is working with the Lanare Community Services District and an accountant to finalize audits so that the feasibility study can begin. They expect this to be done within the next couple of weeks.

Soults and Loan Oak Tract (wastewater) - While an application has not been submitted, we have taken steps to prepare for a septic to sewer consolidation. We have completed sewer interest surveys in both communities and are currently working with Tulare County to identify the lead applicant.

3. *Completed feasibility plans for septic conversion and/or drinking water consolidation for an additional 1-2 communities.*

Tooleville/Exeter (Drinking Water) - An initial feasibility study has been completed for Tooleville's consolidation with Exeter, and the City of Exeter is undertaking a complementary fiscal analysis that will likely be completed by January of 2019. The initial feasibility study concluded that full consolidation was the best solution for the community of Tooleville.

Matheny (Wastewater) - We worked in partnership with Tulare County staff to push the City of Tulare to submit response comments to the Final Environmental Impact Report assessing wastewater service alternatives in a timely fashion. Several months were added to the overall project timeline due to the City of Tulare's internal staff turnover as well as general reluctance to pursue construction grants. The EIR has been completed and we are currently working with community leaders to identify a path forward.

We have completed sewer interest studies in Lanare and in Tombstone Territory. In both places, the majority of respondents expressed interest in such a project.

4. *Updated report on best practices, lessons learned, and valuable resources (e.g. Surveys, outreach material).*

Attached.

Central Valley Disadvantaged Community Water Quality Grants Program
Leadership Counsel for Justice and Accountability
November 1, 2016 - October 31, 2018

	Request to Rose Foundation	Actual	% Variance
Personnel			
Co-director	$9,871.00	$9,867.52	0.04%
Policy Advocate	$46,575.00	$46,558.59	0.04%
Staff Attorney	$14,128.00	$14,123.02	0.04%
Program Assistant	$4,455.00	$4,453.43	0.04%
Benefits	$23,980.00	$23,916.44	0.27%
Total Personnel	$98,919.00	$98,919.00	0.00%
Non-Personnel			
Operating Costs			
Phones/Internet	$1,142.00	$1,142.00	0.00%
Equipment and Supplies	$675.00	$675.00	0.00%
Travel	$2,878.00	$2,878.00	0.00%
Printing	$221.00	$221.00	0.00%
Meeting Expenses	$513.00	$513.00	0.00%
Total Non-Personnel	$5,429.00	$5,429.00	0.00%
Direct Costs	$104,348.00	$104,348.00	0.00%
Indirect Costs	$15,652.00	$15,652.00	0.00%
Total Direct and Indirect	$120,000.00	$120,000.00	0.00%

LEADERSHIP COUNSEL FOR JUSTICE & ACCOUNTABILITY

Introduction

The San Joaquin Valley is home to hundreds of unincorporated communities and neighborhoods that lack basic infrastructure for safe drinking water and adequate wastewater services. Small drinking water systems typically lack the resources to treat water for arsenic, nitrate, or other contaminants that taint their water supply. Further, many homes and communities have no public drinking water or wastewater service but instead rely on private wells and septic systems that too are vulnerable to contamination and failure.

While several communities are located far from cities and larger service providers, most are within a few miles of city boundaries and/or other service providers, and are thus candidates for consolidation or service extension to secure sustainable, affordable, and safe drinking water and wastewater services. These are the small systems and communities that are the focus of this short report.

We have drawn on our experience to discuss consolidation successes, opportunities, and obstacles, and as a result have focused on the following types of consolidations: consolidation by relatively larger public water systems with small mutual water companies; service extensions by relatively larger public water systems to communities on domestic wells; consolidation of two small county service areas; service extensions by relatively larger public wastewater systems to communities reliant on septic systems; and service extensions by relatively larger wastewater systems to mobile home parks reliant on small community or individual waste treatment disposal. Other practitioners and other communities have worked on other types of consolidations including consolidation of drinking water service with an investor-owned utility and consolidation of two or more public water systems (as opposed to mutual water companies and investor owned utilities).

Policy Tools for Consolidation

Residents in many communities with unsafe drinking water and unreliable wastewater service have always known that safe drinking water and reliable wastewater service is close at hand in physical terms but often light years away in reality. However, there is growing understanding at the local, regional and statewide levels of the extent to which residents in California lack safe drinking water and wastewater service on the one hand, and on the other hand that they often live very close to an efficient regional solution through consolidation. In the recent past, advocacy and research has illustrated that there are certain locales that have kept water and wastewater infrastructure from certain communities and, in the past year, research revealed just how many

neighborhoods throughout the San Joaquin Valley live closes to reliable drinking water services.[1] At the same time, state-level decision-makers have begun to look at consolidation as a fair and efficient solution for scores of drinking water systems that are unable to provide safe drinking water to their customers. Recently enacted laws also expanded drinking water consolidation opportunities to domestic wells that provide unsafe drinking water and created tools to facilitate extension of reliable wastewater service to communities without adequate wastewater.

Additionally, as communities, advocates, and decision-makers have dedicated themselves to expanding drinking water and wastewater services to unserved and underserved neighborhoods, laws that have long been on the books have been employed to challenge exclusion from basic services and the body of law and policy focused on expanding access to drinking water and wastewater service has grown.

State and Federal Fair Housing and Civil Rights Laws

Neighborhoods and towns without access to drinking water and/or wastewater service have employed civil rights and fair housing laws to challenge decisions of nearby jurisdictions to exclude them from services. In doing so they have both received the service in question and highlighted racial disparities in provision of basic services which has driven both local and statewide changes.

Changes to Laws Governing Local Governments facilitate and mandate service provision

The law that governs LAFCOs – Cortese Knox Hertzberg – includes several provisions that facilitate provision of services to nearby communities or mandate service provision.[2] LAFCO law and other provisions of the Government Code now also require each LAFCO, city, and county in the state to identify disadvantaged unincorporated communities in their jurisdictions and determine if they have drinking water or wastewater service deficiencies.[3]

Mandatory Consolidation and Service Extension

Recent changes to the Water Code and Health and Safety Code allow state agencies and the regional water quality control board to require cities and special districts to extend drinking water service or wastewater service to disadvantaged communities that lack adequate drinking water or wastewater service.[4]

Funding Opportunities and Incentives

State funding sources for drinking water and wastewater infrastructure have focused resources on service extension and consolidation, facilitating both mandatory and voluntary service extension

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[1] JONATHAN LONDON, ET AL., The Struggle for Water Justice in California's San Joaquin Valley: A Focus on Disadvantaged Unincorporated Communities (2018). Cities Inside Out: Race, Poverty, and Exclusion at the Urban Fringe, 55 UCLA L. Rev. 1095 (2008).
[2] Gov. Code, §§ 56375, 56425, 56430.
[3] Gov. Code, §§ 56425, 56430, 65302.10.
[4] Health & Saf. Code, § 116681, 116682; Water Code, §§ 13288, 13289.

and consolidation. This continued availability of this funding is in large part contingent on the regular passage of water bonds. Given the recent failure of the Proposition 3 water bond, it is likely that funding for consolidation and service extension projects will be impacted in the relatively near future absent new funding commitments from the state.

Additionally, the state has provided funding for technical assistance to facilitate sustainable drinking water and wastewater projects including consolidations and service extensions. We note that funding for technical assistance is sometimes difficult to secure, especially where the barriers to consolidation or service extension are political or legal and/or when one of the water or wastewater systems is reluctant to proceed. On the other hand, our experience has been that the State Water Resources Control Board will often fund technical assistance in these circumstances.[5]

Drinking Water Consolidation

Local advocacy, local policy, and statewide policy have expanding political will (in some instances), incentives and mandates for drinking water consolidation. The result has been both mandatory consolidations which force recalcitrant drinking water systems to extend their drinking water infrastructure and services to nearby communities that lack safe drinking water, and voluntary consolidations that often combine local advocacy and partnership with financial incentives designed to encourage consolidation.

Mandatory Consolidations

Full Consolidation between the City of Tulare and Matheny Tract Committee

Matheny Tract is an unincorporated community of 320 homes located across the street from the City of Tulare in the County of Tulare. For several years the City of Tulare vacillated between willingness and unwillingness to extend its drinking water service to the nearby community of Matheny Tract, a low-income community that received contaminated (arsenic) drinking water from Pratt Mutual Water Company. Pratt Mutual Water Company saw consolidation – whereby Pratt would dissolve and the City of Tulare would provide drinking water to Matheny Tract – as the best option for sustainable, safe and affordable drinking water.

Despite existence of a contract between the City and Pratt Mutual to consolidate the two systems, the City decided in 2012 that it was no longer in its best interest to extend service to its neighbor. Two strategies emerged to push for consolidation – state policy change to allow the state to require – and pay capital costs associated with - the consolidation and litigation to force the city to comply with its contract to consolidate. Both the litigation strategy and the policy advocacy strategy were successful, and the City was forced to provide drinking water service to Matheny Tract Residents and Pratt Mutual Water Company dissolved. Today, Matheny Tract residents are

[5] *See*, e.g., discussion of Fairmead negotiations with the High-Speed Rail Authority for septic-to-sewer funding, *infra*.

customers of the City of Tulare, pay the same rate of water as any other City of Tulare drinking water customer, and drink safe water.

The strategies and circumstances that proved most effective in the case of Matheny Tract was consistent advocacy to force a recalcitrant city to provide services to its neighbor along with state funding necessary to cover the capital costs of that extension.

Full Consolidation with an Interim Wholesale Agreement – The City of Tulare and Soults Tract

Soults Tract, like Matheny Tract, neighbors the City of Tulare and was served for decades by a mutual water company that was unable to provide safe drinking water to its customers. Soults Mutual Water Company, like Pratt Mutual Water Company, felt that full consolidation with the City of Tulare was the best way to provide safe drinking water to its customers and that dissolution of Soults Mutual was also the best course of action.

When the state notified the City of Tulare that it would be forced to consolidate with Pratt Mutual (Matheny) the state also notified the City that it would be forced to consolidate with Soults Mutual (Soults). The City agreed to do so, but there was a key difference between Soults and Matheny – Soults needed to complete construction of a new distribution system before a full consolidation with the City of Tulare could be completed. As an interim step to consolidation, the City of Tulare and Soults entered into a wholesale agreement whereby the City would sell water to Soults, and Soults would manage distribution to its customers. Changes in management in the City of Tulare along with other bureaucratic speed-bumps have slowed completion of the distribution system and the interim wholesale agreement will likely be in place for two or more years. Furthermore, Soults residents will not have meters installed, until the distribution system is completed.

Soults residents now have clean drinking water, but the price is substantial. Pursuant to the wholesale arrangement Soults residents pay the same rate as any other customers but effectively pay more due to three main issues – (1) they pay an additional cost of several hundred dollars per month for the City of Tulare to read the master meter that measures water used by Soults residents as that meter is one of few meters in the City that must be read manually rather than electronically and remotely, (2) the lack of meters at individual homes means that all customers, pay high rates in line with high average usage due to the excessive use by a few customers, and (3) Soults residents must continue to pay for and maintain the Soults Mutual Water Company and the human resources, financial reserves and physical infrastructure that goes along with it.

A speedy interconnection that provides residents with clean drinking water is a success of the Soults consolidation, but several obstacles and downsides demonstrate areas in local and statewide practice that could improve. Full consolidation should happen as quickly as possible and laws should be in place to ensure that local governments cannot impede full consolidation through action, inaction or delay; no fees – such as fees associated with checking a master meter – should be more than the actual cost associated with preforming the duty; meters should be installed immediately to ensure that residents are not paying for more water than they are using; and monthly fees to the consolidating water system should be adjusted so that customers are not paying twice for management and administration.

Newly passed AB 2501 that made changes to Health and Safety Code Section 116682 may address some of these obstacles, but new guidance and policy may be necessary. Additionally, the state should ensure that technical assistance support is available to ensure that a full consolidation happens as quickly as possible and that its terms are fair to residents.

Voluntary Consolidations

Consolidation between a Larger System and a Mutual Water Company

Nearly thirty years ago, and regularly since then, Tooleville Mutual Water Company's water has tested positive for exceedance of nitrates and coliform. Presently, the water in Tooleville is just under the legal limit for nitrate.

In addition, Tooleville's water exceeded the Maximum Contaminant Level (MCL) for Hexavalent Chromium ("Chrom6") while it was in place from 2014 to 2017. However, the MCL for Chrom6 was struck down by Sacramento Superior Court in late 2017 and there is now no legal limit specific to Chrom6 despite its known health impacts.[6] There will be no legal limit specific to Chrom6 until the State redevelops and reestablishes an enforceable limit which will likely take at least one to three years. As laws allowing for mandatory consolidation require that a drinking water system exceed the legal limit for a primary or secondary drinking water contaminant, Tooleville may not be a strong candidate for a mandatory consolidation.

Without the clear applicability mandatory consolidation authority, community members and advocates continue to push for voluntary consolidation, which both the Tooleville residents and the Tooleville Mutual agree is the best path forward. The City has not expressed willingness to consolidate with Tooleville Mutual, but now seems willing to either provide water to Tooleville residents under either a consolidation or wholesale agreement and is studying the implications of both alternatives.

Long-term relationships with the Mutual Water Company, Tooleville residents, and several influential parties with the City of Exeter, along with statewide funding designed to facilitate and incentivize consolidation and support technical assistance, will be responsible for a successful consolidation in Tooleville should such a consolidation take place. However, the state should explore expanding its mandatory consolidation authority to circumstances in which a water system serving a disadvantaged community has provided water that exceeds the maximum contaminant level and is likely to do so again, as is the case in Tooleville which remains vulnerable to both nitrate exceedances and Chrom 6 exceedances once a legal limit for Chrom 6 is back in place.

Service Extension to Communities on Domestic Wells

We are working on several projects designed to extend safe drinking water service to communities reliant on domestic wells that provide contaminated drinking water or, in some cases, provide no water due to depleted groundwater sources. Tombstone Territory in Fresno

[6] Chrom6 is presently regulated under significantly less-protective MCL for total chromium (50µg/L).

County provides a good case study regarding the increased opportunities for communities reliant on domestic wells, and the existing obstacles for consolidations/service extension projects targeting domestic wells.

Tombstone Territory is a community of 39 homes, about a mile from the City of Sanger. Several wells in the community went dry during and after the recent drought, and the few wells in the community we have been able to test exceed the maximum contaminant levels ("MCLs") for nitrate, bacteria, and/or 1,2,3-TCP. Increased interest from the state in addressing the severe and fundamental vulnerability of domestic wells has increased funding for and improved policies regarding service extension for domestic wells, including recent legislation (AB 2501) that clarified the state's authority to mandate service extension to domestic wells and drinking water funding from Propositions 1 and 68. At the same time, extensive community outreach, education, well testing, and community-based leadership has expanded interest in the community to advocate for drinking water service extension from nearby Sanger. Sanger has thus far been a willing partner, agreeing to support a feasibility study for service consolidation.

Despite these various variables working in favor of a successful consolidation project, questions and obstacles remain. If Sanger becomes unwilling to extend drinking water service to Tombstone Territory, it is not clear if the state utilizes its authority to mandate service extension to homes in Tombstone Territory reliant on domestic wells or if the state will provide funding for capital investments necessary to provide drinking water service to members of the community if some households are not supportive of extension of public drinking water service by the City of Sanger. Further, it is unclear what percentage of the community – or number of households – that have contaminated drinking water supplies and want safe drinking water would justify the state's investment in necessary infrastructure. Several households that are hesitant to convert from private wells to Sanger's municipal service are landlords that live out of state. Questions remain as to whether absentee landlords should be able to block extension of and provision of safe drinking water service to their tenant, or to the community at large.

State resources for infrastructure investment and technical assistance as well as committed leadership form Tombstone Territory are the strongest elements in favor of a successful consolidation in Tombstone Territory. Necessary to a successful service extension in Tombstone will be either a willing City of Sanger or, in the alternative, the State Water Resources Control Board's willingness to use its authority to mandate extension. The outstanding questions of how to ensure that residents on domestic wells — including tenants of absentee landlords — who need safe drinking water can satisfy that desire remain. The state may wish to consider that it will expend resources to provide vulnerable communities on domestic wells with safe drinking water if at least half of the households or ten households, whichever is less desire the service. The State should also consider developing policies that prohibit landlords from preventing tenants to receive safe drinking water pursuant to a consolidation. A few intransigent landlords should not be permitted to stand in the way of safe drinking water for an entire neighborhood or community.

Wastewater Consolidation

Wastewater -extension from large system to individual septic

A new law (SB 1215) will be effective January 1, 2018 that will allow the regional water quality control boards to mandate extension of wastewater service to communities that do not have adequate wastewater service. As SB 1215 will be a new legal tool, to date, all wastewater consolidation efforts have focused on voluntary consolidations or have relied on other legal theories to push for and facilitate consolidation. The state does have resources for wastewater infrastructure that can be used for service extension and consolidation.

Our work thus far has focused on advocating for wastewater service extension to: (a) communities where each household has septic systems; or (b) to mobile home parks that rely on either one or several onsite waste disposal and treatment systems. We explore five such efforts below.

Fairmead

Fairmead is a severely disadvantaged community of 167 homes in Madera County served by individual septic tanks. Chowchilla, the City just to the north of Fairmead has extended sewer to a nearby jail but has not yet committed to extend sewer service to Fairmead. However, as of late, Chowchilla has indicated greater willingness to extend services assuming there is sufficient capital for costs associated with the extension.

The estimated cost of the service extension exceeds the cap that the state places on funds for wastewater infrastructure projects (the cap can be raised by a vote of the state water board). While this has proven to be an obstacle in Fairmead and similar communities, other resources may be available in Fairmead, including potential mitigation funds from the state's High Speed Rail project that will pass through Fairmead.

Several variables remain for Fairmead's wastewater project including the availability of sufficient funds to pay for the infrastructure necessary to pay for infrastructure and service capacity, as well as either Chowchilla's willingness to extend wastewater service to the community or the Central Valley Regional Water Quality Control Board's willingness to use its new authority to mandate the extension.

The greatest assets the community has are community leaders within the community committed to completion of a consolidation project, and advocates working alongside the community advocating for cooperation by local and state actors. Technical assistance funding from the state has helped support these efforts as well, including support for mitigation negotiations with the High-Speed Rail Authority. Should Chowchilla hinder further progress on a consolidation project, the state and regional water boards should utilize their mandatory consolidation authority to require service extension. And should ancillary funding not materialize, the state should consider raising its cap on expenditures for wastewater extension projects or make other funding available to facilitate reliable wastewater service in Fairmead and similar communities.

Matheny Tract / City of Tulare

As discussed above, Matheny Tract is across the street for the City of Tulare and within meters of the City's wastewater infrastructure. The community is reliant on individual septic systems and has been fighting for wastewater service for years. They watched the City tear up their roads for installation of wastewater infrastructure that would serve nearby industrial development but the City has remained reluctant to extend service to the community or has predicated its willingness on millions of dollars of investment from the state for infrastructure that would serve new developments. The County of Tulare has conducted a feasibility study to determine the best course for providing sewer service to the community and a preferred alternative of consolidation with the City of Tulare has been selected. The state has committed sufficient funding to the project to cover costs related to the extension of service to Matheny Tract so political will on the part of the City is the primary variable at this point.

Strong community leadership and community-driven advocacy has reinforced community-wide and state-level support for consolidation. If the City of Tulare remains unwilling to extend services despite the availability of capital to do so, the regional water board and state decision-makers should consider using the new authority to mandate service extension. Additionally, the state should extend technical assistance to advocates that are working hard to secure an effective and fair consolidation project.

Lanare / Riverdale

Lanare, a community of about 600 people a couple miles from neighboring Riverdale, has become famous for its decade-long fight for safe drinking water. Community leaders have also long fought for reliable wastewater service as complimentary step toward sustainability and prosperity. The most logical partner for shared wastewater service would be neighboring Riverdale, which has about 2500 residents and is looking to expand. Unfortunately, Riverdale has not been willing to entertain service extension to Lanare, and Fresno County's other local governing agencies have also been hesitant to use their power or influence to encourage provision of reliable wastewater service to Lanare. For example, while Fresno's Local Area Formation Commission noted Lanare's lack of reliable wastewater treatment and disposal, it did not acknowledge an opportunity for service expansion despite Riverdale's plans to expand its services to accommodate growth.

Community-based organizing and advocacy has developed a strong voice in Lanare for service extension from Riverdale, and there is a growing collaboration between Lanare leaders and Riverdale leaders to advocate together for shared services and investments. The regional board and state decision-makers should look to Lanare and Riverdale as it implements its mandatory consolidation authority for wastewater service.

City of Fresno Fringe Communities

We have begun to work with several neighborhoods that lie just beyond the city of Fresno's wastewater service provision. They are both individual homes and mobile home parks, some are within city limits but most are in unincorporated Fresno County.

As community members increase their demand for adequate wastewater service, especially given the proximity of city services, negotiation with the city of Fresno for a cost effective and efficient solution will be the first step toward securing service. Funding from the state may be necessary for capital improvements, and if the city is unwilling to extend services to its neighbors, the regional water board should consider using its mandatory consolidation authority to require the necessary service extensions.

Extension for service provider to mobile homes

While not within the San Joaquin Valley, we wanted to include a short discussion of our work in the Eastern Coachella Valley on a wastewater service expansion project. Hundreds of mobile home communities in the Eastern Coachella Valley have inadequate wastewater treatment and disposal facilities yet they lie within the political boundaries of the Coachella Valley Water District – a drinking water and wastewater service provider. One such community – Sunbird Mobile Home Park – became interested in municipal wastewater service due to inadequate treatment and disposal of wastewater and extremely high monthly rates for use of the mobile home park's waste disposal system.

Community leaders, advocates, engineers from the nearby university, and the Coachella Valley Water District joined forces thanks in part to technical assistance funding provided by the state to facilitate consolidation projects. Engineering studies are complete, and the project should be underway within the year. One question that remains is whether the state can support infrastructure investments for wastewater service in mobile home parks. The state should consider allowing such investment when doing so will provide adequate drinking water and wastewater services to disadvantaged and lower income households.

Conclusion

Consolidation and service extension are important mechanisms for communities fighting for health, well-being, sustainability, and prosperity, and for a state hoping to make unsafe drinking water and substandard wastewater treatment a thing of the past.

Community based advocacy and the growing body of state-wide policies designed to promote consolidation and service extension have been successful in several communities and neighborhoods throughout the state. The most powerful tools and strategies are: (1) sustained community engagement; (2) advocacy demanding an appropriate local and state-wide response to inadequate and disparate service delivery; and (3) state resources necessary to fund necessary capital improvements as well as technical assistance necessary to facilitate a fair and effective consolidation project.

Additionally, local and state-level decision-makers could have even greater impact by: (a) ensuring that consolidation mandates and incentives are available to residents reliant on domestic wells – even if a community is not unanimously supportive of a project; (b) providing technical assistance funds to organizations best suited to advocate for an effective and fair consolidation process and project even if — and especially if — one or more of the parties to the consolidation remains hesitant to move forward; (c) utilizing new mandatory consolidation authority for wastewater service; (d) expanding eligibility for mandatory consolidations to allow a mandatory consolidation of a drinking water system that is likely to provide drinking water that does not comply with legal standards; (e) ensuring that wholesale agreements are only utilized when necessary, are fair in their allocation of costs and fees, and are strictly an interim short-term solution prior to a prompt full consolidation; and (f) securing a stable source of funding that can be used to facilitate, incentivize, and support drinking water and wastewater consolidations.

POR FAVOR, LLENE ESTA ENCUESTA PARA AYUDAR A LA COMUNIDAD DE DELHI A EVALUAR LA POSIBILIDAD DE INSTALAR UN SISTEMA DE ALCANTARILLADO Y UNA CONEXIÓN DE AGUA EN DELHI!

(Versión en español al reverso)

Hello Delhi Resident,

Many residents in the neighborhood of Corner Street in Delhi have expressed interest in extending sewer and water services to the homes currently using private wells and septic systems. In order to acquire state funds to explore this possibility and ultimately to extend services if the community decides to support the projects, we need provide the State Water Resources Control Board with information about the community's median household income (MHI). MHI in the community must be less than 80% of the statewide MHI to qualify for state funding.

Since current census data for the community is incorrect, Leadership Counsel for Justice and Accountability will need to conduct an income survey to gather this critical information. With this income information, the community may be able to qualify for state funds to do a study to see if Delhi County Water District can extend water and sewer services to the community.

Please complete this survey, and contact us at the phone numbers provided below for pickup. This survey should not take more than a few minutes to complete. We appreciate you taking the time to fill out this form thoroughly. Your participation in this survey is critical to improving Delhi's infrastructure.

You are not required to provide your full name or personal identification information if you do not wish. If you decide to share your personal identification information, *it WILL NOT be disclosed*.

If you have any questions about this survey, please contact us at:

Leadership Counsel for Justice and Accountability
Abigail Ramirez
(415)374-6020

Leadership Counsel for Justice and Accountability
Michael Claiborne
(559)753-4353

Thank you for helping your community invest in critical infrastructure and improve health and safety conditions in Delhi.

Sincerely,

Abigail Ramirez and Michael Claiborne

¡POR FAVOR COMPLETE ESTE CUESTIONARIO PARA AYUDAR AL DISTRITO DE SERVICIOS COMUNITARIOS DE LANARE A EXPLORAR LA POSIBILIDAD DE INSTALAR UN SISTEMA DE DRENAJE EN LANARE!

(English on the other side)

Estimados residentes de Delhi,

Muchos residentes en el vecindario de Corner Street en Delhi han expresado interés en extender los servicios de alcantarillado y agua a los hogares que actualmente usan pozos privados y sistemas sépticos. Para adquirir fondos estatales para explorar esta posibilidad y últimamente para extender los servicios si la comunidad decide apoyar los proyectos, debemos proporcionar a la Meza Estatal de Control de Recursos Hídricos información sobre el ingreso medio familiar de la comunidad (MHI). MHI en la comunidad debe ser menos del 80% del MHI estatal para calificar para el financiamiento estatal.

Dado que los datos del censo actual para la comunidad son incorrectos, el Consejo de Liderazgo para la Justicia y la Responsabilidad deberá realizar una encuesta de ingresos para adquirir esta información crítica. Con esta información de ingresos, la comunidad puede calificar para fondos estatales para hacer un estudio para determinar si el Distrito de Agua del Condado de Delhi puede extender los servicios de agua y alcantarillado a la comunidad.

Complete esta encuesta y contáctenos a los números de teléfono de abajo para que los recojamos. Esta encuesta no debe tomar más de unos pocos minutos para completarse. Le agradecemos que se tome el tiempo de completar este formulario a fondo. Su participación en esta encuesta es fundamental para mejorar la infraestructura de Delhi.

Usted no es obligado a proporcionar su nombre completo o información de identificación personal si no lo desea. Si decide compartir su información de identificación personal, NO SERÁ divulgada.

Si tiene alguna pregunta sobre esta encuesta, contáctenos a los números de abajo:

Consejo de Liderazgo para la Justicia y la Responsabilidad
Abigail Ramirez
(415)374-6020

Consejo de Liderazgo para la Justicia y la Responsabilidad
Michael Claiborne
(559)753-4353

Gracias por ayudar a su comunidad a invertir en infraestructura crítica y mejorar las condiciones de salud y seguridad en Delhi.

Sinceramente,

Abigail Ramirez y Michael Claiborne

Survey No.: _____

Median Household Income (MHI) Survey for Special Funding Eligibility
Verifiable Income from 2017 Federal Income Tax Filling

1. **Please write the address of the place where you received this letter:**

   _____

   _____

2. **Was this survey sent to a commercial business?**

   Yes ☐ Stop and return this form in the envelope provided.
   No ☐ **Complete the survey.**

3. **Do you live at this residence for more than six months of the year?**

   Yes ☐
   No ☐ please indicate the type of property:
   - ☐ Vacation home
   - ☐ I own this rental property and do not live here
   - ☐ This is a vacant property
   - ☐ I am renting for a short amount of time

4. **Do you rent or own this home?** ☐ Rent ☐ Own

5. **If you rent this home, please write the homeowner's contact information:**

   Address: _____

   Email: _____

   Phone number: _____

6. **How many people reside at this household,** including children and adults? _____

7. **Provide the total household annual <u>gross</u> earnings in <u>2017</u> from:**
   Wages, salary, commissions, & bonuses from all jobs of residents 15 or older $_____

8. **Provide the total household <u>net</u> annual earnings in 2017 from:**
   Farm or non-farm business, small business, professional practice, or partnership .$_____

9. **Provide any other household annual earnings in 2017 from:**
   Social Security or supplemental security income, public assistance, retirement plans, veteran's payments, child support, alimony, unemployment benefits, interest income, survivor or disability pensions, or any other source of income received regularly. $_____

10. **Please add together your answers for questions 7, 8 and 9:**
    TOTAL INCOME in 2017: $_____

11. **Please print your name, sign and date:**

_____ _____

Printed Name Signature Date

Survey No.: _____

Encuesta de Ingreso Mediano de Hogares para la Elegibilidad Especial de Financiación
Ingresos Verificables de 2017 de Declaración Federal de Impuesto

1. **Por favor escriba la dirección donde recibió esta carta:** _____

   _____

2. **¿Hemos enviado esta encuesta a un negocio comercial?**

   Si ☐ Pare y regrese la encuesta en el sobre pre-pagado.
   No ☐ Complete la encuesta.

3. **¿Vive usted en esta dirección seis meses o más al año?**

   Si ☐
   No ☐ por favor indicar la clase de propiedad:
   - ☐ Casa de vacaciones,
   - ☐ Soy el/la dueño/a de propiedad de alquiler, pero no vivo aquí
   - ☐ Esta casa está desocupada
   - ☐ Estoy alquilando por un tiempo corto

4. **¿Usted y su familia son dueños de esta casa, o rentan?** ☐ Dueños ☐ Rentamos

5. **Si Usted está rentando, por favor díganos la información de contacto del dueño del domicilio:**

   Dirección: _____

   Correo electrónico: _____

   Número de teléfono: _____

6. **¿Cuántas personas residen en este hogar, incluyendo niños y adultos?** _____

7. **¿Cuáles fueron los ingresos brutos anuales totales de su hogar en 2017?**
   (Por favor incluya todos los ingresos incluyendo salarios, sueldos, comisiones y bonificaciones de todos los trabajos de los residentes de 15 años o más) $_____

8. **Si Usted trabaja por su cuenta, por favor díganos cuales fueron sus ingresos netos que haya tenido de pequeños negocios o ingresos de alguna sociedad o participación en una compañía**.
   $_____

9. **Proporcione cualquier otra ganancia anual del hogar en 2017 de:**
   Seguridad Social o ingresos suplementarios de seguridad, asistencia pública, planes de jubilación, pagos de veteranos, manutención de hijos, pensión alimenticia, prestaciones de desempleo, ingresos por intereses, pensiones de supervivencia o de invalidez, o cualquier otra fuente de ingreso recibida regularmente. $_____

10. **Por favor suma sus respuestas a las preguntas 7, 8 y 9:**
    INGRESO TOTAL 2017: $_____

11. **Por favor escriba su nombre, su firma y la fecha de hoy:**

_____ _____

Nombre y Apellido Firma Fecha

SOULTS MUTUAL WATER COMPANY & LONE OAK TRACT

SURVEY OF SEPTIC TANK SYSTEM PERFORMANCE

Section: _____

1.) Name (optional): _____ 2.) Street Address: _____

3.) Number of people in house? _____ # of bathrooms? _____

4.) Do you: own this house? ☐ rent? ☐ # of years living @ this house?

5.) Where does the septic tank water go to?

Leach line ☐ Seepage pit/dry well ☐ Both ☐ Don't know ☐

6.) # of homes served by system? _____

7.) Has the septic disposal system ever given you any problems? Yes ☐ No ☐

If yes, please describe: _____

8.) How many times was the septic tank pumped in the last three years? _____Average Cost? _____

Pumping dates? _____ Receipts? (check mark) Yes ☐ No ☐

Name(s) of Pumping service(s) used: _____

9.) Where does your greywater (wash, sink &/or laundry water) go to?

Septic tank ☐ Yard ☐ Other: _____

10.) Have the leach fields or seepage pits ever been repaired or replaced?

Yes ☐ No ☐

If yes: Why?_____When?_____

What was done? _____ Cost? $_____

Have you had problems with the septic system since this work? Yes ☐ No ☐

11.) Which would you prefer?

public sewers ☐ **septic tank system** ☐

Surveyor:_____ Date: _____

SOULTS MUTUAL WATER COMPANY y LONE OAK TRACT

ENCUESTA DEL FUNCIONAMIENTO DE SISTEMAS DE TANQUES SEPTICOS

Sección: _____

1.) Nombre (opcional)_____ 2.) Domicilio: _____

3.) ¿Número de personas en la casa? _____ Numero de Baños? _____

4.) Usted: Es dueño de casa? ☐ ¿Renta? ☐ # años viviendo en esta casa? _____

5.) ¿A dónde se va el agua del tanque séptico?

Línea de filtración ☐ Poso de filtración/Poso seco ☐ los dos ☐ No se ☐

6.) # de hogares servidos por el sistema? _____

7.) ¿Ha tenido problemas con el servicio de sistema de tanque séptico? (marque uno) Sí ☐ No ☐

Si marco, "Si", por favor explique _____

8.) ¿Cuantas veces has vaciado el tanque séptico en los últimos tres años? _____
Costos promedios _____
¿Fechas de limpiezas? _____ Recibos? Sí ☐ No ☐

Nombre(s) de la compañía que limpio: _____

9.) A donde se va su agua gris (Lababo, cocina y/o agua de lavar)? (marque o escriba)

Tanque séptico ☐ yarda ☐ otro: _____

10.) ¿Ha sido reparada o reemplazada la Línea de filtración o el Poso de filtración alguna vez?

Sí ☐ No ☐

Si "Si": Por qué? _____ Cuando? _____

¿Que fue hecho? _____ Cuánto cuesta? $_____

¿Ha tenido problemas con el sistema después que se hizo este trabajo? Sí ☐ No ☐

11.) ¿Cuáles servicios prefiere? (Circule uno) drenaje publico sistemas de tanques sépticos

Surveyor: _____ Date: _____

SB 1215 : Provision of Sewer Service for Disadvantaged Communities

What does this bill do?

SB 1215 provides the Regional Water Board to authority to mandate connections between receiving systems with low-income communities affected by failing wastewater treatment systems. Residents in affected communities will be able to petition the Regional Water Board to request the mandated system consolidation. A mandate will be issued after certain requirements are met.

Definitions

"**Inadequate onsite sewage treatment system**" - An onsite sewage treatment system that has the reasonable potential to cause a violation of water quality objectives, to impair present or future beneficial uses of water, or to cause pollution, nuisance, or contamination of waters of the state.s

"Provision of sewer service" -The provision of sewer service to a community by any of the following processes:

- ❑ Annexation where the receiving sewer system is a special district.
- ❑ Extension of service where the receiving sewer system is a city, county, or special district.
- ❑ Additional sewer service provided within city, county, or special district boundaries.

Key Components of SB 1215

The property owner of an affected residence may opt out of an order for the provision of sewer service for a maximum of five years from the date of the issuance of the order by demonstrating to the regional board:

- ❑ The onsite sewage treatment system was installed no more than 10 years prior to the issuance of the order.
- ❑ The onsite sewage treatment system is not an inadequate onsite sewage treatment system

Affordability Protections

- ❑ The receiving sewer system shall not increase charges on existing customers of the receiving sewer system solely as a consequence of the provision of sewer service unless the customers receive a corresponding benefit.
- ❑ The receiving sewer system shall not charge rates to newly absorbed customers of the sewer system that are higher than those necessary to provide the sewage service.
- ❑ The regional water board must work on a financing package that benefits both parties by addressing the receiving sewer system's planning and capital costs and the affected residents' connection costs

Before ordering the provision of sewer service the regional board shall do all of the following:

- ❑ Encourage voluntary extension of sewer service
- ❑ Consider other enforcement remedies
- ❑ Consult with the relevant local agency formation commission regarding the sewer service in the affected area and any other relevant information
- ❑ Consult with the state water board.
- ❑ Consult with, and fully consider input from, the local government with land use planning authority and environmental health oversight over the affected area
- ❑ Notify the potential receiving sewer system and affected residents within the disadvantaged community, and establish a reasonable deadline of no less than six months, unless a shorter period is justified, for the potential receiving system and affected property owners to negotiate a means of providing an adequate sewage service
- ❑ Hold at least one public meeting at the initiation of the process in a place as close as feasible to the affected areas. The meeting will be announced with 30 days notice and shall provide affected residents and the potential receiving sewer system an opportunity to present testimony. There will also be an opportunity to submit comments by mail or electronic mail during the 30-day notice period and for at least one week after the public meeting.

Before ordering the provision of sewer service, the regional board shall do both of the following:

Find all of the following:

- ❏ One or more affected residences are served by an inadequate onsite sewage treatment system.
- ❏ Reasonable efforts to negotiate voluntary provision of sewer service were made.
- ❏ The provision of sewer service is appropriate and technically and economically feasible.
- ❏ There is no pending local agency formation commission process that is likely to resolve the problem in a reasonable amount of time.
- ❏ The provision of sewer service is an effective and cost-effective means to address the inadequate onsite sewage treatment system.
- ❏ The capacity of the proposed interconnection needed to accomplish the provision of sewer service designed to serve the disadvantaged community, as determined by the regional board.

❏ Hold a subsequent public meeting in a place as close as feasible to the affected areas if a period of six or more months has passed since the public meeting. The regional board shall make reasonable effects to provide a 30-day written notice of the meeting to the affected residents and all affected local government agencies and sewer service providers. The meeting shall provide representatives of the affected residents and the potential receiving sewer system an opportunity to present testimony.

Upon the issuance of a regional board's order requiring provision of sewer service, the state board shall do all of the following:

❏ As necessary and appropriate, make funds available, upon appropriation by the Legislature, to the receiving sewer system for the costs of completing the provision of sewer service, including, but not limited to, compensation for any capacity lost as a result of the provision of sewer service, by paying the receiving sewer system's capacity connection fee at the rate it charges others, providing additional capacity needed as a result of the provision of sewer service, and paying legal fees. If capacity beyond what is needed for provision of sewer service is provided, the state board shall retain its rights to use the additional capacity without paying additional capacity charge fees for five years, unless it releases those rights in writing. The state board shall provide appropriate financial assistance for the infrastructure needed for the provision of sewer service. The state board's existing financial assistance guidelines and policies shall be the basis for the financial assistance.

❏ Ensure payment of standard local agency formation commission costs caused by the regional board's order. Additional costs or fees related to provision of sewer service, including, but not limited to, other public works costs or upgrades, shall not be used to delay the provision of sewer service required by the order.

❏ Coordinate with the appropriate local agency formation commission and other relevant local agencies to document the change of organization or reorganization.

AB 2501: Drinking Water Consolidation and Extension of Service

What does this bill do?

AB 2501 expands authority of the California State Water Resources and Control Board to order mandatory consolidation between a drinking water system and a neighborhood dependent upon domestic wells. This law also establishes several requirements prior to the order of consolidation including affordability clauses to ensure short-term solutions do not create barriers to accessing safe drinking water.

Definitions

- "**Adequate supply**"- Sufficient water to meet residents' health and safety needs at all times.
- "**Affected residence**"- A residence within a disadvantaged community that is reliant on a water supply that is either inadequate or unsafe and that is not served by a public water system or state small water system.
- "**Consistently fails**" - Failure to provide an adequate supply of safe drinking water.
- "**Consolidated water system**" - The public water system resulting from the consolidation of a public water system with another public water system, state small water system, or affected residences.
- "**Consolidation**" - Joining two or more public water systems, state small water systems, or affected residences into a single public water system.
    - The consolidation may be physical or operational.
    - The state board may also order the extension of service to an area within a disadvantaged community that does not have access to an adequate supply of safe drinking water so long as the extension of service is an interim extension of service in preparation for consolidation.
    - The consolidation shall occur within six months of the initiation of the extension of service. The state board may set timelines and performance measures to facilitate completion.
    - A local agency's decision whether to provide public works or upgrades shall not delay the consolidation or extension of service
- "**Domestic well**" - A groundwater well used to supply water for the domestic needs of an individual residence or a water system that is not a public water system and that has no more than four service connections.
- "**Extension of service**" - The provision of service through any physical or operational infrastructure arrangement other than consolidation.

Key Components of the SB 1215:

Affordability Protections

- The consolidated water system shall not increase charges on existing customers of the receiving water system solely as a consequence of the consolidation or extension of service unless the customers receive a corresponding benefit.
- Fees or charges imposed on a customer of a subsumed water system shall not exceed the costs of the service.
- The receiving water system shall not charge any fees to, or place conditions on, customers of the subsumed water system that it does not charge to, or impose on, new customers that are not subject to the consolidation with the receiving water system.
- NOTE: If costs incurred by the receiving water system in completing the consolidation or extension of service are not otherwise recoverable, the receiving water system may charge fees to customers of the subsumed water system to recover those costs.

Before ordering consolidation or extension of service, the regional board shall do all of the following:

- ❑ Encourage voluntary consolidation or extension of service.
- ❑ Consider other enforcement remedies specified in this article.
- ❑ Consult with, and fully consider input from, the relevant local agency formation commission regarding the provision of water service in the affected area, the recommendations for improving service in a municipal service review, whether the consolidation or extension of service is cost effective, and any other relevant information.
- ❑ Consult with, and fully consider input from, the Public Utilities Commission when the consolidation would involve a water corporation subject to the commission's jurisdiction.
- ❑ Consult with the local government with land use planning authority over the affected area, particularly regarding any information in the general plan.
- ❑ Consult with all public water systems in the chain of distribution of the potentially receiving water systems.
- ❑ Establish a reasonable deadline of no less than six months, unless a shorter period is justified, to negotiate consolidation or another means of providing an adequate supply of safe drinking water.
    - ❑ The deadline may be extended by the state board at the request of the potentially receiving water system, potentially subsumed water system, the local agency formation commission with jurisdiction over the potentially subsumed water system, or the Public Utilities Commission.
- ❑ Consider the affordability of the anticipated monthly rates for drinking water service to residential customers of the potentially subsumed water system.
- ❑ Obtain written consent from any domestic well owner for consolidation or extension of service. Any domestic well owner within the consolidation or extended service area who does not provide written consent shall be ineligible, until the consent is provided, for any future water-related grant funding from the state other than funding to mitigate a well failure, disaster, or other emergency.
- ❑ Hold at least one public meeting at the initiation of this process in a place as close as feasible to the affected areas to provide representatives of the potentially subsumed water system, affected ratepayers, renters, property owners, the potentially receiving water system, and the public an opportunity to present oral and written comments.

Before ordering consolidation or extension of service, the state board shall find all of the following:

- The potentially subsumed water system has consistently failed to provide an adequate supply of safe drinking water.
- Reasonable efforts to negotiate consolidation or extension of service were made.
- Consolidation of the receiving and subsumed water system or extension of service is appropriate and technically and economically feasible.
- There is no pending local agency formation commission process likely to resolve the problem in a reasonable amount of time.
- Concerns regarding water rights and water contracts of the subsumed and receiving water systems have been adequately addressed.
- Consolidation or extension of service is an effective and cost-effective means to provide an adequate supply of safe drinking water.

South San Joaquin Valley Watershed Improvement Programs: Promoting Community Participation

Manual Grant Award Entry

Center on Race, Poverty & the Environment

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FollowUp Form

Instructions

All grantees are required to submit a grant report that describes the work funded by the grant. Unless otherwise noted in your grant contract, your report should contain both a narrative description of activities performed and a financial statement showing how grant funds were spent. You should also provide copies of any deliverables produced during the grant period.

Rose Foundation's policy for the Central Valley Grants Program is that grant reports are due two weeks after the end of each quarter, and final report upon one month after project completion. For example, if your grant period is 24 months, you'll have three quarterly interim grant reports, one every six months, and a final grant report due 25 months from the start of the grant.

Your specific reporting dates and any special reporting requirements are identified in your Grant Contract.

If you have a multi-year grant, please note that Rose Foundation must receive your interim grant report before disbursing grant installments.

If you have any questions about reporting and/or installments, please contact your Program Officer, Laura Fernandez or call (510) 658-0702.

Basic Information

Project Name

Name of Project

South San Joaquin Valley Watershed Improvement Programs: Promoting Community Participation

Grant Period*

Please indicate the start date of the grant period for which you are reporting on

08/07/2018

Amount Awarded

$215,000.00

Area(s) of Emphasis*

Environmental Education
Environmental Health & Justice
Water Resources / Watershed Protection

Water Quality Monitoring Categories

Water Quality Monitoring
Pollution Prevention

Environmental Health & Justice Categories

Toxics

Timeline, Deliverables, & Achievements

Please refer to the template instructions below to fill out the Timeline and Deliverables table. In the document, identify all key deliverables and achievements for the completed milestones of this report, and tie them into the project timeline.

To submit project timeline, deliverables, and achievements:*

1) Click Here to download the Timeline & Deliverables template.
2) Fill out the document with all relevant information. You may refer to the chart that you previously submitted and copy your timeline accordingly.
3) Re-submit the document back to this question.

FinalReportDeliverables.docx

Narrative

Brief Summary*

Please summarize the overall impact of the project so far in terms of activities and accomplishments.

Questions to consider for the project summary: Who/what was helped by the project? What water quality benefits occurred?

We worked with three predominately low income communities of color in the San Joaquin Valley: Arvin, Lamont, and Allensworth.

We secured several water benefits:
- We engaged in 5 monthly meetings on water projects, water issues and capacity building.
- We helped communities increase access to funding technology, and technical experts to help improve water quality in three San Joaquin Valley Communities.
- We have helped communities oversee the construction and testing of five new wells to ensure they achieve community goals for safe, clean, affordable drinking water.

Impact Narrative*

Please describe the impact of the work you conducted with the grant funds. In addition, please describe any unanticipated outcomes, challenges, or other changes that occurred during the project's duration. Please include any lessons learned and/or advice for other organizations facing similar circumstances.

Arvin: We, along with the Committee for a Better Arvin, were able to secure $2.5 million from US EPA to the Arvin Water District to replace a well at-risk due to the ineffective cleanup of a Superfund site. This advocacy started in 2008, when local residents discovered that the Brown & Bryant Superfund site had leeched dangerous chemicals into shallow groundwater and threatened the City's drinking water supply. In May 2017, the Arvin Community Services District finalized an agreement with the Environmental Protection Agency for $2.5 million to replace the existing well, which sits just 1700 feet from the site. For the first half of 2018, well water was tested and certified for consumption. The old well was capped in November 2018. Three new wells have been tested in Arvin, and there is a new, central well in use. CRPE will continue to partner with CBA to ensure that this process with all these wells is properly completed. Worked with members of CBA to develop water quality policy goals and objectives for Kern County General Plan Update.

Lamont: In our ongoing work reducing toxic exposure as well as improving water issues in Lamont, we are working closely with the Lamont Public Utility District (LPUD) to educate them on community issues. We have maintained a strong relationship with Recology, the new owners of the Community Recycling facility, due in part to a supportive LPUD board. We previously negotiated a Good Neighbor Agreement with Recology, creating a Community Benefits Fund based on the number of trucks that bring waste to the facility. The funds will be administered by a community advisory body, that includes representatives from Committee for a Better Arvin and the Committee for Progress in Lamont, as well as CRPE. In 2019, the committees have been considering community-led projects for funding in Lamont, Weedpatch, and Arvin. They are still in the process of identifying community projects. In November of 2018, Kern County Board of Supervisors also approved changes to the Conditional Use Permit for Recology, which may increase benefits for both Arvin and Lamont communities. Worked with Lamont residents to develop water quality policy goals and objectives for Kern County General Plan Update.

Allensworth: The water is good from most of the wells at this point. There are still old wells that have arsenic contamination. The Water District is looking at a site to do a test well there, but the problem is that this is the site is protected under the Endangered Species Act. We worked with the State to get necessary permission to do a test well and Self-Help Enterprises found the water was potable. The Water District will need the State's permission to dig a permanent well. We will continue to work with the community to secure the necessary permits to drill permanent drinking water wells. CRPE held meetings at the end of 2018 to educate residents about the Endangered Species Act, as well as drinking water standards and requirements.

We have been working with the Agricultural Sustainability Institute (ASI) at UC Davis to examine a pilot project to test technology that removes arsenic from the water. This technology has been used in India and is being replicated for testing in the US. They demonstrated the technology is successful by removing arsenic from a private well in Allensworth. There is the possibility of the community receiving a $10,000 for new projects as part of this demonstration. We are working with the Allensworth Progressive Association to conduct three trainings on arsenic contamination impacts and possible treatment options as part of this pilot project. We also provided one training to the community on Prop 218 to help the community prepare to participate in discussions around proposed water rate increases.

Did the grant fund water quality monitoring?*

If the grant did fund water quality monitoring, please include and specify the type of Quality Assurance / Quality Control (QA/QC) procedures that were followed in the question below.

No

Financials

Financials*

Please refer to the line item budget you submitted in your Application Attachments and prepare a corresponding financial statement that shows how the grant funds were actually expended. If there were any variances in any items over 10%, include a brief explanation for the variance. You may paste your financial statement into this section, or include it as an attachment.

SJV Watershed Final.xlsx

Attachments

Please attach or provide a link to any significant deliverables produced with grant funds, such as reports, videos, etc. You may also include other materials such as newsletters, media clippings, or photos that will help us better understand the work you performed under the grant. Please understand that the system limits file sizes - therefore, a few key examples are better than numerous photos or clippings.

Significant Deliverables*

If you produced a report, video, or other significant deliverable with this grant, you may attach it here or paste a URL box below. Use the text box to briefly describe your significant deliverables.

Recology project to provide additional revenue for Arvin and Lamont | Nov 01, 2018 | ABC News Bakersfield | Kelly Broderick
https://www.turnto23.com/news/local-news/recology-project-to-provide-additional-revenue-for-arvin-and-lamont

Newsletters, Media, Photos or Other Attachments

You may attach additional documents or publications here or paste a URL into the text box below. Use the text box to briefly describe your significant deliverables.

EPA To Pay For New Well In Arvin | Kerry Klein | May 7, 2017 | https://www.kvpr.org/post/epa-pay-new-well-arvin

Newsletters, Media, Photos, or other Attachments

You may attach additional documents or publications here or paste a URL into the text box below. Use the text box to briefly describe your significant deliverables.

File Attachment Summary

Applicant File Uploads

- FinalReportDeliverables.docx
- SJV Watershed Final.xlsx

CRPE Center on Race, Poverty & the Environment

Timeline & Deliverables			
Milestone	**Tasks**	**Deliverables**	**Achievements**
25% complete—6 month mark. Target project period: 24 months	1. Community Outreach and Education 2. Conduct semi-monthly meetings with community leaders interesting in education their community 3. Conduct trainings based on water infrastructure projects occurring in each respective community 4. Conduct accountability meetings between residents and agencies 5. Create resources for Valley residents in both English and Spanish 6. Phone check-in call with Program Officer at Rose Foundation	• Develop a total of 25 community leaders representing Allensworth, Alpaugh, Arvin, and Lamont participating in water issues • 5 monthly meetings with community leaders • A total of 5 trainings will be conducted by CRPE based on water projects, water issues and capacity building • Support Tulare County grant consultants to provide translation services at 2 meetings in Alpaugh and Allensworth • Provide 4,000 copies of bilingual resources available for all Valley residents covering topics on water issues, conservation efforts and other topics residents identify	- Successful completion of trainings and provision of resources in both bilingual and monolingual Spanish communities
50% complete—12 month mark Target project period: 24 months	1. Conduct trainings based on water issues occurring in each respective community 2. Conduct semi-monthly meetings with community leaders interested in educating their community	• A total of 5 trainings conducted by CRPE • Addressing water issues and capacity • Building • 5 monthly meetings with community Leaders • Facilitate a meeting between Arvin water district and EPA on $1 million	- Based on our work with local groups and residents, the Arvin Community Services District finalized an agreement with the Environmental Protection Agency for $2.5 million to replace the existing well, which sits just 1700 feet from the site. There is now a new, functional well in Arvin, as

CRPE Center on Race, Poverty & the Environment

	3. Conduct accountability meetings Between residents and agencies 4. Identify resources for communities in addressing water issues 5. Hire consultant to gather water quality data 6. Report on progress to Program Officer	grant for a new well • residents will participate in 7 local/regional water board and agency meetings; CRPE will provide translation • Participate in 1---2 Steering Committee meetings with Allensworth and Alpaugh • Create a network of experts, including Technical experts, who can help Communities address water issues • Share water quality data with all 5 affected communities • Written report to Rose Foundation	a result of this training, networking, and advocacy.
75% complete—18 month mark Target project period: 24 months	1. Regional convening 2. Conduct semi-monthly meetings with community leaders interested in education their community 3. Conduct accountability meetings between residents and agencies	• Policy platform that contains systemic solutions for improving water quality management and financing in the Valley • 5 monthly meetings with community leaders • Support 2 community residents transition onto local water boards • 20 residents will participate in 5 local/regional water board and agency meetings; CRPE will provide translation	- At least two community residents supported by CRPE have come onto local water boards, as a result of the advocacy of our community organizers.
100% complete—24 month mark Target project	1. Develop and implement a community wide survey to evaluate CRPE's support on water issues	• Creation of survey tools and analysis of compiled survey results • 5 monthly meetings with community leaders • 20 residents will participate in 5	- We are still in the process of working with the community of Allensworth to replicate a technology tested for the removal of arsenic from water.

period: 24 months	2. Conduct semi-monthly meetings with community leaders interested in education their community 3. Conduct accountability meetings between residents and agencies 4. Report to Program Officer	local/regional water board and agency meetings; CRPE will provide translation • 10% of residents will fill out survey • Agreement by EPA and Arvin Water Board on$1 million well • Completion of the feasibility study for the Tulare County pilot project and beginning of implementation • The Lamont PUD is responsive to and representative of the community and has in place a viable contingency plan for dealing with its excess wastewater • Final written report due to Rose Foundation	
Ongoing Tasks	1. Community organizing in south San Joaquin Valley to increase resident participation 2. Working with allies and other organizations on water issues in the Valley		

Center On Race, Poverty and The Environment

Profit & Loss

December 15, 2016 through December 15, 2017

Water/Infrastructure Expenses 18 months	Total	Rose Foundation/CV Water Project
Expense		
Personnel	172,700	172,700
Litigation		
Filing Fees	18	0
Litigation - Other	259	0
Total Litigation	277	0
Printing /copying	2,500	2577
Supplies	2,000	2200
Professional Fees		
Translation	5,000	5,000
Child Care	1,500	1,500
Total Professional Fees	6,500	6500
Travel & Meals		
Mileage	6,122	6,122
Travel & Meals - Other	3,154	3,154
Total Travel & Meals	9,275	9,275
Total Direct Expense	192,975	193,252
Overhead/Indirect	43,858	43,858
Total Program Cost	237,110	237,110

Safer Subsistence Fishing: Cache Creek Basin to Sacramento River

Manual Grant Award Entry

California Indian Environmental Alliance

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Sherri Norris

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FollowUp Form

Instructions

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Your specific reporting dates and any special reporting requirements are identified in your Grant Contract.

If you have a multi-year grant, please note that Rose Foundation must receive your interim grant report before disbursing grant installments.

If you have any questions about reporting and/or installments, please contact your Program Officer, Laura Fernandez or call (510) 658-0702.

Basic Information

Project Name

Name of Project

Safer Subsistence Fishing: Cache Creek Basin to Sacramento River

Grant Period*

Please indicate the start date of the grant period for which you are reporting on

05/01/2017

Amount Awarded

$43,245.00

Area(s) of Emphasis*

Environmental Education
Habitat / Wilderness / Preservation
Environmental Health & Justice
Water Resources / Watershed Protection
Human Rights & Civil Liberties
Economic Development

Water Quality Monitoring Categories

Water Quality Monitoring
Watershed Assessment

Environmental Health & Justice Categories

Toxics

Timeline, Deliverables, & Achievements

Please refer to the template instructions below to fill out the Timeline and Deliverables table. In the document, identify all key deliverables and achievements for the completed milestones of this report, and tie them into the project timeline.

To submit project timeline, deliverables, and achievements:*

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2) Fill out the document with all relevant information. You may refer to the chart that you previously submitted and copy your timeline accordingly.
3) Re-submit the document back to this question.

CIEA CV Milestones & Deliverables.docx

Narrative

Brief Summary*

Please summarize the overall impact of the project so far in terms of activities and accomplishments.

Questions to consider for the project summary: Who/what was helped by the project? What water quality benefits occurred?

Please see attached full summary.

Project partners and Tribes in Clear Lake and Cache Creek Area

identified species and locations for further sampling, completed data sets. Evaluation of which locations are safer to eat from in Tribal partner and then peer review.

Impact Narrative*

Please describe the impact of the work you conducted with the grant funds. In addition, please describe any unanticipated outcomes, challenges, or other changes that occurred during the project's duration. Please include any lessons learned and/or advice for other organizations facing similar circumstances.

We held five Project Partner Coordination Meetings in January 2017, April 2017, May 2017, February, 2018 and March 2018. During these meetings we coordinated which activities each project partner intended to complete, which additional regional Tribes should be included in our project, reviewed existing data, the sampling plan and the results from the first set of fish we sampled.

We completed the watershed community survey or "CV Fish consumption survey," and piloted it with Sherwood Valley Band of Pomo Indians reaching a third of their members. We revised this survey twice with our project partners. We were able to provide this survey at four Tribal community events reaching 113 Tribal members from five Tribes. Three Tribes assisted in administering the survey at four community events, reaching Tribal member from seven Tribes in the region. Of these respondents an average of 70% were females and 60% were over 46. We administered this survey at one elders event which enabled us to gather historical fish consumption information to identify historical fishing locations and species that Tribal members would like to see restored in their waterways. We reviewed these surveys in order to guide our fish sampling plans which was the primary intent for sampling for this project and created a "Fish Sampling Plan for the Cache Creek Tribal Subsistence Project," (see attached) which will be revised following additional Tribal partner and peer review our "Assessing Methyl-mercury level in Fishes based on Traditional Subsistence Practices in the Cache Creek Watershed, Sacramento River Basin, California Quality Assurance Project Plan (QAPP) (see attached) We are however in the process of interpreting this data with our project partners in order to provide more information for each Tribe on the current and historical fish consumption patterns of their Tribal members.

Tribal members from the Clearlake and upper Cache Creek area are traveling long distances to fish. Other fishing locations not listed above included the Klamath River, Tomales Bay and the American River. It was our goal to identify safer fishing locations within two hours of Clear Lake. Approximately 1/3 of respondents declined to provide fishing locations or wrote only "creeks" or "ocean." We recognize that we need more respondent who fish in Cache Creek or in the tributaries/creeks that feed into the Cache Creek watershed. We are currently scheduling appointments with Tribes east of Clear Lake. Fires in that region interrupted our efforts to conduct outreach and conditions recently allowed that we continue therefore we will resume this part of our work.

Since the end of the third quarter of this project we began exploring different types of fishing options because line fishing has not yielded the species that we intended to catch. In August 2017 our fishing team went out with Fish and Game to view and report to our partner Tribes how an electrofisher, or fish shocking equipment, might assist us gathering the species needed to fill the data gap goals of this project.

We proceeded with three (3) Project Coordination Meetings and gathering Fish Consumption Surveys at four (4) community events as planned. To date we have gathered 131 needs assessments from community members, including elders of over twenty-two (22) Tribes from adjacent to and within our project area. We identified two additional Tribes that have not yet provided a comprehensive list of fishing locations and fish species, but for which this project footprint is especially important. One of three community events was an annual elders gathering which brings together over 100 elders and their family members from throughout the region. We noted that there were less community members from those two key Tribes from the Cache Creek and Sacramento River confluence area and have taken steps to interview their environmental directors and provide them with the Fish Consumption survey with hopes that should we be granted and extension that we can integrate their preferred fishing locations into our final sampling plan either for this project or for future efforts.

We are evaluating the results of the sampling completed for this project. The preliminary MeHg Data Analysis reports are attached. We are reviewing at the results in relation to the length, age, specie and location of catch of the fishes sampled. Outside of this project timeline we will complete this analysis and the peer reviewed interpretation of the data and provide it to you as well.

To advise our current and future sampling plans, species of Tribal interest are important to identify our targets.

For the fish currently being eaten by Tribal community in the region those species most commonly consumed are Abalone, Salmon, trout, and crab. Tribal members reported the following reasons why they are not fishing: fish declines, access to fishing locations including hostile people at locations who are unaware of the importance of traditional foods, regulatory restrictions, streams that had dried up, and/or concern about toxins (mercury, harmful algal blooms and PCBs).

Early in our project timeline we completed the initial data review in coordination with staff from the Office of Environmental Health and Hazard Assessment (OEHHA), San Francisco Estuary Institute (SFEI) www.step.sfei.org "Existing Mercury Data Review in the Cache Creek Watershed" and data from the US Geological Survey (USGS). We identified that the CA Environmental Data Exchange Network (CEDEN) does not have all of the data that we need integrated in yet, and that San Francisco Estuary Institute (SFEI) has started to locate waters with low mercury levels on a statewide level but did not specifically receive information from Tribes on which locations should be included in their study. CIEA has been pressing that they identify safer waters since 2006 and we are happy to recently see this shift. We have not yet reviewed the SFEI report for safer fishing location statewide, until recently it was our understanding that this report was in peer review. At the beginning of our project we provided SFEI with review of their BOG/SWAMP Portal to assist in their creation of the "Safe to Eat Portal." We also have been informed that Cache Creek Tribes may be interested in sharing their fish sampling data for the reach of Cache Creek adjacent to their current land holdings.

We conducted GIS maps of proposed sampling locations these are in the QAPP and we are currently adding sampling results into Arc GIS. The preliminary review of our sampling are contained in the "Fish Consumptions + Locations Quick Analysis" (See attached) and the "Preliminary MeHg Data Analyses from samples gathered in 2017 and 2018" (see attached). We are still integrating this data with the results of our sampling events in order to provide the fish consumption advice that we intend to provide Clearlake and Cache Creek Tribal families once we are able to review and interpret the known data.

The last of the project program tasks was to rank water bodies in the region based on which are most likely to support safer fishing and to confirm these by completing the data sets. We did identify three preferred locations correlated from fish consumption advisories, traditional fishing locations and sample those locations to confirm that they can support subsistence fishing.

Many community events have been delayed this year because of revised work focus/schedules of each of our project partners and an office move completed by CIEA. This led to a postponement of our community surveys. We still intend to distribute these surveys to six additional Tribes at three or more events this summer and complete these in the second quarter.

Our Tribal partners from Clear Lake have been delayed in their work for this project and our final review of sampling findings due to catastrophic fires including the Sulpher fire (Oct. 2017), Redwood Valley (Oct. 2017) Ridge and River fires (Mendocino Complex July 2018), in addition to multiple small fire events. For this reason we requested a five month extension, due to unanticipated challenges for which our staff and those our partners was unable to adapt and complete our benchmarks and final reports. At this time project partners are sampling to identify current toxins in the water ahead of the upcoming rain events.

Following five year of extreme drought California received 30.75 inches of precipitation during the first few months of our project in 2017. This was the second-highest average rainfall recorded since 1895. Record rainfall following years of drought created higher than normal sedimentation loads, road closures from flooding and landslides, this resulted in a delay in creating our fish sampling plan and created safety challenges for the team originally identified to collect samples during the first and second quarters of 2017. We did not have access to the site specific sampling locations on the creeks and streams that community members had identified as important early on. This resulted in an early delay of our project which we reported in our first quarter progress report.

While reviewing our draft fish sampling plan we determined that we would always not need boat mounted equipment. A backpack electrofisher would give better results in certain situations including

streams and creeks. In the final push to gather samples we anticipate using both methods. Since we will need it more than three times, purchasing this equipment would be more cost effective than renting it three times. We are seeking funding for this unanticipated cost.

We have been advised that in addition to following sampling protocols required by the lab and followed by Fish and Game, we should also revise our sampling plan to be a Quality Assurance Plan and have the EPA approve it

Did the grant fund water quality monitoring?*

If the grant did fund water quality monitoring, please include and specify the type of Quality Assurance / Quality Control (QA/QC) procedures that were followed in the question below.

Yes

Types of Quality Assurance

Type(s) of Quality Assurance/Quality Control (QA/QC) procedures followed*

QA/QC can be from the EPA or CA State Water Resources Board, for example. Click here for information about QA/QC

We did not sample water, we sampled fish. Methylmercury and mercury are small measurements best documented through fish tissue sampling. We have a fish sampling plan and a QAPP - will attempt to upload here.

Financials

Financials*

Please refer to the line item budget you submitted in your Application Attachments and prepare a corresponding financial statement that shows how the grant funds were actually expended. If there were any variances in any items over 10%, include a brief explanation for the variance. You may paste your financial statement into this section, or include it as an attachment.

CV Safer Fishing final budget.docx
please see attached. Note that we printed less and traveled more than originally anticipated.

Attachments

Please attach or provide a link to any significant deliverables produced with grant funds, such as reports, videos, etc. You may also include other materials such as newsletters, media clippings, or photos that will help us better understand the work you performed under the grant. Please understand that the system limits file sizes - therefore, a few key examples are better than numerous photos or clippings.

Significant Deliverables*

If you produced a report, video, or other significant deliverable with this grant, you may attach it here or paste a URL box below. Use the text box to briefly describe your significant deliverables.

Cache Creek Fish Sampling Plan 2018.docx

We are evaluating the results of the sampling completed for this project. The preliminary MeHg Data Analysis reports are attached. We are reviewing at the results in relation to the length, age, specie and location of catch of the fishes sampled. Outside of this project timeline we will complete this analysis and the peer reviewed interpretation of the data and provide it to you as well.

Newsletters, Media, Photos or Other Attachments

You may attach additional documents or publications here or paste a URL into the text box below. Use the text box to briefly describe your significant deliverables.

FishTissue_CacheCreek_QAPP_2018_DRAFT_20181025_CLB_JS.doc

Newsletters, Media, Photos, or other Attachments

You may attach additional documents or publications here or paste a URL into the text box below. Use the text box to briefly describe your significant deliverables.

we have other xls documents but when try to upload them this says they are the wrong format.

File Attachment Summary

Applicant File Uploads

- CIEA CV Milestones & Deliverables.docx
- CV Safer Fishing final budget.docx
- Cache Creek Fish Sampling Plan 2018.docx
- FishTissue_CacheCreek_QAPP_2018_DRAFT_20181025_CLB_JS.doc

Timeline & Deliverables		
Milestone	**Tasks**	**Deliverables**
100 % complete—12 mark. Target project period: 12	1. 1st of four Project Partner Coordination Meeting: We held five project partner meetings	
100% complete— Aug. 2017. Target project period: 8	2. Watershed community use survey 3. Distribution of survey by three (s) Tribal partners, at four (4) community events, reaching members of seven (7) Tribes 4. Coordinate with community uses of water for fish consumption	• Watershed Survey to identify priorities & water quality targets (fish tissue standards) **"CV Fish consumption Survey"** • Aggregate survey results from seven Tribes and communities (**Fish Consumptions + Locations Quick Analysis)**
75% complete. Target project period: 12	5. Data review and identify data gaps: existing data 6. GIS overlay	• 1st Waterbodies and Traditional Use Ranking Report: with existing status and data gaps Instead of this title we broke this into two documents: **Fish Consumptions + Locations Quick Analysis, "Existing Mercury Data Review in the Cache Creek Watershed** http://step.sfe.org and the "**Preliminary MeHg Data Analyses from samples gathered in 2017 and 2018"**
100% complete—12 month mark. Target project period: 12	7. Rank waters based on community surveys, water quality and known toxicity in fish	8. Identify two (2) to three (3) regionally preferred sites for sampling **"Fish Sampling Plan for the Cache Creek Tribal Subsistence Project"**

	CV Safer Fishing - Project Budget	1 Yr Budget w/ emrgncy ext.	Actual
	Staff Time & Benefits: 905.14 Hours @ $35/hour - inclincludes benefits/taxes	**$31,680**	**$31,680**
	S.Norris 201 hours x $35.00		$7,035
	Elem & Big Valley: 65.29 x $35.00		$2,285
	J.Silva # hours 252 x $75.00		$18,900
	B.Lockhart 68 hours x $35.00		$2,380
	H.Ryan 18 hours x $35.00		$630
	Lawrence Ray Consulting: Fish Capture & Project Organization Meeting: hours 5 x $45/hr +3 hours x $75/hr		$450
	Travel : 1972. miles (staff & consultants) @ .54/mile	**1064.88**	**1364.95**
4/7/2017	Travel from El Cerrito to Lower Lake & Return: 101 mi x 2 @.54		109.08
5/22-5/23/2017	Travel from el Cerrito to Lakeport & Return: 116 mi x 2 @.54		125.28
8/4-8/5/17	Travel from El Cerrito to Elem Office, Lakeport: 116 mile x2		125.28
2/14/2018	Travel Fort Bragg to El Cerrito & return : 168 miles x 2 @ .54/mile		181.44
2/28/2018	Travel Fort Bragg to El Cerrito & return : 168 miles x 2 @ .54/mile		181.44
3/14/2018	Travel Fort Bragg to Redbud trail: 165.8 x 2 @ .54		181.44
3/14/2018	Travel from El Cerrito to Rosebud Trail: 107 miles * 2 *.54		115.56
3/23/2018	Travel from El Cerrito to Lower Lake & Return: 101 mi x 2 @.54 (split total trip is over budget by 63.72)		45.36
3/23/2018	Travel from El Cerrito to Lower Lake & Return: 101 mi x 2 @.54 (split $45.36 from another project budget		63.72
5/15-5/16/18	Travel from Fort Bragg to Nice, to Redbud trail, to Blue Lake, to Lakeport and return: 165.8 x 2 @ .54		185.76
5/16/2018	Travel from El Cerrito to Nice and return: 125 * 2* .54 = split 50.59 or 144.72		50.59
	Printing: All outreach materials	**550**	**249.93**
	Sampling / Testing: 21 samples @ $192 each.	**4032**	**4032**
	Phones ($31.67/mo x 12 mo.)	**380**	**380**

	Sampling Consultants	**1000**	**1000**
	Supplies	**538**	**538**
	Admin/Accounting	**4,000**	**4,000**
-	**Total**	**$43,245**	**$43,245**

Phase 1 Fish Sampling Plan for the Cache Creek Tribal Subsistence Project

Prepared by: Javier Silva, Noyo Tribal Environmental Consulting

ABSTRACT

The goal of our Safer Subsistence Fishing: Cache Creek Basin to Sacramento River Project is to create a model for identifying and securing safe fishing locations in the Cache Creek Watershed from Clearlake into the Sacramento River. This will result in cleaner water quality standards to levels that will support continued fish consumption at or near cultural subsistence rates and provide safer places for cultural practices within the watershed.

A California Indian Environmental Alliance Project

Introduction

Cache Creek is a large stream in Lake, Colusa, and Yolo counties, California Figure 1. The headwaters of the South Fork are located at Clear Lake in Lake County. From here, the creek more or less flows alongside State Route 20 and bends south near the junction of State Route 20 and State Route 16 in Colusa County. The North Fork begins at Indian Valley Reservoir in Lake County and joins the South Fork near Wilbur Springs.

Indian Valley Dam and Reservoir regulate flow on North Fork Cache Creek. Cache Creek Dam, located 5 miles downstream from Clear Lake, regulates outflow on South Fork Cache Creek. Capay Diversion Dam, built in 1914 and located approximately 50 miles downstream from the Cache Creek Dam, diverts water into the Winters Canal to the south and the West Adams canal to the north for distribution throughout the Yolo County Flood Control and Water Conservation District service area.

This project will show that the goal of securing safer fishing locations is obtainable and that families can have local alternatives and be healthful in their own traditional territories in California. Our project will provide an alternative and preferable method of assessing and remediating locations based on California Tribes' and community needs.

The four components of this program are to 1) Rank waters in this area by cleanest locations 2) Fill data gaps, 3) Develop further cleanup plans and identify sources to fund this work and will begin to 4) Protect this portion of the watershed utilizing existing state programs and distribute fish consumption advisories.

Fish Tissue Sampling

Fish and shellfish (clams, crayfish, mussels) tissue samples will be collected and analyzed for methyl mercury. Tribal partner staff will go out biannually, or once a quarter (Feb, May, August, Nov) to conduct electrofishing surveys. Sites are selected using information collected from Tribal Consumption Surveys. We will begin by submitting samples from samples stored frozen in the Big Valley Rancheria Environmental Department Lab, and sampling Clear Lake to complete data sets. Goals are to obtain five grams of tissue taken from the fillet muscle for analysis from approximately ten (10) fish: five fish from trophic level 4, and five fish from trophic level 3.

Trophic level 4 - Representative fish species shall be largemouth bass (total length 300-400 mm), catfish (total length 300 – 400 mm), brown bullhead (total length 300-400 mm), and crappie (total length 200-300 mm).

Trophic level 3 - Representative fish species shall be carp, hitch, Sacramento blackfish, black bullhead, and bluegill of all sizes; and brown bullhead and catfish of lengths less than the trophic level 4 lengths.

Sizes should reflect fish that are typically caught and consumed by Clear Lake fishermen, so that measures of contaminant levels will be representative of consumer exposures. Sampling a range of fish that fishermen catch will also provide a more representative estimate of their likely exposure. The

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same sources used to determine target species may also provide information on the sizes of fish fishermen harvest.

Once collected, fish tissue samples will be processed, and immediately shipped in a container with ice to Brooks Applied Laboratories located in Bothell, WA. Sampling, container/ preservation, and shipping SOP's are described in Appendix B. Remaining fish will be frozen for future analysis at location yet to be determined. Fish sampling locations are shown in Table 3. Table 2 summarizes sample containers, volumes, and preservation requirements for each analysis. For more information please see the accompanying QAPP.

Mercury in Shellfish

Tribal people have known (traditional) locations where shellfish are harvested in the summer months. Clams and mussels are located on sandy beaches on specific shorelines of Clear lake which are located by 'feeling' by the harvester's feet. Shellfish are collected by children, as many clams as needed through the summer to be cooked at home every day – boiled to open, floured and deep fried. Harvest periods are generally in August, September, October.

Shellfish samples (clams, mussels, crayfish) will be collected from the shoreline or with minimal wading within the sample location area. A total of 5 grams of crayfish (Pacifastacus leniusculus), 5 grams of clams (Corbicula fluminea), and 5 grams of mussels (Anodonta nuttalliana) will be collected on shorelines of Clear lake to be analyzed for mercury.

Once collected, shellfish tissue samples will be processed and immediately shipped in a container with ice to Brooks Applied Laboratories located in Bothell, WA. Sampling, container/ preservation, and shipping SOP's described in Appendix B. Shellfish sampling locations are shown in Figure 1. Table 2 summarizes sample containers, volumes, and preservation requirements for each analysis. Remaining shellfish will be frozen for future analysis at location yet to be determined. For more information please see the accompanying QAPP.

Field Measurements

Field parameters will be recorded at each surface water sample locations for temperature, pH, dissolved oxygen, specific conductivity, turbidity, and total dissolved solids using a multiparameter instrument.

Field measurements will be taken prior to surface water sample collections for laboratory analysis. All field instruments will be calibrated (according to the manufacturer's instructions) at the beginning of each date of sampling and checked at the end of each day. Instrument calibration and sample measurement data will be recorded in the field logbook. The User's Manual for the multiparameter sonde, including setup, calibration, instrument specifications, accuracy, etc, can be found in Appendix [#] .

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Table 1 Summary of Field and Quality Control Samples to be Collected - Tissue Samples.

Matrix/ Media	Analytical Parameter [1]	No. of Sampling Locations [2]	Depth [3] (surface, mid, or deep)	No. of Field Duplicates[4]	EPA Level 2 QC Analyses [5] No. of Lab:		Total No. of Samples[7]
					Dup	MS	
ANALYSES:							
Fish [A] (Clear Lake)	Methyl Mercury	5	mid	1	1	1	8
Shellfish [B] (Clear Lake)	Methyl Mercury	1	Shoreline	1	1	1	8
FIELD Measurements:							
WQ monitoring instruments [8]	Turbidity, pH, DO, specific conductance	5	surface	N/A	--	--	N/A

NOTES:

[1] Mercury analyses for fish and/or shellfish tissue samples will be performed at Brooks Applied Laboratories following SOP's in Appendix A. Tissue samples will be shipped frozen to Brooks Applied Laboratories located in Bothell, WA immediately following collection/processing.

[2] Fish sampling sites include 2 to 4 sites near shorelines; and/or randomly selected CDFW Clear lake locations following. Sample collections are expected to take place quarterly (Feb, May, August, Nov) until sampling goals are met.

[3] Fish tissue samples will be collected using electrofishing techniques working with CDFW personnel at Clear Lake sampling sites. Clam and Shellfish tissue samples will be collected from the shorelines and creeks following SOP's in Appendix A. Any variations will be noted in the field logbook.

[4] Field duplicates will be collected at a frequency of 10% of the samples collected, or one per day, whichever is less frequent, and presented as "blind" samples for laboratory analysis.

[5] Brooks Applied Laboratories will perform Quality Control analyses including laboratory duplicates (Dup) at 20%, and Matrix Spikes (MS) at 10% of fish/shellfish tissue samples.

[7] Field measurement parameters include those parameters measured directly at each sampling site. Temperature, Specific Conductivity, DO, pH, TDS, Turbidity are measured using a Hydrolab multi-parameter instrument.

[A] Fish samples: Send in 'whole' or fillets. Place each piece in a 'labeled' ziplock bag, remove air, and freeze tissue samples. Can be shipped frozen overnight to Brooks Applied Laboratories - Bothell, WA.

[B] Shellfish samples: 'Shuck' clams/mussels until 5 grams of tissue is obtained for each species. Keep shells on crayfish until 5 grams of tissue is obtained. Place clams/mussel/crayfish in tissue samples in separate, labeled ziplock bag, remove air, and freeze tissue samples. Ship overnight to Brooks Applied Laboratories.

Table 2- Analytical Method, Containers, Preservation, and Holding Time Requirements - Fish/Shellfish Tissue

Analytical Parameter	Analytical Method Number	Containers (number, size/volume, type)	Preservation Requirements (chemical, temperature) [2]	Maximum Holding Times[1]
Analytical Parameter:				
Mercury, Methyl	EPA 1630	4 oz glass or plastic wide mouth jar or zip type plastic bags	Chilled to 2-4°C during shipment	1 year

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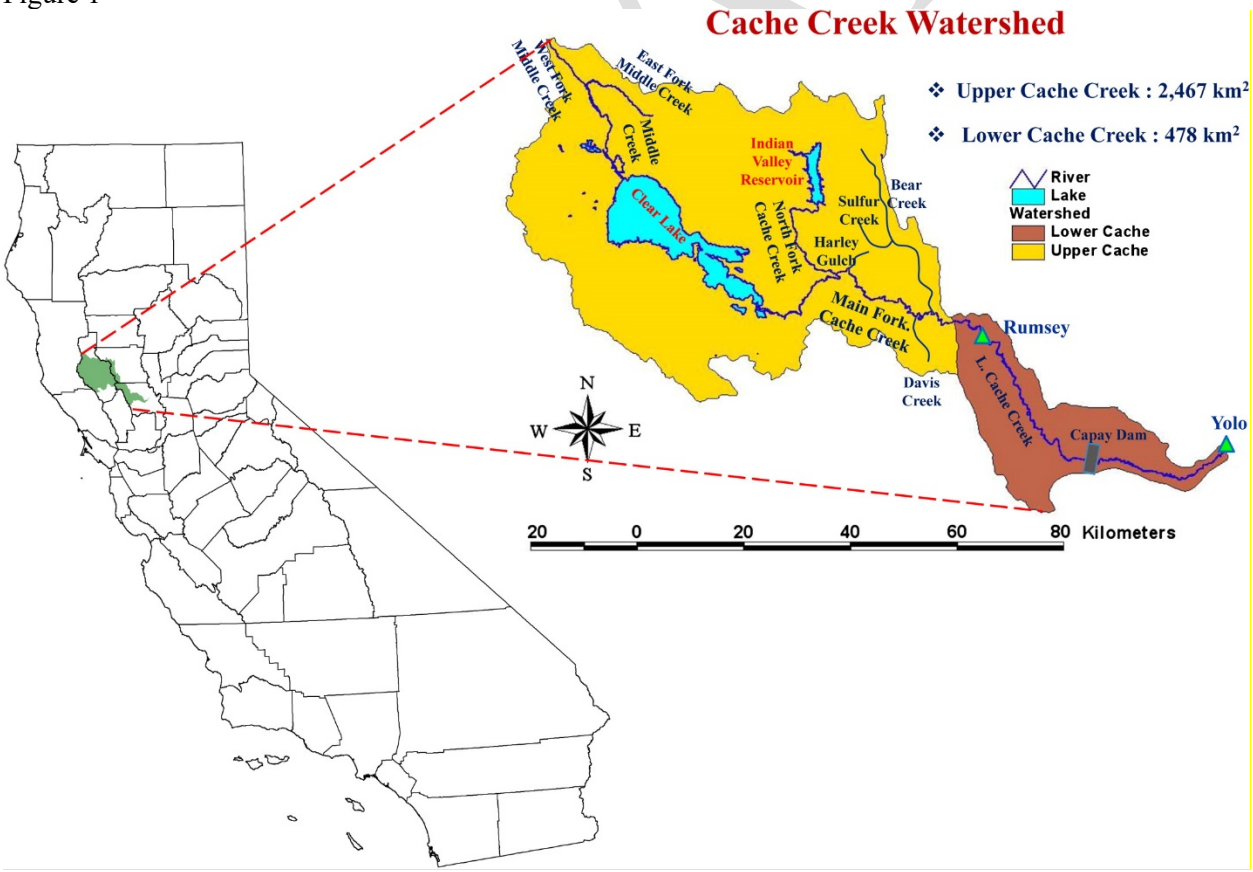
NOTES:
[1] Preservation/maximum holding times provided by Brooks Applied Laboratories (see Appendix B for SOP's).

Table 3 – Sample Locations

Site Identification	Site Description	Latitude/Longitude
Red bud Trail	Red Bud Trail and Hwy 20	39°59’16 N / 122°32’20 W
Baton Flat	Main Cache Creek	38°58’37 N / 122°31’10 W
North Fork/Main Cache Creek Confluence	Main Cache Creek and Hwy 20	38°58’52 N / 122°30’12 W
Cache Creek/Bear Creek Confluence	Main Cache Creek and Hwy 16	39°55’41 N / 122°19’59 W
Low Water Crossing	Main Cache Creek and Hwy 16	38°54’40 N / 122°18’29 W
Cache Creek Rumsey	Main Cache Creek at Rumsey Bridge	38°53’24 N / 122°14’16 W
Cache Creek Guinda	Main Cache Creek at County Park	38°49’37 N / 122°10’58 W
Cache Creek Nature Preserve	Main Cache Creek, Gordon Slough	38°41’14 N / 121°52’13 W
Clear Lake Oaks Arm	Clearlake Oaks	39°01’03 N / 122°40’22 W
Clear Lake Upper Arm	State Park	39°01’18 N / 122°48’42 W
Clear Lake Lower Arm	Redbud Park	38°56’53 N / 122°38’19 W
Blue Lakes	Blue Lakes, Scott Creek	39°10’18 N / 123°00’48 W
Lower Blue Lake	Lower Blue Lake, Scott Creek	39°09’32 N / 122°59’46 W
Indian Valley Reservoir	Park	39°04’58 N / 122°32’07 W
Wolf Creek	Wolf Creek Reservoir/Spring Valley	39°04’23 N / 122°35’32 W

Figure 1



Existing Data

As part of this Project on December 2017 Big Valley Rancheria submitted fish tissue samples previously collected with in Clear Lake from the Upper Arm, Oaks Arm and Lower Arm. These had been stored frozen since their collection date.

Results from 2015 sampling event, Submitted December 2017

	A	B	C	F	G	H	I	K	L	M	N	O	P	Q	T	U	W
1	SAMPLE NAME	SITE NAME	ARM	DATE COLLECTED (see color chart at bottom of spreadsheet)	SPECIES NAME	FISH LENGTH (CM)	FISH WEIGHT (G)	SAMPLE LENGTH (mm) *the variations in color in this column have to do with grouping species in weight categories	SAMPLE LENGTH (INCHES)	CONDITION (WHOLE, ORGANS REMOVED, TISSUE SAMPLE TAKEN, IN IN SHELLS, ETC.)*as of December 2017*	TROPHIC LEVEL	DATE ANALYZED 1	ANALYSIS 1	RESULT (MG/KG) *average result of 3 tissue samples per fish (highlighted yellow is above Clear Lake TMDL goals for MeHg goal	DATE ANALYZED 2	ANALYSIS 2	RESULT mg/kg (highlighted yellow is above Clear Lake TMDL goals for MeHg goals)
9	28	687	UPPER	3/25/2015	TULE PERCH	14.1	42		5.50	WHOLE, TISSUE SAMPLE TAKEN	3	4/9/2015	Hg (total)	0.09	Dec-17	MeHg	0.0568
10	29	641	UPPER	3/25/2015	TULE PERCH	14	36		5.50	WHOLE, TISSUE SAMPLE TAKEN	3	4/10/2015	Hg (total)	0.12	Dec-17	MeHg	0.0682
5	44	609	UPPER	4/22/2015	HITCH	23	121		8.00	WHOLE, TISSUE SAMPLE TAKEN	3	6/10/2015	Hg (total)	0.18	Dec-17	MeHg	0.147
4	54	215	OAK	5/26/2015	HITCH	18.3	60		7.00	WHOLE, TISSUE SAMPLE TAKEN	3	6/3/2015	Hg (total)	0.08	Dec-17	MeHg	0.114
6	56	250	OAK	5/26/2015	TULE PERCH	16.2	70		5.50	WHOLE, TISSUE SAMPLE TAKEN	3	6/3/2015	Hg (total)	0.07	Dec-17	MeHg	0.0981
4	64	CLV7	UPPER	4/29/2015	HITCH	18	56.7		6.75	WHOLE, TISSUE SAMPLE TAKEN	3	5/27/2015	Hg (total)	0.18	Dec-17	MeHg	0.248
4	74	778	UPPER	4/23/2015	BLACK CRAPPIE	31.5	481		4.75	CROSS SECTION, TISSUE SAMPLE TAKEN	4	5/20/2015	Hg (total)	0.55	Dec-17	METHYLME	0.356
5	75	M4	UPPER	4/20/2015	CRAYFISH	11.4	35	95.25	3.75	WHOLE, MISSING APPENDAGES, TISSUE SAMPLE TA	3	5/20/2015	Hg (total)	0.03	Dec-17	MeHg	0.0138
6	76	M4	UPPER	4/20/2015	CRAYFISH	10.2	28	88.9	3.50	WHOLE, MISSING APPENDAGES, TISSUE SAMPLE TA	3	5/20/2015	Hg (total)	0.02	Dec-17	MeHg	0.0138
4	85	762	UPPER	4/23/2015	TULE PERCH	15	55		5.25	WHOLE, TISSUE SAMPLE TAKEN	3	4/23/2015	Hg (total)	0.07	Dec-17	MeHg	0.0896
5	86	609	UPPER	4/22/2015	TULE PERCH	17	105		6.25	WHOLE, TISSUE SAMPLE TAKEN	3	4/23/2015	Hg (total)	0.12	Dec-17	MeHg	0.136
8	89	AC1	UPPER	3/25/2010	HITCH	38	759.77		16.00	WHOLE, TISSUE SAMPLE TAKEN	3	6/24/2015	Hg (total)	0.21	Dec-17	MeHg	0.353
14				fall													
16				spring													
17				summer													
18				winter													

In May 2018 Project Partner staff from Robinson Rancheria, CIEA and consultants Lawrence Ray and Javier Silva sampled in collaboration with State of California Department of Fish and Wildlife to complete data sets for Clear Lake.

Results from the May 2018 sampling event, Submitted July 2018:

SAMPLE NAME (IF APPL	SITE NAME	ARM	LATITUDE	LONGITUDE	DATE COLLECTED	SPECIES NAME	FISH LENGTH (CM	FISH WEIGHT (G)	FISH WEIGHT (LBS/OZ)	SAMPLE WEIGHT (GRAMS)	CONDITION (WHOLE, ORGANS REMOVED, TISSUE SAMPLE TAKEN, IN IN SHELLS, ETC.)	DATE ANALYZED	RESULT (mg/g)	ANALYSIS	NOTES
CIEA 001	Clearlake State Park	Upper	39°01'18 N	122°48'42 W	5/16/2018	Carp	60.96	3533.49	7.79	19	Whole, Tissue Sample Taken	7/9/2018	81.00	MeHg	#1 Carp
CIEA 002	Clearlake State Park	Upper	39°01'18 N	122°48'42 W	5/16/2018	Carp	50.8	2041.99	4.5	16	Whole, Tissue Sample Taken	7/9/2018	41.10	MeHg	#2 Carp
CIEA 003	Clearlake State Park	Upper	39°01'18 N	122°48'42 W	5/16/2018	Carp	73.66	5338.78	11.77	19	Whole, Tissue Sample Taken	7/9/2018	177.00	MeHg	#3 Carp
CIEA 004	Clearlake State Park	Upper	39°01'18 N	122°48'42 W	5/16/2018	Carp	38.1	879.97	1.94		Whole				#4 Carp
CIEA 005	Clearlake State Park	Upper	39°01'18 N	122°48'42 W	5/16/2018	Carp	40.64	1206.56	2.66		Whole				#5 Carp
CIEA 006	Clearlake State Park	Upper	39°01'18 N	122°48'42 W	5/16/2018	Crappie	30.48	594.21	1.31	11	Whole, Tissue Sample Taken	7/9/2018	169.00	MeHg	#1 Crappie
CIEA 007	Clearlake State Park	Upper	39°01'18 N	122°48'42 W	5/16/2018	Crappie	29.21	503.49	1.11	12	Whole, Tissue Sample Taken	7/9/2018	148.00	MeHg	#2 Crappie
CIEA 008	Clearlake State Park	Upper	39°01'18 N	122°48'42 W	5/16/2018	Crappie	30.48	439.98	0.97	22	Whole, Tissue Sample Taken	7/9/2018	141.00	MeHg	#3 Crappie
CIEA 009	Clearlake State Park	Upper	39°01'18 N	122°48'42 W	5/16/2018	Bluegill	20.32	213.19	0.47	12	Whole, Tissue Sample Taken	7/9/2018	87.10	MeHg	#1 Bluegill
CIEA 010	Clearlake State Park	Upper	39°01'18 N	122°48'42 W	5/16/2018	Bluegill	17.78	131.54	0.29	18	Whole, Tissue Sample Taken	7/9/2018	50.50	MeHg	#2 Bluegill
CIEA 011	Clearlake State Park	Upper	39°01'18 N	122°48'42 W	5/16/2018	Bluegill	17.78	99.79	0.22	9	Whole, Tissue Sample Taken	7/9/2018	106.00	MeHg	#3 Bluegill
CIEA 012	Clearlake State Park	Upper	39°01'18 N	122°48'42 W	5/16/2018	Blackfish	41.91	950.00	2.09	28	Whole, Tissue Sample Taken for HABs & MeHg	7/9/2018	96.30	MeHg	#1 Blackfish, sex unknown
CIEA 013	Clearlake State Park	Upper	39°01'18 N	122°48'42 W	5/16/2018	Blackfish	40.64	700.00	1.54	21	Whole, Tissue Sample Taken for HABs & MeHg	7/9/2018	154.00	MeHg	#2 Blackfish, male
CIEA 014	Clearlake State Park	Upper	39°01'18 N	122°48'42 W	5/16/2018	Blackfish	40.64	750.00	1.65	14	Whole, Tissue Sample Taken for HABs & MeHg	7/9/2018	79.70	MeHg	#3 Blackfish, male
CIEA 015	Clearlake State Park	Upper	39°01'18 N	122°48'42 W	5/16/2018	Bullhead Catfish	36.83	2650.00	5.84	15	Whole, Tissue Sample Taken for HABs & MeHg	7/9/2018	50.50	MeHg	#1 Catfish, sex unknown
CIEA 016	Clearlake Oaks Launch	Oak	39°01'03 N	122°40'22 W	5/22/2018	Channel Catfish	69.85	5429.50	11.97	90	Whole, Tissue Sample Taken for MeHg	7/9/2018	202.00	MeHg	Sex UNK
CIEA 017	Redbud	Lower	38°56'53 N	122°38'19 W	5/22/2018	Crappie	27.94	830.07	1.83	30	Whole, Tissue Sample Taken for MeHg	7/9/2018	184.00	MeHg	Sex UNK
CIEA 018	Redbud	Lower	38°56'53 N	122°38'19 W	5/22/2018	Crappie	31.12	576.06	1.27	25	Whole, Tissue Sample Taken for MeHg	7/9/2018	103.00	MeHg	Sex UNK
CIEA 019	Redbud	Lower	38°56'53 N	122°38'19 W	5/22/2018	Hitch	27.31	231.33	0.51	20	Whole, Tissue Sample Taken for MeHg	7/9/2018	60.80	MeHg	Sex UNK
CIEA 020	Redbud	Lower	38°56'53 N	122°38'19 W	5/22/2018	Bullhead Catfish	33.66	544.31	1.2	20	Whole, Tissue Sample Taken for MeHg	7/9/2018	65.50	MeHg	Sex UNK

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Assessing Methyl Mercury-level in Fishes based on Traditional Subsistence Practices in the Cache Creek Watershed, Sacramento River Basin, California
Quality Assurance Project Plan (QAPP)

Prepared by

California Indian Environmental Alliance
P.O. Box 218
Berkeley, CA 94702

October 2018

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GROUP A: PROJECT MANAGEMENT

A1. Approval Sheet

Executive Director/Project Director **California Indian Environmental Alliance**	Date
Environmental Director / Chairperson **Big Valley Rancheria of Pomo Indians**	Date
Environmental Director / Chairperson **Elem Indian Colony**	Date
Environmental Director / Chairperson **Habematolel Pomo of Upper Lake**	Date
Environmental Director / Chairperson **Robinson Rancheria of Pomo Indians**	Date
Environmental Director / Chairperson **Scotts Valley Band of Pomo Indians**	Date
Project Officer USEPA Region IX	Date
QA Manager USEPA Region IX	Date

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A2. Distribution List

The following is a list of organizations and persons who will receive copies of this approved QAPP and any subsequent revisions:

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A4. Project/Task Organization

Tribes from the Cache Creek Watershed and the California Indian Environmental Alliance (CIEA) will oversee the project described in the Sampling Analysis Plan (SAP).

The CIEA project manager is responsible for 1) coordinating with Tribes in collecting fishes and aquatic invertebrate samples, and 2) coordinating field crew in collecting, handling, processing, and shipment of samples.

Tribal Project partners and CIEA will be responsible for all aspects of field work.

Tribal partners and CIEA staff will be responsible for all aspects of sample preparation, processing and shipment.

Brooks Applied Lab (BAL) laboratory in Bothell, Washington will complete analyses of tissue and duplicate samples, reporting results and associated laboratory QA/QC to the project manager.

Tribal partners and CIEA staff will be responsible for interpreting data, sharing results with Tribes and Tribal community members in the region, and developing recommendations for resulting projects to reduce toxins in the watershed.

A5. Background

Cache Creek is an eleven hundred square mile (2849 square kilometer) watershed in the California coastal range (Figure 1). The basin is divided into three subbasins: the north and main forks of the Cache and Bear creeks. All three water bodies flow year-round and are fed by creeks that flow year-round and seasonally. The flow from the north and main forks are regulated by dams at Indian Valley reservoir and Clear Lake, respectively. The reservoirs trap winter runoff for release in summer for agriculture purposes such as irrigation. Bear Creek remains undamed. Almost all the summer flow is diverted out of Cache Creek at Capay Dam. Controlled summer flows likely mobilize fine grain material from the creek bed and transport it to Capay dam where the material is diverted out of the channel and deposited on local farm land. During non-irrigation season (September to March) the inflatable dam at Capay is removed and higher winter storm flows can scour contaminated sediment from the creek bed and transport it downstream to the Cache Creek Settling Basin and the Yolo Bypass. The Cache Creek watershed

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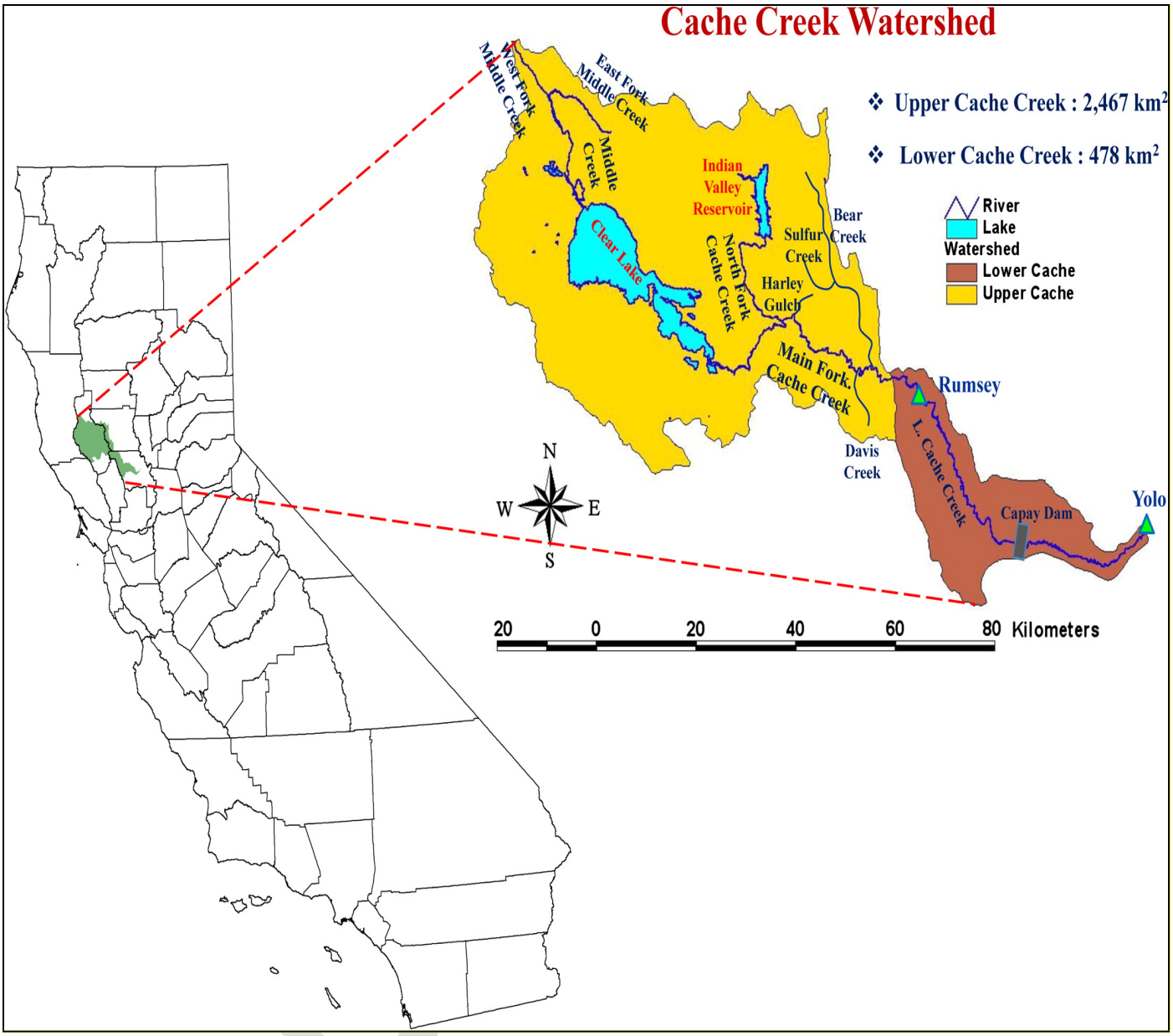

Figure 1. Map showing location of Cache Creek Watershed, Sacramento River Basin in relationship to the State of California.

includes portions of three historic mercury mining districts. Sulphur Bank Mine in the Clear Lake mercury mining district is the largest mercury mine in the watershed and is a USEPA superfund site. Sulphur Bank Mine operated from 1875 to 1957 and is thought to have produced 4.7-million kg of mercury (Suchanek et al., 1997). About 0.1-million kg of mercury mine waste is now in sediment in Clear Lake (Suchanek et al., 1995) and may be available for transport down Cache Creek. The Sulfur Creek mining district consists of the Abbott-Turkey Run, Wide Awake, Manzanita, Empire, Central, Elgin, Clyde and Rathburn-Petray mercury mines. The Abbott-Turkey Run mine is in the Harley Gulch drainage while the Rathburn-Petray complex discharges to Bear Creek. The other mines drain to Sulfur Creek, which is tributary to Bear

Creek. The Abbott-Turkey Run complex was the largest mining operation in the Sulfur Creek district and is estimated to have produced about 1.8-million kg of mercury (Churchill and Clinkenbeard, 2003). Production for the entire Sulfur Creek district is about 2-million kg. Finally, the Knoxville mercury 5 mining district includes the Reed, Harrison and Manhattan mercury mines in the Davis Creek watershed. These mines operated from 1860 to 1978 and produced between 2.4 and 2.8-million kg of mercury (Lehrman, 1985). In 1984, the Homestake Mining Company purchased the site and impounded Davis Creek to create the Davis Creek reservoir to provide water for gold production. The Company also reclaimed mine waste and plugged the Reed mine exit. These actions should have significantly reduced the off-site movement of mercury. Nonetheless, annual monitoring of reservoir sediment demonstrates that Davis Creek Reservoir trapped an average of 72 kg of mercury per year for the 9year period between 1993 and 2002 from the three upstream mines (Slotton et al., 2002). Off-site movement of mercury prior to remediation and construction of the reservoir by Homestake may have been underestimated.

Sources of mercury entering the watershed include waste rock, ore and tailings from historic mercury mines, geothermal springs, erosion of mineralized and non-mineralized (background) soil, and atmospheric deposition. There are six inactive mines in the lower Sulphur Creek watershed and at least two inactive mines in the upper watershed that contribute mercury to the Sulphur Creek. The streambed and banks are contaminated with mine tailings and waste rock, which contribute mercury to the creek as they erode. Multiple geothermal springs discharge to the creek, including some within the creek bed. Mercury is transformed to methylmercury in sediment by sulfate-reducing bacteria. Sources of methylmercury include in-channel production, direct geothermal discharge, and drainage from the interaction of geothermal water with mine wastes.

In December 2000, UC Davis researchers collected approximately 200 fish at diverse locations in the Cache Creek watershed as part of the CALFED mercury grant (Slotton et al., 2004a). One fish was caught in Sulphur Creek, about 100 yards upstream from the confluence with Bear Creek. The fish was a California roach (*Lavinia symmetricus*), with a mercury concentration of 0.34 mg/kg, wet weight. Dr. Peter Moyle, retired UC Davis professor and recognized expert on California fishes, surmised that rain runoff in winter may enable a roach to enter Sulphur temporarily from Bear Creek. Water chemistry, particularly sulfate, and high summer temperatures, however, prevent fish from living in Sulphur Creek (Moyle, 2005). In a survey conducted by electroshocking in April 2004, no fish were found in lower Sulphur Creek (DFG, 2004).
(https://www.waterboards.ca.gov/centralvalley/water_issues/tmdl/central_valley_projects/sulphur_creek_hg/sulphur_creek_tmdl.pdf)

Bioaccumulation of methylmercury into the aquatic food chain can yield concentrations in fish that are more than a million times greater than concentrations in water. In the winter 2017, Big Valley Rancheria of Pomo Indians, Robinson Rancheria of Pomo Indians the California Indian Environmental Alliance (CIEA), working in collaboration with State of California Department of Fish and Wildlife collected fishes from Clear Lake in and around the reservation to test mercury levels in fish that were not part of the State of California data collection.

The major sources of mercury accumulation in humans' results from methylmercury exposure from eating contaminated fish. Methylmercury is absorbed into the body through the digestive system. Its half-life in the human body ranges from 20 to 70 days, and it takes approximately one year for mercury to leave the body. Methylmercury is a neurotoxin which easily crosses the blood brain barrier and the placenta, and is found in breast milk. Exposure to methylmercury while in uetero may cause permanent learning disabilities in children. It accumulates in all bodily tissues, but especially the brain, kidneys, heart, and other muscle tissue, interfering with normal cell function. "In the developing brain, methylmercury is toxic to the cerebral and cerebellar cortex, causing focal necrosis of neurons and destruction of glial cells" (Goldman and Shannon 2001). Fetal blood mercury levels often exceed those of the mother by more than double and the damages sustained from the effects of Methyl Mercury (MeHg) exposure in utero are permanent. (Budtz-Jørgensen, Grandjean, Weihe, and Keiding 2004). In 2004, an EPA study estimated that 630,000 babies born each year are at risk of developing learning disabilities and other forms of neurological damage due to mercury contamination (Mahaffey 2004). "Prenatal exposure to MeHg has been shown to alter blood-pressure regulation and heart-rate variability in children. Those adverse effects were observed at very low cord-blood Hg concentrations (less than 10 µg/L)" that have not been associated with other developmental effects (Sørensen, Murata, Budtz-Jørgensen, Weihe, Grandjean 1999). Recent research by He et al., 2013 showed that mercury exposure in young adulthood (age 20-32) were positively associated with the incidence of diabetes later in life (age 38- 50). Not only is methylmercury positively associated with neurological learning disabilities, cardiovascular dysfunction and diabetes, it is also linked to other human health disorders including immune system suppression. Because of the health effects of methylmercury in humans including the permanent effects on cognition and neurological developments this toxin is a threat to the cultural continuance of California Indian Tribes because of the need to pass on language, physical activities and oral histories. Tribal families are at an increased risk to methylmercury exposure if their traditional waters are contaminated by mercury because fish are a nutritional staple wherein Tribes are culturally connected to specific waterbodies and the fish within them. Tribes cannot move to another location to fulfill their responsibility to their traditional territories or to practice their cultural continuance. In California the number one source of mercury contamination is left over from historical gold mining operation during the 20 years of the California Gold Rush. Additional sources of mercury include fuel combustion, fires, domestic and international sources of atmospheric deposition from industries such as coal fired power plants, and resuspension of mercury from dredging, earthquakes, erosion.

In general, reservoirs, regulated streams and rivers, wetlands and floodplains are particularly prone to methylation of mercury because of increased microbial activity that results from water level fluctuations.

A6. Problem

Mercury is one of the most widespread contaminants affecting the United States' aquatic ecosystems. Inorganic mercury can be converted to methylmercury through metabolic processes. Methylmercury is the most toxic form of mercury and organisms require a long time to eliminate it from their system (USGS, 1995). The dominant exposure to mercury for both humans, fishes, and wildlife is through the consumption of fish. There is no method of cooking or cleaning fish that will reduce or eliminate the amount of mercury in a meal of contaminated fish. Mercury is stored in the fish tissue and cannot be removed by removing the skin, head fat

or guts although those areas store Polychlorinated biphenyls which are also present in many water bodies in California so removing those parts before cooking are recommended. Fish are high in omega 3 fatty acids of the variety that is the best for human development and maintenance. We therefore wish to continue to eat fish but need to know how to avoid those high in toxins, such as mercury. The best way to avoid mercury contaminated fish is to choose those that are smaller and lower on the trophic level (Oken, 2005). The exception are wild-caught anadromous salmon that have a naturally low level of mercury because of their lifecycle.

Surface waters within the Cache Creek watershed support traditional and cultural resources critical to Tribes within the basin including fishes and tules. It addition to the methylmercury accumulating in fish, Tule takes up mercury and is in need of sampling in Clear Lake. The Tribes are concerned about the effects of legacy mining within this watershed, and any current or potential future impairments need to be identified and addressed.

Clear Lake was first added to the Clean Water Act Section 303(d) List of Impaired Waterbodies in 1986 for and nutrients, and then for high levels of mercury in fish in 1988 (CVRWQCB, 2006). Mercury and nutrients have impaired several of the eight beneficial uses designated for Clear Lake, specifically Contact Recreation (REC-1), Spawning, Reproduction, and/or Early Development (SPWN), Wildlife Habitat (WILD), and Commercial fishing/sport fishing (COMM). Details on applicable standards are found in the State's Water Quality Objectives (CVWQCB, 2016).

This decrease in environmental quality has also had a negative effect on Clear Lake as a cultural resource to the Tribes. For example, Lake County Tribes observed and noted in recent petitions to the U.S. Fish and Wildlife Services (CBD, 2012), a decrease in the population of Clear Lake Hitch, a native fish species of concern, correlated to reduced numbers of springtime fish migrations in Clear Lake spawning tributaries. This has a direct effect on an important part of the cultural life of Tribes and is a direct indicator of the need for improved resource management in the Clear Lake Basin.

Problem background discussion is provided in the following three sections; Sulphur Bank Mercury Mine (SBMM), Nutrients/Stormwater Runoff, and the Clear Lake Hitch.

The following paragraphs are taken from Central Valley Water Quality Control Board's Total Maximum Daily Load Report for Mercury, Sections 1.5.2.1-1.5.2.3:

1.5.2.1 Sulphur Bank Mercury Mine

The Clear Lake watershed lies within a region naturally enriched in mercury. The Sulphur Bank Mercury Mine (SBMM), on the shore of Oaks Arm, was a highly productive source of mercury between 1880 and 1957. Several smaller mines were located in the Clear Lake watershed, all of which are now inactive. Levels of mercury in Clear Lake sediments rose sharply after around 1927, when open pit operations began.

The Regional Water Board has a goal to reduce methylmercury concentrations in Clear Lake fish by reducing total mercury loads from various sources within the Clear Lake watershed. Sources of mercury within the Clear Lake watershed include past and present discharges from the Sulfur Bank Mercury Mine and geothermal sources, natural an anthropogenic erosion of soils with naturally occurring mercury, and atmospheric deposition (CVRWQCB, 2016).

The Clear Lake mercury 303(d) listing is based on the Health Advisories (fish consumption) issued by the California Department of Health Services for the human consumption of fish tissue containing elevated levels of mercury and the elevated levels of mercury in fish tissues as it impacts wildlife. Average mercury concentrations for largemouth bass and channel catfish (trophic level 4) collected from Clear Lake was 0.50 mg/kg, which is greater than 0.35 mg/kg, the criterion used by the CDHS to issue a fish consumption advisory. The Clear Lake Hitch have been included in only limited testing which found an average concentration of 0.15 mg/kg mercury in a sample of 41 fishes (CDHS, 1987). Water Quality Objectives established by the Central Valley Regional Water Quality Control Board (CVRWQCB) as amendments to the Basin revision plan are even more protective of human health and wildlife. These objectives have established mercury thresholds in Clear Lake fish tissue of 0.09 and 0.19 mg/kg as methylmercury in trophic level 3 (hitch, bluegill) and level 4 (basses, catfishes) fish respectively (CVRWQCB, 2016).

Levels of methylmercury in fish are assumed to be directly proportional to the concentration of mercury in surficial sediment. To meet the recommended water quality objectives, existing fish tissue concentrations would have to be reduced by 60%. This will be accomplished by reducing the concentration of total mercury in the surficial layer of lakebed sediment by 70% of existing levels and by further investigation and reduction of other mercury sources believed to have a high potential for mercury methylation (CVRWQCB, 2016). The estimated load and load allocation from tributary inputs and surface water runoff are 18 kg/year and 14.4 kg/year, respectively. The implementation plan to achieve the sediment compliance goals is to reduce the existing inputs of mercury from tributaries and surface water runoff by 20%.

1.5.2.2 Stormwater Runoff/Nutrient Loading

CVRWQCB's Basin Plan outlines Water Quality Objectives for Clear Lake Nutrients. Nuisance algae blooms impair beneficial uses in Clear Lake, which is a violation of the narrative basin plan objective that states: “Water shall not contain biostimulatory substances which promote aquatic growths in concentrations that cause nuisance or adversely affect beneficial uses” (CVRWQCB, 2012). Tourism and sport fishing are important sectors of the local economy which historically have been negatively impacted due to water quality impairment. This impairment has been attributed to phosphorus as the most likely cause, triggering nuisance algae blooms. The CVRWQCB has determined that the Total Maximum Daily Load (TMDL) for nutrients Clear Lake developed in 2006 continues to be appropriate, after a Technical Report by Tetra Tech Inc. followed by a California Environmental Quality Act review (CVRWQCB, 2012). Most scientific and technical reports conclude phosphorus inputs from watershed erosion contributes to nuisance or harmful algae blooms. The goal of the TMDL plan is to continue an overall 60% reduction in total phosphorus loading from the watershed. This will result in a maximum level of 73 µg/L chlorophyll-a concentration, an indicator of algae concentration, in Clear Lake.

Stormwater runoff from the Elem Indian Colony can include both typical components such as sediment and nutrients with the added potential of mine waste constituents (toxic metals). In 2006, U.S. EPA conducted an emergency response action at the site to remove soil known to contain dangerous levels of mercury and other site waste constituents. The response action included replacing contaminated soil used as road fill and several homes found to be built on contaminated fill material. This response included rebuilding roads and drainage throughout the

Colony. This change in drainage along roads in the community served to emphasize the need for improved storm water runoff sampling in the area.

Nutrient loading in Clear Lake is a priority for the County and Tribes. Algae blooms are an annual event inhibiting recognized beneficial uses with a profound cultural and economic impact. Although the Tribe is a stakeholder and not a responsible party in the Central Valley Water Board's TMDL process, the Elem Environmental Department will supplement the State's program with data generated by the Clear Lake Tribes and USEPA Region 9 to assess quality of surface water originating on the SBMM and passing over the Elem Indian Colony and surface water originating on the Colony. This data can then be used to determine the need for improved storm water runoff/non-point source controls.

1.5.2.3 Clear Lake Hitch (*Lavinia exilicauda chi*)

The Tribe's surface Water Quality Monitoring (WQM) program seeks to monitor water quality in support of development of the Clear Lake Hitch Adaptive Management Plan (CLHAMP). The CLHAMP is a multi-Tribe project that includes participation by the Elem Indian Colony, Robinson Rancheria, Big Valley Rancheria and the Upper Lake Habematolel Pomo Tribes, as well as Lake County and the Chi Council. Within that plan, data is utilized from a variety of programs with results used to support actions planned and evaluated within the CLHAMP. The Hitch is an important traditional food source for all Clear Lake Pomo Tribes, and a natural/cultural heritage of Clear Lake.

In 2014, the California Fish and Game Commission listed the Clear Lake Hitch as "threatened" under the Endangered Species Act (CBD 2015). Since 2013, fewer than a thousand adult fish regularly spawn in two primary streams, Kelsey and Adobe creeks south of Clear Lake, though other streams are used when sufficient 'attraction' flows and upstream spawning grounds can be accessed by the fish.

The development of Clear Lake Hitch habitat restoration projects included multiple water quality issues including issues with mercury, nutrients (agricultural runoff, septic tanks, etc), threats from stream bank erosion, introduced species of fishes, as well as other parameters associated with loss or degradation of habitat. Due to the multiple issues to be addressed in the CLHAMP, the WQM program includes data available for use by the Clear Lake TMDL, Tribal, and other programs.

A7. Objectives

Our final goal of the *Safer Subsistence Fishing Project,* is to provide Tribal members with confirmation of safer locations for fishing at or near subsistence levels.

The objective of this study is to fill data gaps and evaluate trends in mercury concentrations in fish tissue using Tribal historical sampling data as compared with samples taken during this study. The tissue concentration data collected from this study will be compared to human-health fish consumption advisories and wildlife-protection levels to better inform tribal members of potential mercury exposure risks and to guide our ongoing investigations.

A8. Relevance and benefits

Results of this study will provide important baseline information on the occurrence and trends of mercury concentrations in fish within the Cache Creek Watershed. The data will assist Tribal members and their families in determining safer locations for fishing, and priority remediation projects to address mercury. It may additionally provide data for use advising the Central Valley Regional Water Quality Control Board's Basin Plan amendment, TMDLs, regional basin plan amendments and can provide content to inform the Westside Integrated Regional Water Management Plan.

A9. Approach

Tribal relevant species of fish will be collected from five reaches of the Cache Creek Watershed, including creeks and tributaries as identified by the accompanying Fish Consumption Survey. Collections will be made in 2017 and early in 2018 using standard electrofishing, gill nets or other fish collection methods at locations listed in Table 1. We will utilize fish already gathered by our project partner Big Valley Rancheria in their recent sampling efforts. We will target fish of each species for which there are missing data sets. Each fish will be measured for total length (mm) and weight (g). Field sample preparation will follow guidelines in USEPA (2000). Fish will be placed on ice and frozen on-site and later shipped to the laboratory in Washington state for analysis. Samples will be labeled and placed in self-sealing plastic bags and placed on dry ice for later shipment to the lab. Individual samples, consisting of a one inch skinless fillet will be taken from each fish just below the pectoral fin (Goldstein 1996). Chain of custody forms will accompany the samples during processing and shipment. The remainder of each fish carcass will be retained frozen as backup samples in case further laboratory analysis is required. Samples will be analyzed for methyl mercury to document the magnitude and variability of concentrations within selected size classes of fish collected. Mercury will be analyzed to identify if the Big Valley Rancheria's mercury analyzer requires calibration, however methylmercury will primarily be analyzed in fish tissue.

Fish-tissue samples will be analyzed for methyl mercury by the Brooks Applied Laboratory in Bothell, Washington using standard laboratory and quality control procedures (USGS, 2007). USEPA method 1630 will be used for determination of methylmercury in tissue samples. Replicate samples of tissue will also be taken to evaluate variability.

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Table 1.Sampling sites

Site Identification	Site Description	Latitude/Longitude
Red Bud Trail	Red Bud Trail and Hwy 20	39°59'16 N / 122°32'20 W
Baton Flat	Main Cache Creek	38°58'37 N / 122°31'10 W
North Fork/Cache Creek Confl.	Main Cache Creek and Hwy 20	38°58'52 N / 122°30'12 W
Cache Creek/Bear Creek Confl.	Main Cache Creek and Hwy 16	39°55'41 N / 122°19'59 W
Low Water Crossing	Main Cache Creek and Hwy 16	38°54'40 N / 122°18'29 W
Cache Creek at Rumsey	Main Cache Creek at Rumsey Bridge	38°53'24 N / 122°14'16 W
Cache Creek at Guinda	Main Cache Creek at County Park	38°49'37 N / 122°10'58 W
Cache Creek Nature Preserve	Main Cache Creek, Gordon Slough	38°41'14 N / 121°52'13 W
Clear Lake Oaks Arm	Clearlake Oaks	39°01'03 N / 122°40'22 W
Clear Lake Upper Arm	State Park	39°01'18 N / 122°48'42 W
Clear Lake Lower Arm	Redbud Park	38°56'53 N / 122°38'19 W
Blue Lakes	Blue Lakes, Scott Creek	39°10'18 N / 123°00'48 W
Lower Blue Lake	Lower Blue Lake, Scott Creek	39°09'32 N / 122°59'46 W
Indian Valley Reservoir	Park	39°04'58 N / 122°32'07 W
Wolf Creek	Wolf Creek Reservoir/Spring Valley	39°04'23 N / 122°35'32 W

A10. Products

The laboratory data will be stored electronically in a database and released to the Tribes following review. Once the data are reviewed and approved by the project partner Tribes it will be available to the public upon request and it may be used for CDPH-EHIB to evaluate whether new or revised fish consumption advisories may be needed.

A11. Quality objectives and criteria

Data Quality Objectives for this study are designed to be comparable to those from the State of California Fish and Wildlife Quality Assurance Program Plan. Collection and processing of fish tissue will follow USGS quality assurance and quality control procedures (Scudder et al., 2008, http://pubs.usgs.gov/of/2008/1208/) (Appendix A).

Data quality indicators (accuracy, precision, completeness, representativeness, and comparability, and method detection limits) for the methods to be used are outlined in Table 2. These DQIs have been provided to the Brooks Applied Laboratory. The Laboratory has acknowledged it is willing of meeting these criteria. USEPA laboratory method 7473 will be used for tissue analysis http://www.epa.gov/sam/method33.htm . USGS mercury laboratory quality assurance procedures will be followed (Appendix B, http://wi.water.usgs.gov/mercury-lab/quality-assurance-manual.html).

Accuracy is the degree of agreement of a measurement with a known or true value. To determine accuracy, a laboratory or field value is compared to a known or true concentration.

Accuracy is determined by such QC indicators as: matrix spikes, surrogate spikes, laboratory control samples (blind spikes) and performance samples.

Precision

To assess precision associated with all steps of the project (from sample collection through analysis) field duplicates will be collected and analyzed. Field duplicates will be collected at a frequency of 10% (1 fish/10 fish sampled). To assess laboratory precision alone, laboratory duplicates will be prepared and analyzed at a 5% frequency. Brooks Applied Laboratory will be responsible for the precision of the sample analyses.

Completeness is expressed as percent of valid usable data obtained compared to the amount that was expected. However, due to unforeseen circumstances some results may be lost due to equipment failure, environmental conditions or logistical constraints. The minimum percent of completed analyses defined in this section depends on how much information is needed for decision making. Generally, completeness goals rise, the fewer the number of samples taken per event or the more critical the data are for decision making. This study will have a completeness goal between 75-95%.

Since laboratory analysis requires only a fraction of the tissue collected, the remaining fish carcass will be kept in a locked freezer at the Tribal office until the data is received from the laboratory and validated. The additional preserved tissue can also be used to validate the results as needed, or may allow us to analyze for emerging contaminants to establish a historical baseline.

Representativeness is the expression of the degree to which data accurately and precisely represent a characteristic of the population. It relates both to the area of interest and to the method of taking the individual sample. Representativeness is a qualitative parameter concerned with the proper design of the sampling program and is satisfied by the proper selection of sample location and number of samples collected. Each water body will be equally represented by requiring up to 15 catchable size (>12 inch) fish be captured at a variety of locations within each location.

Comparability is a measure of the confidence comparing two data sets. Species and age (size) of fish are known to greatly affect mercury bioaccumulation. Therefore, the target species and size class will be restricted to reduce this variability.

Detection Limit is usually expressed as a method detection limits (MDL) for analytes of interest. A critical element to be addressed is how these limits relate to any regulatory or action levels that may apply. A regulatory agency sets criteria for an analyte based on ecological and/or environmental concerns. A rule of thumb methodology for determining appropriate program detection limits is to use a factor of 3 to 5 times lower than the criteria or standard or some action level for a compound or element of concern. The detection limit for total mercury in fish tissue is set by USEPA method 1630. Table 2 provides a reporting limit that is based on the MDL using a given sample size of 0.2 g

Table 2. Data Quality Objectives and quality assurance criteria

Sample Media Parameter	USEPA Method	Reporting Limit (Based on MDL)	Accuracy	Precision	Completeness RPD
Fish Tissue MeHg	1630	0.1µg/kg(wet)*	80%-120%	+/-20%	+/-25%
		Equipment Blank	Field Blank	Field Duplicate	Matrix Spike
		1/sampling event	1/10	1/10	1/10

*Assuming a 0.2g sample size

A12. Special training and certification

Personnel operating the electrofishing equipment (vessel and/or backpack have been certified in electrofishing protocols and fish processing protocols or will be accompanied by a certified person (Appendix A, http://pubs.usgs.gov/of/2008/1208/).

A13. Documentation and Records Sample Receipt

All field sampling, analytical request, and cooler inventory forms are found in the tissue sampling protocols (Appendix C, http://pubs.usgs.gov/of/2008/1208/).

Separate field data sheets will be maintained for each sampling event. Samples must be accompanied by a form with the following information: samplers names, sampling location, sampling time, sampling equipment, pertinent field comments, and species information.

Upon receipt, the laboratory verifies the information contained on the Request for Analysis form and checks to make certain that samples meet appropriate handling and preservation requirements by:

· Matching actual sample container numbers with those listed on *Request for Analysis* form;
· Checking that appropriate containers were used for the analytes requested;
· Verifying condition of samples as received.

Samples improperly documented, preserved, or exceeding holding time are either rejected by the laboratory for analysis, or analyzed and the result reported as an "*estimate*." The sampler is notified and re-sampling is recommended.

A13.1. Chain-of-custody or sample tracking

A chain-of-custody form will accompany the fish tissue samples from the field to the processing laboratory to the analytical laboratory. A copy of this form is given in Appendix D.

Following each sampling event, whole fish carcasses will be held in a freezer until all samples are collected. A portion of the filet is removed from each fish carcass, weighed, labeled and packaged for shipment. The remaining fish carcass is kept in a locked freezer at a Tribal partners' environmental office, or an office of the California Indian Environmental Alliance until validated data is received from the laboratory. Copies of the chain-of-custody forms will stay at the CIEA office and the original will accompany the samples to the analytical laboratory.

At the laboratory, samples are logged in and identified as either legal chain-of-custody or sample tracking samples. The laboratory will follow the sample handling procedure appropriate to the sample, e.g., chain-of-custody procedures. Samples will remain in the control of the sampling crew until delivery to the laboratory.

A13.2. Field notebook

All field notes will be taken on the field data sheets.

A13.3. Corrections to documentation

All original field data will be recorded on water proof field forms. None of these documents will be destroyed or thrown away, even if they are illegible or contain inaccuracies that require a replacement document. If an error is made on a document assigned to one individual, that individual will make corrections by crossing a single line through the error, entering the correct information, and initialing and dating the correction.

A14. Budget

Field work, laboratory analysis, and data compilation for this proposed project will be conducted in beginning in the Fiscal Year (FY) 2017 and 2020.

Activity	Cost
Personnel	$31,680
Travel	$1,065
Printing	$550
Laboratory analyses	$4,032
Phone	$380
Sampling consultants	$1,000
Supplies	$538
Accounting	$4,000
Total	**$43,250**

GROUP B: DATA GENERATION AND ACQUISITION

The elements in this group address all aspects of project design and implementation.

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Implementation of these elements ensure that appropriate methods for sampling, measurement and analysis, data collection or generation, data handling, and QC activities are employed and are properly documented.

B1. Sampling process design

This element describes the project's data collection or research experimental design. A summary of the design is given in the introduction of this report.

USEPA/USGS sampling methods will be used to collect and process fish tissue from the Cache Creek Watershed. The map and location of these reservoirs is given in the introduction.

Sampling protocols can be found at (Appendix A, http://pubs.usgs.gov/of/2008/1208/) and will be briefly described below.

The Office Environmental Health Hazard Assessment methyl mercury threshold will be used to evaluate consumption risk: No consumption (>0.44 ppm); 1 serving per week (0.15-0.43 ppm); 2 servings per week (0.07-0.14 ppm); and Depending on safe consumption rate (<0.07 ppm).

B2. Fish capture for tissue collection

Project personnel will coordinate with the Tribal staff for the best locations to collect catchable size fish in the watershed nearest the locations listed in Table 1. A boat-mounted electrofisher, backpack shocker or gill net will be used to collect fish near the shoreline. This is the preferred method of capture, as it involves minimal handling of fish. It is not effective in deep water, or for larger fish. Fish will be kept in a live well on the boat until they can be weighed and measured. In the event these methods do not provide the desired quantities or species, rod and reel fishing will be used as a last resort. Gill nets are set and checked periodically throughout the day or set overnight and checked the next morning. Upon capture, fish will be identified to species, weighed and measured and processed. The total body length is defined as the length from the anterior-most part of the fish to the tip of the longest caudal fin ray.

B3. Handling fish and labeling samples

Following sample collection each individual fish will be euthanized via freezing and placed in a labeled ziplock bag, placed in an ice chest containing ice or dry ice, and transported to a locked freezer at the CIEA office. Filleting of the fish will be done at the office in order to avoid air or boat motor exhaust contamination of the tissue and to provide for consistent and clean filleting procedures.

Tissue processing protocol is given in Appendix A (http://pubs.usgs.gov/of/2008/1208/). Processing staff will avoid touching the sample flesh with bare hands and will wear gloves while filleting the fish. There will be no contact of bare hands with the fillet. The processing counter will be covered with a clean plastic sheet and all fillet knives and dissecting tools cleaned with

dilute soap and rinsed with de-ionized (DI) water. New gloves and clean tools will be used for each sample. Frozen fish will be partially thawed and rinsed with DI water and placed on the dissecting counter. A skinless fillet portion will be extracted from one side of the fish above the lateral line and below the dorsal fin. Each fillet will be weighed, placed in a labeled ziplock bag and frozen until all samples are processed. The sample fish length and weight are transferred onto a sample submission/tracking along with the tissue weight information. Each sample is labeled with site name and location information, date, time, organism name, contact person and phone number.

B4. Fish tissue preservation and sample shipment

Samples will be shipped on dry ice via overnight, guaranteed delivery methods. The cooler will be tracked during the shipment process with shipment receipts and tracking numbers supplied to the receiving laboratory. Chain-of-custody forms, with proper receipts retained, will be enclosed in a Ziploc bag and taped to the inside top of the shipping cooler. Samples will be pre-frozen and placed within enough ice to sustain 4 ^{o}C throughout the time of sample shipment. If it is not logistically possible to freeze the samples before shipment, they will be cooled as much as possible. Coolers will be sealed with two custody seal stickers, placed on opposing corners of the cooler and taped over and completely around the cooler with clear adhesive tape. Packing fiber tape will be wrapped around the cooler to prevent opening during transit. Tape will be used to secure the cooler drain, cooler latch, and shipping labels.

The laboratory analyzing the samples will be contacted prior to shipment to ensure that the laboratory is prepared to receive, inventory, store, and analyze samples in a timely manner in order to meet necessary holding times requirements. Once the samples arrive at the laboratory, a representative will check the samples for holding time and temperature requirements. Any leakage or significant loss of temperature will be recorded as a source of potential error and noted in the laboratory analysis reports. The laboratory representative will then sign off on the chain-of-custody form as the current possessor of the cooler and its content, thereby completing the chain-of- custody for the samples. A copy of this final chain-of-custody form will be provided as part of the laboratory reporting package.

B5. Analytical methods

USEPA Method 1630; Methyl Mercury by Distillation, Aqueous Ethylation, Purge and Trap, and Cold Vapor Fluorescence Spectrophotometry will be used for fish tissue analysis.

B6. Quality control

Laboratory duplicates will be done according to the laboratory's standard operating procedures. See mercury laboratory quality assurance manual under analytical procedures for more details (Appendix B, BAL Website). In general, if the relative percent difference between laboratory duplicates is greater than 10% the sample must be reanalyzed. Precision will be calculated using the formula in section A11 above.

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B7. Instrument/equipment testing, inspection, and maintenance

All field monitoring equipment will be tested for accuracy and /or calibrated in accordance with the manufacturer's instructions. In accordance with good laboratory practices, preventative maintenance programs, regular inspections, and careful operation of all instruments and equipment will be performed. Exact procedures are specific to CIEA and are not included in this QAPP. They may be added later under guidance from CIEA.

B8. Instrument calibration and frequency

All of the field and laboratory equipment and instruments used for this project will be calibrated at the frequency required by the method and according to the procedure and technical acceptance criteria set forth in the USGS collection and processing manual (Appendix A, http://pubs.usgs.gov/of/2008/1208/) and the Brooks Applied Laboratory quality assurance manual (Appendix B),) under instrument calibration and maintenance. In general all field equipment is inspected and tested before each use and all laboratory equipment is calibrated according to the requirements outlined in the method.

B9. Inspection/acceptance of supplies and consumables

All field equipment provided by CIEA and/or tribal partners and laboratory supplies were supplied by Brooks Applied labs.

B10. Non-direct measurements

For purposes of this QAPP, we will consider non-direct measurements as mercury data already existing or collected under other studies. This 'old' or 'outside' mercury data may be value to this study and will be incorporated into completing this project if it meets the data quality objectives.

B11. Data management

Field data and paperwork will be kept in a dedicated folder assigned to the Tribal Fish Subsistence Project and stored at the CIEA office. Analytical data will be stored in the CIEA and tribal database until reviewed by the project manager and the staff prior to the data being available on the project web site.

GROUP C: ASSESSMENT AND OVERSITE

The elements in this group address the activities for assessing the effectiveness of project implementation and associated QA and QC activities. The purpose of assessment is to ensure the plan is implemented as prescribed.

C1. Assessment and response actions

Assessment and Response Actions will be specific to CIEA and are not addressed in this QAPP. They may be added at a later date pending guidance from CIEA.

C2. Reports to management

Reports to Management will be specific to CIEA are not addressed in this QAPP. They may be added at a later date.

GROUP D: DATA VALIDATION AND USABILITY

D1. Data review, verification and validation

Data will be reviewed and verified by the project manager and validated by the CIEA/Tribal project partner staff. Data will be validated by comparison to the quality assurance criteria in section A11. Data will be accepted if they meet the quality assurance measures mentioned earlier. If the duplicate sample exceeds 50% RPD, all the data will be rejected. If the precision measures fall between these extremes, data may be used, but must be flagged as not meeting quality control objectives.

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Glossary

The definitions below are required to better understand the meaning of terms frequently used throughout the text. Definitions to terms are as cited in EPA 1631 and the Quality Assurance/Control Manual of the USGS National Water Quality Laboratory.

Accuracy
: A measure of the degree of conformance of the values generated by a specific mathod or procedure with the true value. The concept of accuracy includes both bias and precision.

Bias
: Systematic error that is manifested as a consistent positive or negative deviation from the known or true value. It differs from random error which shows no such deviation.

Blank
: Solution that is free of the analyte(s) of interest. Such a solution would be used to develop specific types of blank samples.

Certified Reference Material
: A reference material, for which one or more property values are certified by a technically valid procedure, accompanied by or traceable to a certificate or other documentation which is issued by a certifying body.

Duplicate Analysis
: The analysis or measurement of the variable of interest performed as identically as possible on two subsequent subsamples of a sample.

Filtered
: Pertains to the constituents in a representative water sample that pass through a 0.45 micrometer membrane filter.

Intercomparison Study
: An exercise in which samples are prepared and split by a reference laboratory, then analyzed by one or more testing laboratories and the reference laboratory. The intercomparison, with a reputable laboratory as the reference laboratory, serves as the best test of the precision and accuracy of the analyses at natural environmental levels.

Limit of Detection
: The minimum concentration of a substance that can be identified, measured, and reported with 99-percent confidence that the analyte concentration is greater than zero; determined from analysis of a sample in a given matrix containing analyte.

Matrix Spike
: An aliquot of an environmental sample to which known quantities of the analyte(s) of interest is added in the laboratory. The matrix spike is analyzed exactly like a sample. The purpose is to quantify the bias and precision caused by the sample matrix. The background concentrations of the analytes in the sample matrix must be determined in a separate aliquot and the measured values in the matrix spike corrected for those background concentrations.

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Precision

The degree of similarity among independent measurements of the same quantity, without reference to the known or true value.

Quality Assurance (QA)

Those planned or systematic actions necessary to provide adequate confidence that a product or service will satisfy given requirements for quality.

Quality Control (QC)

The operational techniques and activities used to fulfill requirements of quality.

Quality Control Sample (QCS)

A sample containing known concentration of a given analyte. The QCS is obtained from a source external to the laboratory, or is prepared from a source of standards different from the source of calibration standards. It is used to check laboratory performance with test materials prepared external to the usual preparation process.

Reagent Water

Water known not to contain the analyte(s) of interest at the detection limit of the method. For these methods, water is first purified by reverse osmosis then passes through a deionizing system. Output from the deionizing system must exceed 18 MW and pass through a 0.2 µM filter.

Sample

A representative part of a larger whole; a finite part or subset of a statistical population.

Standard Operating Procedure (SOP)

A written document which details the method of operation, analysis, or action whose techniques and procedures are thoroughly prescribed and which is accepted as the method for performing certain routine or repetitive tasks. It may be a standard method or one developed by the user.

Stock Solution

A solution containing an analyte that is prepared from a reference material traceable to EPA, NIST, or a source that will attest to the purity and authenticity of the reference material.

Total

Pertains to the constituent in a representative water sample. This term is used only when the analytical procedures ensures measurement of at least 95 percent of the constituent present in both the dissolved and suspended phases of the sample.

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APPENDIX A

Procedure for Collecting and Processing Aquatic Invertebrates and Fish for Analysis of Mercury as Part of the National Water Quality Assessment (NAWQA) Program

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APPENDIX B

Brooks Applied Laboratory Bothell, Washington
Quality Assurance Manual

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APPENDIX C – Field Data Forms

FIELD DATA SHEET (NWIS field name noted in parentheses)		
USGS Mercury studies--Fish tissue samples	Study Unit (SUID):	
Station Name (SNAME):		
Station ID (STAID):	Sample date (DATES), YYYYMMDD:	
Time range, 24h, HHMM -HHMM:		**Medium Code (MEDIM):** C
9Sample Type (STYPE):	**Analysis status (ASTAT):** H	Hydrologic condition (HSTAT):
Field Crew:		
Field comments:		
Species Common name:	Latin name:	
ITIS Taxonomic code (TAXON):	Body part code (BDPRT):	

Fish #	**Sample time (TIMES)** *(24 h)*	Fish length, total, cm, P91106	Fish wt, g, P91104	Sample wt, g, P91105	Gender, Male, P47463	Gender, Female, P47462	**S**cale/ **O**tolith	Sample ID	NWIS Record #
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									

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Page ___of ___ SAMPLE SUBMISSION/TRACKING FORM	
USGS Mercury studies--Fish tissue samples	**Shipper instructions:**
Filename: HgStudy_TERL_SUID_YYYYMMDD.xls Study Unit contact: Fax number: Shipped by: Shipping date: Received by: Received date:	(1) Save a COPY of this file in the format: HgStudy_TERL_SUID_YYYYMMDD.xls (2) Enter sample data into this spreadsheet, electronically, exactly as in NWIS. (3) Sign, date, and ship hard copy of this completed form with samples. (4) Email electronic copy to laboratory to facilitate lab log-in.
	Lab Instructions:
	(1) Sign, date, and note comments upon receipt of samples. (2) Save form. Fax or mail copy to Study Unit contact.
Study Unit (SU) notes to lab: *Please send splits of freeze-dried/ground tissue to L. Chasar, USGS-FISC, 2010 Levy Avenue, Tallahassee, FL 32310. Include copy of spreadsheet with samples when shipped. Please email/call L. Chasar prior to shipping.*	
Analyses requested: ***Total Mercury***	**Medium Code: C**
Lab notes / condition of samples:	
Sample data	

STAID	DATES	TIMES *(24 h)*	Species	Fish length, total (cm)	Fish wt (g)	Sample Cut	Sample wt (g)	Gender (M/F/I)	Sample ID	Comments

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Appendix D - **Chain of Custody Form**

1. Project: _____ **Project #:** _____

2. Sender	3. Carrier	4. Receiver
Signature _____ Date _____ Sent from _____ _____ _____	Company _____ Signature _____ Date _____ B/L No. _____ Pkg Tracking No. _____ _____	Courier from Depot Signature _____ Date _____ Lab Custodian Signature _____ Date _____ Condition upon Receipt _____ _____

5. Shipment Description

	Custody Seal No. (if any)	Seal Intact?	Custody Seal No. (if any)	Seal Intact?
Number of packages _____ Sealed (yes or no) _____ Types of containers _____ Condition prior to shipment _____ _____ _____	_____ _____ _____ _____ _____ _____	_____ _____ _____ _____ _____ _____	_____ _____ _____ _____ _____ _____	_____ _____ _____ _____ _____ _____

6. Contents

Sample I.D. Number	Type of Sample	Legal Seal Intact? (yes or no)	Legal Seal No. (if any)	Condition (damaged, loss of liquid, etc.)

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CALIFORNIA RURAL LEGAL ASSISTANCE, INC.

FIGHTING FOR JUSTICE, CHANGING LIVES

CRLA's Water Quality Planning and Well Rehabilitation Project in Del Rey
Final Grant Report to The Rose Foundation

Amount Awarded: $ 43,942.50
Grant Period: 1/1/2017 – 6/30/2018
Reporting period: 5/1/18 – 6/30/18

Brief Summary: *Please summarize the overall impact so far of the project in term of activities and achievement.*

Through this grant, CRLA sought to support the unincorporated Fresno County community of Del Rey in its efforts to understand the extent of contamination in its drinking water, understand mitigation and remediation efforts, equip residents to engage in robust public participation, and work with the Del Rey Community Services District (CSD) to encourage public participation. CRLA has made progress in all areas, with TCP remediation efforts beginning as residents are prepared to actively participate. More work will be needed as the long remediation process continues.

CRLA provided in depth public participation technical assistance to the CSD throughout the grant period. The CSD is now more equipped and willing to encourage public participation. The CSD launched a successful community education event in October 2017 with support from CRLA. Over 150 residents attended the event which was designed to improve public perception and understanding of the CSD and to highlight the work CSD is doing in the community. The CSD's knowledge of public participation best practices will allow them to involve the community in the remediation process as it unfolds.

CRLA also provided various trainings to the CSD to improve their capacity to help community residents address their concerns and thus improve community trust. CRLA developed various educational materials and made them available to the CSD explaining what agencies should be contacted for each problem residents might raise and for individual agency process such as code enforcement.

CRLA also partnered with CSU Fresno to develop and conduct a community-wide survey. The survey provided CRLA with a gauge of community needs in general and of their concerns around water specifically. It also provided the CSD with information on the needs of the community and provided data for future grant applications to remediate the water quality.

Throughout the grant period, CRLA ensured residents were knowledgeable about the water contamination in their community, cognizant of the fact that residents cannot take remedial steps if they are unaware of the problem. Residents were provided with trainings on who and how their water is managed, the contaminants in their water, how to read the annual consumer confidence report, and how water standards are set. As new residents started attending CRLA-led meetings,

CRLA staff saw the need to repeat some trainings to ensure new participants were also informed of the water contamination.

In addition, CRLA worked with residents to develop their collective capacity to advocate for their needs and participate in local decision-making processes that would determine water remediation efforts. CRLA provided civic engagement training and hands-on opportunities for residents to develop their skills. While TCP remediation efforts were unavoidably delayed at the beginning of the grant period, residents developed their capacity to participate in local decision-making impacting community wellbeing by working with agencies to address other issues such as blight and community safety.

As residents developed their capacity, resident attendance at CSD board meetings increased and became steady throughout the grant period. At the last CSD meeting this grant period, community residents asked the CSD to plan resident engagement during the rate study process. A testament to the development of Del Rey residents who not only understand that they should be informed but actively included in the process, and their willingness and ability to voice their request during board meetings!

In all, CRLA staff worked extremely hard to become a trusted community partner. In the community, we saw the need for a more consistent presence to build trust. CRLA staff developed monthly, informal *charlas* where residents gathered to voice concerns, learn about the methods for addressing their concerns, and received regular updates on community projects and water remediation efforts. CRLA took on issues of urgent community concern in order to build trust and opportunities for resident development as a precursor to more directly tackling water quality and access issues. With the CSD, CRLA became a constant attendee at board meetings, providing information, training, and support as needed.

In the meantime, Del Rey has now tested positive for TCP in one of its idle wells underlining the need for TCP remediation efforts. The CSD has begun work on all preliminary steps to position itself to start the full water remediation process as soon as possible. The CSD is currently doing a water rate study. Rate studies are needed periodically to ensure the CSD is financially healthy and eligible to receive loans and aid to remediate water contamination. A TCP remediation study has also been completed by a contracted engineer detailing the work and cost to be completed during the TCP remediation planning phase and supervision of construction.

Del Rey is awaiting possible funding from Prop 1 funds and from its ongoing litigation against the manufacturers of TCP. While larger funding becomes available, the CSD is beginning remediation steps with smaller funds. Recently the board approved a contract for the TCP remediation project to begin work on their grinders and emergency generator for one of the wells with CDBG funding.

As TCP remediation efforts begin, community support and engagement are needed even more. Water contamination is a decades-long problem for disadvantaged communities, and remediation efforts unfortunately also require years and decades. In Del Rey, we are seeing progress and the initial steps to remediation take shape as residents become more involved.

Narrative: *Please describe the work you conducted with the grant funds. Refer to your workplan and describe your progress towards the milestones and deliverables outlined in your proposal. If the grant funded water quality monitoring, make sure to include and specify the type of Quality Assurance / Quality Control (QA/QC) procedures followed. Also, please describe any unanticipated outcomes, challenges, or other changes that occurred during the project's duration. Please include any lessons learned and/or advice for other organizations facing similar circumstances. Finally, please briefly describe any other significant work your organization performed during the grant period - this provides helpful context to understand how work on this grant fit into your organization's overall goals and strategies.*

Goals and Outcomes

1. **CRLA will continue to meet with residents as needed to provide project updates and ongoing training.**

Throughout the last reporting period, CRLA met monthly with residents and sometimes bimonthly, and continued to provide updates on the water remediation efforts in an accessible manner. CRLA-led *charlas* proved to be ideal for providing residents with the tools and confidence they needed to actively participate in the water remediation process. They also proved to be a valuable platform for the CSD to engage with residents.

Residents have shown an increased rate of civic engagement through their attendance at CSD meetings. They are knowledgeable of their rights to be informed and involved in the water remediation processes and are eager to be involved.

2. **CRLA will produce a Final Report detailing how a disadvantaged community can address water contamination in a way that ensures meaningful community engagement.**

CRLA is very pleased to share its report, "Meaningful Participation in Drinking Water Remediation: Best Practices for Public Engagement and Inclusion to Address Water Contamination in Environmental Justice Communities". Please see attached Final Report.

Challenges

The greatest challenge during the grant period was due to the various timelines operating in Del Rey around TCP remediation. Del Rey CSD postponed the remediation process as the State went through the process of establishing a Maximum Contamination Level for TCP. Progress was further delayed as litigation against TCP manufacturers was underway. These delays were in addition to routine delays disadvantaged communities encounter in obtaining clean water, making for a more protracted process than is typical.

The Community Services District has improved a great deal in how they relate to the community and more improvement will be needed in the future. While the first step is there, proactively trying to engage with residents, the CSD is still learning how to evaluate and incorporate community input

when it is given. This has proven to be an increasing challenge as residents engage more and more with the CSD.

Lessons Learned

A more detailed explanation of the lessons learned can be found in the attached report, "Meaningful Participation in Drinking Water Remediation: Best Practices for Public Engagement and Inclusion to Address Water Contamination in Environmental Justice Communities".

A lesson that was learned during this reporting period was the need to repeat community educational presentations. Throughout the grant term, new residents started participating in community meetings, trainings, and in our monthly *charlas*. A sign that our educational efforts are reaching even more residents in the community. As new residents began to attend it was clear that they needed the information and training we had presented at earlier community events. While we deliberately summarized previous information at the beginning of meetings, it became evident that we would need to repeat our previous informational meetings and trainings, updating them with recent developments.

Other Work

During the grant period CRLA's CEI Program has continued working with Disadvantaged Unincorporated Communities (DUCs) throughout the San Joaquin Valley with separate funding. Staff has started researching and attending meetings for implementation of the Sustainable Groundwater Management Act (SGMA). The SGMA process will change the way California manages its water resources, participation in the process to ensure disadvantaged communities are included is essential. In Fresno County, staff has been working on the development of the county General Plan, through which jurisdictions determine which communities experience the benefits of amenities such as parks, services, transportation, jobs, and which communities experience the burdens. In Kings County, staff has been working with residents and DTSC to develop a community health assessment to identify the effects of living next to a toxic waste site, and has ensured the development of civil rights, public participation, and language access policies that allow for greater resident involvement. Staff has also been involved in multiple locations to help residents obtain access to basic services such as sewer, sidewalks, and parks. Our work in Del Rey is part of our work that focuses on the issues facing disadvantaged unincorporated communities throughout the state.

Deliverables & Timeline: Please identify all key deliverables for the completion milestones of this report and tie them into the project timeline.

Timeline & Deliverables		
Milestone	**Tasks**	**Deliverables**
100% complete—	1. CRLA will continue to meet with residents as needed to provide project updates and ongoing training.	Documented process for well rehabilitation planning in disadvantaged communities

18 month mark Target project period: 18 months	2. CRLA will produce a Final Report detailing how a disadvantaged community can address water contamination in a way that ensures meaningful community engagement and participation, increases technical expertise, and improves local governance capacity.	seeking avenues for resident participation and engagement.

PROJECT BUDGET

Final financial report of expenditures attached.

Please address any questions regarding this report to:

Marisol F. Aguilar
CEI Program Director
1111 I St., Suite 310
Modesto, CA 95354
(209) 577-3811 ext. 317
maguilar@crla.org

Mariah Thompson
CEI Staff Attorney
3747 E. Shields Ave.
Fresno, CA 93726
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mthompson@crla.org

California Rural Legal Assistance, Inc.
Rose Foundation
January 1, 2017 to April 2018

Line Item Budget

EXPENSES:	Budget	Actual
Program Director (.05 FTE)	1,947.25	1,947.25
Staff Attorney (.25 FTE)	13,720.00	13,720.00
Community Worker (.45 FTE)	11,688.00	11,688.00
Payroll Taxes & Fringe Benefits	7,823.60	7,823.60
Equipment, Maintenance & Technology	583.00	583.00
Telecommunications	1,581.00	1,581.00
Travel	2,604.88	2,604.88
Rent & Utilities	0.00	0.00
Office Supplies, Duplication & Printing	0.00	0.00
Indirect Costs	3,994.77	3,994.77
Total Project Budget	**43,942.50**	**43,942.50**

MEANINGFUL PARTICIPATION IN DRINKING WATER REMEDIATION:

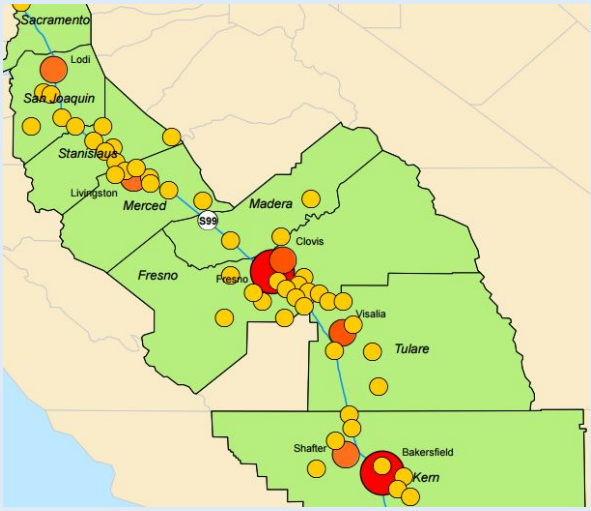
BEST PRACTICES FOR PUBLIC ENGAGEMENT AND INCLUSION TO ADDRESS WATER CONTAMINATION IN ENVIRONMENTAL JUSTICE COMMUNITIES

PREPARED BY:
THE COMMUNITY EQUITY INITIATIVE AT CALIFORNIA RURAL LEGAL ASSISTANCE, INC.
JULY 2018

CRLA

INTRODUCTION TO 1, 2, 3 TCP CONTAMINATION IN THE SAN JOAQUIN VALLEY

1, 2, 3 Trichloropropane (123 TCP) is a man-made industrial solvent, degreasing agent, and known carcinogen that, in prior decades, was regularly added to pesticides used throughout the San Joaquin Valley. 123 TCP was added by the State of California to the list of chemicals known to cause cancer in 1992; in 1999 the State established a notification level of 0.005-microns per liter (ug/L) after 123 TCP was identified in drinking water wells throughout the state and at a California Superfund hazardous waste site in Southern California. The notification level required public water systems (PWS) to report levels of 123 TCP in their water above .005 ug/L but did not require mandatory testing nor remediation; most PWS did not test for 123 TCP at that time.



Map of wells contaminated with 123 TCP

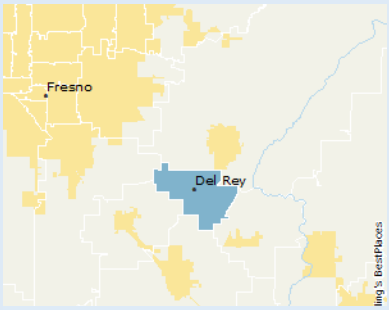
Subsequent research identified hundreds of wells in the San Joaquin Valley contaminated with 123 TCP, primarily in low-income agricultural communities of color—environmental justice communities (EJ communities).

Advocacy efforts by community-based organizations, public health specialists, and residents in impacted communities ultimately led to the adoption of a Maximum Contaminant Level (MCL) of .005 ug/L for 123 TCP in 2017. PWS were subsequently required to test for the presence of 123 TCP in their groundwater supplies and remediate contamination higher than the MCL. Failure to remediate contaminated aquifers has legal consequences for PWS and can result in state action.

THE COMMUNITY EQUITY INITIATIVE AND THE COMMUNITY OF DEL REY

The Community Equity Initiative (CEI) is California Rural Legal Assistance, Inc's (CRLA) environmental justice program. CRLA is a non-profit law firm with over half a century of experience providing high-quality free legal representation to California's most marginalized rural communities. CEI works directly with residents of environmental justice communities to provide education, training, and legal representation that results in increased resident involvement in the land use and planning decisions that shape the neighborhoods and communities that residents call home.

CEI has worked for years in the disadvantaged unincorporated community of Del Rey on issues related to 123 TCP contamination; Del Rey has 123 TCP levels significantly higher than the MCL in most of its wells. CEI's work related to water contamination has included a public education program related to 123 TCP and water contaminant regulation, workshops to provide updates on the MCL-setting process, tracking Del Rey Community Service District's remediation plans, and education and support to increase resident understanding of and involvement in water management practices.



Del Rey is an unincorporated community in southeast Fresno County

THIS REPORT

This report provides an overview of best practices that PWS should use when addressing water contamination in their communities. It primarily focuses on increasing resident participation in the remediation process, improving the relationship between the PWS and the community, and maximizing resident satisfaction with remediation strategies. EJ communities have a right to meaningful participation in decision-making processes and must be included at all stages of drinking water remediation. The practices identified in this report can be applied to all types of drinking water remediation and are not limited to 123 TCP contamination. They can be applied to community involvement in both urban and rural EJ Communities.

BEST PRACTICE #1: UNDERSTAND THE IMPORTANCE OF PUBLIC RELATIONS

It is important that PWS value their relationship with residents and plan their water remediation strategy from that starting point. Resident satisfaction with and confidence in their water provider is a necessary precondition to public participation and meaningful involvement.

PWS in rural areas are often run by community service districts (CSDs); decisions are made by boards comprised of residents from the local community. CSDs are often sensitive to public perception of their performance and desire a positive relationship with their communities. CSD board members are elected and therefore rely on a positive public view of their job performance to maintain their positions. They are also residents of the community and their customers are also their neighbors, friends, and families.

Maintaining a positive relationship between the PWS and the public takes extra effort on the part of the PWS when drinking water is contaminated. Residents need to know that the PWS has their health and wellbeing in mind and is doing everything in their power to protect families from risk. PWS must ensure that they are transparent, proactive, responsive, and patient with residents, who are likely to experience fear, confusion, anxiety, and anger when they find out that their drinking water may be unsafe.

Public participation will decrease and residents will lose faith in the PWS when the relationship between the PWS and the community is damaged. Word travels quickly, especially in small rural areas or when the media picks up on a story. It can take a long time to re-establish trust in local decision-makers once that trust is lost; PWS must be cognizant of how their decisions are being perceived by residents and must resolve to cultivate confidence in the community.

BEST PRACTICE #2: START THE CONVERSATION EARLY

PWS frequently underestimate the importance of early and clear communication with residents regarding drinking water contamination. Contamination should be addressed with the community in an intentional and understandable way as soon as it is identified. Failure to disclose the contamination until required by law can lead to a sense of betrayal by residents who will wonder how long the PSW knew about the problem without informing residents. Residents want to know as soon as possible so they can make an informed decision about whether they want to continue consuming the contaminated water or if they want to take additional precautions.

This is particularly true with regards to contaminants that have known public health impacts but are not yet subject to an MCL. 123 TCP was recognized as a carcinogen for more than twenty years before an MCL was adopted that mandated its removal from public drinking water. Some water systems were fully aware of the presence of 123 TCP in their water supply prior to the MCL adoption but did not adequately disclose its presence to residents or discuss remediation options because they were not under a legal mandate. When residents found out that the PWS had known about 123 TCP in the water for years the primary reaction was outrage; residents felt they could have been using a filter or bottled water to reduce their family's exposure but were denied this opportunity by PWS officials who failed to communicate.

This principle applies even if the PWS staff thinks the contamination "isn't that bad" or that the public health risk isn't particularly high. Residents do not possess specialized knowledge related to water contaminants and risk exposure; when a resident hears "the water is contaminated" they will take it very seriously. If the contamination does not represent a severe or immediate health risk, the best practice is to address it by educating residents about the contaminant and health risks rather than ignoring it. More communication is better.

Communicate early and often with residents about drinking water contamination

BEST PRACTICE #3: DO NOT RELY ON CONSUMER CONFIDENCE REPORTS

PWS are required by law to include information related to water contamination in their annual Consumer Confidence Report (CCR). Frequently residents will assert that the PWS failed to tell them about the water contamination and PWS staff will reply that it was contained in the CCR. PWS staff must understand that most residents do not read the CCR, and even if they do, they are unlikely to understand it. Most people simply set it aside or throw it away.

PWS should assume that the public is totally unaware of any information that is presented solely in a CCR. The CCR is a legal mandate, but it is a confusing, technical document that consists of a table of the names of chemicals and a number representing detection levels in the water supply. CCRs are completely ineffective from a public education standpoint. Residents simply do not possess the technical expertise required to understand what the document is, what the chemicals listed in the CCR are and whether they represent a public health risk.

Consumer Confidence Reports are confusing, technical, and not helpful for public education

PWS should provide accessible education about any water contaminants. The PWS has a number of options for doing this: it could host public meetings to walk through the CCR with residents to explain what the different contaminants are; it could design educational materials and handouts about water contaminants that describe the contaminant in layman's terms along with information about public health and options to protect oneself from exposure; it could develop a public relations campaign to educate the public about the contamination and answer common questions, and more.

If a PWS only includes information about the water contamination in a CCR, it should expect that residents will feel angry and believe that the PWS was hiding the contamination problem from them. Steps should be taken to ensure that residents receive information that is truly understandable about their drinking water.

BEST PRACTICE #4: MEET RESIDENTS WHERE THEY ARE

Most PWS decision-making bodies, such as CSDs, meet monthly to conduct the business of the water system. The Brown Act requires that these meetings be public, that the agendas be posted in advance, and that no business be conducted that was not included on the agenda. Water contamination remediation discussions primarily occur at these meetings: decision-makers discuss and take action on remediation plans, environmental impact reports, state enforcement actions, etc. Advertisement of meetings usually consists of the PWS posting the agenda on a community bulletin board or outside of their office.

Public participation at such meetings is rare. PWS often lament the lack of public participation at their meetings or feel frustrated about it; when residents state "you did not tell us about the water contamination," PWS staff frequently reply, "if anyone attended our meetings they would know about it."

The methods traditionally employed by PWS to encourage public participation are not effective. Residents frequently do not know about the existence of such meetings, or are unable to attend meetings because of the time or location where the meetings are held. Most people are not in the habit of reviewing public bulletin boards, and simply posting the agenda of a meeting is unlikely to generate public interest because agendas appear technical and dull to many people.

To ensure the public has access to all the appropriate information related to water contamination, PWS should develop public participation strategies that do not depend on resident attendance at government meetings. PWS staff should provide public education opportunities that take advantage of the places that the public is already gathered. PWS should host educational events and hand out educational materials about water contamination in schools, churches, senior centers, parks, community centers, fairs, food distribution sites, parades, concerts, sports practice, or any other places that the public gathers regularly. An effective strategy is for PWS to partner and plan events with community-based organizations that are experienced at outreach.

Festivals, events, schools, church, or other public gatherings are good opportunities for outreach

BEST PRACTICE #5: HAVE (AND USE) A LANGUAGE ACCESS PLAN

Many environmental justice communities contain significant populations of Limited English Proficient (LEP) individuals: individuals that do not speak English as their primary language and who have a limited ability to read, speak, write, or understand English. LEP individuals are protected by state and federal laws; recipients of state and federal funding must ensure that LEP individuals within their service area have meaningful access to the services that they provide.

Information about water contamination should be provided in the main languages spoken by the community

PWS should develop a language access plan (LAP) to identify and accommodate LEP individuals within their service area. The LAP should identify the approximate number of LEP individuals using census data or other available data and should develop policies and procedures to ensure that LEP individuals receive information and services in their language, including information and services related to water quality and contaminant remediation.

Public meetings and educational materials should have translations or interpretation available that allows LEP individuals to access the information. CCRs should be provided in the primary languages spoken in the community other than English. Templates for CCRs in other languages are available from the State Water Resources Control Board. Any notification letters disseminated by water systems pursuant to legal mandates should be provided in the primary languages spoken by LEP individuals in the community in addition to English.

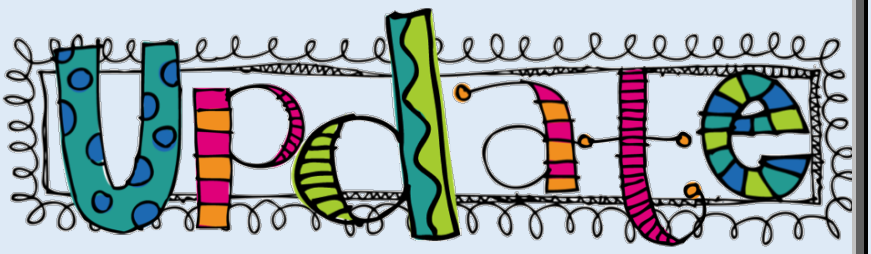
PWS should work with community organizations serving LEP individuals to develop policies and procedures that guarantee meaningful participation of the LEP population.

BEST PRACTICE #6: KEEP IN TOUCH

Water contaminant remediation is an ongoing process that frequently takes years. 123 TCP remediation, for example, will require that PWS (a) begin testing for the contaminant (b) notify residents of the presence of the contaminant (c) develop a treatment plan, which requires publishing Requests for Proposals for engineering companies and conducting environmental impact studies (d) identify and procure funding for remediation (e) construct any new infrastructure necessary for remediation (f) remediate and conduct ongoing testing.

Each stage of this process should be communicated to residents, and residents should be provided the opportunity to give feedback on remediation plans. If the cost of remediation must fall on residents, clear communication related to any potential rate increases and a proper Proposition 218 rate setting process must be conducted.

PWS staff should also make themselves available to answer resident questions, and should update their public participation plans as necessary to reflect any changing needs in the community.



PWS should provide periodic updates on remediation efforts to the community so residents know exactly what is happening with their drinking water

CONCLUSION

Drinking water contamination represents a difficult challenge for PWS and residents. Residents will have many questions about the contamination, the remediation plan, timeline, costs, and the ways to keep their families safe. It is critical that PWS take proactive steps to keep residents informed and to allow for resident participation and feedback on the process. This will increase resident confidence in the PWS, reduce resident frustration, ensure access to accurate information about drinking water risks, and lead to a remediation plan that is representative of community needs and appropriate for community conditions.

PWS should communicate early and often with residents using transparent, understandable, linguistically-accessible methods that result in real understanding and awareness. PWS should design education campaigns that utilize partnerships with community-based organizations and take advantage of existing opportunities for resident involvement. The public participation plan should be revisited and updated as often as necessary to ensure ongoing public involvement.

FOR QUESTIONS OR FURTHER INFORMATION PLEASE CONTACT:

THE COMMUNITY EQUITY INITIATIVE AT

CALIFORNIA RURAL LEGAL ASSISTANCE, INC.

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CRLA

Sustainable Medication Take Back for Amador County

Manual Grant Award Entry

California Product Stewardship Council

Heidi Sanborn
1822 21st Street, Suite 100
Sacramento, CA 95811

info@CalPSC.org
O: 916.706.3420

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FollowUp Form

Instructions

All grantees are required to submit a grant report that describes the work funded by the grant. Unless otherwise noted in your grant contract, your report should contain both a narrative description of activities performed and a financial statement showing how grant funds were spent. You should also provide copies of any deliverables produced during the grant period.

Rose Foundation's policy for the Central Valley Grants Program is that grant reports are due two weeks after the end of each quarter, and final report upon one month after project completion. For example, if your grant period is 24 months, you'll have three quarterly interim grant reports, one every six months, and a final grant report due 25 months from the start of the grant.

Your specific reporting dates and any special reporting requirements are identified in your Grant Contract.

If you have a multi-year grant, please note that Rose Foundation must receive your interim grant report before disbursing grant installments.

If you have any questions about reporting and/or installments, please contact your Program Officer, Laura Fernandez or call (510) 658-0702.

Basic Information

Project Name

Name of Project

Sustainable Medication Take Back for Amador County

Grant Period*

Please indicate the start date of the grant period for which you are reporting on

06/01/2017

Amount Awarded

$38,875.81

Area(s) of Emphasis*

Water Resources / Watershed Protection

Water Quality Monitoring Categories

Environmental Health & Justice Categories

Timeline, Deliverables, & Achievements

Please refer to the template instructions below to fill out the Timeline and Deliverables table. In the document, identify all key deliverables and achievements for the completed milestones of this report, and tie them into the project timeline.

To submit project timeline, deliverables, and achievements:*

1) Click Here to download the Timeline & Deliverables template.
2) Fill out the document with all relevant information. You may refer to the chart that you previously submitted and copy your timeline accordingly.
3) Re-submit the document back to this question.

Rose Amador Final Report DRAFT Timeline and Deliverables.pdf

Narrative

Brief Summary*

Please summarize the overall impact of the project so far in terms of activities and accomplishments.

Questions to consider for the project summary: Who/what was helped by the project? What water quality benefits occurred?

During the two-year grant, the California Product Stewardship Council (CPSC) sited the first four permanent medicine take-back bins in Amador County, protecting water quality by collecting 567 lbs. of medications that could have otherwise been flushed down the toilet or drain. Staff held one ribbon-cutting event, which was attended by local elected officials; gave three presentations; secured an additional $10,500 of in-kind funding to cover the medicine disposal costs; was featured in the local newspaper once and radio station twice; and received more than 600,000 impressions utilizing print, radio and digital media. All Amador County residents were helped by this project, as the region previously lacked any physical locations to properly dispose of their unwanted controlled medication. CPSC developed partnerships with four community entities including organizations that represent disadvantaged communities such as First 5 and the Child Abuse Prevention Council.

Impact Narrative*

Please describe the impact of the work you conducted with the grant funds. In addition, please describe any unanticipated outcomes, challenges, or other changes that occurred during the project's duration. Please include any lessons learned and/or advice for other organizations facing similar circumstances.

Surveys

CPSC developed and administered pre and post-project surveys for the public and healthcare community to determine what guidance was being given about safe medicine disposal before and after the public education campaign. Twenty-one pre-project surveys were collected via Facebook, email and telephone in February 2018 and 19 post-project surveys in August 2018. The public survey showed an increase of approximately 28% of respondents who indicated they dispose of unwanted medications by taking them to a pharmacy, hospital, health clinic or medical care provider with a medicine collection bin. The healthcare community surveys showed a 25% increase in the number of pharmacists that advise patients to dispose of medications by taking them to a police department, sheriff, or other law enforcement. This increase with regards to disposing of medications in take-back bins sited at pharmacies and law enforcement locations aligns with the work completed through the grant as two medication collection bins were sited at police departments and the other two were sited at pharmacies.

Recruitment

Prior to the grant there were no permanent medicine take-back locations in Amador County, despite previous attempts to establish a take-back program. Due to local sensitivities, CPSC first had to request a meeting with the Amador County Sheriff to obtain permission to site the four bins within the County. After the Sheriff approved the placement of bins, CPSC had to secure funding for the medicine disposal, as the eligible host locations were not interested in participating unless all costs were covered.

Staff contacted other key stakeholder groups in the County, including the Child Abuse Prevention Council of Amador and First 5 Amador Commission. CPSC arranged to give three presentations, which resulted in securing $5,000 in funding Child Abuse Prevention Council, $2,000 from County Supervisor Lynn Morgan, and $3,500 from Sutter Community Hospital Foundation to pay the costs of disposal. However, concerns remained regarding the long-term funding for disposal costs. To address this issue, CPSC attended and spoke at a County Board of Supervisors Meeting on 4/10/18, which resulted in an ad-hoc committee being formed to focus on sustainable funding for disposal.

When CPSC developed the list of potential locations for recruitment, there were only 15 pharmacies, hospitals, skilled nursing facilities and law enforcement agencies eligible to host bins to collect controlled medication. During the initial recruitment site visits, numerous locations were eliminated from consideration due to their physical inability to host. Furthermore, correctional and skilled nursing facilities were deemed as unfavorable host locations due to their security, which eliminated two locations from the recruitment list. Corporate pharmacies were also eliminated from the recruitment list due to the County not wanting to site bins at these locations, which eliminated five potential locations. Lastly, the Fire Stations in Amador County are not deputized and therefore unable to host bins.

Staff recruited hosts for the four bins, had them installed with signage in English and Spanish and arranged disposal services. Locations include two police departments, one pharmacy and one health clinic. Three of the four locations accept controlled medications.

The Ione Police Department (PD) take-back bin was the first installed in the County and was donated by CPSC after being relocated from another region. In addition, Ione PD will store their collected medications until the bi-annual DEA Drug Take-Back Day. Therefore, Ione PD's bin and disposal costs are both covered outside of the grant funds.

Public Education Campaign

CPSC executed a comprehensive multi-media public education that included print, digital, radio, and television media. A safe medicine disposal whiteboard video was customized for the project and promoted locally through video pre-roll on desktops and laptops, mobile devices and connected television including Apple TV and Firesticks, which could not be skipped by the viewer. Print ads were placed in the local newspaper, the Ledger Dispatch (Dispatch), and one-third page flyers were customized and printed in English and Spanish to include all bin locations as they became active. Targeting tactics included demographic, contextual, search and site retargeting, and geofencing to reach the correct audience. The video rollout was scheduled to deliver 50,000 impressions but delivered 63,000, which resulted in 133 clicks to the website, a .21% click through rate, which surpasses the industry standard of .05%.

The project also received in-kind media, including the local newspaper The Ledger Dispatch in print and on its website, and the most highly rated television in the region, KCRA 3. CPSC and the project partners were also interviewed on the local radio station, KVGC 96.5 FM and 1340 AM Voice of the Gold Country, which has an estimated 80,000 listeners. Lastly, Facebook posts proved to be a successful media outlet, as CPSC created graphics and text for 14 boosted and non-boosted Facebook posts that received 66,639 impressions.

On April 28, 2018, CPSC executed a ribbon cutting event at the first bin sited in the County, the Ione Police Department. Attendees included the City Mayor and Manager, Police Chief, Public Health Officer, among others. CPSC developed a press release to promote the event, which was distributed locally to three newspapers, one online blog, four television stations, and two radio stations on 4/26/18. s a result, CPSC Executive Director was interviewed on Afternoon News with Kitty O'Neal on News Talk Radio KFBK on 4/27/18, which was heard by an estimated 250,000 listeners. CPSC also collaborated with Sutter Community Foundation on a joint press release after the event that was featured in the Dispatch, which has a circulation of 5,500, and included a photo from the ribbon cutting.

Staff also placed a full-page color ad in the Dispatch and ran 30-second radio ads for one month in April 2018.

Unanticipated Outcomes

CPSC did not anticipate there to be a very limited number of groups representing disadvantaged communities in Amador County to partner with, especially the Hispanic population that represents approximately 13% of County residents.

Challenges

Attempting to recruit bin hosts that would pay the disposal costs of the medications collected posed a serious challenge for CPSC. As a result, CPSC had to work with local stakeholders to secure the funding for disposal for at least two years in order to have agreement from bin hosts.

Furthermore, obtaining press has become more and more difficult, especially in small rural areas such as Amador County. As a result, it took CPSC's influence and connections with KCRA 3 to have them feature the new collection bins in Amador on their station, which is the most highly rated station in the region. CPSC did achieve great success with social media, such as the Ione PD post that reached 5,291 Facebook users and received 601 likes, 52 comments and was shared by 124 people.

Lastly, although Walgreens is installing take-back bins in select 24-hour locations nationwide, their single location in Amador County is not open 24 hours a day. In an attempt to persuade Walgreens to make an exception and install a bin at their Sutter Creek 24-hour location, First 5 and Child Abuse Prevention Council sent a letter to Walgreens on 3/15/18 followed by a letter from Amador County on 6/4/18. Neither letter received a response. Another optimal location, Pine Cone Drug in Pine Grove was not interested in hosting because the Owner felt that members of the public would come to his facility to utilize the bin and not become a patron.

Changes

While CPSC initially intended to recruit locations that could accept controlled medications only, it was decided that a non-controlled medicine take-back bin could be added because there were no other viable locations that could accept controlled medications. As a result, the fourth and final bin was sited at WellSpace Heath Center in Jackson. CPSC also explored siting bins at veterinary clinics, although it was ultimately decided that the health center would help more unserved residents as they have more foot traffic and is closer to Sutter Creek.

Lessons learned/Advice

CPSC found that the first step is to identify local stakeholders that are already engaged with safe medicine disposal. For this project, First 5 and Child Abuse Prevention Council had been involved in previous discussions for several years regarding drug abuse prevention and safe medicine disposal. As a result of CPSC's collaboration with these two entities and others and their being local and active

advocates for the project, CPSC was able to secure the disposal funding and site all four bins. Furthermore, siting bins also help them meet their goals of protecting children from the abuse and neglect.

Did the grant fund water quality monitoring?*

If the grant did fund water quality monitoring, please include and specify the type of Quality Assurance / Quality Control (QA/QC) procedures that were followed in the question below.

No

Financials

Financials*

Please refer to the line item budget you submitted in your Application Attachments and prepare a corresponding financial statement that shows how the grant funds were actually expended. If there were any variances in any items over 10%, include a brief explanation for the variance. You may paste your financial statement into this section, or include it as an attachment.

Rose Amador Grant Tracking Report FINAL SUBMITTED.pdf

CPSC repurposed a bin used for a previous safe medicine disposal project, thereby allowing CPSC to purchase only three new medicine collection bins for this project. As a result, CPSC had $3,010.41 funds remaining in the “Bins” budget. CPSC opted to create and distribute most of the public education materials in-house, rather than hire a public relations consultant, and therefore $1,350 remaining in the “P/R Consultant” budget. Due to of the small size of the local media market and many outlets providing free services, CPSC was able to conserve $2,539.87 in the “Media Buys and Printing” budget. Because of these savings and due to the labor-intensive nature of securing long-term funding for the bin disposal costs and coordinating the ribbon cutting and securing in-kind media, CPSC reallocated $6,900.28 from these expense categories to the labor budget.

Furthermore, because of these unexpected challenges and the additional labor required, CPSC donated $1,572.81 of in-kind support. CPSC was also able to secure $10,500 in additional in-kind funding to cover the costs of disposal.

Attachments

Please attach or provide a link to any significant deliverables produced with grant funds, such as reports, videos, etc. You may also include other materials such as newsletters, media clippings, or photos that will help us better understand the work you performed under the grant. Please understand that the system limits file sizes - therefore, a few key examples are better than numerous photos or clippings.

Significant Deliverables*

If you produced a report, video, or other significant deliverable with this grant, you may attach it here or paste a URL box below. Use the text box to briefly describe your significant deliverables.

KCRA 3 Interview: https://www.youtube.com/watch?v=YoxibJh6eRc

KVGC Radio Interview: https://www.youtube.com/watch?v=dqWNF2IWNe0
Whiteboard video: https://www.youtube.com/watch?v=kn-O6O4LE8M&feature=youtu.be

Newsletters, Media, Photos or Other Attachments

You may attach additional documents or publications here or paste a URL into the text box below. Use the text box to briefly describe your significant deliverables.

Ads & articles.pdf

Newsletters, Media, Photos, or other Attachments

You may attach additional documents or publications here or paste a URL into the text box below. Use the text box to briefly describe your significant deliverables.

DRTF - Amador Med Collection Locations Flyer 10-22-18.pdf

File Attachment Summary

Applicant File Uploads

- Rose Amador Final Report DRAFT Timeline and Deliverables.pdf
- Rose Amador Grant Tracking Report FINAL SUBMITTED.pdf
- Ads & articles.pdf
- DRTF - Amador Med Collection Locations Flyer 10-22-18.pdf

CPSC
California Product Stewardship Council SM

1822 21st Street, Suite #100
Sacramento, CA 95811
916-706-3420

www.CalPSC.org

Sustainable Medication Take Back for Amador County

Interim Report C

Deliverables & Timeline:

Timeline & Deliverables			
Milestone	**Tasks**	**Deliverables**	**Achievements**
100% complete—18 month mark target for 18 month project	1. Compile medicine bin collection data. The collection goal is 15 pounds per bin per month. 2. Complete data analysis and prepare and submit final grant report to Rose Foundation per contract.	1. CPSC contacted Ione Police Department to obtain total amount of medications collected in the collection bin, which they estimate to be 379 lbs. Obtained collection data from Assured Waste Solutions for the remaining three bins, which totaled 188 lbs. of medications collected, for a total of 567 lbs. 2. CPSC analyzed the data from surveys, public education campaign and amount of medications collected. Staff submitted a clear and concise final grant report to Rose Foundation on December 12, 2018.	1. Achievements: a. The bin located at WellSpace Health bin has not yet returned any medications, as it was sited in mid-November 2018. b. Ione Police Department is storing their collected medications until the bi-annual Drug Take Back Day, when they receive free disposal. Ione Police Department estimates that they have collected 379 lbs. of medications since January 2018. c. Ione Pharmacy has collected 82 lbs. of medication. d. Jackson Police Department has collected 106 lbs. of medications. 2. In the data analysis, CPSC found that the public survey showed an increase of approximately 28% of respondents who indicated they dispose of unwanted medications by taking them to a pharmacy, hospital, health clinic or medical care provider with a medicine collection bin. The healthcare community surveys showed a 25% increase in the number of pharmacists that

			advise patients to dispose of medications by taking them to a police department, sheriff, or other law enforcement. CPSC also achieved over 600,000 impressions through its multi-media public education campaign.

California Product Stewardship Council
Rose Foundation - Amador
Actual Expenses
Grant Term: June 1, 2017 to November 30, 2018

Total grant **$ 38,875.81**

Payments received
6/5/2017 20,000.00
5/4/2018 18,875.81
38,875.81

	Obj 1 - Meetings & Presentations					Obj 2 - Take-Back Sites								Obj 3 - Promotion and Outreach					Obj 4 - Surveys & Reporting									
	Heidi	Christopher	Jordan	Justin	Intern	Heidi	Doug	Dan	Christopher	Jordan	Joanne	Justin	Intern	Heidi	Jordan	Joanne	Justin	Intern	Heidi	Jordan	Joanne	Justin	Intern			Media Buys & Printing	P/R Consultant	
Rate	$175	$85	$75/$85/$150	$75	$25	$175	$175	$155	$85	$75/$85/$150	$75/$135	$75	$25	$175	$75/$85/$150	$75/$135	$75	$25	$175	$75/$85/$150	$75/$135	$75	$25	Travel	Bins			Total
Original Budget					6,000.00								12,000.00					3,000.00					1,855.00	520.81	6,000.00	8,000.00	1,500.00	38,875.81
Budget Reallocations *					(1,061.00)								(290.50)					7,029.50					1,182.76	39.52	(3,010.41)	(2,539.87)	(1,350.00)	-
Revised Budget					4,939.00								11,709.50					10,029.50					3,037.76	560.33	2,989.59	5,460.13	150.00	38,875.81
Available Budget					-								-					-					-	-	-	-	-	-
					0%								0%					0%					0%	0%	0%	0%	0%	0%
Actual Expenses:																												
June 2017	262.50	93.50	142.50			52.50			153.00	645.00																		1,349.00
July 2017	52.50		60.00			280.00			68.00	862.50					30.00									66.80				1,419.80
August 2017	525.00		412.50			140.00		108.50	399.50	30.00					15.00					7.50				67.60				1,705.60
September 2017			25.50							85.00	30.00																	140.50
October 2017						140.00				180.00	195.00		22.50			22.50				240.00								800.00
November 2017			150.00			70.00				255.00	27.00	45.00							122.50	105.00	27.00							801.50
December 2017	17.50		435.00			157.50				1,530.00		30.00			300.00		45.00			150.00				149.34	2.90			2,817.24
January 2018	647.50		1,125.00	30.00		647.50				1,440.00		82.50		35.00	375.00		60.00		52.50	75.00		135.00		99.07	2,677.85			7,481.92
February 2018	17.50		15.00			140.00				1,110.00		180.00		157.50	1,035.00		427.50			30.00		97.50				176.46		3,386.46
March 2018	70.00		30.00			297.50				1,020.00	13.50	532.50		245.00	705.00		442.50		87.50	615.00		45.00			308.84	1,500.00		5,912.34
April 2018	612.50		75.00			35.00						7.50		1,522.50	3,150.00		285.00			45.00		7.50		177.52		1,300.67	150.00	7,368.19
May 2018	35.00		15.00	60.00		52.50				105.00				192.50	690.00	27.00	165.00									2,152.00		3,494.00
June 2018			30.00			17.50									75.00					15.00						325.00		462.50
July 2018												22.50			15.00			12.50		330.00		15.00						395.00
August 2018						35.00				75.00		67.50			15.00				140.00	885.00		142.50				6.00		1,366.00
September 2018				75.00		70.00	87.50			525.00										30.00								787.50
October 2018										195.00		30.00			75.00		22.50			225.00						33.63		581.13
November 2018										15.00					165.00													180.00
																												-
Total Actual Expenses	**2,240.00**	**93.50**	**2,515.50**	**165.00**	**-**	**2,135.00**	**87.50**	**108.50**	**620.50**	**8,072.50**	**265.50**	**997.50**	**22.50**	**2,152.50**	**6,645.00**	**49.50**	**1,447.50**	**12.50**	**402.50**	**2,752.50**	**27.00**	**442.50**	**-**	560.33	2,989.59	5,493.76	150.00	40,448.68
					5,014.00								**12,309.50**					**10,307.00**					**3,624.50**					
Amount not billed - in-kind donation					(75.00)								(600.00)					(277.50)					(586.74)			(33.63)		(1,572.87)
Total Actual Expenses Billed					4,939.00								11,709.50					10,029.50					3,037.76	560.33	2,989.59	5,460.13	150.00	38,875.81

New Drug Disposal Bin Available in Ione

Knowing what to do with your unused or expired medications can be confusing. It is important to dispose of them properly to help reduce harm from accidental exposure or intentional misuse. National prescription drug take back days, which are available periodically through both the Amador and Calaveras County Sheriff's Offices in partnership with the DEA, are a great option, but if you are looking for something available all year long, Ione has just the thing.

At Ione Police Department Headquarters, located at 1 East Main Street in Ione, you will find Amador County's first, and so far only, permanent medicine collection bin. In this bin, locals can dispose of both controlled and non-controlled substances in a safe way. Call (209) 274-2456 to check hours of operation before heading out to utilize this valuable service.

HEALTH35.indd 1 2/14/18 3:35 PM

Ledger Dispatch

Amador & Calaveras Objective Reporting News

Tuesday, June 12, 2018

Students Prep for College

Ione Junior High students hold college information fair for future scholars.

PAGE B1

TGIF Concerts Continue

AmadorArt's annual TGIF Concert Series continues in Sutter Creek this week.

PAGE C1

VOL. 162 NO. 70 ONLINE AT LEDGER.NEWS 75¢

Count Continues in Amador County Primary Election

By Caitlyn Schaap
Ledger Dispatch

The staff at the Amador County Election Office remains hard at work counting ballots.

As of press time Monday morning, just over 7,000 ballots had been counted. Amador County has more than 21,000 registered voters, and more than half are expected to have voted during the

election. Though the total ballots cast is unknown at this time, it is likely that only about one half or less have been counted.

After many polling locations ran short on ballots during last week's primary election, many votes were cast using provisional, ballots, sample ballots and photocopies of ballots. These all must be transferred to real ballots before they can be counted, a slow process, so the final count of ballots is likely more than a week away.

As of press time Monday morning, these were the latest counts.

Supervisor Brian Oneto led his race with challenger Andrea Macon 9,50 votes to 577 in Supervisor District 5. In District 3 incumbent

*See **Election**, Page A8*

LEDGER/Bill Lavallie

Fire crews douse the flames of the fire that broke out Sunday.

Fire Season Arrives in Amador

A grass fire near Ione Sunday caused much damage after spreading to at least one structure.

The fire, on Duck Creek Road in Ione, was called in to CAL FIRE on Sunday afternoon.

The fire initially was classified as a grass fire in a residential area, but was soon elevated to "structures threatened" and eventually also became a structure fire.

*See **Fire**, Page A3*

Community Partnerships Bring Safe Medicine Disposal To Amador County

By Leslie Meiring
Ledger Dispatch

While medications can provide many solutions for our health, they can also negatively impact the well-being of our community and environment if improperly disposed of. Previously, Amador County residents had nowhere to dispose of unwanted medications, but a new Rose Foundation grant has funded three new safe medicine take-back bins, two located in the City of Ione and one at Jackson Police Department. Sutter Health and Sutter Amador Hospital have contributed $3,500 to support the bins disposal costs and is helping you get rid of those unused prescription and expired over-the-counter medications in a free and safe way.

"Providing year-round convenient disposal options provides several benefits to the community including removing medicines from the homes that can fuel the prescription drug epidemic and related crime, preventing poisonings of children and pets, and protects water quality," stated Heidi

*See **Disposal**, Page A4*

COURTESY PHOTO

Highway 16 Crash Leaves Two Dead

By Caitlyn Schaap
Ledger Dispatch

A crash on Highway 16 in Amador County left two dead and one with major injuries Friday.

At around 9:30 p.m. on Friday night, June 8, on Highway 16, east of Greilich Road, Kenny Guillemin, 30, of Laytonville, Utah, was traveling westbound at an unknown speed in a 1996 Toyota.

At the same time, a driver of a 2008 Honda was traveling eastbound at an unknown speed.

For unknown reasons, the driver of the Honda drove the vehicle across the solid double yellow lines and directly into the path of Guillemin. Both the driver and passenger in the Honda, both residents of Sacramento, sustained fatal injuries in the crash and were pronounced dead at the scene. Guillemin sustained major injuries in the crash and was transported by

*See **Crash**, Page A6*

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2: Point the App camera at any image with this icon, push and hold scan button. Then, watch your newspaper come to life.

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Community Partnerships Bring Safe Medicine Disposal To Amador County

ledger.news/news/local_news/community-partnerships-bring-safe-medicine-disposal-to-amador-county/article_12cae404-6db0-11e8-b320-e381b7499b53.html

While medications can provide many solutions for our health, they can also negatively impact the well-being of our community and environment if improperly disposed of. Previously, Amador County residents had nowhere to dispose of unwanted medications, but a new Rose Foundation grant has funded three new safe medicine take-back bins, two located in the City of Ione and one at Jackson Police Department. Sutter Health and Sutter Amador Hospital have

contributed $3,500 to support the bins disposal costs and is helping you get rid of those unused prescription and expired over-the-counter medications in a free and safe way.

“Providing year-round convenient disposal options provides several benefits to the community including removing medicines from the homes that can fuel the prescription drug epidemic and related crime, preventing poisonings of children and pets, and protects water quality,” stated Heidi Sanborn, Executive Director of the California Product Stewardship Council (CPSC). “I encourage everyone to visit www.dontrushtoflush.org to find a permanent drop off location for their unwanted people or pet medicines.”

Flushing unused medications down toilets and drains is unsafe. Without year-round collection locations for medicines, residents had few or no options to properly dispose of their unwanted medications. These new medicine take back bins encourage and allow the public to dispose of half used and old medications safely.

According to a 2016 John Hopkins University Bloomberg School of Public Health Survey, 60.6 percent of adults who had used prescription painkillers in the previous year reported having leftover pills. It has been found that 40.6 percent of adults that misused prescription opioids obtained them for free from friends or relatives. Securely storing medications at home is also important in reducing access to medications by children, helping to eliminate prescription drug abuse.

+1

Collection Site	Address	Phone
[illegible] Pharmacy	[illegible]	[illegible]
[illegible] Police Department	[illegible]	[illegible]
Jackson Police Department	[illegible]	[illegible]

COURTESY IMAGE

“The new medicine collection bins allow Amador County residents to safely dispose of their unwanted medications for free,” said Denise Sammons, quality director at Sutter Amador Hospital. “Proper disposal of unused prescription medicines will keep them out of the hands of children and out of waterways making large strides in keeping our communities, our families and our environment safer.”

By providing safe and convenient disposal opportunities for unused medications, Don’t Rush to Flush is taking the first step towards pollution prevention and helping to protect families and the community by getting pharmaceuticals out of homes and out of the hands of our children.

The CPSC is a non-profit based in Sacramento that developed and administers the Don’t Rush to Flush, Meds in the Bin We All Win campaign, which was established using grant funding from the Rose Foundation to protect communities and the environment. CPSC, in collaboration with the Rose Foundation and other public-private partnerships such as with Sutter Amador Hospital, has placed 46 medicine collection bins throughout California that accept controlled and non-controlled medications from the public, free-of-charge, and collected over 13 tons of

medications!

California Product Stewardship Council educates both the public and private sectors about Product Stewardship and works closely partners with business, jurisdictions, waste and recycling companies, manufacturers and others to promote and encourage sustainable practices and to recognize those companies who are taking a leadership role in participating in waste reduction. CPSC has led the charge for manufacturers to share responsibility for their products at end-of-life, and to have the drug companies' fund, implement and promote safe medicine disposal programs. For more information, please go to: www.CalPSC.org

Rose Foundation for Communities and the Environment is a grantmaking public charity that gives grants to community-based organizations. Grantmaking programs support community-based projects and organizations that are building long-term solutions that benefit people, the environment and the economy. For more information, please go to: https://rosefdn.org/

Don't Rush to Flush, Meds in the Bin We All Win Campaign was developed by CPSC using grant funds to promote safe medicine storage and disposal and prevent the flushing and trashing of unwanted medications. For more information, please go to: www.DontRushToFlush.org

Sutter Amador Hospital is part of the Sutter Health network, a not-for-profit, community-based health system located throughout Northern California. The 52-bed hospital is the only hospital in Amador County serving a population of more than 40,000. Sutter Amador Hospital is fully accredited by The Joint Commission as a primary Stroke Center and provides comprehensive services including 24-hour emergency care, critical care, diagnostic imaging, infusion services, a family birth center, surgery, orthopedics and laboratory services. For more information on Sutter Amador Hospital visit sutteramador.org

Ledger Dispatch

Amador & Calaveras Objective Regional N

Friday, April 13, 2018

Wildflowers & Wine - a Hit!

Wine on 49's sold-out Wildflowers & Wine event is fun for all in Sutter Creek.

PAGE C1

New Veterinarian in Pine Grove

Dr. Crunk joins Pine Grove Veterinary Clinic to care for your animals & pets.

PAGE B1

VOL. 162 NO. 55 ONLINE AT LEDGER.NEWS 75¢

Amador Planning Commission Denies Use Permit for Hideout

By Craig Baracco
Ledger Dispatch

The Amador County Planning Commission has denied a request to allow an existing up-country event center to apply for a conditional use permit at their meeting Tuesday night.

The Hideout at Kirkwood Mountain Resort, on Highway 88, had requested a zoning interpretation from the planning commission to allow the business to continue to host weddings and other events by applying for a use permit. While the county has allowed weddings and other events at wineries with a use permit and commissioners praised the Hideout and its unique setting, calling it a asset to the county, they were generally skeptical of the request, saying it would set a bad precedent for the rest of the

See **Planning**, Page A10

Three Dead in Pine Grove, Sheriff Investigating

By Caitlyn Schaap
Ledger Dispatch

The Amador County Sheriff's Office is investigating what appears to be a double murder suicide Thursday morning.

On Thursday April 12 at approximately 3:05 a.m., ACSO received a 911 call reporting a possible suicide at a residence on Hilltop Street in Pine Grove. Sheriff's deputies arrived to find three decedents within the residence, Jacob Jedidiah Thayer, 26 of Pine Grove, Marie Ann Leonetti, 27 of Pine Grove, and Richard Roger Thayer II, 60 of Pine Grove. The preliminary investigation being conducted by Sheriff's Detectives indicates that this appears to be a double murder suicide with a firearm.

As of press time Thursday morning no other details had been released. Stay up-to-date as the story unfolds at facebook.com/ledgerdispatchnews.

LEDGER/Craig Baracco

Chair Morgan reads a proclamation to the Board of the Amador Community College Foundation, honoring the organization's work in the county.

Board of Supervisors Talks Drug Disposal Bins

By Craig Baracco
Ledger Dispatch

The Amador Board of Supervisors have approved a financial donation to the Amador County Fair.

Meeting Tuesday morning, the board fielded a request for a total of $40,000 in funding from the Amador County Fair Board, including $30,000 for a electrical repair project on the fairgrounds and $10,000 for a promotion campaign to encourage more rental and use of the fairgrounds throughout the year. The board voted to approved the $30,000 for buildings portion of the request, but did not include the money for the promotional campaign.

The board also heard a report on the placement of pharmaceutical disposal bins in the county. The bins, which allow the free disposal of various medications including opioids and other problematic drugs, are now located at the Jackson and Ione Police Stations as well as the Ione Pharmacy. A fourth bin

See **Supervisors**, Page A6

CCSO Seeks Information in Shooting of Motorcyclist

By Caitlyn Schaap
Ledger Dispatch

More information is being sought by the Calaveras County Sheriff's Office about a motorcyclist in Calaveras County who was shot Sunday night.

According to the Calaveras County Sheriff's Office, on Sunday, April 8, at around 5 p.m. the Calaveras County Sheriff's Office Communications Center received a 911 call of a motorcycle down near Highway 26, west of Mokelumne Hill. CHP units responded and fire/medics also arrived on scene. CHP contacted the sheriff's office and advised that the injured male motorcycle rider appeared to be the victim of a gunshot wound. Sheriff's patrol units and sheriff's detectives responded to the scene to conduct a criminal investigation. Highway 26 between Mokelumne Hill and Paloma Road remained closed throughout the night and into the morning as sheriff's investigators

See **Shooting**, Page A10

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GOT UNWANTED MEDS?

DEA Collection Event:

Saturday, April 28, 2018 | 10 AM - 2 PM

Event Locations

Amador Sheriff's Office
700 Court Street, Jackson

Ione Police Dept.
1 E Main Street, Ione

DON'T RUSH TO FLUSH

MEDS in the BIN. We All WIN!

Brought to you by: CPSC California Product Stewardship Council.

In Partnership with:

Sutter Health Sutter Amador Hospital

FIRST 5 AMADOR

NEW & FREE Locations Year-Round

Ione Police Dept.
1 E Main St, Ione
(209) 274-2456

Ione Pharmacy
307 Preston Ave, Ione
(209) 274-2432

Jackson Police Dept.
33 Broadway #D, Jackson
(209) 223-1771

Visit: DontRushToFlush.org

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(209) 274-2432

Jackson Police Dept.
33 Broadway #D, Jackson
(209) 223-1771

Visit: DontRushToFlush.org

DON'T RUSH TO FLUSH

MEDS in the BIN. We All WIN!℠

Four FREE Medicine Collection Sites in Amador County

Ione Pharmacy
307 Preston Avenue
Ione, CA 95640
(209) 274-2432

Ione Police Department
1 E Main Street
Ione, CA 95640
(209) 274-2456

Jackson Police Department
33 Broadway, #D
Jackson, CA 95642
(209) 223-1771

WellSpace Health
11333 Prospect Drive
Jackson, CA 95642
(209) 268-0560
Accepts non-controlleds medications only.

Easy as 1-2-3! Follow These Steps:

1. At home, remove pills from the container & consolidate in a clear zipper bag.
Keep liquids & creams in original containers.

2. Remove or obscure personal information from containers. Recycle empty pill containers in your household recycling.

3. Place zipper bag, liquids, and creams into the collection bin

Note: Medications should remain in the original child-proof container until just prior to drop-off.

No needles or lancets allowed.

CPSC California Product Stewardship Council

FIRST 5 AMADOR

Sutter Health Sutter Amador Hospital

www.DontRushToFlush.org

DON'T RUSH TO FLUSH

MEDS in the BIN. We All WIN!℠

Cuatro opciones GRATUITAS en el condado de Amador para deshacerse de medicamento

Ione Pharmacy
307 Preston Avenue
Ione, CA 95640
(209) 274-2432

Ione Police Department
1 E Main Street
Ione, CA 95640
(209) 274-2456

Jackson Police Department
33 Broadway, #D
Jackson, CA 95642
(209) 223-1771

WellSpace Health
11333 Prospect Drive
Jackson, CA 95642
(209) 268-0560
Solamente aceptan medicamentos no regulados.

¡Tan Fácil como 1-2-3! Siga estos pasos:

1. En casa, remuera las pastillas de los envases y póngalas en una bolsa transparente de cierre. Deje líquidos y cremas en el envase original.

2. Quite u obscurezca la información personal en los envases de medicamentos. recicle los envases vacíos en su reciclaje de casa.

3. Coloque la bolsa de cierre, líquidos, y cremas en el bote de recolección de medicamentos.

Nota: El medicamento debe permanecer en su envase original con tapa a prueba de niños hasta justo antes de dejarlo en bote de colecciõn.

No aceptan jeringas or lancetas.

ROSE FOUNDATION for COMMUNITIES and the ENVIRONMENT

Amador Child Abuse Prevention Council

AMADOR COUNTY CALIFORNIA

CPSC California Product Stewardship Council

FIRST 5 AMADOR

Sutter Health Sutter Amador Hospital

www.DontRushToFlush.org

Madera Community for Sustainable Water

Central Valley Disadvantaged Community Water Quality Grants Program 3

Madera Coalition for Community Justice

Baldwin Moy
126 North B Street
Madera, CA 93638

maderaccj@yahoo.com
O: 559.661.1879
F: 559.674.5674

Baldwin Moy

126 North B Street
Madera, CA 93638

Maderaccj@yahoo.com
O: 559.661.1879
F: 559.674.5674

FollowUp Form

Instructions

All grantees are required to submit a grant report that describes the work funded by the grant. Unless otherwise noted in your grant contract, your report should contain both a narrative description of activities performed and a financial statement showing how grant funds were spent. You should also provide copies of any deliverables produced during the grant period.

Rose Foundation's policy for the Central Valley Grants Program is that grant reports are due two weeks after the end of each quarter, and final report upon one month after project completion. For example, if your grant period is 24 months, you'll have three quarterly interim grant reports, one every six months, and a final grant report due 25 months from the start of the grant.

Your specific reporting dates and any special reporting requirements are identified in your Grant Contract.

If you have a multi-year grant, please note that Rose Foundation must receive your interim grant report before disbursing grant installments.

If you have any questions about reporting and/or installments, please contact your Program Officer, Laura Fernandez or call (510) 658-0702.

Basic Information

Project Name

Name of Project

Madera Community for Sustainable Water

Grant Period*

Please indicate the start date of the grant period for which you are reporting on

01/01/2018

Amount Awarded

$27,900.00

Area(s) of Emphasis*

Environmental Education
Water Resources / Watershed Protection

Water Quality Monitoring Categories

Pollution Prevention
Pollution Awareness

Environmental Health & Justice Categories

Toxics

Timeline, Deliverables, & Achievements

Please refer to the template instructions below to fill out the Timeline and Deliverables table. In the document, identify all key deliverables and achievements for the completed milestones of this report, and tie them into the project timeline.

To submit project timeline, deliverables, and achievements:*

1) Click Here to download the Timeline & Deliverables template.
2) Fill out the document with all relevant information. You may refer to the chart that you previously submitted and copy your timeline accordingly.
3) Re-submit the document back to this question.

Timeliner.pdf

Narrative

Brief Summary*

Please summarize the overall impact of the project so far in terms of activities and accomplishments.

Questions to consider for the project summary: Who/what was helped by the project? What water quality benefits occurred?

The project has brought about a general community awareness, activated a group of concerned residents and created a group of students who are knowledgeable of the water issues and participated in selected community education and outreach. Equally as important is that it has raped up MCCJ's visibility and advocacy capacity in the city, county and region on the issue of water. In that connection, it has opened doors for the organization to recently submit a second SEP application to the Rose Foundation and the potential to pursue other funding opportunities on the related issues of health/water.

Impact Narrative*

Please describe the impact of the work you conducted with the grant funds. In addition, please describe any unanticipated outcomes, challenges, or other changes that occurred during the project's duration. Please include any lessons learned and/or advice for other organizations facing similar circumstances.

In this quarter (final), all of the project deliverable s were completed as set forth in the work plan. This included attending the local IRWMG meetings and two water conferences, met with local water advocate groups, brainstormed with regional coalition and network, held three community workshops and one student workshop, appeared on local radio, distributed info sheets at numerous venues, etc. What has been most promising is the recent local issues in the City of Madera which involves water contamination, increasing fees, failing wells and inadequate financial resources. The efforts started during the previous quarter but really intensified in this quarter. MCCJ has been at the forefront of this advocacy with building allies, involving the media and coordinating, collaborating and cooperating with local stakeholders from many different sectors.

There were no water quality monitoring activities.

The issue of water is multi-faceted and inter sectional not just locally but regionally and statewide. In order for even a small community-based organization like MCCJ to remain active, relevant and effective, it must connect with other advocacy groups. This project has opened doors for MCCJ to elevate the work as a priority but also to integrate it with its other five projects. However, to remain focused, there must be dedicated staff(s). This is a real challenge for a CBO like MCCJ to build up the expertise in-house as opposed to relying on outside organizations. This is a broad, complicated and nuanced substantive area of advocacy. As a local CBO that only operates in Madera County, there are no local funding sources to engage in this type work. It’s simply not viewed as important or pressing. In fact, it is. Nevertheless, it is truly a promising area that ties together many of the work that MCCJ currently undertake and new issue areas to pursue. It will fit nicely into the organization’s environmental justice/health work ongoing – most probably a core part of it.

One unexpected, the local high schools lack of cooperation in convening workshop to their civic classes. (MCCJ had enjoyed a good working relationship with local schools.)

At the beginning of the quarter, the project coordinator reduced her time due to school obligations and had to leave due to new opportunities. As a result, MCCJ had to hire, train and supervise a new staff to complete the project. Once again, it’s often difficult to maintain a competitive salary scale as compared to neighboring Merced and Fresno. As a result, the organization hire part-time workers and retention is a real challenge.

Did the grant fund water quality monitoring?*

If the grant did fund water quality monitoring, please include and specify the type of Quality Assurance / Quality Control (QA/QC) procedures that were followed in the question below.

No

Financials

Financials*

Please refer to the line item budget you submitted in your Application Attachments and prepare a corresponding financial statement that shows how the grant funds were actually expended. If there were any variances in any items over 10%, include a brief explanation for the variance. You may paste your financial statement into this section, or include it as an attachment.

PROJECT BUDGET
(financial statement on how the funds are being spent)
Coordinator and Co-coordinator - 8404.37
Consultant – 2500.00
Administration – 1200.00
Stipends – 800.00
Travel – 145.00
Material – 100.00
Food/snacks – 150.00

Attachments

Please attach or provide a link to any significant deliverables produced with grant funds, such as reports, videos, etc. You may also include other materials such as newsletters, media clippings, or photos that will help us better understand the work you performed under the grant. Please understand that the system limits file sizes - therefore, a few key examples are better than numerous photos or clippings.

Significant Deliverables*

If you produced a report, video, or other significant deliverable with this grant, you may attach it here or paste a URL box below. Use the text box to briefly describe your significant deliverables.

Madera Community for Sustainable Water.pdf
Attached is a pdf version of the power point that the students created. It covers the watershed/water cycle, water conservation, water quality, water pollution and advocacy. There is also a version of the power point in spanish, however due to data constraints we only attached the english version. If you would like a copy of the spanish version please let us know.

Newsletters, Media, Photos or Other Attachments

You may attach additional documents or publications here or paste a URL into the text box below. Use the text box to briefly describe your significant deliverables.

Presentation Photos.docx
Attached is a photo of some of the students who volunteered as part of the Madera Community for Sustainable Water. There are additional photos of the presentation available upon request.

Newsletters, Media, Photos, or other Attachments

You may attach additional documents or publications here or paste a URL into the text box below. Use the text box to briefly describe your significant deliverables.

Brochure.pdf
Attached is a brochure that we handed out at various outreach events.

File Attachment Summary

Applicant File Uploads

- Timeliner.pdf
- Madera Community for Sustainable Water.pdf
- Presentation Photos.docx
- Brochure.pdf

Deliverables & Timeline: Please identify all key deliverables for the completion milestones of this report, and tie them into the project timeline.

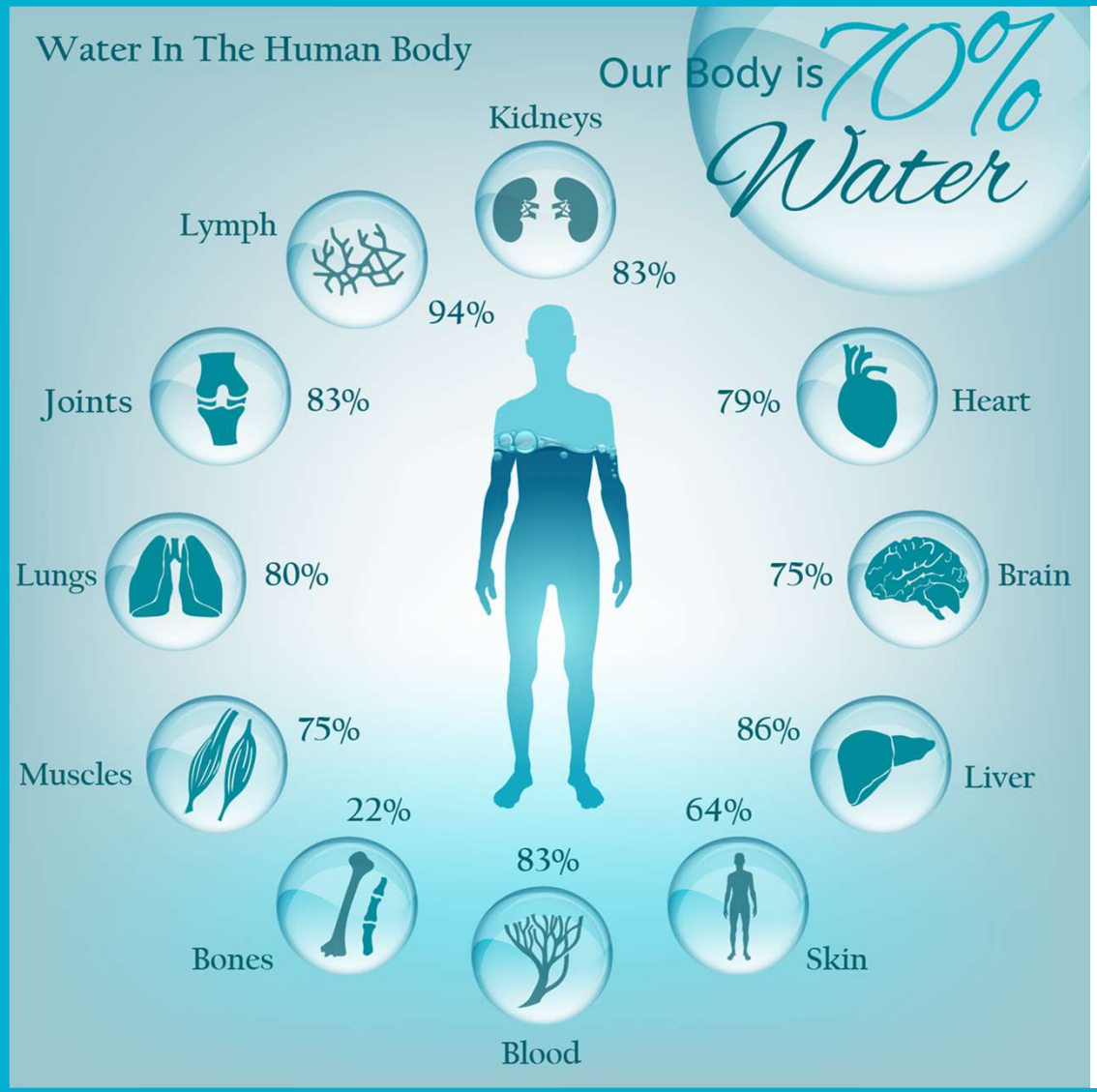
Timeline & Deliverables		
Milestone	**Tasks**	**Deliverables**
100% complete—12 mark. Target project period: 12 months	1. Attended county groundwater and water planning meetings. 2. Networking with local/regional allies and advocates 3. Hold community workshops. 4. Hold student workshop. f 5. Media 6. Information dissemination 7. Local base-building 8. Youth activity 9. Board approval and support	1. Attended monthly IRWM workshops, selected SWMG meetings and several Madera County Board of Supervisors hearings. 2. Met with Self-Help Housing, Community Equity Initiative, Leadership Counsel for Justice and Accountability, Community Water Center, Central California Environmental Justice Network and CVP Water Committee on collaboration, training and advocacy. 3. Held water workshops at two DACs, one in City of Madera. 4. Held water workshop for students. 5. Appear twice on local radio re the topic of water and rising water rates. 6. Distributed over 400 info flyers 7. Met with local residents concerned with the city water issues; attended city council meetings; investigation and research 8. Local field event 9. Presentation to board and planning session

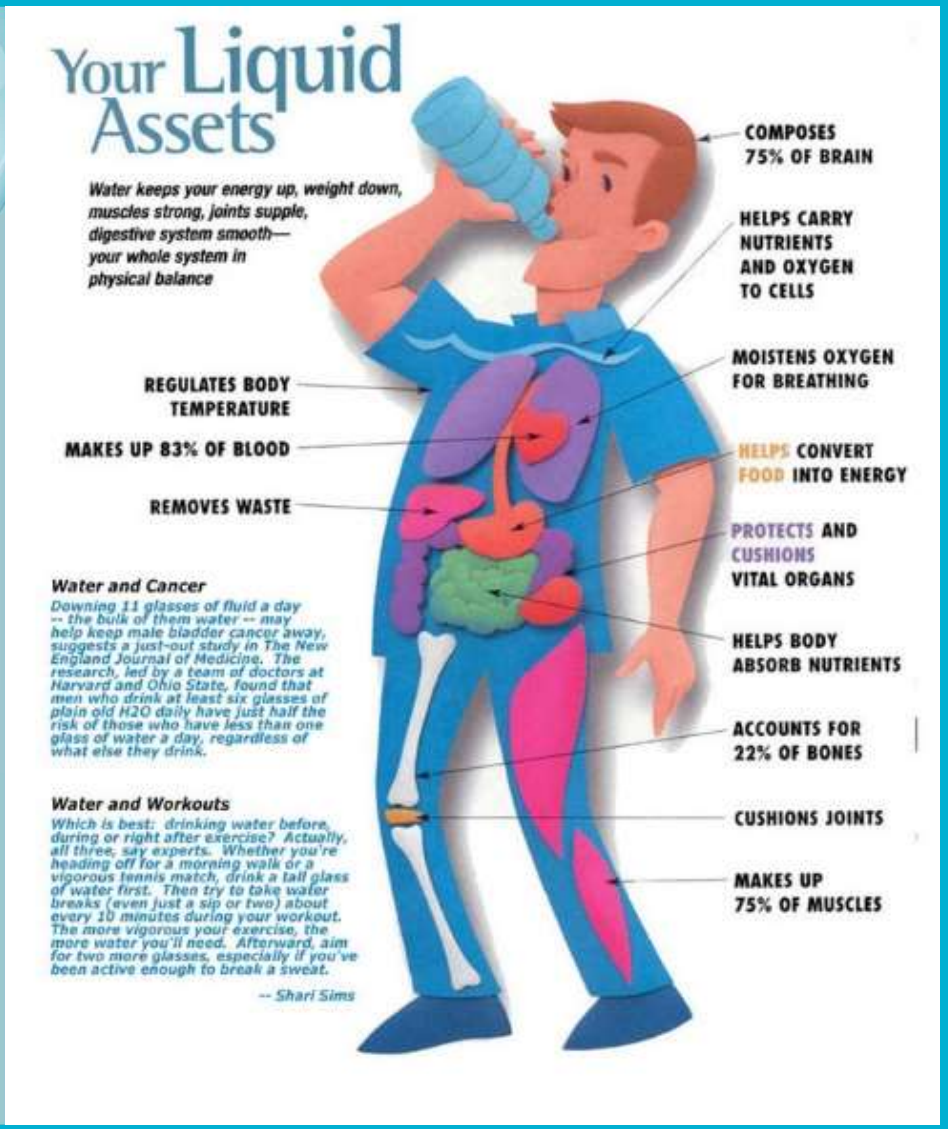
MADERA COMMUNITY FOR SUSTAINABLE WATER

"When the well is dry, we will know the worth of water."
- Benjamin Franklin

MADERA COALITION for COMMUNITY JUSTICE

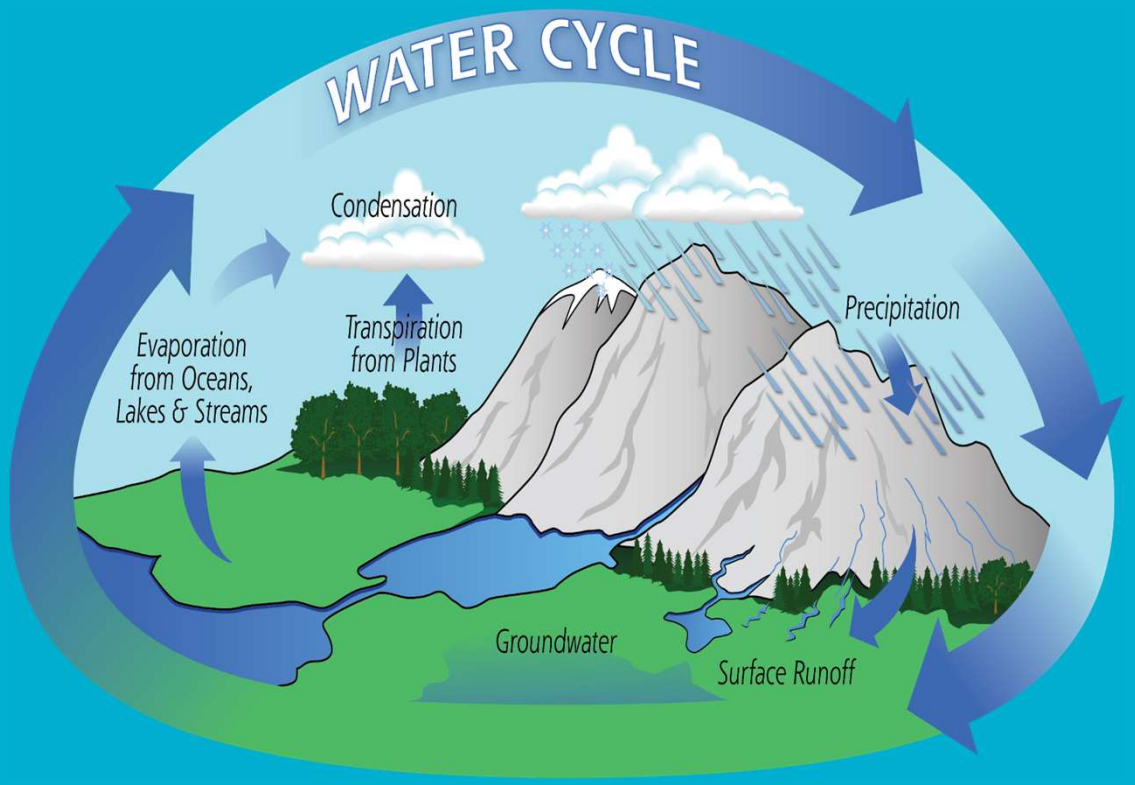
educate | organize | empower


Water In The Human Body
Our Body is 70% Water
Kidneys
83%
Lymph
94%
Joints
83%
79%
Heart
Lungs
80%
75%
Brain
Muscles
75%
86%
Liver
22%
64%
83%
Bones
Skin
Blood


Your Liquid Assets
Water keeps your energy up, weight down, muscles strong, joints supple, digestive system smooth— your whole system in physical balance
COMPOSES 75% OF BRAIN
HELPS CARRY NUTRIENTS AND OXYGEN TO CELLS
MOISTENS OXYGEN FOR BREATHING
REGULATES BODY TEMPERATURE
MAKES UP 83% OF BLOOD
HELPS CONVERT FOOD INTO ENERGY
REMOVES WASTE
PROTECTS AND CUSHIONS VITAL ORGANS
Water and Cancer
Downing 11 glasses of fluid a day -- the bulk of them water -- may help keep male bladder cancer away, suggests a just-out study in The New England Journal of Medicine. The research, led by a team of doctors at Harvard and Ohio State, found that men who drink at least six glasses of plain old H2O daily have just half the risk of those who have less than one glass of water a day, regardless of what else they drink.
HELPS BODY ABSORB NUTRIENTS
ACCOUNTS FOR 22% OF BONES
Water and Workouts
Which is best: drinking water before, during or right after exercise? Actually, all three, say experts. Whether you're heading off for a morning walk or a vigorous tennis match, drink a tall glass of water first. Then try to take water breaks (even just a sip or two) about every 10 minutes during your workout. The more vigorous your exercise, the more water you'll need. Afterward, aim for two more glasses, especially if you've been active enough to break a sweat.
-- Shari Sims
CUSHIONS JOINTS
MAKES UP 75% OF MUSCLES

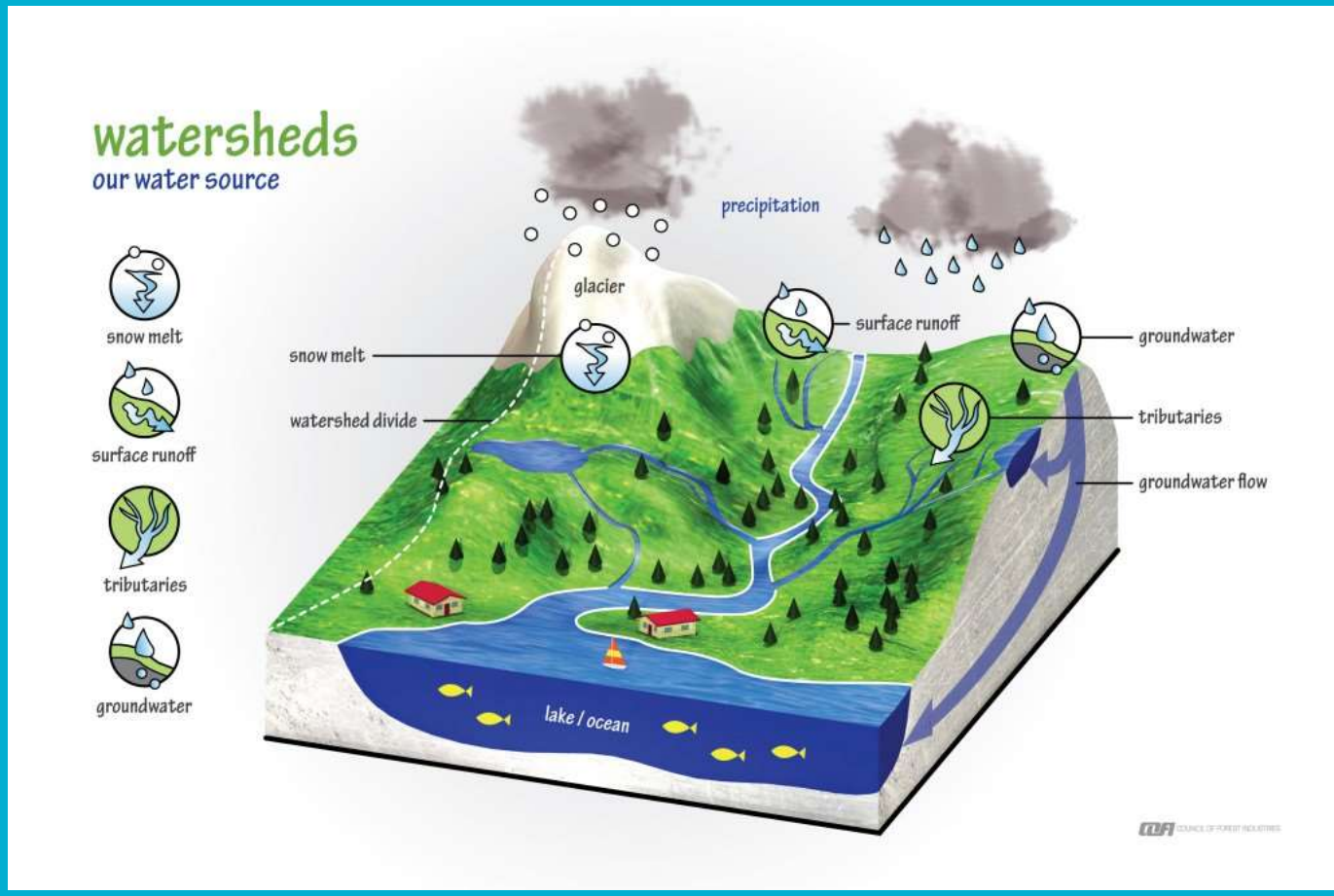
WHERE DOES OUR WATER COME FROM?

- We get our water from surface and groundwater.
- Our surface and ground water comes from a process known as the water cycle.
- The water cycle brings us water through rain, snow melt and underground sources.

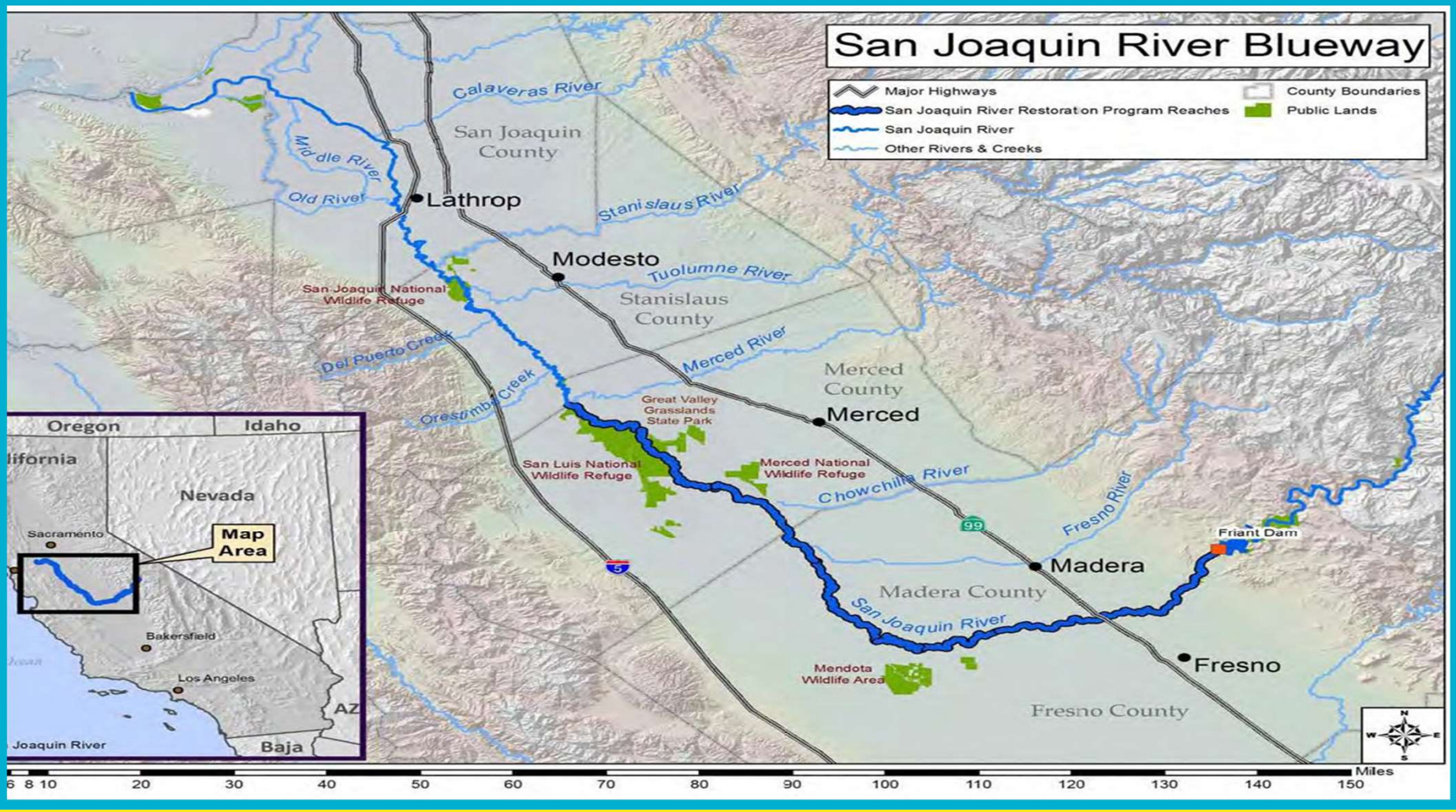


What is a watershed?

A watershed is an area of land where all the water that falls on it eventually drains to one common point.



SAN JOAQUIN RIVER

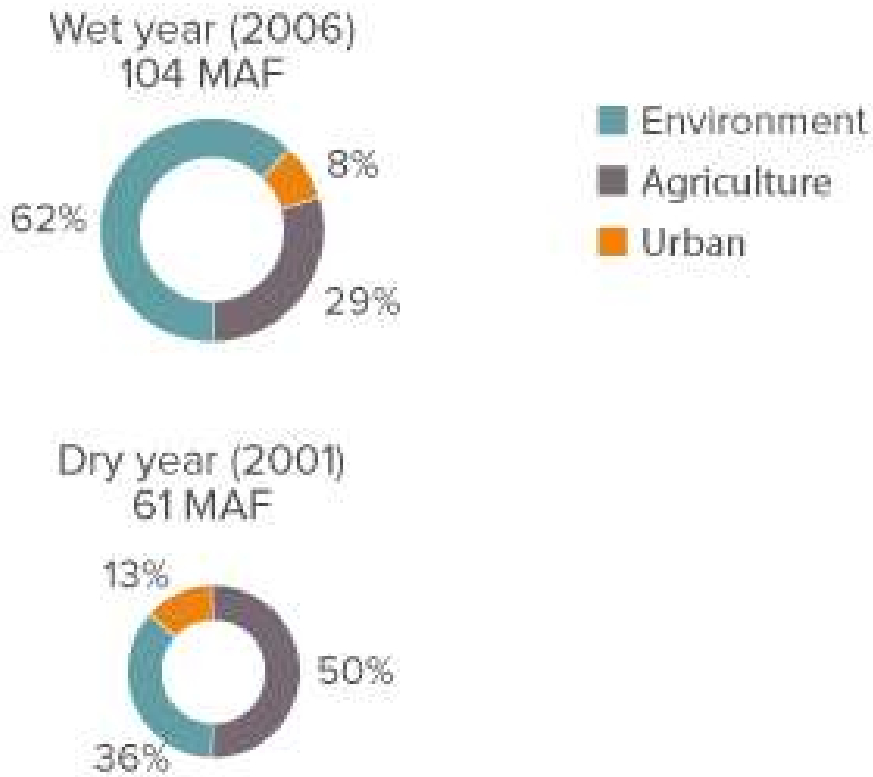


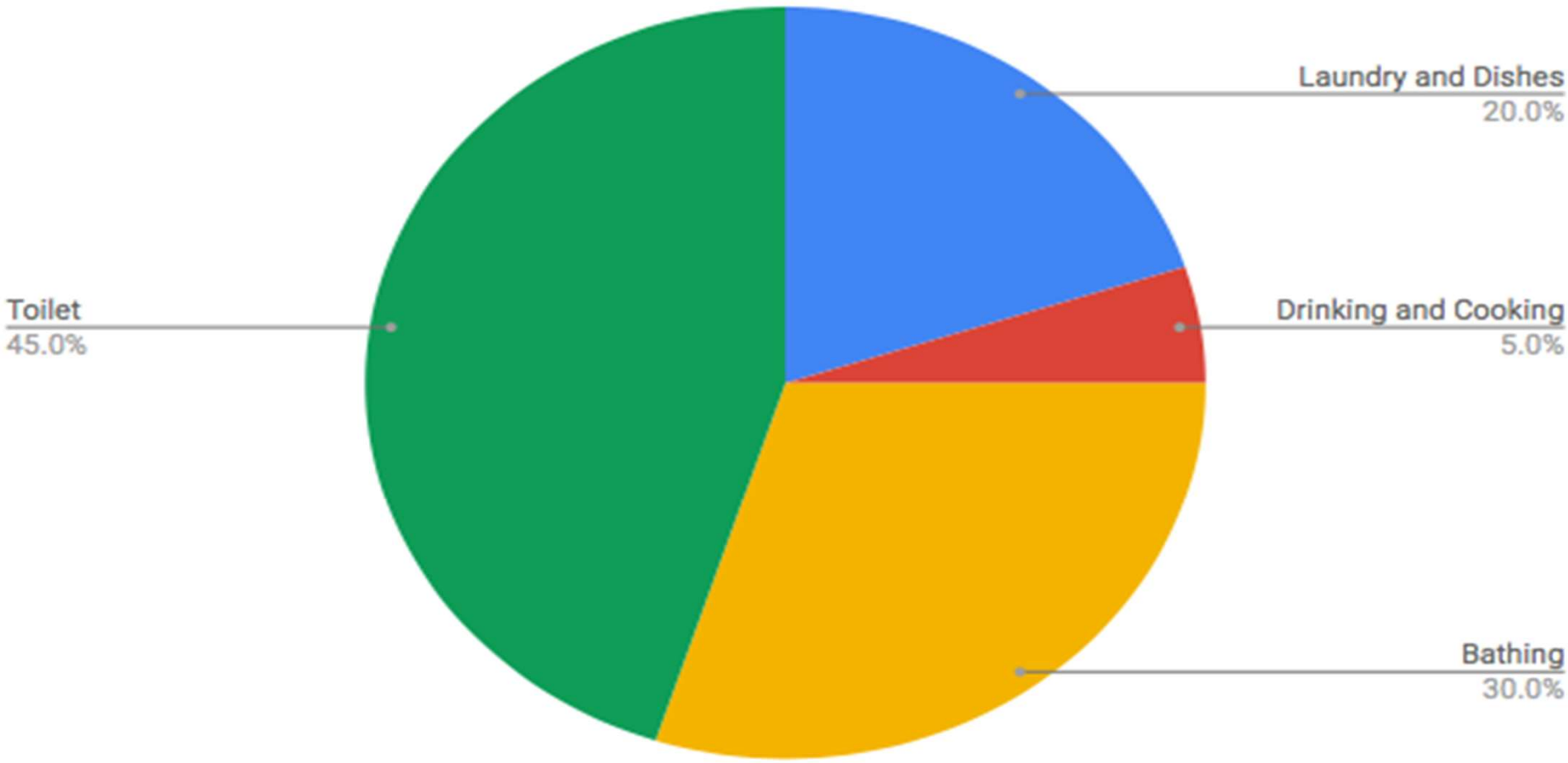
Californian's have lived
with drought on and off
for generations

Where does our water go?

Average annual applied water use (1998–2010)

Statewide applied water use, millions of acre-feet (MAF)




Water use around the house
Laundry and Dishes
20.0%
Drinking and Cooking
5.0%
Bathing
30.0%
Toilet
45.0%

WHY IS IT IMPORTANT TO CONSERVE WATER?

- WATER IS HIGHLY VALUABLE AND LIMITED
- WATER COST A GREAT DEAL IN ENERGY AND MONEY TO PUMP AND PURIFY
- WATER USE CAN BE REDUCED SIGNIFICANTLY IF WE CHANGE OUR PERSOAAL HABITS AND HOUSEHOLD USE

WATER FACTS

- 70% of our body is made of water
- 97% is salt water
- 2% is water frozen in glaciers
- Only one percent is fresh water (we can use ground water - .4%; surface water - .022% &, .001 atmosphere)
- American's uses 98 gallons of water a day
- Humans can live less than 2 weeks without water but a month without food
- 25 million people die each year from water contamination

WATER POLLUTION

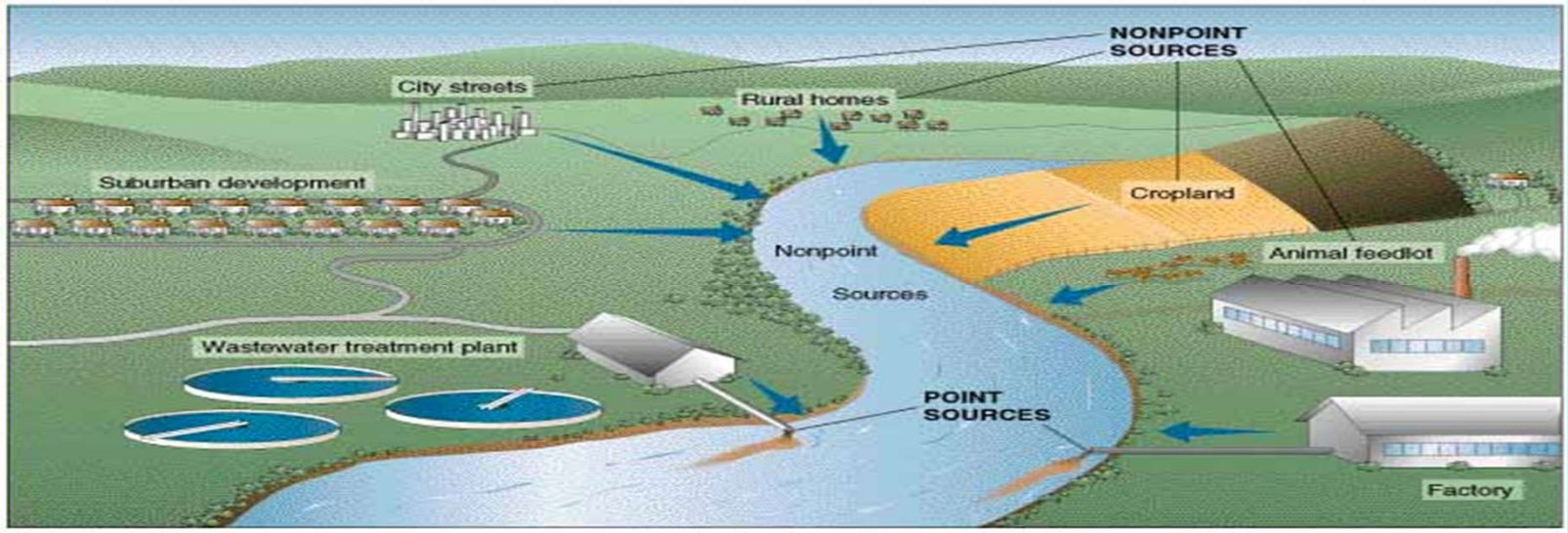
What is pollution in the water?

When something is added to the water that makes it unclean and unsafe. Pollution happens when the water becomes overloaded with too much of a polluting agent and the aquatic organism cannot clean it up.

Sources of pollution

- Nonpoint source of pollution
  - Comes from many different sources rather than one identifiable, specific point. Chemicals, waste products and soil that are carried by rain into streams or rivers.

- Point source pollution
  - Comes directly from a known source like an industrial pipe.

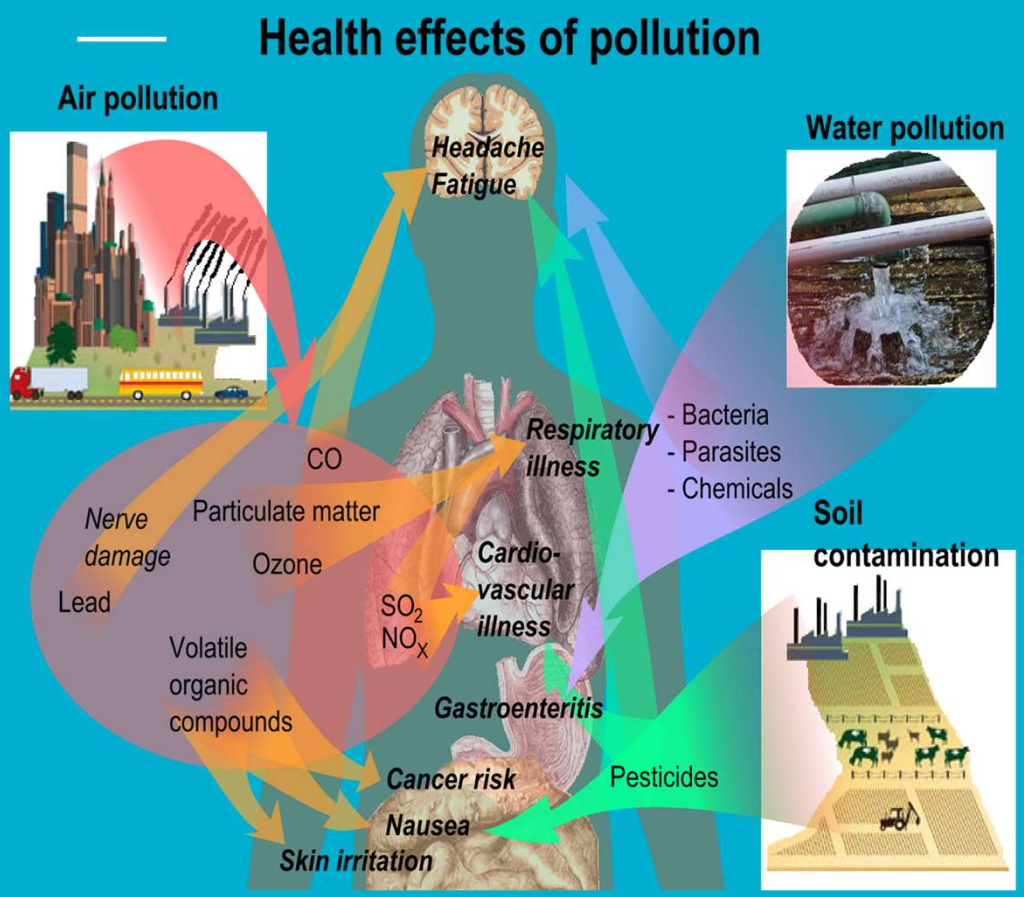


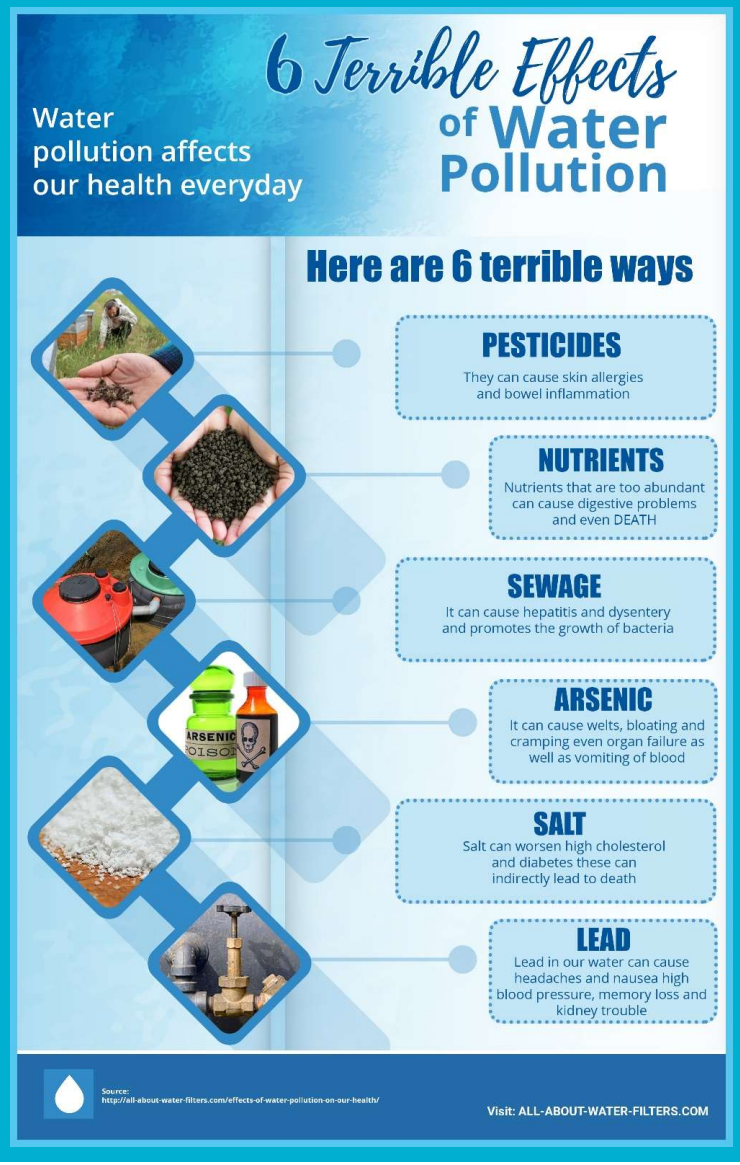
SOURCES OF WATER POLLUTION

- Petroleum
- Sewage
- Solids
- Toxic
- Fertilizers and pesticides
- Animal waste
- Heat waste

HOW DOES POLLUTION AFFECT THE ENVIRONMENT ?

How does pollution affect you?





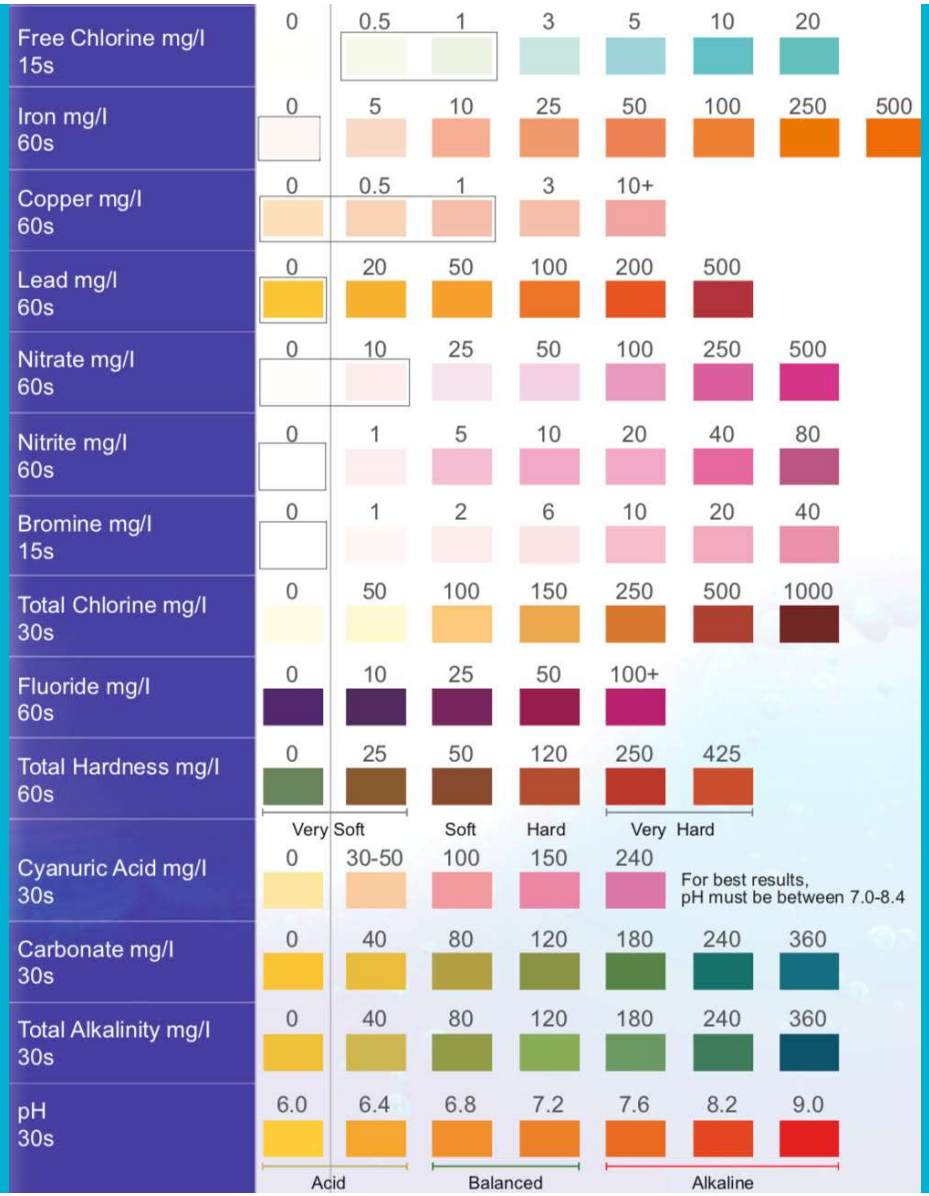
Why are we learning about water?

Water is a valuable resource, in which we take for granted. Along without us not have any sort of life without water, Farmers are taking ground water as an option to increase the amount of water, without knowing they are causing the land to drastically fall within feet. As of the year of 2020 the county has to come up with a strategy/idea on how to conserve water in our county or we will be punish by using the water meters

Is your water safe to drink?

Contact: Madera County Public Health Laboratory (Environmental Laboratory)
14215 Rd 28
Madera, CA 93638
Phone: (559) 675-7893

Contact: Madera County Environmental Health Division
2037 W Cleveland Ave
Madera, CA 93637
Phone: (559) 675-7823



What Can I Do?

Become an engaged citizen who participates in decision-making. Places *belong* to those who live, work, and play there!

<u>Get Involved!</u>

- Educate yourself about your district/representatives.
- Attend a meeting or contact City/County officials, put pressure on them and let your voice be heard.
- If you recognize a problem, talk to your friends, neighbors and people in a similar situation to organize a united effort.
- Vote for candidates who share your interests, and encourage others to vote.

California

PUMA

Jesus is the Sweetest Gift
CELEBRATE

MADERA COALITION for COMMUNITY JUSTICE

educate | organize | empower

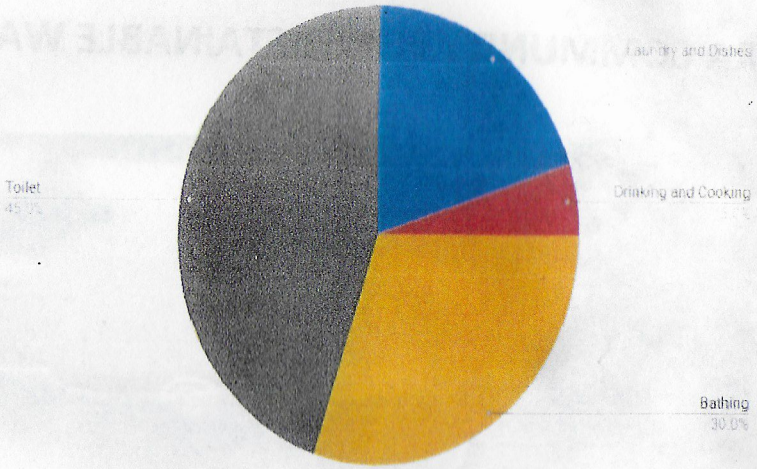
Madera Coalition for
Community Justice
126 N. B street,
Madera CA 93638
(559) 661-1879

MADERA COMMUNITY FOR SUSTAINABLE WATER

Water Facts:

- Over 65% of our body is made of water
- 97% is salt water
- 2% is water frozen in glaciers
- Only one percent is fresh water (we can use ground water - .4%; surface water - .022% &, .001 atmosphere)
- America uses 98 gallons of water a day
- Humans can live less than 2 weeks without water but a month without food
- 25 million people die each year from water contamination

Water use around the house



Ways to conserve water:

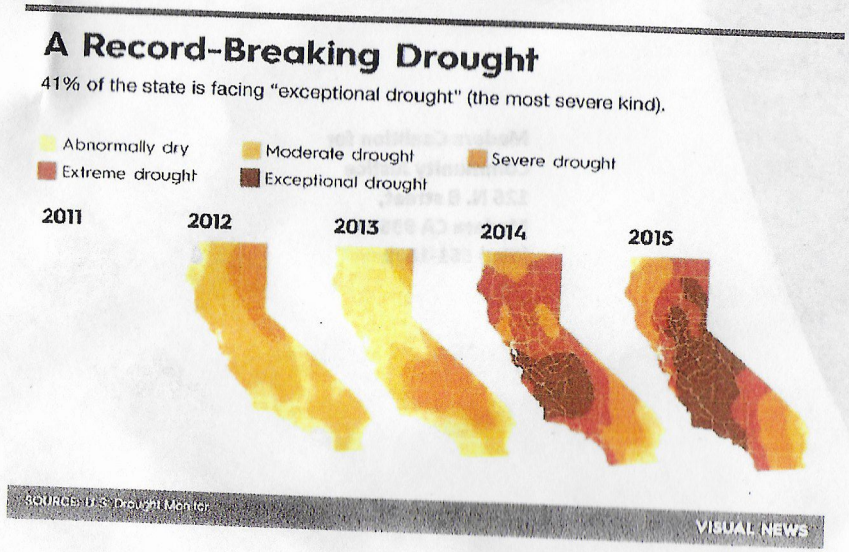
- Low volume toilet, replace with water - saving flush kit
- Low-flow, water-saving shower heads
- Faucet aerators
- Repair leaks in faucet and toilets immediately
- Use dishwasher and clothes washer only when full load
- Attach pistol-type sprayer to end of garden hose

Madera Coalition for Community Justice has been awarded a grant to establish an organizational framework to ensure water security in terms of quality and quantity in Madera County. The grant coordinator for this project is Mariela Mendez.

Our goal is to raise awareness by educating and empowering the community about ways to ensure water security in terms of quality and quantity by providing tools and resources about the water issue.

Community meetings will take place in different areas of Madera County. Please visit our community calendar to stay up to date with our meetings and events.

This project is funded by a grant from the Rose Foundation For Communities and the Environment.



Arsenic-free drinking water for Central Valley DACs

Central Valley Disadvantaged Community Water Quality Grants Program 3

Rural Community Assistance Corporation

Stanley Keasling
3120 Freeboard Drive
Suite 201
West Sacramento, CA 95691

sbutrum@rcac.org
O: 916-447-9832
F: 916-447-2878

Stephanie Villegas

3120 Freeboard Drive
Suite 201
West Sacramento, California 95691

svillegas@rcac.org
O: (916) 447-9832 ext. 1051
M: (916) 917-6088 – Cel

FollowUp Form

Instructions

All grantees are required to submit a grant report that describes the work funded by the grant. Unless otherwise noted in your grant contract, your report should contain both a narrative description of activities performed and a financial statement showing how grant funds were spent. You should also provide copies of any deliverables produced during the grant period.

Rose Foundation's policy for the Central Valley Grants Program is that grant reports are due two weeks after the end of each quarter, and final report upon one month after project completion. For example, if your grant period is 24 months, you'll have three quarterly interim grant reports, one every six months, and a final grant report due 25 months from the start of the grant.

Your specific reporting dates and any special reporting requirements are identified in your Grant Contract.

If you have a multi-year grant, please note that Rose Foundation must receive your interim grant report before disbursing grant installments.

If you have any questions about reporting and/or installments, please contact your Program Officer, Laura Fernandez or call (510) 658-0702.

Basic Information

Project Name

Name of Project

Arsenic-free drinking water for Central Valley DACs

Grant Period*

Please indicate the start date of the grant period for which you are reporting on

06/01/2018

Amount Awarded

$93,000.00

Area(s) of Emphasis*

Environmental Education
Environmental Health & Justice
Water Resources / Watershed Protection

Water Quality Monitoring Categories

Water Quality Monitoring

Environmental Health & Justice Categories

Timeline, Deliverables, & Achievements

Please refer to the template instructions below to fill out the Timeline and Deliverables table. In the document, identify all key deliverables and achievements for the completed milestones of this report, and tie them into the project timeline.

To submit project timeline, deliverables, and achievements:*

1) Click Here to download the Timeline & Deliverables template.
2) Fill out the document with all relevant information. You may refer to the chart that you previously submitted and copy your timeline accordingly.
3) Re-submit the document back to this question.

Rose Foundation Time & Deliverables Table 12.15.18.pdf

Narrative

Brief Summary*

Please summarize the overall impact of the project so far in terms of activities and accomplishments.

Questions to consider for the project summary: Who/what was helped by the project? What water quality benefits occurred?

The primary geographic area for the specific project described in the proposal consists of the disadvantaged communities of Caruthers and Riverdale in Fresno County. RCAC has subcontracted this project to Self Help Enterprises (SHE) due to their strong presence in the Central Valley and already established relationship with the communities served through this project. SHE is working with the Riverdale Joint Unified School District and the fairgrounds in Caruthers to install water bottle filling stations. This project will help students and staff at the Riverdale Joint Unified School District and community members in Caruthers.

The proposed project will include stations in Riverdale and stations with point-of-use (POUs) in Caruthers. In Caruthers, the water has arsenic so POUs will be installed along with the water bottle filling stations.

Impact Narrative*

Please describe the impact of the work you conducted with the grant funds. In addition, please describe any unanticipated outcomes, challenges, or other changes that occurred during the project's duration. Please include any lessons learned and/or advice for other organizations facing similar circumstances.

RCAC has partnered with Self Help Enterprises (SHE) to complete the project in Caruthers and Riverdale. SHE staff have been in communication with the school staff from the Riverdale Joint Unified School District and community members from Caruthers to complete the site walk-through and pre-installation assessments. Based on the site assessments, SHE has provided the recommendations for which units will be installed throughout the Riverdale Joint Unified School District and at the Caruthers fairgrounds.

Due to unexpected delays, we have not completed two of the tasks originally proposed in the timeline.

Tasks that have been completed:

- Program outreach and commitment from the water system and community installation sites
- Site walk-through and pre-installation assessments.
- Execute grant agreements with site sponsors and water system.
- Order of 10 water bottle filling stations for Riverdale Joint Unified School District.

One task has not been completed due to unexpected challenges.

- Order filling station units filter systems and security cabinets. Obtain construction bids from sites and/or contractors.
- Due to Caruther's Fair Board President being a professor at the local college, he will away for the month of December and has asked to order the two fountains and cabinets in January so he can be there to receive them. Additionally, construction bids will be obtain when the orders are submitted so that they are not delayed by the delivery of the units.

Did the grant fund water quality monitoring?*

If the grant did fund water quality monitoring, please include and specify the type of Quality Assurance / Quality Control (QA/QC) procedures that were followed in the question below.

Yes

Types of Quality Assurance

Type(s) of Quality Assurance/Quality Control (QA/QC) procedures followed*

QA/QC can be from the EPA or CA State Water Resources Board, for example. Click here for information about QA/QC

No Quality Assurance (QA)/ Quality Control (QC) procedures have been used at this time. However, QA/QC procedures will be followed with the work in Caruthers since the community's water has arsenic contamination. SHE staff are working with the Division of Drinking Water (DDW) to coordinate the POU project in the community of Caruthers. Protocols for sampling, monitoring and communications will be developed after the pilot has been completed. Water quality results will be made available to community members in Caruthers and outreach materials will be distributed to educate community members on the location and functionality of the water bottle filling and filtration systems.

Financials

Financials*

Please refer to the line item budget you submitted in your Application Attachments and prepare a corresponding financial statement that shows how the grant funds were actually expended. If there were any variances in any items over 10%, include a brief explanation for the variance. You may paste your financial statement into this section, or include it as an attachment.

Interim Financial Report 12.15.18.pdf
Please see attached.

Attachments

Please attach or provide a link to any significant deliverables produced with grant funds, such as reports, videos, etc. You may also include other materials such as newsletters, media clippings, or photos that will help us better understand the work you performed under the grant. Please understand that the system limits file sizes - therefore, a few key examples are better than numerous photos or clippings.

Significant Deliverables*

If you produced a report, video, or other significant deliverable with this grant, you may attach it here or paste a URL box below. Use the text box to briefly describe your significant deliverables.

N/A

Newsletters, Media, Photos or Other Attachments

You may attach additional documents or publications here or paste a URL into the text box below. Use the text box to briefly describe your significant deliverables.

Newsletters, Media, Photos, or other Attachments

You may attach additional documents or publications here or paste a URL into the text box below. Use the text box to briefly describe your significant deliverables.

File Attachment Summary

Applicant File Uploads

- Rose Foundation Time & Deliverables Table 12.15.18.pdf
- Interim Financial Report 12.15.18.pdf

RCAC
www.rcac.org

Corporate Office:
3120 Freeboard Drive, Suite 201
West Sacramento, CA 95691
(916) 447-2854 • Fax (916) 447-2878

Rural Community Assistance Corporation

Arsenic-free Drinking Water for Central Valley DACs

Amount Awarded: $ 93,000

Brief Summary: Please summarize the overall impact so far of the project in term of activities and achievement.

RCAC has partnered with Self Help Enterprises (SHE) to complete the project in Caruthers and Riverdale. The primary geographic area for the specific project described in the proposal consists of the disadvantaged communities of Caruthers and Riverdale in Fresno County. SHE staff are working with the Riverdale Joint Unified School District and the fairgrounds in Caruthers in install water bottle filling stations. This project will help students and staff at the Riverdale Joint Unified School District and community members in Caruthers. The water in the community of Caruthers has arsenic contamination so the project will include the installation of drinking fountains with point-of-use (POUs) filters. Outreach and site assessments have been completed to provide recommendations for the installation of the water bottle filling stations. Both communities are excited to participate in this program to provide access to safe drinking water to students and community members.

Narrative: Please describe the work you conducted with the grant funds. Refer to your work plan and describe your progress towards the milestones and deliverables outlined in your proposal. If the grant funded water quality monitoring, make sure to include and specify the type of Quality Assurance / Quality Control (QA/QC) procedures followed. Also, please describe any unanticipated outcomes, challenges, or other changes that occurred during the project's duration. Please include any lessons learned and/or advice for other organizations facing similar circumstances. Finally, please briefly describe any other significant work your organization performed during the grant period - this provides helpful context to understand how work on this grant fit into your organization's overall goals and strategies**.**

RCAC has partnered with Self Help Enterprises (SHE) to complete the project in Caruthers and Riverdale. SHE staff have been in communication with the school staff from the Riverdale Joint Unified School District and community members from Caruthers to complete the site walk-through and pre-installation assessments. Based on the site assessments, SHE has provided the recommendations for which units will be installed throughout the Riverdale Joint Unified School District and at the Caruthers fairgrounds.

Due to unexpected delays, we have not completed two of the tasks originally proposed in the timeline.

Tasks that have been completed:

- Program outreach and commitment from the water system and community installation sites
- Site walk-through and pre-installation assessments.
- Execute grant agreements with site sponsors and water system.

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www.rcac.org

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West Sacramento, CA 95691
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Rural Community Assistance Corporation

- Order of 10 water bottle filling stations for Riverdale Joint Unified School District.

One task has not been completed due to unexpected challenges.

- Order filling station units filter systems and security cabinets. Obtain construction bids from sites and/or contractors.

Due to Caruther's Fair Board President being a professor at the local college, he will away for the month of December and has asked to order the two fountains and cabinets in January so he can be there to receive them. Additionally, construction bids will be obtain when the orders are submitted so that they are not delayed by the delivery of the units.

No Quality Assurance (QA)/ Quality Control (QC) procedures have been used at this time. However, QA/QC procedures will be followed with the work in Caruthers since the community's water has arsenic contamination. SHE staff are working with the Division of Drinking Water (DDW) to coordinate the POU project in the community of Caruthers. Protocols for sampling, monitoring and communications will be developed after the pilot has been completed. Water quality results will be made available to community members in Caruthers and outreach materials will be distributed to educate community members on the location and functionality of the water bottle filling and filtration systems.

Deliverables & Timeline: Please identify all key deliverables for the completion milestones of this report, and tie them into the project timeline.

Timeline & Deliverables		
Milestone	**Tasks**	**Deliverables**
25% complete—3 month mark. Target project period: 12 months	1. Program outreach and commitment from water system and community installation sites. 2. Site walk-through and pre-installation assessments. 3. Execute grant agreements with site sponsors and water system. 4. Order filling station units, filter systems and security cabinets. 5. Obtain construction bids from sites and/or contractors. 6. Execute task orders to provide installation funds.	10 water bottle filling stations purchased to increase effective access to free safe drinking water in Riverdale. Two water bottle filling stations equipped with certified Point of Use Arsenic filters purchased to ensure access to safe drinking water for Caruthers community residents.
50% complete—6 month mark	1. Conduct filter pilot study and coordinate with local water regulator. 2. Develop sampling, monitoring and communications protocols.	Pilot study conducted, and approval from local water regulator to move forward with installation of filters to provide safe water.

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Rural Community Assistance Corporation

Target project period: 12 months		Communications, sampling and monitoring, and operations and maintenance protocols established.
75% complete—9 month mark Target project period: 12 months	1. Facilitate filling station and filter installations. 2. Design, purchase and install safe water signage. 3. Ongoing water sampling by water system. 4. Ongoing filter and filling station operation and maintenance by site sponsors. 5. Develop program communications and outreach materials, including fact sheets, maps of safe water locations. 6. Water quality results made prepared for community members.	At least two water bottle filling stations equipped with POU arsenic filters installed in Caruthers. At least 10 water bottle filling stations installed in Riverdale. Water quality results made available to community members in Caruthers.
100% complete—12 month mark Target project period: 12 months	1. Ongoing water sampling by water system. 2. Ongoing filter and filling station operation and maintenance by site sponsors. 3. Prepare presentations for schools and communities about benefits of drinking water.	Communications and outreach materials developed and distributed to educate the communities on location and functionality of water bottle filling stations and filtration systems, and provide information on the availability of safe drinking water. Distribute 1950 reusable water bottles Riverdale Joint Unified School District students. Promotion of water as the healthiest beverage choice conducted.
Ongoing Tasks		

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Rural Community Assistance Corporation

PROJECT BUDGET

(financial statement on how the funds are being spent)

Reported by RCAC 12/15/18

Item	Budget	Cost 6/1/18-9/30/18
Pedestial Units Caruthers	$ 9,000.00	$ 23,699.00
Filling stations Riverdale	$ 20,000.00	$ -
Filters (Caruthers)	$ 1,120.00	$ -
Flow meters (Caruthers)	$ 200.00	$ -
Filling stations (Caruthers)	$ 6,000.00	$ -
Reusable Water Bottles Caruthers	$ 9,750.00	$ -
Installation Costs	$ 4,000.00	$ -
Salaries	$ 3,715.67	$ 532.09
Fringe Benefits	$ 1,677.38	$ 236.56
Travel	$ -	$ -
General Supplies	$ 120.52	$ 13.56
Telephone	$ 103.61	$ 14.33
Postage	$ 10.88	$ 1.19
Office Space	$ 255.04	$ 39.94
Equipment rental & maintenance	$ 59.21	$ 13.92
Printing & copying	$ -	$ -
Water sampling & monitoring subcontract*	$ 1,440.00	$ -
Communications subcontract**	$ 17,000.00	$ -
Indirect	$ 18,547.68	$ 205.57
TOTAL	**$ 93,000.00**	**$ 24,756.16**

Rose foundation Interim Report
Reported by RCAC 12/15/18

ITEM		Budget		Cost 6/1/18-12/15/18
Pedestial Units (Caruthers)		$ 25,475.00		$ -
Filling stations (Riverdale)		$ 23,699.00		$ 23,699.00
Filters (Caruthers)		$ 1,182.00		$ -
Flow meters (Caruthers)		$ 244.00		$ -
Filling stations (Caruthers)		$ -		$ -
Reusable Water Bottles (Riverdale)		$ 8,606.00		$ -

Installation Costs		$ 23,374.00		$ -
Salaries		$ 2,086.00		$ 532.09
Fringe Benefits		$ 937.00		$ 236.56
Travel		$ -		$ -
General Supplies		$ 76.75		$ 13.56
Telephone		$ 61.00		$ 14.33
Postage		$ 7.00		$ 1.19
Office Space		$ 155.00		$ 39.94
Equipment rental & maintenance		$ 43.00		$ 13.92
Printing & copying		$ -		$ -
Water sampling & monitoring subcontract*		$ -		$ -
Subcontractor Fee		$ -		$ -
Indirect		$ 7,054.00		$ 205.57

TOTAL		$ 93,000.00		$ 24,756.16

Water in the Balance - Four Key Actions

Central Valley Disadvantaged Community Water Quality Grants Program 2

Central Sierra Environmental Resource Center

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FollowUp Form

Instructions

All grantees are required to submit a grant report that describes the work funded by the grant. Unless otherwise noted in your grant contract, your report should contain both a narrative description of activities performed and a financial statement showing how grant funds were spent. You should also provide copies of any deliverables produced during the grant period.

Rose Foundation's policy for the Central Valley Grants Program is that grant reports are due two weeks after the end of each quarter, and final report upon one month after project completion. For example, if your grant period is 24 months, you'll have three quarterly interim grant reports, one every six months, and a final grant report due 25 months from the start of the grant.

Your specific reporting dates and any special reporting requirements are identified in your Grant Contract.

If you have a multi-year grant, please note that Rose Foundation must receive your interim grant report before disbursing grant installments.

If you have any questions about reporting and/or installments, please contact your Program Officer, Laura Fernandez or call (510) 658-0702.

Basic Information

Project Name

Name of Project

Water in the Balance - Four Key Actions

Grant Period*

Please indicate the start date of the grant period for which you are reporting on

06/01/2018

Amount Awarded

$140,000.00

Area(s) of Emphasis*

Environmental Education
Habitat / Wilderness / Preservation
Water Resources / Watershed Protection

Water Quality Monitoring Categories

Water Quality Monitoring
Wetland, Waterbody, Riparian Habitat Conservation or Protection
Pollution Prevention

Environmental Health & Justice Categories

Timeline, Deliverables, & Achievements

Please refer to the template instructions below to fill out the Timeline and Deliverables table. In the document, identify all key deliverables and achievements for the completed milestones of this report, and tie them into the project timeline.

To submit project timeline, deliverables, and achievements:*

1) Click Here to download the Timeline & Deliverables template.
2) Fill out the document with all relevant information. You may refer to the chart that you previously submitted and copy your timeline accordingly.
3) Re-submit the document back to this question.

Report C Timeline and Deliverables.docx

Narrative

Brief Summary*

Please summarize the overall impact of the project so far in terms of activities and accomplishments.

Questions to consider for the project summary: Who/what was helped by the project? What water quality benefits occurred?

During the third 6-month grant period for the project “Water in the Balance – Four Key Actions,” CSERC surpassed project goals for water sampling, watershed watchdog monitoring, stakeholder collaboration, and raising environmental awareness. We continued to sample national forest and foothill streams. We monitored more than 40 meadows and assessed countless miles of roads to locate resource damage. CSERC staff advocated for balanced forest and watershed health projects while serving as key participants in four different collaborative stakeholder groups. We presented a training for teachers at a Forest Institute and continued to provide our free online Nature Games for Kids that received over 100,000 unique views already this year.

Impact Narrative*

Please describe the impact of the work you conducted with the grant funds. In addition, please describe any unanticipated outcomes, challenges, or other changes that occurred during the project's duration. Please include any lessons learned and/or advice for other organizations facing similar circumstances.

CSERC made strong progress during the third quarter of the grant period. Our staff (1) continued to sample water quality in mountain and foothill streams, (2) provided evidence of watershed issues of concern to the Forest Service and to the Central Valley Regional Water Board through our watchdog monitoring, (3) served as key water advocates in four collaborative stakeholder groups, (4) and raised public awareness about watershed issues through contacts with the media, public events, online articles, and our website's educational games for kids.

WATER QUALITY SAMPLING – Similar to CSERC's first two interim reports, our staff exceeded our grant targets for water quality sampling by taking 117 samples in this grant reporting period (82 were forest and foothill samples, and 35 were field blanks or field duplicates as required by the QAPP). Staff devoted 267 hours during the six-month period to water sampling, separate from our forest and watershed watchdog monitoring work. We continued to sample foothill locations in the Mokelumne, Stanislaus, Tuolumne, and Merced River watersheds, and expanded our water sampling in the Stanislaus Forest to include testing for environmental DNA and eDNA. This important information allows clearer determination of the source of bacterial contaminants in the water samples CSERC collects. Microbial source testing confirmed that cattle are the source for a high percentage of the bacterial contamination documented in CSERC's forest stream sampling. Staff is currently in the process of analyzing and compiling all of this year's water sampling data to provide to the Water Board and the Forest Service.

WATERSHED WATCHDOG MONITORING – In the 6-month period, CSERC staff devoted 573 hours to watchdog monitoring across the Stanislaus Forest. Our monitoring of grazing in meadows and riparian areas bolstered our water sampling work. Forest monitoring documented pocked and crumbling streambanks, bare soil due to over-grazing, and cattle manure in the streams. (Separate from this grant, it is noteworthy that CSERC staff continued to invest a significant amount of time to support our on-going lawsuit against the Forest Service for the agency repeatedly allowing water quality violations in forest streams caused by poorly managed livestock on national forest lands.) In October, CSERC coordinated a highly important site visit for staff from the Regional Water Board to see first-hand cattle impacts to riparian resources and erosion issues caused by poor road maintenance on public forest lands. CSERC's watchdog monitoring also detected numerous roads that are blown-out and discharging sediment into downslope waters. In addition to other watchdog monitoring, CSERC staff visited and assessed watershed conditions at two major burn areas that suffered high severity wildfire impacts during the 2018 fire season.

COLLABORATIVE DEVELOPMENT OF STRATEGIC WATERSHED SOLUTIONS – CSERC's key role as a voice for nature in four collaborative groups helped provide balanced, middle-ground solutions to complex watershed issues. CSERC staff contributed 278 hours working toward collaborative solutions. Our leadership in the Yosemite-Stanislaus Solutions helped craft forest watershed projects under a Master Stewardship Agreement between the Forest Service, YSS, and Tuolumne County. In the Amador-Calaveras Consensus Group, we advocated for balanced forest thinning projects to make the forest more resilient to drought and help reduce the risk of catastrophic wildfire in our region's watersheds. CSERC continued to engage in the Phoenix FERC hydroelectric relicensing process with on-the-ground knowledge and detailed comments on environmental studies. With the Tuolumne-Stanislaus Integrated Region Water Management collaborative group, CSERC continued to provide leadership for the conservation community, as well as extra time invested in assessing potential projects up for consideration by the IRWM process.

RAISING PUBLIC AWARENESS THROUGH OUTREACH AND EDUCATION – Despite CSERC's continued outreach invitations to schools across the Central Valley and foothills, CSERC did not receive requests for new presentations during the reporting period. Nevertheless, CSERC will still end with a total of more than 3,200 participants served by CSERC's slide show programs during this calendar year. In June, CSERC staff was asked to present a training about forest and water issues to 26 teachers from Central Valley schools. In other educational outreach efforts, CSERC staff participated in the Salmon Festival for the Stanislaus River to raise awareness around watershed and river issues with youth and adults. In addition, staff worked closely with online contacts to raise awareness about river health, pollution, aquatic species, and ecosystem connections. CSERC's free website-hosted environmental

games for kids have already had over 100,000 unique site visits during this calendar year. Through activist alerts, CSERC encouraged conservation activists to support the State Water Board's Bay-Delta plan that would increase flows in three rivers that feed into the Bay/Delta. CSERC also continued to provide quotes and timely informational updates to the media on water and watershed issues.

CSERC's commitment to so many integral watershed issues and projects in the iconic Northern Yosemite region continues to provide downstream water quality benefits for DAC communities in the foothills and Central Valley. Although pressures on schools associated with school testing and other conflicts resulted in a pause in demand for our school presentations during the six-month period, new school presentations by CSERC have already been given in December, and our free online educational games for kids continue to be used in classrooms.

There was a continued high demand for staff time and resources as CSERC participated in two FERC hydroelectric relicensing. Similar to the public input opportunity associated with the Water Board's Bay/Delta river flow plan, the FERC planning processes enabled CSERC to advocate for increased river flows and improved water quality for both upper and lower watersheds. In hands-on restoration work that resulted in an immediate watershed benefit, CSERC organized and led 11 volunteer workday projects to benefit resources in the local national forest, resulting in a total contribution of 690 hours of time provided by volunteers to protect meadows, prevent erosion, and plant trees in burned areas.

In this third 6-month portion of our overall grant period, CSERC's efforts continued to provide important benefits for the watershed, the ecosystem, and downstream water users. By monitoring water quality, advocating for river flows, educating the public, and providing expertise on watershed issues, CSERC's work made a measurable difference on the front lines of water protection for the iconic Northern Yosemite region. The support of the Rose Foundation has continued to be highly valuable in our water protection efforts.

Did the grant fund water quality monitoring?*

If the grant did fund water quality monitoring, please include and specify the type of Quality Assurance / Quality Control (QA/QC) procedures that were followed in the question below.

Yes

Types of Quality Assurance

Type(s) of Quality Assurance/Quality Control (QA/QC) procedures followed*

QA/QC can be from the EPA or CA State Water Resources Board, for example. Click here for information about QA/QC

CSERC has two approved QAPPs filed with the State Water Board. One for water sampling in the National Forest and another for water sampling in foothill streams. Copies are available upon request.

Financials

Financials*

Please refer to the line item budget you submitted in your Application Attachments and prepare a corresponding financial statement that shows how the grant funds were actually expended. If there were any variances in any items over 10%, include a brief explanation for the variance. You may paste your financial statement into this section, or include it as an attachment.

Report C Financial.pdf

*While CSERC has done significant outreach for our educational programs, few were requested during this six month period. However, we have already scheduled a number of educational program for the next six month period and expect to reach more participants in the next reporting period. See the attached budget.

Attachments

Please attach or provide a link to any significant deliverables produced with grant funds, such as reports, videos, etc. You may also include other materials such as newsletters, media clippings, or photos that will help us better understand the work you performed under the grant. Please understand that the system limits file sizes - therefore, a few key examples are better than numerous photos or clippings.

Significant Deliverables*

If you produced a report, video, or other significant deliverable with this grant, you may attach it here or paste a URL box below. Use the text box to briefly describe your significant deliverables.

DRAFT CSERC 2018 Stanislaus National Forest Water Quality Report.pdf

Attached is CSERC's draft water quality report for stream sampling in the Stanislaus National Forest.

Newsletters, Media, Photos or Other Attachments

You may attach additional documents or publications here or paste a URL into the text box below. Use the text box to briefly describe your significant deliverables.

CSERC regularly produces newsletter and online articles on key watershed and conservation issues:

https://www.cserc.org/blog/there-here-chinook-salmon-back-in-our-local-rivers/

https://www.cserc.org/news/newsletter/summer-2018/water-districts-agricultural-interests-rally-against-final-version-of-water-board-plan-to-increase-river-flows-in-three-local-rivers/

https://www.cserc.org/news/livestock-2018/

Newsletters, Media, Photos, or other Attachments

You may attach additional documents or publications here or paste a URL into the text box below. Use the text box to briefly describe your significant deliverables.

File Attachment Summary

Applicant File Uploads

- Report C Timeline and Deliverables.docx
- Report C Financial.pdf
- DRAFT CSERC 2018 Stanislaus National Forest Water Quality Report.pdf

Timeline & Deliverables			
Milestone	**Tasks**	**Deliverables**	**Achievements**
25% complete—6-month mark. Target project period: 24 months	1. Watershed monitoring 2. Selected water sampling 3. Outreach programs to schools, community groups) 4. Website/Social networking	Verbal and photo reports of monitoring provided to land management agencies. Lab results quantify contaminant levels. Outreach feedback leads to enhancement of website and networking.	Verbal and photo reports of monitoring were shared with management agencies. CSERC hosted field tours to take out USFS officials and Water Board staff to personally observe dramatic problems. Detailed final monitoring results were compiled for resource degradation assessments and were submitted to the Water Board and USFS officials. 146 water samples were taken and tested at certified laboratory. Water sampling result data from 2011-2016 was painstakingly formatted and submitted to Water Board. 2017 sampling data was compiled and submitted. Classroom programs and assemblies reached 1,400 youth and members of community groups in 6-month period. Thousands of young people visited CSERC's website - Educational Games For Kids. Staff poured high levels of time and travel into participating in four ongoing stakeholder collaborative processes plus a new FERC process for the South Fork Stanislaus. Staff advocated for water and the environment at 74 meetings and additional field sessions. Over the first 6 month-grant period, CSERC staff provided 2,090 hours of work in comparison to the Project commitment of

			only 1,321 hours of staff time for the entire first year of the Project. Mileage tied to the grant also was estimated to be 8,598 miles for the first 6 months, but CSERC staff actually incurred 13,048 miles of travel associated with Project work. Above and beyond the grant funds CSERC provided $29,000+ of contributed cost toward the four program areas.
50% complete—12-month mark Target project period: 24 months	1. Foothill watchdog monitoring expanded 2. Selected water sampling 3. Outreach programs continued 4. Greater focus on Spanish language website articles and outreach	Responsible agencies were notified of violations identified. More lab results showing pollution levels. Continued refinement of outreach based on feedback.	Watchdog monitoring during the winter focused on locating problems such as major erosion or road blow-outs due to storm events. CSERC staff walked miles of supposedly closed remote off-road-vehicle routes to document illegal use and to take pictures of gullies, erosion, and sediment discharge into downslope waters. Staff visited lower elevation streams over the six months to sample water quality. 2017 water sampling data was provided to the Water Board and to the Forest Service. CSERC continued to press the Forest Service to improve livestock management to reduce contamination. Free slide show programs reached over 3,000 youth and members of community groups in the 6-month period. Online educational games and CSERC blogs also proved to be highly popular. CSERC was often the sole participant at FERC planning meetings for the South Fork

			Stanislaus. Staff advocated for water and watersheds in 3 other major stakeholder planning processes that affect over 1,000,000 acres of the region.
75% complete—18-month mark Target project period: 24 months	1. Renewed forest monitoring of watersheds and threats 2. Selected water sampling 3. Continuation of all outreach	Renewed reporting to agencies with responsibility for watersheds, water Prior year water quality results submitted as data to Water Board	During the six-month period, CSERC applied 561 hours of staff time to watershed watchdog monitoring. Our staff documented livestock-caused watershed degradation along with erosion issues due to poor road maintenance. CSERC continued to press the Forest Service to better maintain roads and to improve livestock management to reduce stream contamination. CSERC staff spent significant time gathering resource information in support of our lawsuit against the USFS for failing to protect wetlands or to prevent stream pollution. We coordinated two tours for Regional Water Board staff to show them some of the most egregious watershed and riparian resource effects in the Stanislaus Forest. We continued our water quality sampling efforts at multiple locations during this reporting period. We are currently compiling our data from forest and foothill sampling to submit to the Water Board when complete. 117 water samples were taken and tested at certified laboratory in the report period. CSERC staff contributed 96 hours to outreach efforts, including to schools and teachers, but we had no requests for school assemblies during the period. We presented a training at a Forest Institute for Teachers. Our free online

			educational games for kids have received over 100,000 unique site visits this calendar year and continue to be used in classrooms. In addition, CSERC contributed 170 hours towards outreach, website, and social networking – including providing web articles and games in Spanish. CSERC provided 278 hours of staff time, participating in four collaborative stakeholder groups during the six months. Our staff's engagement helped these groups address watershed and water quality issues that can often affect downstream water users in the Central Valley. In total – just during the 6-mponth period -- CSERC provided approximately $31,000 of contributed cost toward the four program areas that was contributed above and beyond the grant funds that were applied.
100% complete—24-month mark Target project period: 24 months	1. Ongoing monitoring where risks identified in region 2. Additional water sampling 3. Expanded outreach and online efforts to raise awareness	Final watershed monitoring report to USFS and to IRWM stakeholder group. Submission of remaining water quality data to Water Board and USFS.	N/A

Ongoing Tasks	N/A

Financials - third 6 months - interim report

Attachment B - Financial Statement

Water In The Balance Project Budget

	50% of 2-year grant	13-18 months amount	Amount of grant spent in 6 month period	CSERC spent this additional amount on grant work
WATERSHED WATCHDOG MONITORING				
Program salaries to implement monitoring				
24 field days x 2 staff 308 hrs $35/hr	11,830.00	5,915.00	5,915.00	13,720.00
Mileage expense for monitoring				
2,870 miles x $.54 mile	1,550.00	775.00	775.00	867.00
Total watchdog monitoring cost for year	13,380.00	6,690.00	6,690.00	14,587.00
WATER QUALITY SAMPLING PROGRAM OF WORK				
Program salaries to implement sampling				
20 field days 6 hrs ea x 2 staff 240 hrs $35/hr	8,400.00	4,200.00	4,200.00	5,180.00
Mileage expense for water quality sampling access				
2,450 miles times $.54 mile	1,320.00	660.00	660.00	487.00
Laboratory samples expenses				
150 samples $55 ea + $500 for higher analysis	8,750.00	4,375.00	4,375.00	1,475.00
Testing to analyze pollutant source contributors				
lab genetic analysis costs*	1,950.00	1,950.00	1,950.00	2,029.00
Supplies	300.00	150.00	32.00	
Total water sampling cost for the year	20,720.00	11,335.00	11,217.00	9,171.00
DEVELOPING STRATEGIC SOLUTIONS				
Program salaries to engage in collaborative processes	15,875.00	7,940.00	7,940.00	1,790.00
Mileage expense for collaborative participation				
5,765 miles x $.54 mile	3,100.00	1,550.00	1,150.00	
Total collaborative engagement expenses	18,975.00	9,490.00	9,090.00	1,790.00
WATER CONSERVATION AND PUBLIC AWARENESS OUTREACH				
Salaries for presentations/educational preparation				
320 hrs $35/hr	11,200.00	5,600.00	3,360.00	
Salaries for website work, social networking, outreach				
70 hrs $35/hr	2,450.00	1,225.00	1,225.00	4,725.00
Mileage costs left off of grant application	3,300.00	1,650.00	135.00	
Supplies	500.00	250.00	65.00	
Total conservation and public outreach expenses	17,450.00	8,725.00	4,785.00	4,725.00
TOTAL WATER IN THE BALANCE BUDGET SECOND YEAR	**70,525.00**	**36,240.00**	**31,782.00**	**30,273.00**
TOTAL WATER IN THE BALANCE BUDGET TWO YEARS	**140,000.00**			

*** Note - $1,950 genetic lab cost from the first yeear budget was spent in the third 6 month period**

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Water Quality Monitoring of Surface Waters in the Stanislaus National Forest - 2018

Annual Report
Tenth Year of Study
Central Sierra Environmental Resource Center
December 5, 2018

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Summary

This report details the findings of the Central Sierra Environmental Resource Center's 10th year of water quality monitoring of surface waters in the Stanislaus National Forest. As in previous years (2009-2017), the 2018 sampling year focused assessing fecal indicator bacteria (FIB; *Escherichia coli*, fecal coliform) concentrations in forest streams, and how those findings relate to state and federal water-quality standards for was contact recreation beneficial uses. Staff also implemented a pilot project in 2018, employing microbial source tracking (MST) of cattle and human fecal genetic markers to better understand potential sources of fecal bacteria pollution at these sites. The 2018 monitoring effort occurred at three streams in three different watersheds and grazing allotments, including Bell Creek in the Tuolumne River watershed (Bell Meadow-Bear Lake Allotment), Herring Creek in the Stanislaus River watershed (Herring Creek Allotment), the North Fork Mokelumne River in the Mokelumne River watershed (Highland Lakes Allotment), and at one control site on Bourland Creek, within an exclosure fence where cattle are not permitted, within the Upper Hull Allotment in the Tuolumne River watershed. Due to a wildfire on the forest, staff were not able to access the sites on Herring Creek and NF Mokelumne River for a portion of the 2018 summer season. Some of the most notable findings of the monitoring effort were:

- Three violations of state's newly adopted water-quality criteria for water contact recreation beneficial use (*E. coli*) and three violations of the Central Valley Regional Water Boards Basin Plan water quality criteria for water contact recreation beneficial use (fecal coliform) were detected at Bell Creek on September 20, 2018. These violations were of samples > 1,600 MPN/100 mL for both fecal coliform and *E. coli*, over four and five times higher than thresholds for these pollutants.

- No violations were documented at the control site.

- Results of genetic analyses of water samples for the cow and human feces genetic markers at the site on Bell Creek indicate that elevated FIB concentrations coincide with high concentrations of the cow genetic marker, not the human maker.
    - Water sampled at Bell Creek exceeded FIB water-quality criteria on September 20, and also contained high concentrations of the genetic marker for cattle feces (404,000 copies/100 mL), but not for human feces (not detected - 0 copies/100 mL).
    - The highest concentration of the human marker detected in water samples from Bell Creek was 432 copies/100 mL on August 9, 2018, but mean FIB concentrations were relatively low that sampling day (*E. coli*, 13 ± 4 MPN/100 mL; fecal coliform, 17 ± 6 MPN/100 mL).

- Mean (± standard deviation) FIB concentrations were considerably higher when cattle were present (*E. coli*, 467 ± 744 MPN/100 mL; fecal coliform, 468 ± 743 MPN/100 mL) than when cattle were not present (*E. coli*, 43 ± 76 MPN/100 mL; fecal coliform, 44 ± 75 MPN/100 mL).

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CSERC's continued water quality monitoring demonstrates, even with implementation of BMPs, some streams on the STF have FIB concentrations in violation of water quality standards for recreational contact, and may be at least in part due to the presence of livestock as currently regulated and permitted on National Forest lands. **It is important to note that CSERC's pilot project employing MST consisted of a handful of sampling events, and only analyzed two potential fecal sources (cattle and human). This is not enough data to conclude that cattle are the sole contributors of fecal pollution to the stream site. Further assessment is needed to fully understand fecal pollution sources in Bell Creek and other surface waters on the Stanislaus Forest, and how that relates to livestock grazing on forestlands.**

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Background

Thousands of recreational users utilize waters on forestlands for swimming, fishing, and wading, especially during the summer months. However, these months are also when cattle are permitted to graze on national forests. There is a large body of literature suggesting that fecal bacteria pollution is occurring on forestlands and other agricultural lands, and that this contamination is, in part, related to livestock grazing (Derlet et al., 2008; Knapp and Nelson, 2015; Myers and Kane, 2011; Myers et al. 2017; Pandey et al. 2018, Wilkes et al., 2011). As recreational uses will most likely continue to rise in the future (White et al. 2016), it is critical that the land managers have a better understanding of water quality issues on public lands.

Since 2009, CSERC biologists have conducted water quality monitoring in over 30 streams and rivers on the Stanislaus National Forest sampling for fecal indicator bacteria (FIB; fecal coliform and *E. coli*). Between 2009 and 2017 we have documented 100s of violations of state and federal standards established for FIB (CVRWQCB 1996; USEPA 1986) across 20 streams and rivers on the Stanislaus NF (Myers and Kane, 2011; Myers and Whited 2012; Myers et al. 2017; unpublished data). However, the sources of this fecal pollution have yet to be conclusively determined.

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CSERC staff continued to monitor a select number of streams for FIB pollution on the Stanislaus National Forest in 2018.

Staff also implemented a pilot project in 2018, employing microbial source tracking (MST) to detect and quantify the prevalence of DNA unique to cattle and humans feces, in order to identify potential sources of fecal contamination at our stream monitoring sites.

Methods

Field Site Selection

Information on water quality sampling sites visited in 2018 can be found in Table 1 and Figure 1.

Table 1. List of water sample sites on the Stanislaus National Forest sampled in 2018 (latitude and longitude datum NAD 83).

Stream (site code)	HUC 8 Watershed	County	Grazing Allotment	Coordinates (lat, lon)	Elevation (m)
Bell Cr. (BC_MBM_L)	Upper Tuolumne River	Tuolumne	Bell Meadow-Bear Lake	38.16512, -119.94153	1,991
Bourland Cr. (BouC_BoM_2)*	Upper Tuolumne River	Tuolumne	Upper Hull	38.1086, -119.9130	2,206
Herring Cr. (HerC_HCUp)	Upper Stanislaus River	Tuolumne	Herring Creek	38.2660, -119.9046	2,343
NF Mokelumne River (TNFMoke_LLG)	Upper Mokelumne River	Alpine	Highland Lakes	38.5008, -119.7804	2,548

*Control site on Bourland Creek, samples were taken while cows were on the Upper Hull Allotment. However, the site on Bourland Creek is contained within an exclosure fence that includes Bourland Meadow (upstream of site)- the headwaters of Bourland Creek.

Figure 1. Map of water quality sampling sites located in the Stanislaus National Forest

Field Water Collection

A Quality Assurance Project Plan (QAPP) was prepared for this monitoring project and all procedures specified in the QAPP were followed. Collection of MST water samples followed protocols established by Source Molecular, the accredited MST laboratory conducting the genetic analyses (https://sourcemolecular.com/send-samples/).

For FIB water samples, 100 mL samples were collected in 125-mL sterile sample bottles

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(provided by AquaLab, state-certified analytical laboratory in Twain Harte, CA), taken directly from the thalweg, approximately 0.1 m below the stream's surface, while wearing disposable, clean nitrile gloves. FIB sample bottles were marked with a unique 3-digit identifying number and individually sealed in clean Zip-loc plastic bags (to avoid any potential contamination from the ice water) on frozen ice packs (on ice within plastic bags prior to August 30, 2018) in a cooler until delivered to AquaLab. The collection date, collection time, bottle ID, site ID and samplers' names were recorded on the field datasheets, which are retained at the CSERC office; they are also recorded on the Chain-of-Custody form that was transmitted to AquaLab along with each sample. Additional FIB samples collected during sampling events were taken 5 minutes after the collection of the previous sample.

For MST water samples, one 500 mL sample was collected in a 500-mL sterile sample bottle (provided by Source Molecular, Miami, FL) directly from the thalweg, approximately 0.1 m below the stream's surface, while wearing disposable, clean nitrile gloves. At each sampling event, one MST sample was collected, and was collected prior to collection of FIB samples. The site ID and date were marked with permanent marker on the MST sample bottle. The MST bottle was then sealed in a plastic bag (provided by Source Molecular), then immediately put on frozen ice packs in a cooler, along with the Chain of Custody form (collection date, collection time, site ID, genetic markers to analyze for) and shipped overnight to Source Molecular's laboratory facilities in Miami, FL.

Quality control measures were taken during the 2018 field season. FIB field blanks were collected every other sampling day from 6/21/18 – 8/29/18. From 8/30/18 – 9/26/18, field blanks were collected every sampling day, in order to comply with new SWAMP standard operating procedures (SOPs) for bacteria in inland waters that came out in 2018 (https://mywaterquality.ca.gov/monitoring_council/swim_workgroup/docs/sop_iwscm_052018.pdf). FIB field duplicates were collected every other sampling event from 6/21/18 – 8/29/18. Split samples were collected every sampling day from 8/30/18 – 9/26/18, instead of field duplicates, in order to comply with new SWAMP SOP. Relative percent difference (RPD) was calculated for both field duplicates and split samples.

After collecting the water samples, numerous observations were recorded on the field data sheet including relative stream flow (e.g., very low, low-very low, low, medium-low, medium, medium-high, high, very high), instream features (presence of instream algae, aquatic plants, leaf litter, foam, oily sheen, trash), water clarity (e.g., clear, cloudy > 4" visibility, or murky with < 4" visibility), dominant understory vegetation, dominant over-story vegetation, dominant streambed type (e.g., bedrock, boulder, cobble, gravel, sand, fines), stream reach type (e.g., riffle, run, pool), any bank disturbance and type (e.g., pocking, chiseling, sloughing, other), presence of cattle and/or cattle manure, number and location of cattle, presence of recreational activities (e.g., swim, campsite, trail, other), presence of pack stock and/or pack stock manure, presence of wildlife or evidence of wildlife and wildlife type, and weather (e.g., cloud cover, precipitation, wind).

In addition, numerous field measurements were also collected and recorded on the field data sheet during the time of water quality sampling. Water temperature (degree C) and specific conductance (uS/cm) were measured at the sampling location after bacteria samples were

collected using a YSI EC 300 meter (meter calibrated monthly). Average canopy cover was also determined with a densiometer. Wetted width (ft) was measured with a measuring tape. Water depth (inches) at 12-in intervals were also measured and recorded across the width of the channel.

Photo documentation of the site also occurred. Photos were taken from the sampling location (at the thalweg) in four directions including upstream, river right (when looking downstream), downstream and river left (when looking downstream). Compass bearings were also documented for each of these photos. Photos were also taken of any disturbances and of the site and sampling location.

Figure 2. Photos of 2018 stream sampling sites. From top left to bottom right, Bell Creek, Herring Creek, North Fork Mokelumne River, and the control site on Bourland Creek.

Laboratory Analyses

FIB water samples were delivered to AquaLab within the 6 hours of collection. All water samples were tested for *E. coli*, total coliform, and fecal coliform bacteria, using Multiple Tube Fermentation (Most Probable Number/100 mL) procedures. The detection minimum using this method of analysis is 2 MPN/100 mL of water. The detection maximum using this method of analysis is 1,600 MPN/100 mL of water.

MST water samples were shipped overnight to Source Molecular in Miami, FL. At the laboratory, water samples were filtered to isolate DNA. After DNA extraction, the DNA is

purified, and then quantified using quantitative real-time polymerase chain reaction (qPCR) DNA analytical technology. qPCR is used to detect the presence of fecal indicator microorganisms in water samples based on unique genetic sequences. qPCR is then used to quantify the amount of the unique genetic sequences by using the starting concentration of the indicator organism to extrapolate from reference standard curves of known concentrations. CSERC staff requested the laboratory to quantify the concentration of the unique genetic sequences of Bacteroidetes (a phylum of bacteria found in the gut of animals) specifically found in cows (Source Molecular Cow Bacteroidetes ID - EPA 1) and humans (Source Molecular Human Bacteroidetes ID - Dorei). Results were reported in DNA copies per 100 mL of water sample and also qualitatively reported as high concentration, medium concentration, low concentration, detected but not quantifiable (DNQ), or not detected (ND).

Data Summary and Analysis for Comparison to State and Federal Standards

E. coli results were compared to the recreational water quality criteria contained in the EPA's RWQC (USEPA 2012) for *E. coli* in freshwater, which was adopted by the State Water Resources Control Board in August 2018 -- a six-week rolling geometric mean (GM) not to exceed 100 cfu/100 mL, calculated weekly, and a statistical threshold value (STV) of 320 cfu/100 mL not to be exceeded by more than 10 percent of the samples collected in a calendar month, calculated in a static manner (SWRCB 2018).

Fecal coliform results were compared to the water quality standards contained in the Central Valley Regional Water Quality Control Board's Basin Plan (CRWQCB 2016) for water contact recreation (REC-1) beneficial use of the receiving waters included in this study, whenever the geometric mean of five samples collected over a 30-day period exceeded 200 /100 mL of water or ten percent of the total number of samples taken during any 30-day period 400 /100 mL of water. **However, as the *E. coli* water quality criteria was adopted by the State Water Resource Control Board in August of 2018, *E. coli* results supersede numeric water quality objectives for bacteria contained in regional basin plans (fecal coliform).**

Results

Microbial Source Tracking, Fecal Indicator Bacteria & Potential Fecal Sources

Due to the Donnell Fire, staff could not safely access the site on Herring Creek or the site on the NF Mokelumne River in August and part of September. Also due to the drier conditions during the summer months in 2018, Herring Creek and the control site on Bourland Creek lacked surface flow during the month of September and were not sampled then.

Genetic analyses of water samples for cattle and human-specific bacteria genetic markers demonstrated several findings. The highest concentration of either marker was collected on September 20, 2018 at Bell Creek, where 404,000 copies/100 mL of the cow marker were detected, while the human marker was not detected (Figure 3 and Table 2). The highest concentrations of FIB detected at Bell Creek was also on September 20, 2018 - all water samples were > 1,600 MPN/100 mL for both fecal coliform and *E. coli* (Table 2).

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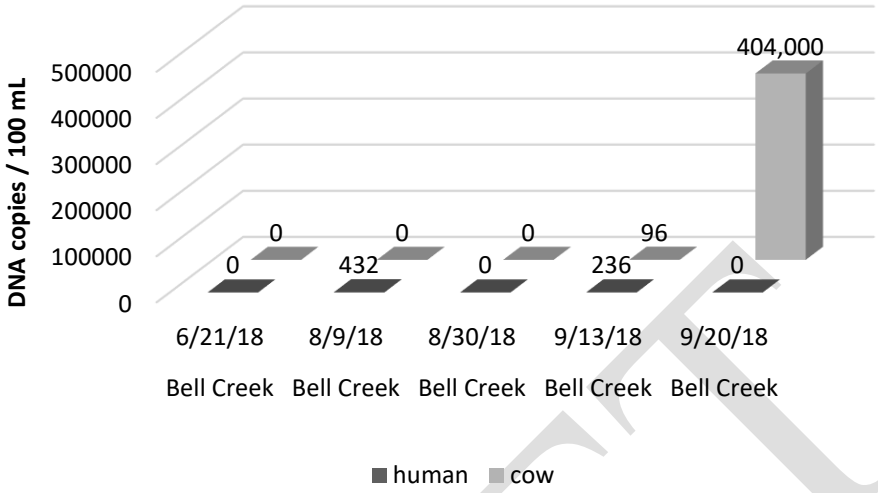

Figure 3. Quantity of human (black bars) and cattle (gray bars) genetic marker copies detected in water samples collected from Bell Creek on each of the five sampling days in 2018.

Staff also observed numerous cows at the site on Bell Creek and just upstream of the site on September 20, 2018 (Figure 4).

Figure 4. Photos of cattle at or near sampling site on Bell Creek on September 20, 2018, from top left to bottom right: form site after sampling looking upstream at cows, looking downstream at site and at cows after sampling, looking downstream at site and at cows after sampling, and approximately 120 m upstream of site before sampling.

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The highest concentration of the human marker detected in water samples from Bell Creek was 432 copies/100 mL on August 9, 2018 (Figure 3), but mean FIB concentrations were relatively low that sampling day (Table 2). The cattle marker was not detected on August 9, 2018 (Table 2 and Figure 3).

The cow marker and human marker were both detected at Bell Creek on September 13, 2018 in low concentrations, 96 copies/100 mL and 236 copies/100 mL, respectively (Figure 3). However, mean FIB concentrations were relatively low that sampling day (Table 2).

The cow marker and the human marker were not detected at the site on Bell Creek on June 21, 2018 (Figure 3). The cow marker was detected but not quantifiable on August 30 (Table 2).

Overall, FIB concentrations were relatively low across the stream sites and the control site in 2018 (Table 2), with the exception of Bell Creek (Figure 5). Since CSERC staff were not able to access the sites on Herring Creek and NF Mokelumne River in August and a portion of September, due to the Donnell Fire, we cannot conclude whether or not there was fecal pollution in those streams during that time period.

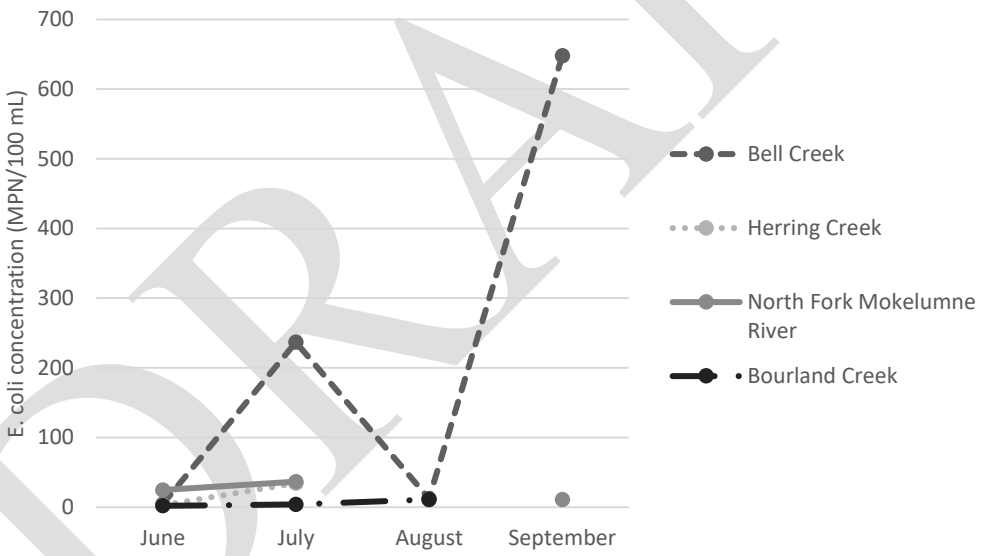

Figure 5. Mean *E. coli* concentrations for each stream site sampled in the Stanislaus National Forest during the 2018 sampling season. Bourland Creek is the control site.

Mean (± standard deviation) FIB concentrations were 10 times higher when cattle were present (*E. coli*, 467 ± 744 MPN/100 mL; fecal coliform, 468 ± 743 MPN/100 mL) than when cattle were not present (*E. coli*, 43 ± 76 MPN/100 mL; fecal coliform, 44 ± 75 MPN/100 mL) (Figure 6).

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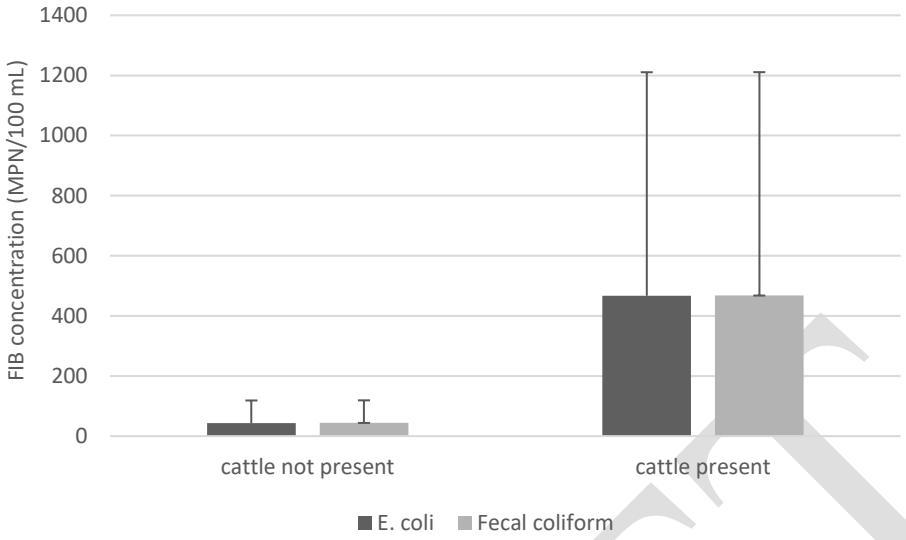

Figure 6. Mean *E. coli* (black bars) and fecal coliform (gray bars) when cattle were absent from site at time of sampling and when cattle were present at the site at the time of sampling (error bars-standard deviation).

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Table 2. Summary of site data for streams sampled in 2018 on the Stanislaus National Forest including sample date, mean water temperature (°C), mean water depth (inches), mean percent canopy cover, cattle presence (yes/no), mean (±SD) *E. coli* concentration (MPN/100 mL), mean (±SD) fecal coliform concentration (MPN/100 mL), and cow and human genetic marker concentrations (marker copies/100 mL).

Stream site	Date	Mean water temperature (°C)	Mean water depth (in)	Cattle present (Y/N)	Fecal Indicator Bacteria		Microbial Source Tracking	
					E. coli (MPN/100 mL)	Fecal coliform (MPN/100 mL)	Cow marker (100 copies/ 100 mL)	Human marker (100 copies/ 100 mL)
Bell Cr. (BC_MBM_L)	6/21/18	10.6	5.6	No	4.7 ± 3.1	6.0 ± 3.5	ND	ND
Bell Cr. (BC_MBM_L)	7/18/18	16.8	3.0	No	270 ± 42	270 ± 42	--	--
Bell Cr. (BC_MBM_L)	8/9/18	13.9	1.8	No	13 ± 3.5	17 ± 5.5	ND	432
Bell Cr. (BC_MBM_L)	8/30/18	10.1	3.1	No	8.5 ± 6.4	11 ± 3.5	ND	DNQ
Bell Cr. (BC_MBM_L)	9/6/18	12.4	3.2	No	3.0 ± 1.4	3.0 ± 1.4	--	--
Bell Cr. (BC_MBM_L)	9/13/18	9.0	4.2	Yes	7.7 ± 3.5	8.7 ± 4.0	96	236
Bell Cr. (BC_MBM_L)	9/20/18	6.0	3.2	Yes	1,600 ± 0	1,600 ± 0	404,000	ND
Herring Cr. (HerC_HCUp)	6/21/18	11.6	14.4	No	3.0 ± 1.4	3.0 ± 1.4	ND	ND
Herring Cr. (HerC_HCUp)	7/18/18	16.6	12.3	No	34 ± 14	34 ± 14	--	--
NF Mokelumne River (TNFMoke_LLG)	6/28/18	13.0	2.4	No	30 ± 20	30 ± 20	--	--
NF Mokelumne River (TNFMoke_LLG)	7/26/18	13.8	2.4	No	20 ± 4.2	20 ± 4.2	--	--
NF Mokelumne River (TNFMoke_LLG)	9/26/18	7.9	3.0	Yes	12 ± 3.6	13 ± 3.2	--	--
Bourland Cr. (BouC_BoM_2)*	6/6/18	14.9	3.3	No	2.0 ± 0	2.0 ± 0	--	--
Bourland Cr. (BouC_BoM_2)*	7/12/18	13.3	2.9	No	4	4	--	--
Bourland Cr. (BouC_BoM_2)*	8/15/18	12.7	4.5	No	11	17	--	--

*control site
-- no data
ND = not detected
DNQ = detected but not quantifiable

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Violations of Water Quality Standards for Fecal Indicator Bacteria

There were three violations of state's newly adopted water quality standards established for *E. coli* (USEPA 2012) and three violations of the Central Valley Regional Water Board's water quality standards for fecal coliform (CVRWB 2016) across the 2018 sites. Specifically, there were three Type 2 violations of California's regulatory water quality standards for fecal coliform (10% total sample exceedance of 400 MPN/100 mL), and three Type 2 violations of the USEPA's water quality standards for *E. coli* (statistical threshold of 320 MPN/100 mL). No violations were documented at the control site on Bourland Creek. Table 3 lists individual violations of FIB water quality standards in 2018.

Table 3. Violations of *E. coli* and fecal coliform for streams sampled in 2018 in the Stanislaus NF.

Violation #	Violation type	Stream site	Date	Collection time	Sample bottle ID	Fecal Indicator Bacteria	Fecal Indicator Bacteria (MPN/100 mL)
1	EPA/SWB type 2	Bell Cr. (BC_MBM_L)	8/30/18	8:24	X82	*E. coli*	4
			8/30/18	8:24	√32	*E. coli*	17
			8/30/18	8:29	614	*E. coli*	13
			9/6/18	9:25	H#C	*E. coli*	4
			9/6/18	9:30	B#K	*E. coli*	2
			9/13/18	8:39	C#P	*E. coli*	4
			9/13/18	8:39	S#√	*E. coli*	50
			9/13/18	8:44	R#√	*E. coli*	11
			9/13/18	8:49	T#F	*E. coli*	8
			9/20/18	**8:50**	**S#u**	***E. coli***	**> 1,600**
			9/20/18	8:55	I#I	*E. coli*	> 1,600
			9/20/18	9:00	T#I	*E. coli*	> 1,600
			9/20/18	9:00	O3∧	*E. coli*	> 1,600
2	EPA/SWB type 2	Bell Cr. (BC_MBM_L)	8/30/18	8:24	X82	*E. coli*	4
			8/30/18	8:24	√32	*E. coli*	17
			8/30/18	8:29	614	*E. coli*	13
			9/6/18	9:25	H#C	*E. coli*	4
			9/6/18	9:30	B#K	*E. coli*	2
			9/13/18	8:39	C#P	*E. coli*	4
			9/13/18	8:39	S#√	*E. coli*	50
			9/13/18	8:44	R#√	*E. coli*	11
			9/13/18	8:49	T#F	*E. coli*	8
			9/20/18	8:50	S#u	*E. coli*	> 1,600
			9/20/18	**8:55**	**I#I**	***E. coli***	**> 1,600**
			9/20/18	9:00	T#I	*E. coli*	> 1,600
			9/20/18	9:00	O3∧	*E. coli*	> 1,600
3	EPA/SWB type 2	Bell Cr. (BC_MBM_L)	8/30/18	8:24	X82	*E. coli*	4
			8/30/18	8:24	√32	*E. coli*	17
			8/30/18	8:29	614	*E. coli*	13

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			9/6/18	9:25	H#C	*E. coli*	4
			9/6/18	9:30	B#K	*E. coli*	2
			9/13/18	8:39	C#P	*E. coli*	4
			9/13/18	8:39	S#√	*E. coli*	50
			9/13/18	8:44	R#√	*E. coli*	11
			9/13/18	8:49	T#F	*E. coli*	8
			9/20/18	8:50	S#u	*E. coli*	> 1,600
			9/20/18	8:55	I#I	*E. coli*	> 1,600
			9/20/18	**9:00**	**T#I**	***E. coli***	**> 1,600**
			9/20/18	9:00	O3∧	*E. coli*	> 1,600
4	CVRWB type 2	Bell Cr. (BC_MBM_L)	8/30/18	8:24	X82	Fecal coliform	8
			8/30/18	8:24	√32	Fecal coliform	17
			8/30/18	8:29	614	Fecal coliform	13
			9/6/18	9:25	H#C	Fecal coliform	4
			9/6/18	9:30	B#K	Fecal coliform	2
			9/13/18	8:39	C#P	Fecal coliform	4
			9/13/18	8:39	S#√	Fecal coliform	50
			9/13/18	8:44	R#√	Fecal coliform	11
			9/13/18	8:49	T#F	Fecal coliform	11
			9/20/18	**8:50**	**S#u**	**Fecal coliform**	**> 1,600**
			9/20/18	8:55	I#I	Fecal coliform	> 1,600
			9/20/18	9:00	T#I	Fecal coliform	> 1,600
			9/20/18	9:00	O3∧	Fecal coliform	> 1,600
5	CVRWB type 2	Bell Cr. (BC_MBM_L)	8/30/18	8:24	X82	Fecal coliform	8
			8/30/18	8:24	√32	Fecal coliform	17
			8/30/18	8:29	614	Fecal coliform	13
			9/6/18	9:25	H#C	Fecal coliform	4
			9/6/18	9:30	B#K	Fecal coliform	2
			9/13/18	8:39	C#P	Fecal coliform	4
			9/13/18	8:39	S#√	Fecal coliform	50
			9/13/18	8:44	R#√	Fecal coliform	11
			9/13/18	8:49	T#F	Fecal coliform	11
			9/20/18	8:50	S#u	Fecal coliform	> 1,600
			9/20/18	**8:55**	**I#I**	**Fecal coliform**	**> 1,600**
			9/20/18	9:00	T#I	Fecal coliform	> 1,600
			9/20/18	9:00	O3∧	Fecal coliform	> 1,600
6	CVRWB type 2	Bell Cr. (BC_MBM_L)	8/30/18	8:24	X82	Fecal coliform	8
			8/30/18	8:24	√32	Fecal coliform	17
			8/30/18	8:29	614	Fecal coliform	13
			9/6/18	9:25	H#C	Fecal coliform	4
			9/6/18	9:30	B#K	Fecal coliform	2
			9/13/18	8:39	C#P	Fecal coliform	4
			9/13/18	8:39	S#√	Fecal coliform	50
			9/13/18	8:44	R#√	Fecal coliform	11
			9/13/18	8:49	T#F	Fecal coliform	11
			9/20/18	8:50	S#u	Fecal coliform	> 1,600
			9/20/18	8:55	I#I	Fecal coliform	> 1,600
			9/20/18	**9:00**	**T#I**	**Fecal coliform**	**> 1,600**
			9/20/18	9:00	O3∧	Fecal coliform	> 1,600

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Quality Control

All field blanks taken during the 2018 sampling season were < 2 MPN/100 mL for both fecal coliform and *E. coli* (Table 4). Some of the field replicates exceeded the 25% RPD, but according to CSERC's QAPP, the samples collected on this day were still used in analyses (Table 5).

Table 4. Field blank concentrations (MPN/100 mL) for fecal coliform and *E. coli*, sampling site, date, collection time, and sample container ID.

Stream site	Date	Collection time	Sample ID	*E. coli* (MPN/100 mL)	Fecal coliform (MPN/100 mL)
Bell Cr. (BC_MBM_L)	6/21/18	08:23	651	< 2	< 2
Bourland Cr. (BouC_BoM_2)*	7/12/18	09:38	B#P	< 2	< 2
Bell Cr. (BC_MBM_L)	8/9/18	08:37	870	< 2	< 2
Bourland Cr. (BouC_BoM_2)*	8/15/18	10:32	∧81	< 2	< 2
Bell Cr. (BC_MBM_L)	8/30/18	08:19	B#Q	< 2	< 2
Bell Cr. (BC_MBM_L)	9/6/18	09:20	705	< 2	< 2
Bell Cr. (BC_MBM_L)	9/13/18	08:37	J#u	< 2	< 2
Bell Cr. (BC_MBM_L)	9/20/18	09:05	T#K	< 2	< 2
NF Mokelumne River (TNFMoke_LLG)	9/26/18	11:10	057	< 2	< 2

*control site

Table 5. Field duplicate (or split sample) concentrations (MPN/100 mL) for fecal coliform and *E. coli*, relative percent difference (RPD), sampling site, date, collection time, and sample container ID.

Stream site	Date	Collection time	Sample IDs	RPD (%) *E. coli*	RPD (%) Fecal coliform
Bourland Cr. (BouC_BoM_2)*	6/6/18	11:42	541, N=4	0	0
NF Mokelumne River (TNFMoke_LLG)	6/28/18	11:05	1∧4, ∧26	116	116
Bell Cr. (BC_MBM_L)	7/18/18	08:41	O65, ∧77	34	34
NF Mokelumne River (TNFMoke_LLG)	7/26/18	10:57	641, G=2	122	122
Bell Cr. (BC_MBM_L)	8/30/18	08:24	X82, √32	124	72
Bell Cr. (BC_MBM_L)	9/13/18	08:39	C#P, S#√	170	170
Bell Cr. (BC_MBM_L)	9/20/18	09:00	T#I, O3∧	0	0
NF Mokelumne River (TNFMoke_LLG)	9/26/18	10:45	Y3#, 1∧5	77	67

*control site

Conclusion

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Overall, fecal indicator bacteria concentrations were relatively low across the stream sites sampled in 2018, with the exception of Bell Creek. Secondly, there were only a handful of violations of water quality objectives for fecal indicator bacteria. However, since staff could not access two of the four stream sites in August and a portion of September, due to the Donnell Fire, it is unclear how many more violations of water quality standards for water contact recreation beneficial use we may have detected.

Genetic analyses of water samples for the cow and human feces genetic markers at the site on Bell Creek indicate that cows were large contributors of fecal pollution to Bell Creek during September of 2018. Results of analyses of FIB and MST water samples indicated that elevated FIB concentrations coincide with high concentrations of the cow genetic marker, not the human maker.

This is the tenth year of detecting elevated fecal coliform and *E. coli* concentrations in streams within national forest grazing allotment areas that are also used by varying numbers of recreational visitors. One consideration for reducing the risk of exposing those recreational visitors (swimmers, hikers, campers, backpackers) to bacteria in national forest waters is to evaluate where the areas with the highest levels of recreational use occur within each national forest. Keeping livestock out of those high-use recreational areas would appear to be one effective strategy to reduce, in those specific areas, exposure by recreational visitors to stream water that fails to meet State and federal standards for recreational contact and public health.

CSERC's continued water quality monitoring demonstrates, even with implementation of BMPs, some streams on the Stanislaus National Forest have FIB concentrations in violation of water quality standards for recreational contact, and may be at least in part due to the presence of livestock as currently regulated and permitted on National Forest lands. **It is important to note that CSERC's pilot project employing MST consisted of a handful of sampling events, and only analyzed two potential fecal sources (cattle and human). This is not enough data to conclude that cattle are the sole contributors of fecal pollution to the stream site. Further assessment is needed to fully understand fecal pollution sources in Bell Creek and other surface waters on the Stanislaus Forest, and how that relates to livestock grazing on forestlands.**

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Sustainable Medication Take Back for the Sacramento Valley

Manual Grant Award Entry

California Product Stewardship Council

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FollowUp Form

Instructions

All grantees are required to submit a grant report that describes the work funded by the grant. Unless otherwise noted in your grant contract, your report should contain both a narrative description of activities performed and a financial statement showing how grant funds were spent. You should also provide copies of any deliverables produced during the grant period.

Rose Foundation's policy for the Central Valley Grants Program is that grant reports are due two weeks after the end of each quarter, and final report upon one month after project completion. For example, if your grant period is 24 months, you'll have three quarterly interim grant reports, one every six months, and a final grant report due 25 months from the start of the grant.

Your specific reporting dates and any special reporting requirements are identified in your Grant Contract.

If you have a multi-year grant, please note that Rose Foundation must receive your interim grant report before disbursing grant installments.

If you have any questions about reporting and/or installments, please contact your Program Officer, Laura Fernandez or call (510) 658-0702.

Basic Information

Project Name

Name of Project

Sustainable Medication Take Back for the Sacramento Valley

Grant Period*

Please indicate the start date of the grant period for which you are reporting on

04/01/2018

Amount Awarded

$200,000.00

Area(s) of Emphasis*

Water Resources / Watershed Protection

Water Quality Monitoring Categories

Environmental Health & Justice Categories

Timeline, Deliverables, & Achievements

Please refer to the template instructions below to fill out the Timeline and Deliverables table. In the document, identify all key deliverables and achievements for the completed milestones of this report, and tie them into the project timeline.

To submit project timeline, deliverables, and achievements:*

1) Click Here to download the Timeline & Deliverables template.
2) Fill out the document with all relevant information. You may refer to the chart that you previously submitted and copy your timeline accordingly.
3) Re-submit the document back to this question.

Rose SJC Interim Report B Timelines & Deliverables.pdf

Narrative

Brief Summary*

Please summarize the overall impact of the project so far in terms of activities and accomplishments.

Questions to consider for the project summary: Who/what was helped by the project? What water quality benefits occurred?

The California Product Stewardship Council (CPSC) established nine medicine take-back bins that collected 1,389 lbs. of medications protecting water quality from meds that could have been flushed. Staff promoted the bins to the public using the “Don’t Rush to Flush” messaging achieving 1,035,555 impressions through a variety of media including movie theatre ads. CPSC partnered with five local community groups and provided educational materials such as flyers, whiteboard videos and model language for websites and newsletters to share with residents.CPSC staff gave four presentations to healthcare industry, child protection, opioid safety and law enforcement groups and hosted an informational booth at the Annual Recycling Exposition. The PR campaign targets disadvantaged communities by producing outreach materials in both English and Spanish, utilizing a multimedia approach to provide access to residents of every socioeconomic status, and putting med bins where they are most needed.

Impact Narrative*

Please describe the impact of the work you conducted with the grant funds. In addition, please describe any unanticipated outcomes, challenges, or other changes that occurred during the project's duration. Please include any lessons learned and/or advice for other organizations facing similar circumstances.

Public Surveys

CPSC opened the pre-project public survey for responses on 2/1/18 and closed it 6/15/18. The survey received 167 responses during this 14-week period. It was promoted on the social media outlets, NextDoor and Facebook; the City of Stockton's website; and included as part of the City of Stockton's May 2017 utility bill insert. Public surveys were also collected at two events, the 4/28/18 Drug Enforcement Administration (DEA) Drug Take-Back Day, and the Annual Recycling Expo on 3/14/18.

Survey results indicated the following:

1. 87% of respondents do not receive counseling on how to dispose of unwanted medications from their physician, pharmacist, or veterinarian;
2. Of the respondents that received disposal guidance, 60% indicated they were advised to take unwanted medications to a pharmacy, hospital, health clinic, or medical care provider's office with a medication collection bin;
3. 23% of respondents dispose of unwanted medications during the "National Drug Take-Back Day" medication collection events operated by local law enforcement (at one of two that are offered each year);
4. 93% of respondents answered "Yes" to whether they would use a free medication collection bin at a local pharmacy, hospital, health clinic, medical care provider's office, or law enforcement agency;
5. Respondents averaged 8.7 on a scale of 1-10, with 10 being a high impact on the environment on the impact on water quality from flushing medications or throwing them away.

In short, most San Joaquin County (SJC) residents do not know what to do with medications, nor get good advice on where to bring them. However, they do understand the environmental problems related to flushing or trashing meds and 93% said they will use the bins supporting our med bin project!

Recruitment

CPSC staff traveled to SJC five times to conduct recruitment site visits to potential bin hosts and followed up remotely by email and phone call, which resulted in six pharmacies and three police departments hosting take-back bins that have collected 1,389 lbs. of medications since installation. Staff continues to follow-up with remaining potential hosts, with three pharmacies, three hospitals, two medical clinics, and two police departments, and the County Sheriff expressing strong interest.

While pharmacies and hospitals/clinics with onsite pharmacies may establish medication take-back bins in skilled nursing facilities, after site visits to 25 facilities, CPSC staff determined that these locations were not ideal due to their high security requirements.

Partnerships

CPSC staff researched 47 local entities to share information on safe medicine disposal and called and emailed the appropriate contact to develop a partnership. Of those 47 entities, CPSC identified 20 groups that target low-income or disadvantaged populations in the County. This outreach effort resulted in four partnerships with the following entities:

1. San Joaquin County Opioid Safety Coalition
2. San Joaquin Pharmacists Association
3. Community Partnership for Families of San Joaquin
4. Cancer Kids of San Joaquin County
5. Safe Kids San Joaquin

For the remainder of the grant, CPSC will continue to develop partnerships with more entities focused on low income or disadvantaged populations, including organizations representing the elderly and minority groups such as the Hispanic Chamber of Commerce.

Public Education Campaign

Throughout the first year of this two-year grant term, CPSC performed the following public education outreach, which achieved 1,035,555 impressions in the County:

1. 59,065 copies of an eight-page newspaper insert featuring County Supervisor Bob Elliot representing District 5, which was inserted into the Stockton Record, Lodi News-Sentinel, Manteca Bulletin, Tracy Press, and The Escalon Times;
2. Forty 30-second radio ads on KUOP-FM for two weeks, an NPR-member station that reached 127,000 listeners during the ad duration;
3. 12 boosted and non-boosted social media posts, reaching 14,003 viewers and received 733 likes, 25 comments, and 105 shares;
4. Designed and printed to be distributed 1,100 1/3-page flyers in English and 300 in Spanish;
5. Produced a digital campaign for Spanish and English Whiteboard videos which were broadcast for one month, conveying the video to residents via their Connected TV's (i.e. Apple TV, Firestick, etc.) iPads/Tablets, and mobile devices and received 89,472 impressions;
6. 20-second movie theatre ads on 54 screens in four movie theatres, reaching 654,615 movie goers during the three-month ad duration;
7. City of Stockton May 2018 utility bill insert, which was distributed via email to 90,000 residents.

Staff has begun developing the public education campaign for the remainder of the grant term, which may include billboards, print, radio and television ads, social media, among others.

CPSC has also begun planning for promotion of the 16th bi-annual Drug Enforcement Administration Drug Take-Back Day on 10/27/18, with messaging focused on year-round collection. Furthermore, staff has also begun preparing for a press event on 11/15/18, which will involve the City of Stockton's "Mobile City Hall", which will stop at a participating pharmacy located within the City.

We believe the public education we have done to date was highly effective based on impressions, but some of the data points we need from SJC staff are not available by med bin yet as their key staffer is out on maternity leave. We should be getting the data by bin in the next two weeks.

Presentations

During the first 12 months, CPSC staff gave four presentations to 98 individuals, including:

1. San Joaquin County Planning Commission, 1/25/18, 35 attendees - introduced the grant to the community of people who most care about it.
2. San Joaquin County Pharmacists Association, 7/10/18, 15 attendees - was highly effective as some of the pharmacists requested bins after the presentation and will share the PR material.
3. County Chief's Council, 9/19/18, 8 attendees - got the information on med bins directly to the County Sheriff who attended and made him more open to hosting bins at the Sheriff station.
4. San Joaquin County Opioid Safety Coalition, 9/26/18, 40 attendees - resulted in Community Medical Centers requesting two med bins for non-controlled meds at their clinics!

Unanticipated Outcomes/Challenges/Changes

While San Joaquin County offered to pay for the costs of disposal at law enforcement and local pharmacies, coverage of disposal costs was not offered to chain pharmacies or hospitals because the County doesn't want to pay for large businesses waste. CPSC reached out to the six San Joaquin County hospitals in good standing with the Board of Pharmacy listed with the DEA, but only three were interested in hosting a bin and paying the disposal costs and none have committed to hosting a bin yet.

Law enforcement agencies were a main target to host take-back bins, as well as pharmacies and hospitals. Prior to the grant, three of nine law enforcement locations within the County were hosting take-back bins for medications as part of an existing pilot project. While trying to recruit Lathrop Police Department to host a take-back bin, CPSC learned participation was contingent on the Sheriff's Department also hosting a bin at their location. CPSC staff visited the Sheriff's office twice and followed up with calls and emails but was unable to obtain a response. As a result, CPSC contacted the Office of the Sheriff to arrange a presentation to the Chief's Council, a monthly meeting comprised of all local law enforcement Chiefs. CPSC staff presented to this group on 9/19/18, hoping to recruit the Sheriff's Department, and therefore, City of Lathrop Police Department to host a bin. Unfortunately, neither have committed to participating yet.

While CPSC planned a kick-off press event in June 2018, it was decided to delay the press event until a couple more bins were sited. The kick-off press event has been rescheduled for 11/15/18, in conjunction with America Recycles Day. For this event, the City of Stockton will deploy their new Mobile City Hall to locations in the City, including a stop at a participating pharmacy where we will invite the press and local media.

CPSC faced recruiting challenges with several locations that wanted to host a bin but did not have the required space for the bin. Staff visited these locations to check space availability and/or provide placement suggestions, these locations were not interested in modifying their existing setup to allocate room for the bin.

Lessons Learned/Advice for Other Organization Facing Similar Circumstances

Recruiting optimal bin hosts is always hard work, but this project has challenged CPSC to work hard to identify the locations most convenient for public access. Since it took two years to receive the grant funds after submission of the grant application, the County had already sited 12 bins as part of their pilot program so that many of the “low hanging fruit” locations were already hosting bins. CPSC learned that even though pharmacies can host take-back bins at skilled nursing facilities, they are not an optimal location due to their high security and limited public access. Similarly, correctional facilities with pharmacies can also host bins, but are not an ideal location due to their high security.

Did the grant fund water quality monitoring?*

If the grant did fund water quality monitoring, please include and specify the type of Quality Assurance / Quality Control (QA/QC) procedures that were followed in the question below.

No

Financials

Financials*

Please refer to the line item budget you submitted in your Application Attachments and prepare a corresponding financial statement that shows how the grant funds were actually expended. If there were any variances in any items over 10%, include a brief explanation for the variance. You may paste your financial statement into this section, or include it as an attachment.

Rose San Joaquin Grant Tracking Report 9-2018.xlsx

The budget is almost exactly where we wanted it at the 50% mark in the grant term with two minor exceptions, 1) 90% left in the PR Consultant category and 2) the full $2,000 remains to be spent for the meeting expenses. Regarding the PR Consultant, we hope to use the funds to do spontaneous interviews of people coming to the DEA event or a med bin location, and the money will be spent on the videographer. We want the video to use for clips to promote the bins and may give participants a locking pill container or other related thank you gift for speaking on camera. We have not yet needed to use the $2,000 budgeted for meeting expenses to get in front of key groups, but for the remaining disadvantaged groups we plan to buy a spot placement in their newsletters to promote the bins to their members, and hopefully earn our way onto their agendas for groups such as the Hispanic Chamber of Commerce and local California Association of Retired Americans meetings. Overall, we have spent 46% of the budget and are slightly over or under in certain categories but we are just where we wanted to be at this time on budget.

Attachments

Please attach or provide a link to any significant deliverables produced with grant funds, such as reports, videos, etc. You may also include other materials such as newsletters, media clippings, or photos that will help us better understand the work you performed under the grant. Please understand that the system limits file sizes - therefore, a few key examples are better than numerous photos or clippings.

Significant Deliverables*

If you produced a report, video, or other significant deliverable with this grant, you may attach it here or paste a URL box below. Use the text box to briefly describe your significant deliverables.

Rose SJC Insert FINAL PRINTED.pdf
*This eight-page newspaper insert focused on safe medicine disposal in San Joaquin Count. (attached) One of the eight pages was focused on safe needle disposal, which was paid for by the City of Stockton and San Joaquin County Public Works.

Newsletters, Media, Photos or Other Attachments

You may attach additional documents or publications here or paste a URL into the text box below. Use the text box to briefly describe your significant deliverables.

Tracy Press - Pharmacists host safe presccription disposal, 6-19-18 final.pdf
*15-second Spanish whiteboard video: https://youtu.be/xXCDfEyA7D8
*City of Tracy story on three of CPSC's new med bins in Tracy (attached)
*20-second English whiteboard video played before movie theater trailers: https://drive.google.com/file/d/1Jf4iM9SIOeNtAo8KIwpyZY72ouS3wuju/view?usp=sharing

Newsletters, Media, Photos, or other Attachments

You may attach additional documents or publications here or paste a URL into the text box below. Use the text box to briefly describe your significant deliverables.

[Unanswered]

File Attachment Summary

Applicant File Uploads

- Rose SJC Interim Report B Timelines & Deliverables.pdf
- Rose San Joaquin Grant Tracking Report 9-2018.xlsx
- Rose SJC Insert FINAL PRINTED.pdf
- Tracy Press - Pharmacists host safe presccription disposal, 6-19-18 final.pdf

CPSC
California Product Stewardship Council SM

1822 21st Street, Suite #100
Sacramento, CA 95811
916-706-3420

www.CalPSC.org

Timeline & Deliverables			
Milestone	**Tasks**	**Deliverables**	**Achievements**
50% complete—12 months	1. Establish up to 18 new permanent medication take-back sites in the region supported by outreach materials promoting the new and existing collection locations for unwanted and expired medications. 2. Distribute educational materials for the medical community to give the public including community groups, doctors and clinics serving disadvantaged communities.	1. Established nine new permanent medication take-back sites in the region. Developed and distributed outreach materials, including: a. Eight-page educational newspaper insert b. Movie theatre ads c. Social media d. English and Spanish flyers e. Radio ads f. Spanish whiteboard video 2. Developed educational materials and partnered with the following entities to distribute to the public: a. San Joaquin County Opioid Safety Coalition b. San Joaquin Pharmacists Association c. Community Partnership for Families of San Joaquin d. Safe Kids San Joaquin e. Cancer Kids of San Joaquin	1. The nine newly established medicine take-back bins collected 1,389 lbs. of medications from the public since the start of the grant. CPSC staff achieved 1,035,555 impressions through a multi-media public education campaign. 2. Developed a 1/3 page flyer with bin locations and provided 500 copies to community partners to distribute to the general public. Hosting a booth at the San Joaquin County Community Health Fair on 10/20/18 and will distribute 700 flyers in English and 300 flyers in Spanish.

California Product Stewardship Council
Rose Founation 2017 Rollover Grant
San Joaquin Basin Watershed (Sacramento Valley)

		ED
Obj. 1 Meetings & Presentations		$241.00
		20
		$4,820
Obj. 2 Take-Back Sites		
		20
		$4,820
Obj. 3 Promotion and Outreach		
		15
		$3,615
Obj. 4 Surveys and Reporting		
		11
		$2,651
	Total Labor Hours	66
	Total Labor $	$15,906
Expenses		
A. Travel		$2,000
B. Bins		$25,000
C. Meeting Expenses		$2,000
D. Media Buys & Printing		$64,000
E. Public Relations Consultant		$3,000
	Total Travel and Expenses	
	Total Project Budget	
	Direct Administration Cost	
	Total SEP Amount	
	Overall Program Oversight	
	Total Due from Discharger	

Key: ED = Executive Director

California Product Stewardship Council
Rose Foundation - San Joaquin
Actual Expenses
Grant Term: October 1, 2017 to October 1, 2019

Total Grant **$ 200,000.00**

Payments received

100,000.00

100,000.00

	Obj 1 - Meetings & Presentations						Obj 2 - Take-Back Sites					Obj 3 - Promotion and Outreach						Obj 4 - Surveys & Reporting										
	Heidi	Doug	Jordan	Joanne	Justin	Intern	Heidi	Jordan	Joanne	Justin	Intern	Heidi	Doug	Jordan	Joanne	Justin	Intern	Heidi	Jordan	Joanne	Justin	Intern	Total Labor	Travel	Bins	Meeting Expenses	Media Buys & Printing	P/R Consultant	Total
Rate	$241	$241	$139	$143	$95	$50	$241	$139	$143	$95	$50	$241	$241	$139	$143	$95	$50	$241	$139	$143	$95	$50							
Original Budget						20,509.00					39,316.00						29,050.00					15,094.00	103,969.00	2,000.00	27,516.45	2,000.00	61,483.55	3,000.00	199,969.00
Budget Reallocations *																													-
Revised Budget						20,509.00					39,316.00						29,050.00					15,094.00	103,969.00	2,000.00	27,516.45	2,000.00	61,483.55	3,000.00	199,969.00
Available Budget						6,730.90					23,980.40						10,966.10					10,411.80	52,089.20	1,334.55	-	2,000.00	34,647.00	2,700.00	92,770.75
						33%					61%						38%					69%	50%	67%	0%	100%	56%	90%	46%
Actual Expenses:																													
November 2017	48.20		27.80					27.80		570.00													673.80						673.80
December 2017	530.20		1,390.00		199.50			514.30											111.20				2,745.20						2,745.20
January 2018	1,156.80		597.70		323.00		289.20	3,461.10		1,282.50				27.80		114.00			653.30		788.50		8,693.90	160.98	24,328.00		42.16		33,225.04
February 2018			208.50		123.50		48.20	1,112.00		133.00		433.80		166.80		256.50			83.40	28.60	114.00		2,708.30				97.62		2,805.92
March 2018	1,205.00				475.00		289.20	875.70		893.00		1,325.50		1,070.30		712.50			514.30		332.50		7,693.00	221.87			971.69		8,886.56
April 2018			41.70		180.50		120.50	417.00		437.00		602.50		1,529.00		171.00		216.90	444.80		456.00		4,616.90		188.45		22.55		4,827.90
May 2018							120.50	889.60	157.30	769.50		457.90		1,946.00		342.00	100.00	48.20	41.70				4,872.70	70.52			12,000.00		16,943.22
June 2018	144.60		430.90		1,206.50		72.30	69.50		351.50		530.20		2,001.60		123.50	90.00	24.10	111.20		19.00	75.00	5,249.90		3,000.00		6,243.61	300.00	14,793.51
July 2018	1,518.30				1,206.50		192.80	41.70		902.50		361.50		820.10		874.00	85.00		305.80		133.00		6,441.20	117.83			60.74		6,619.77
August 2018	72.30		264.10		28.50		144.60	69.50		57.00		554.30		1,084.20	28.60	66.50			27.80				2,397.40						2,397.40
September 2018		843.50	1,042.50		513.00		48.20	750.60		228.00		144.60	723.00	875.70		465.50			152.90				5,787.50	94.25			7,398.18		13,279.93
																							-						-
																													-
Total Actual Expenses	**4,675.40**	**843.50**	**4,003.20**	**-**	**4,256.00**	**-**	**1,325.50**	**8,228.80**	**157.30**	**5,624.00**	**-**	**4,410.30**	**723.00**	**9,521.50**	**28.60**	**3,125.50**	**275.00**	**289.20**	**2,446.40**	**28.60**	**1,843.00**	**75.00**	**51,879.80**	**665.45**	**27,516.45**	**-**	**26,836.55**	**300.00**	**107,198.25**
						13,778.10					**15,335.60**						**18,083.90**					**4,682.20**							

* Budget reallocations:

KEEPING SAN JOAQUIN COUNTY

SAFE TOGETHER

Community members can join law enforcement, local government and health professionals in protecting San Joaquin County. Learn how:

Lock Up Medications page 3

Don't Rush to Flush Medications or Needles page 4

Meds in the Bin, We All Win page 6

Community leaders, like San Joaquin County Supervisor Bob Elliott, have come together to install medication and sharps disposal bins to protect residents.
PHOTO BY ROBIN EAGAN

Proper Disposal Keeps Us All SAFE

San Joaquin County residents have a new way to safely dispose of unwanted medications and used needles

by Rodney Orosco

IMPROPER DISPOSAL PUTS US ALL IN DANGER

Improper disposal of medication or needles affects the entire community — from fueling drug addiction and threatening public safety to needles being found in parks, waterways and even libraries.

Criminals may use medications that are tossed into the trash or sell them on the black market. This risk is even greater in neighborhoods where there are large numbers of seniors.

Used **sharps** that have been thrown into the trash or recycling accidentally stick workers and can expose them to diseases.

"I have talked to code enforcement staff and when they have to secure an empty house, they come across a lot of **sharps**," explained City of Stockton Solid Waste Manager Gretchen Olsen.
However, the most shocking needle surprise comes at the library. "People are putting **sharps** in the library book return slots," she said.

Properly disposing of unwanted medications and used sharps — such as needles, lancets and auto-injectors — is a safety priority for individuals and the community.

Flushing these items may seem like an easy option for disposal but it is actually a *serious* environmental and health hazard. In actuality, treatment plants are not designed to remove medications from the water. That means some medication that is flushed ends up in our waterways and, eventually, in our drinking water.

If you can't flush then the trash is the next best option, right?

Wrong.

"Medications thrown in the garbage can become fuel for addiction, result in an overdose, or cause accidental poisoning," said San Joaquin County Public Health Officer Dr. Kismet Baldwin.

These common disposal problems are easily preventable.

Thankfully, disposing of medication in San Joaquin County is easy: Take the unwanted medication to one of the County's DEA-authorized disposal locations and then drop it into a specially designated bin.

However, safety does not end at the medicine cabinet. Because some medications and medical tests are taken by blood, special care must be taken to dispose of these needles, also called sharps. Used sharps are considered hazardous waste and must also be quickly and properly disposed of — and the toilet is *not* an option.

Sharps flushed down the toilet can become lodged in equipment, forcing county workers to remove them by hand, exposing workers to accidental and dangerous needle sticks. Tossing sharps in the trash or recycling is illegal in the state of California because of Senate Bill 1305, which was passed in 2006 to protect waste workers.

Used sharps need to be properly disposed of in a designated sharps container and then taken to a sharps disposal location. Just like medication disposal, sharps disposal only takes one easy step.

> **"This effort is the result of a partnership among a broad range of stakeholder groups."**
>
> **Bob Elliott**
> District 5 Supervisor
> San Joaquin County

There are currently dozens of sharps and medication disposal bins located throughout the County with more on the way, thanks to a unique collaborative effort between the City of Stockton, San Joaquin County and other area organizations.

"This effort is the result of a partnership among a broad range of stakeholder groups," San Joaquin County Supervisor Bob Elliott said. "Thank you to all the community leaders and organizations that made these disposal bins possible, including San Joaquin County Public Works, The Rose Foundation, and the California Product Stewardship Council."

CPSC California Product Stewardship Council

Find out where to drop off unwanted medications and sharps at www.sjcrecycle.org or call San Joaquin County Public Works at 209-468-3000.

Protecting Our CHILDREN

Lock up your medications! You might save the life of someone you love

by Rodney Orosco

Sandra Chavez's youngest son, Jeff, died as a result of prescription drug abuse that began when he was a teen. Sandra's family learned of his addiction when he was arrested for being in possession of meds not intended for him.

PHOTO BY RON NABITY

Today, Americans fill nearly three times as many prescriptions as they did in 1980 and spend five times as much on over-the-counter drugs, according to a report by Safe Kids Worldwide. This increase in more household medications has also resulted in a dangerous unintended consequence.

"Having medications in the home can increase the risk of accidental ingestion or poisonings, leading to a significant number of emergency room visits. Especially in toddlers," said San Joaquin County Public Health Officer Dr. Kismet Baldwin.

And that phenomenon includes San Joaquin County. Over the past five years, there have been 800 visits to emergency departments in the region by children under the age of five due to accidental poisonings.

The nationwide statistics are just as shocking. Poison control centers get a call about a child ingesting medication that they "found" once a minute — every day. **Emergency rooms see roughly four busloads — or over 300 — poisoned children daily,** all from medications that should have been properly secured or removed from the home when they were no longer needed and properly disposed of.

Keeping children safe from accidental medication poisoning is about not assuming — not assuming the medication is out of reach of a child and not assuming a child-proof bottle is actually child proof.

"Safe medicine storage means out of sight and out of reach — not one or the other," said Safe Kids San Joaquin County Coalition Coordinator Rachel Zerbo. "To be safe, medicine should be stored out of sight in a cabinet or drawer where children can't see it and the medication should be out of reach."

> **"Safe medicine storage means out of sight and out of reach — not one or the other."**
>
> **Rachel Zerbo**
> Coalition Coordinator
> Safe Kids San Joaquin County

The dangers of easy-to-reach medications in the home are not limited to only toddlers.

"Teens are also vulnerable to medication poisoning," said Zerbo. "They may be curious about the effects of medications, or they can be easily influenced by peer pressure."

While parents can secure medications in the home, it is not enough. All adults with children in their lives should take precautions to keep medication out of reach. Children can easily find medication in a purse, bedside table or on a kitchen countertop.

"If a child spends time at a grandparent or other caregiver's home, parents need to make sure those caregivers are also storing their medication safely," said Zerbo.

SAFE AT HOME

Thousands of children in the U.S. find their way into **medicine bottles they shouldn't** each year, including children in San Joaquin County.

800 visits to San Joaquin County emergency rooms in the past five years by children under the age of 5 were due to accidental poisonings.

64 percent of those visits were attributed to **medications.**

DO

- **DO** lock up medications.
- **DO** store medications in their original containers — labels can help prevent medications from being mixed up.
- **DO** keep an updated list of all prescription medication in your home, so you know if something goes missing.
- **DO** talk to your pharmacist about how to properly dispose of unused medications.

DON'T

- **DON'T** leave medications where kids or pets can get them.
- **DON'T** share prescription medications. A medication that works for one person may cause harm — even death — to someone else, even if symptoms are similar.
- **DON'T** take medications in front of children, which can lead to them imitating this behavior.

Don't **RUSH** to **FLUSH** Medications!

Medicine can end up in waterways, risking human and environmental health

by Anne Stokes

Flushing unused and expired medications down the drain may be what you were told to do to get rid of them. Even the Federal Drug Administration controversially tells the public to discard some of the most addictive medications down the drain to avoid accidental poisonings or purposeful misuse if there is no take-back program available. However, the effects of flushing pharmaceuticals can have long-term and wide-spread ramifications on both humans and the environment. It is a threat that is real and growing.

While most people know that anything flushed down the drain ends up at a water treatment plant, most aren't aware of the intricate processes involved in water cleaning. According to Brandon Nakagawa, Water Resource Coordinator with the San Joaquin County Department of Public Works, those processes aren't geared toward removing medications.

"We have treatment processes that take out organic matter and then use microbes to digest those compounds. It reduces the organic matter in the water to a point where we can discharge it back to the river or stream," he said. "Pharmaceuticals are something that our systems aren't necessarily designed to remove."

After being treated, this water can be routinely used as drinking water. But according to the Environmental Protection Agency, pharmaceuticals are increasingly being detected in drinking water. Even when found in miniscule amounts, the number of compounds that end up in the public's drinking water, combined with long-term cumulative exposure to these compounds, becomes worrisome.

"You have unused medicines mixing together into an unintended soup and getting into groundwater, and often then getting into waterways," said Tim Little, Executive Director of the Rose Foundation for Communities and the Environment. "It's a type of pollution, short and simple, and it doesn't make sense to throw pollution into waterways when there is an easy way — and efficient way — to keep it out."

While technology that can remove pharmaceutical compounds from water is starting to emerge, it can be very expensive and still isn't used or required at most waste water treatment plants. Thus, the best and least costly way to keep medications out of local water supplies is to dispose of them through convenient disposal bins or collection events throughout San Joaquin County.

"Maybe we won't know for decades the exact effects of pharmaceuticals in the water, maybe we'll know sooner than later, but why take the chance?" Nakagawa said. "Let's do the right thing and dispose of things properly."

PHOTO BY ANNE STOKES

"It doesn't make sense to throw pollution into waterways when there is an easy way — and efficient way — to keep it out."

Tim Little
Executive Director
Rose Foundation for Communities and the Environment

THE COST OF FLUSHING

- Only **half of medications** in sewage can be removed by water treatment plants once flushed, as found in a 2013 report by the International Joint Commission, leading to traces of medications showing up in drinking water supplies.

- Intact medications are **more potent** than excreted drugs, which have been metabolized.
- Pharmaceutical compounds may affect physiological responses in humans, plants and animals, according to studies by the Centers for Disease Control and Prevention (CDC).

- Estrogen and testosterone used in certain medications — as well as other endocrine disruptors — **cause significant reproductive effects on aquatic wildlife,** even at very low levels of exposure.

- Trace amounts of antibiotics lead to antibiotic-resistant bacteria in our water.
- The wide array of medications found in waterways can have **unanticipated impacts** on drinking water supplies and wildlife.

STICK SHARPS in Their Place — a Certified Container

Used sharps are a danger when not disposed of properly

by Rodney Orosco

Michael White's workers at the Stockton Recycling Material Recycling Facility, like Lorena Dominguez, are constantly at risk of being stuck by an improperly disposed of needle. But it doesn't have to be that way.
PHOTO BY ANNE STOKES

Lorena Dominguez's day at work started just like any other, but ended in panic.

As a recycling line worker at the Stockton Recycling Material Recycling Facility (MRF), Dominguez's job is to watch the line as items whiz by and remove any that are not recyclable. Dominguez does this by hand, grabbing items like plastic bags, garbage, dirty food containers and toys when she sees them.

But what Dominguez did not see one day was a needle hidden in a bag underneath a pizza box.

"When I first got stuck, my first thought was that it was a needle because I felt the pain," Dominguez said. "I stopped the line and discovered the needle was in the bag I was holding. It was full of loose needles."

What happened next is all too common for recycling line workers: months of treatment accompanied by months of worry.

"It took four months to finally receive an answer that everything was OK," she said. "My family was worried because they did not know what that needle could be infected with."

Because of the improper disposal of sharps, needle sticks are a far too common hazard for MRF workers.

"Every day our workers see needles coming across the recycling line," said Stockton Recycling MRF General Manager Michael White.

Even being careful or wearing heavy gloves doesn't always protect workers from an accidental stick.

"Being stuck [by a needle] is definitely one of the biggest scares for our employees," White said.

There is still danger when needles are placed into plastic containers and thrown in the trash or recycling. These containers can burst when compressed in garbage trucks during collection, causing the sharps to mix in with the recyclables.

"We see plastic milk jugs full of needles," White said. "The caps pop off the jugs, the needles spill out, or the needles poke through the plastic and jab one of the workers."

Needles are not only a safety concern on the line, they are also a productivity concern — which costs money.

"We have to stop the line when we see needles. It is a hard stop," White said.

The result is dozens of paid workers standing around while they wait for the issue to be resolved.

All these problems can be solved if San Joaquin County residents keep their used sharps out of the trash and dispose of them properly the first time, by using one of the County's disposal bins.

While Dominguez, a three-year veteran of the recycling line, is not afraid to get back to the line, many victims of an accidental stick do not return to work because of stress. Dominguez does express concern.

"I am more cautious and feel anxious when there is a bigger pile of material coming through the line," she said.

> **"Being stuck [by a needle] is definitely one of the biggest scares for our employees,"**
>
> **Michael White**
> General Manager
> Stockton Recycling Materials
> Recycling Facility

SHARPS SAFETY

Disposing of used sharps and needles correctly is not only the **law in California**, it is a simple act that can protect the **community.**

4 months: How long it takes to test a waste or recycling worker who has been stuck by an improperly disposed of needle, before it is determined if they are clear of diseases such as hepatitis or HIV. It is months of anxiety no one should have to endure.

Best way to protect workers: Store your used sharps properly in an **approved container** until they can be taken to a disposal bin.

DO

- **DO** take needles to a pharmacy or other location with a proper disposal bin.
- **DO** put sharps in an FDA-cleared container prior to putting them in the disposal bin.
- **DO** ask your pharmacist how to properly dispose of unused medications.

DON'T

- **DON'T** throw needles into the trash.
- **DON'T** flush needles down the toilet.
- **DON'T** place needles in a plastic container and then throw that container into the garbage or recycling.

WHAT TO PUT IN A DISPOSAL BIN

Medications

Sprays

Liquid Medications

Pill Medications

Sharps

Needles

Lancets

Auto Injector

Responsible and CONVENIENT

Proper disposal is easy in San Joaquin County

by Anne Stokes

As any good real estate agent will tell you, it's all about location, location, location. That's why in the City of Stockton and the rest of San Joaquin County, community partners are working together to make it easy for residents to responsibly dispose of their unwanted medication and used medical sharps.

"If it's not easy and convenient, people just won't do it," said David Gorton, Planning and Materials Management Section Manager with the San Joaquin County Department of Public Works. "So long as people have convenient local options, they'll take advantage of those. If they don't, they will more than likely end up improperly disposing of these items in the garbage, down the drain or toilet — ways that endanger the environment or put our solid waste workers at risk."

> **"If it's not easy and convenient, people just won't do it."**
> **David Gorton**
> Planning and Materials Management Section Manager, San Joaquin County Department of Public Works

Currently, there are dozens of medication and sharps disposal bins throughout the county, with more on the way. Located mainly in pharmacies and police stations, residents can drop off items anytime the store or office is open for business.

Improperly disposed of materials pose safety and environmental risks. Sharps thrown away in the trash or recycling bin have been known to injure sanitation or recycling facility workers. Medications, whether they're flushed down the drain or end up in a landfill, eventually make their way into local waterways and public drinking supplies. Medications left in cabinets can also be targets for theft or accidentally ingested by young children or seniors who may mistakenly take the wrong medicine.

Collection bins are for prescription and over-the-counter medications, but not vitamins. Medications should be removed from their bottles and placed into zip top plastic bags before being deposited into the bins. Empty pill bottles can then be recycled with regular curbside plastic recycling. When using the bins, be sure to secure any packaging so that pills and liquids don't leak. Sharps — which cannot be deposited in pharmaceutical bins — must be in a hard plastic container before being deposited in the specially designated sharps kiosk.

While collection bins are the most convenient way to safely dispose of medications and sharps, the County's household hazardous waste facility also holds regular take-back events and accepts these materials from county residents, free of charge.

To find the closest disposal bin to you, visit www.sjcrecycle.org.

It's EASY to do it RIGHT

San Joaquin County is growing its disposal programs with help from the Rose Foundation

by Anne Stokes

> **"It benefits the environment and it's the right thing to do from a medical perspective."**
> **Harold Reich**
> Owner and Pharmacist
> Reich's Pharmacy

Since 1990, Pharmacist Harold Reich's business plan has revolved around service to his community. For many years, Reich's Pharmacy accepted and disposed of customers' unused pharmaceuticals at the company's expense simply because it was the right thing to do. But when the practice became too costly, San Joaquin County stepped in by creating a pilot medication take-back program in 2016.

"The disposal bins have made it something that we can definitely participate in as a business. It's a community service that we try to promote," Reich said. "I think it's two-fold — I think it benefits the environment and it's the right thing to do from a medical perspective."

The County was able to help due in part to a grant from the Rose Foundation for Communities and the Environment, a nonprofit dedicated to providing resources that allow communities to participate in environmental causes that affect their residents. The organization granted $200,000 to the California Product Stewardship Council (CPSC) to expand San Joaquin County's existing program. CPSC increased the number of medication disposal bins and gave residents an easy and responsible disposal option so they wouldn't flush medications down the drain and into the environment.

"I think most people want to do the right thing, and I think as humans we're all driven toward doing the easy thing, because we're all busy people," said Tim Little, the Rose Foundation's Executive Director. "That's what the take-back is about, making it easy to do the right thing."

Reich said he is still astounded at the volume of expired medications his customers have at home and wouldn't know what to do with, if not for the program. If left in the home, these medications could have the potential to be misused.

"It's scary really, in some regards, that they have access to something that's been expired for many years," he said. "Getting those things out of the medicine cabinets in people's homes reduces the temptation and likelihood that somebody will get a hold of something they shouldn't, and cause themselves or others harm."

Properly disposing of unwanted medications and used sharps is critical to keeping San Joaquin County's waters clean – like the San Joaquin River, pictured here. But proper disposal comes at a cost.
PHOTO BY ROBIN EAGAN

WHO PAYS to Keep Water Clean?

Because medication disposal costs the government, you do

by Anne Stokes

Extended Producer Responsibility (EPR) is just what it sounds like: extending the responsibilities of manufacturers past the sale of their products. It requires producers to clean up their own mess, so to speak.

"Our society is really good at producing stuff, but we're not really good at taking responsibility for it once it's been used," said Tim Little, Executive Director of the Rose Foundation for Communities and the Environment, a nonprofit that provides communities with resources to get involved in ecological issues. "By having producer responsibility, you start to get mechanisms to properly manage them."

According to Heidi Sanborn, Co-founder and Executive Director of the California Product Stewardship Council (CPSC), producers should share the responsibility for the life cycle of products they create and sell — meaning they should be on the hook for costs associated with safely recycling or disposing of the materials.

But what happens instead is local governments — and taxpayers, like those in San Joaquin County — foot the bill for safe disposal programs and events, including those that accept unwanted medications and used sharps. These programs may be free at point of disposal for residents, but have a high price tag for the local governments that are funded by the residents.

"Our country has privatized profits and socialized costs. We don't think that's fair," Sanborn said. "The bottom line is that local governments cannot afford to provide the programs to the level that they need to be available to get a high level of participation from the public."

The producers of these products argue that if they paid for disposal and take-back programs, they would ultimately pass these costs on to consumers in the form of more expensive products. But Sanborn says that consumers are already paying costs through their local governments.

"What we've done with this current system is to bury the costs, so nobody knows what they're paying for," she said. "Taxpayers don't know that a fluorescent lamp costs as much to recycle as it does to buy. They just drop it off for 'free' at their public facility. But it's not free at all."

> **"Our country has privatized profits and socialized costs."**
>
> **Heidi Sanborn**
> Co-founder and Executive Director
> California Product Stewardship Council (CPSC)

CPSC first got involved in pharmaceutical EPR issues due to public demand in San Francisco and Alameda counties.

"County officials were getting so much public demand for more collection opportunities for a variety of reasons — drug abuse prevention, law enforcement, water quality — that they wanted to make producers responsible, and that just happens to be our policy area," Sanborn said.

Sanborn points to successful pharmaceutical and sharps take-back programs in Canada and Mexico as models for California and how to support the proper disposal of hazardous items.

"It's not only the right thing to do, it's a matter of public health and safety," she said. "Twenty years from now our hope is that nothing goes onto the market that has no end-of-life management program in place."

To learn more about Extended Producer Responsibility and good product stewardship, visit www.calpsc.org.

PUT IT IN A DISPOSAL BIN

The Alameda MED-Project Product Stewardship Plan was approved by the County's Department of Environmental Health in 2015. The program's goal: to provide Alameda County residents with convenient, safe and accessible ways to get rid of their unused pharmaceuticals. This successful program — funded by pharmaceutical companies — is a solid example of how local communities can create solutions to problems without putting that burden on taxpayers.

In 2017, the MED-Project (a manufacturer-funded program operating in nine California counties):

Collected **15,750 pounds** of pharmaceuticals in **32 bins** located throughout Alameda County

Held **12 one-day** collection events which collected **3,155 pounds** of unwanted medicine

Currently: Alameda County has dozens of take-back bin locations, with **37 more sites** planned to be implemented by the end of 2018

DISPOSAL LOCATIONS IN SAN JOAQUIN COUNTY

Legend

- : Disposal bins for meds and sharps
- : Disposal bin for sharps only
- : Disposal bin for meds only
- ✕ : Does not accept controlled substances

Escalon

1. **Escalon Police Department**
   2040 McHenry Ave.
   Escalon, CA 95320
   209-838-7093

2. **Vineyard Pharmacy and Gifts**
   1900 McHenry Ave., Ste. 202
   Escalon, CA 95320
   209-838-0511

Lockeford

3. **Lockeford Drug**
   14090 CA-88
   Lockeford, CA 95237
   209-727-5527

4. **Young's Payless Market – IGA**
   18980 CA-88
   Lockeford, CA 95237
   209-727-3762

Lodi

5. **Community Medical Centers, Lodi**
   2401 W. Turner Road, Ste. 450
   Lodi, CA 95242
   209-370-1700

6. **Fairmont Pharmacy**
   1121 W. Vine St., Ste. 13
   Lodi, CA 95240
   209-625-8633

7. **Lodi Police Department**
   215 W. Elm St.
   Lodi, CA 95240
   209-333-6728

8. **Walgreens**
   75 N. Ham Lane
   Lodi, CA 95242
   209-369-8575

Manteca

9. **City of Manteca Solid Waste Division Admin Office**
   210 E. Wetmore St.
   Manteca, CA 95337
   209-456-8440

10. **Community Medical Center, Manteca**
    200 Cottage Ave., Ste. 103
    Manteca, CA 95336
    209-624-5800

11. **Manteca Police Department**
    1001 W. Center St.
    Manteca, CA 95337
    209-239-8401

Ripon

12. **Ripon Police Department**
    259 N. Wilma Ave.
    Ripon, CA 95366
    209-599-2102

Stockton

13. **Angkor Pharmacy**
    4555 N. Pershing Ave., Ste. 7
    Stockton, CA 95207
    209-473-4706

14. **Community Medical Centers, Channel**
    701 E. Channel St.
    Stockton, CA 95202
    209-944-4700

15. **Community Medical Centers, Waterloo**
    1031 Waterloo Road
    Stockton, CA 95205
    209-940-5600

16. **Dignity Health – St. Joseph's Medical Center**
    1800 N. California St.
    Stockton, CA 95204
    209-943-2000

17. **El Dorado Drug Store**
    2005 S. East Mariposa Road
    Stockton, CA 95205
    209-464-7722

18. **Forty Nine Drug Co.**
    937 N. Yosemite St.
    Stockton, CA 95203
    209-465-2671

19. **Kaiser Permanente Pharmacy**
    7373 West Lane, 1st Floor
    Stockton, CA 95210
    209-476-3242

20. **Rx Express Pharmacy**
    711 E. Market St.
    Stockton, CA 95202
    209-465-1001

21. **San Joaquin County Household Hazardous Waste Facility**
    7850 R.A. Bridgeford St.
    Stockton, CA 95206
    209-468-3066

Tracy

22. **Abala Pharmacy**
    550 W. Eaton Ave., Ste. B
    Tracy, CA 95376
    209-832-7080

23. **Grant Line Pharmacy**
    2160 W. Grant Line Road, Ste. 205
    Tracy, CA 95377
    209-832-2999

24. **Harold K. Reich's Pharmacy**
    39 W. 10th St.
    Tracy, CA 95376
    209-835-1832

25. **Tracy Police Department**
    1000 Civic Center Drive
    Tracy, CA 95376
    209-831-6550

26. **Tracy Material Recovery Facility**
    30703 S. MacArthur Drive
    Tracy, CA 95377
    209-832-2355

27. **Tracy Recycling Buyback Center**
    590 10th St.
    Tracy, CA 95376
    209-832-1024

More locations coming! Find an updated list at
www.sjcrecycle.org
or call 209-468-3000.

PUT THESE ITEMS INTO DISPOSAL BINS

Medication bins accept:

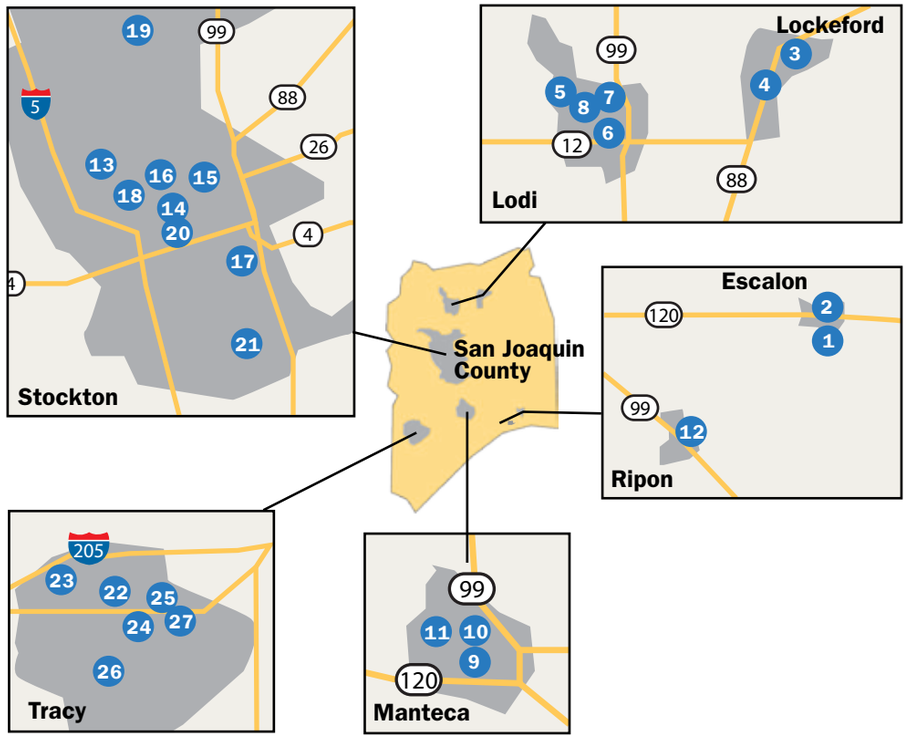
- Sprays
- Liquids
- Pills
- Pet medications
- Ointments/lotions

Make sure pills are in zip top bags, and any containers are shut tight!

Sharps bins accept:

- Needles
- Lancets
- Auto injectors

Put these items into a hard plastic container before placing them in a bin!



CPSC
www.calpsc.org
916-706-3420

Rose Foundation
www.rosefdn.org
510-658-0702

City of Stockton
www.stocktonrecycles.com
209-937-8331

SJC County
www.sjcrecycle.org
209-468-3000

Produced for CPSC and San Joaquin County partners by N&R Publications, www.nrpubs.com

Tracy Press

Pharmacists host safe prescription disposal

goldenstatenewspapers.com/tracy_press/news/pharmacists-host-safe-prescription-disposal/article_a9b0bce2-73ee-11e8-9405-877d82fa608e.html

By Glenn Moore

June 19, 2018

Three pharmacies in Tracy are part of a countywide push to give people an easier and safer

way to get rid of unwanted medications and medical sharps.

Harold K. Reich's Pharmacy, 39 W. 10th St., now has a pair of steel bins bolted to the floor near the front door — white for medication and red for sharps, such as needles, lancets and injection pens. Pharmacist Harold Reich said they were installed in May.

"The advantage is it gets the prescriptions out of your medicine cabinet where kids can get a hold of them if you are not using them. Hopefully it helps with the risk of taking outdated medications, and it avoids getting them thrown out in the trash or down the toilet," he said. "It is safer and cleaner for the environment."

Rajony Chin, a management analyst from the county public works solid waste division, said a program was introduced in 2016 to collect medical sharps and unused medications in a handful of places in the county. During a recent expansion that more than quadrupled the reach of the program, her department added 20 sharps bins and 16 new medication bins, including several in Tracy.

Reich used to take back people's extra pills and other unwanted medications — although no narcotics — and dispose of them at his own expense.

"We would order a container, dump everything in and then ship it to Texas," he said. "It was costing us a hundred dollars a box to ship."

When the state added multiple layers of new regulations for handling outdated medications, he finally had to say no.

Then, in February, the county public works department invited him to take part in its program. The county provides the bins and sends someone to empty them once or twice a month. Reich agreed, and he also changed his Drug Enforcement Agency license with the federal government and registered with the state so people can discard their old narcotics at his pharmacy.

"Hopefully it will keep stuff out of the sewer system, because a lot of people still flush them down the toilet, which you never want to do," Reich said, explaining that the dissolved drugs end up in rivers because sewage treatment plants are not equipped to filter them out.

He said people don't need an appointment and "can come on in" to drop off unwanted medications or sharps during his normal business hours.

The other two participating pharmacies are Abala Pharmacy, 550 W. Eaton Ave., Ste. B, and Grant Line Pharmacy, 2160 W. Grant Line Road, Ste. 205.

All types of needles, medical lancets and pens for injecting drugs can be discarded in the red sharps bins, but only if they are inside a sealed container, such as a thick plastic laundry detergent bottle. Loose syringes or needles cannot be accepted.

"A lot of people have sharps in their garage," Reich said. "They just stockpile the stuff because it is so hard to get rid of."

Both prescription drugs and over-the-counter medications, including liquids and creams, can be dropped into the white medication bins as long as they are in spill-proof packaging. Cough syrup bottles and similar containers can be sealed in zip-top bags to prevent leaks. Pills can stay in their original bottles as long as any personal information is removed or covered up.

Some things cannot be dumped in the bins — aerosol or pressurized containers, radioactive pharmaceuticals, chemotherapeutic cancer medications and medical waste.

When asked specifically about medical marijuana or cannabis products, Chin did not deny that they could be discarded in the medication bins throughout the county.

“If it is not on the list of prohibited items, it can be disposed of,” she said.

The Environmental Justice Coalition for Water

The Environmental Justice Coalition for Water
Rose Foundation
Project: Clean water for Sacramento Area Disadvantaged Communities
50% Report: Months 7-12 (April 2018- September 2018): TASK 2 & 3: Needs Assessment and Mapping; Relationship Building of Sacramento and Yolo Counties

The following report summarizes EJCWs fulfillment of tasks two and three of the Rose Foundation funded project Clean Water for Sacramento Area Disadvantaged Communities. Please find four attachments to this document addressing points A and E. EJCW Sacramento Area Program Coordinator Cori Ring-Martinez prepared the data and document review addressed in points A and D, drawing on a variety of sources, cited in the respective documents. The stakeholder interviews reviewed in point B were completed by previous staff member Vanessa Toro-Barragan and ED Colin Bailey, as well as Cori Ring-Martinez. EJCW would like to take the opportunity to thank the Rose Foundation for their continued support in this effort and look forward to continuing this important work and productive relationship. If there are any questions or concerns about the following information, please feel free to contact Cori Ring-Martinez at cori@ejcw.org or call at 916-836-5091.

A. **Data gathering and document review of Sacramento and Yolo Counties:**
EJCW will compile, review. and map existing data on water quality, quantity, climate change/resilience, flood risk, fish health for beneficial uses, etc., as it relates to disadvantaged communities in the two counties, as a visual aid to identification of problems and solutions, as well as a guide to community engagement.

   i. Sacramento and Yolo County data and document reviews are attached as Appendix A and B, respectively.
   ii. The methodology used in this data review are as follows:
   Yolo and Sacramento County Data Review Methodology:
      1) Water Quality and Environmental Justice Mapping
         i. CalEnviroScreen 3.0: Cumulative Impacts
      2) Drinking Water Quality
         i. CalEnviroScreen 3.0: Drinking Water Contaminants Index: with results parceled in tables
         ii. Human Right to Water, Compliance Status of Public Water Systems
      3) Clean Up Site Index
         i. CalEnviroScreen 3.0: Clean Sites Index: With any results parceled in tables.
      4) Groundwater Threats Results
         i. CalEnviroScreen 3.0: Groundwater Threats Index
         ii. GAMA Map (Groundwater Ambient Monitoring and Assessment Program
         iii. Sustainable Groundwater Management Act (SGMA)

5) Fisheries Health Resources
    i. CalEnviroScreen 3.0: Impaired Water Bodies Index
    ii. Local Projects on Fish Health – sourced from the CalEPA website or other local agencies.
6) Climate Change Resiliency
    i. Climate Change Threats the region is prone to, sourced from County Hazard Mitigation Plans and Climate Adaptation Plans
7) Socio-Economic Demographics
    i. General Characteristics: Disadvantaged Community Mapping tool
    ii. CalEnviroScreen 3.0: Pollution Burden and Population Characteristics
    iii. Regional Opportunity Index (ROI)
8) Integrated Regional Water Management Groups Stakeholder Identification and Implementation of Plans
    i. Stakeholders
    ii. Ongoing projects
    iii. Completed projects
9) Indigenous Tribes
10) Control of Water Rights
11) Topics of concern

B. **Interviews with stakeholders (at least 6-8) regarding observations about water-related challenges and needs in Sacramento and Yolo Counties:** including local social justice and environmentalist groups (e.g. UC Davis Center Environmental Health, UC Davis Center for Regional Change), government (Department of Water Resources, flood control districts, city and county storm water staff, groundwater sustainability agencies, public water providers, sanitation districts, etc.), faith communities, and community organizations (e.g. Avondale Glen Elder Neighborhood Associations, Capitol Region Organizing Project). We will use interviews as an opportunity to engage stakeholders in community mapping exercises.
    i. **Knights Landing, UC Davis** PhD students Skye Kelty and Alfonso Aranda, regarding their research into the Yolo County unincorporated agricultural community's potential exposure to harmful pesticides or other toxins in their drinking water, and potential community solutions.
    ii. **Sacramento County Public Defender**, Tiffanie Synnott, addressing the County's desire to lessen ticketing for people experiencing homelessness and creating a diversion program for this population.
    iii. **UC Davis Center for Regional Change Director** Jonathan London, regarding CRC's pilot mapping project to identify DAC/URC within the West Side IRWM with the purpose of providing data/findings that could guide water needs projects.
    iv. **City of Davis Arts Commission**, Sara Zimmerman, addressing access to water and sanitation for people experiencing homelessness in Yolo County.

v. **Meeting of the Minds**, Jessie Feller Hahn, addressing access to water and sanitation for people experiencing homelessness in Sacramento County.
vi. **Sacramento Housing Alliance**, Veronica Beaty, addressing the landscape of housing policy and need in the Sacramento region.
vii. **Mutual Housing California**, Holly Wunder-Stiles, discussing potential to support land acquisition, affordable housing development and management, to mitigate potential gentrifying impacts of Morrison Creek project.
viii. **Sacramento Community Land Trust**, Katie Valenzuela, to explore possible asset holding and management capacity in the event of successful land acquisition for Morrison Creek project.
ix. **Regional Water Authority**, Rob Swartz, addressing access to water and sanitation for people experiencing homelessness in Sacramento County.
x. **Sacramento Municipal Utilities District**, Kathleen Ave, addressing need for pre-disaster mitigation planning for the most vulnerable residents and neighborhoods.
xi. **Sacramento Area Flood Control District**, Tim Washburn, addressing status of Morrison Creek in flood mitigation plan for region and potential support for multi-benefit project.
xii. **Department of Water Resources**, Marc Commendatore addressing the state of watershed maintenance and education in URC and DAC in the Sacramento Region.

C. **Building partnerships with agency, organizational, and community stakeholders, alike**. As part of the data collection and interview process, we will invite key stakeholders to meet directly with each other, to share ideas and develop rapport through one regional water justice summit that will occur during the last stages of the project development.
   i. Accomplished alongside the interview process and planning for the Water Justice Tour, or the Urban Creek Tour realized on September 15th 2018 as part of the Morrison Creek Revitalization Project.

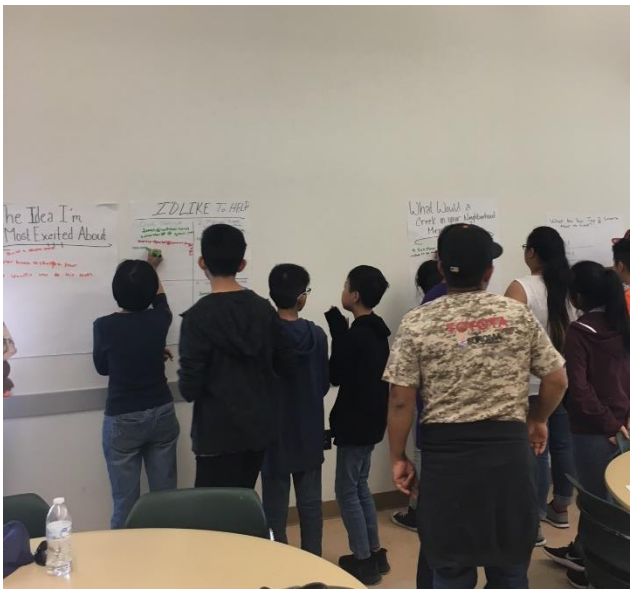
D. **Data analysis and needs assessment:** We will amend community water maps by drawing on Integrated Regional Water Management Plans, The Office of Health Hazard Assessment's CalEnviroScreen 3.0 mapping tool, and direct community surveys, among other resources.
   i. Accomplished in point A.

E. Planning for Environmental Justice Tour and Water Justice Leadership Training (WJLT). Understand and evaluate potential water justice areas for the tour. Meanwhile, adjust WJLT curriculum to reflect water needs assessment using the developed and piloted Salinas Valley disadvantaged community project's WJLT curriculum.

The Morrison Creek Revitalization Project is collaborative and community driven by residents and other stakeholders in the project focus area of Lemon Hill, in Southeast Sacramento. The need for these projects is particularly acute in low-income and minority communities like

Southeast Sacramento, where environmental pollution, less access to green space, housing discrimination, higher levels of poverty and unemployment, and lower levels of education are legacies of racial inequality. Urban stream revitalization projects and the multiple community benefits they confer for human health, social well-being, and environmental quality is of growing interest at all levels of government, in the nonprofit sector, in private institutions and among commercial interests as well.

The Morrison Creek Revitalization Project took 30 community members from Southeast Sacramento on a bus tour to visit other urban creek restoration projects in the region. The tour was planned with significant input from the project Community Committee, which provided direction on tour goals and stops as well as outreach and recruitment. Please find attached a tour overview and a document outlining the results of the Tour's visioning session, pictured below.



- Appendix C: Tour Overview
- Appendix D: Tour Visioning Session

The Environmental Justice Coalition for Water
Water Justice for All

Timeline & Deliverables			
Milestone	**Tasks**	**Deliverables**	**Achievements**
25% complete—6 month mark. Target project period: 6 months	Task 1 (North Sacramento Valley scope): -Secondary data gathering - 6-8 Interviews with stakeholders -Building partnerships with agencies, organizational, and community stakeholders -Data analysis, mapping and needs assessment drawing on secondary sources and direct community surveys	Task 1 (North Sacramento Valley scope): - Data analysis, mapping and needs assessment report (2) Summary of stakeholders interviews (2)	Reports and stakeholder interviews completed
50% complete—12 month mark Target project period: 6 months	Task 2 (for both Sacramento and Yolo Counties) -Secondary data gathering - 6-8 Interviews with stakeholders -Building partnerships with agencies, organizational, and community stakeholders -Data analysis, mapping and needs assessment drawing on secondary sources and direct community surveys Task 3 -Curriculum development Valley region	Task 2 (for both Sacramento and Yolo Counties): - Data analysis, mapping and needs assessment report (2) Summary of stakeholders interviews (2) Task 3: - Revised curriculum and evaluation tool for the Sacramento region	- Data analysis reports completed - 12 stakeholder interviews conducted - Water Justice Tour completed
75% complete—18 month mark Target project	Task 4a & 4b-Continue outreach, recruitment for WJLT - Towards the end of 75% mark, complete WJLT	Task 4: - List of outreach and summary of recruitment/outreach efforts - Workshop agenda, materials, attendee list	NA

period: 6 months			
100% complete—24 month mark Target project period: 6 months	Task 5: -Identify community based solutions to current challenges, including the potential for communities to write and submit grant proposals to address long term needs	Task 5: 2 community projects for further development	NA
Ongoing Tasks	1. Maintaining relationships with stakeholders		

Creek Tour Visioning Session

As our last stop on the Urban Creek Restoration Tour, we conducted a visioning session where participants were encouraged to visit different "stations" located around the room to elicit design ideas for Morrison Creek, identify priorities and concerns, and obtain commitments from participants for follow up work on the project. The following are products of this session.

What would a Creek in your neighborhood mean to you?

- A fun place for me to go and have fun when bored
- A place to go and feel safe being around
- A place that I can feel relaxed and observe nature
- Access to nature close to home and a safe place. It would also show that we matter too
- It would mean everything, if the creek was dirty I would tell everyone to help
- If me and my friends could have a place to go out and play instead of video games would be great
- Equity
- Help change the neighborhood by giving it pride
- A safe place to walk or bike
- A safe, relaxing way for my students to get to school (Elder Creek Elementary)
- A place to be outside to relax and recharge

What are your TOP 2 concerns about the creek? (indicated by tally)	
Safety	8
Homelessness	5
Water Quality	7
Dumping/Trash	10
Other	Organizing, maintenance, daily/nightly access

The idea I'm most excited about: (# indicates extra check marks)

- Is to build a skate park (1)
- Is a solar bench to charge your phone (3)
- Add a specific area to skip rocks (1)
- Amphitheater area (3)
- Community garden (3)
- A mural of the history of the neighborhoods (3)
- Artwork from community members
- Zipline (adult-friendly) (1)

- New place to hold events
- Fitness equipment and Light in the creek (2)
- Walk path (1)
- Water fountain (3)
- Trash cans (3)
- Access from George Sim to Elder Creek Elementary (2)
- Make a flat area under the bridge for shade
- Bird sanctuary (1)
- Native plant area to create relaxing, beautiful, shady oasis (4)
- Bike path (1)
- Bathrooms - regulated
- Phone charging stations
- Shade (2)
- Access to lower creek bench
- Happy and health community members

I'd like to help with:

1) **Creek Clean ups:**
   11 commitments

2) **Morrison Creek Community Committee**
   4 commitments

3) **Social Media:**
   2 commitments

4) **Outreach to Elected Officials**:
   2 commitments

Cash Expenses	Requested from CV DAC Pgrm:	Spent as of 10/05/2018	Remaining Funds
Staff Salaries and Benefits	$ 40,000.00	$ 25,703.84	$ 14,296.16
Network Meetings & Trainings	$ 20,000.00	$ -	$ 20,000.00
Project Travel (staff and DAC members)	$ 12,345.00	$ -	$ 12,345.00
Postage	$ 200.00	$ -	$ 200.00
Rent & Utilities	$ 1,500.00	$ -	$ 1,500.00
Printing	$ 1,000.00	$ -	$ 1,000.00
Project Consultants	$ 20,000.00	$ -	$ 20,000.00
Translators and Interpreters	$ 3,000.00	$ -	$ 3,000.00
subtotal	$ 98,045.00	$ 25,703.84	
project overhead @ 15%	$ 1,955.00		
Total $	**$ 100,000.00**	**$ 25,703.84**	
Remaining funds		$ 74,296.16	

Sacramento County Needs Assessment

1) Water Quality and Environmental Justice Mapping

a. CalEnviroScreen 3.0: Cumulative Impacts

i. CalEnviroScreen is a science-based mapping tool that helps identify California communities that are most affected by many sources of pollution, and that are often especially vulnerable to pollution's effects. CalEnviroScreen uses environmental, health, and socioeconomic information to produce a numerical score for each census tract in the state.

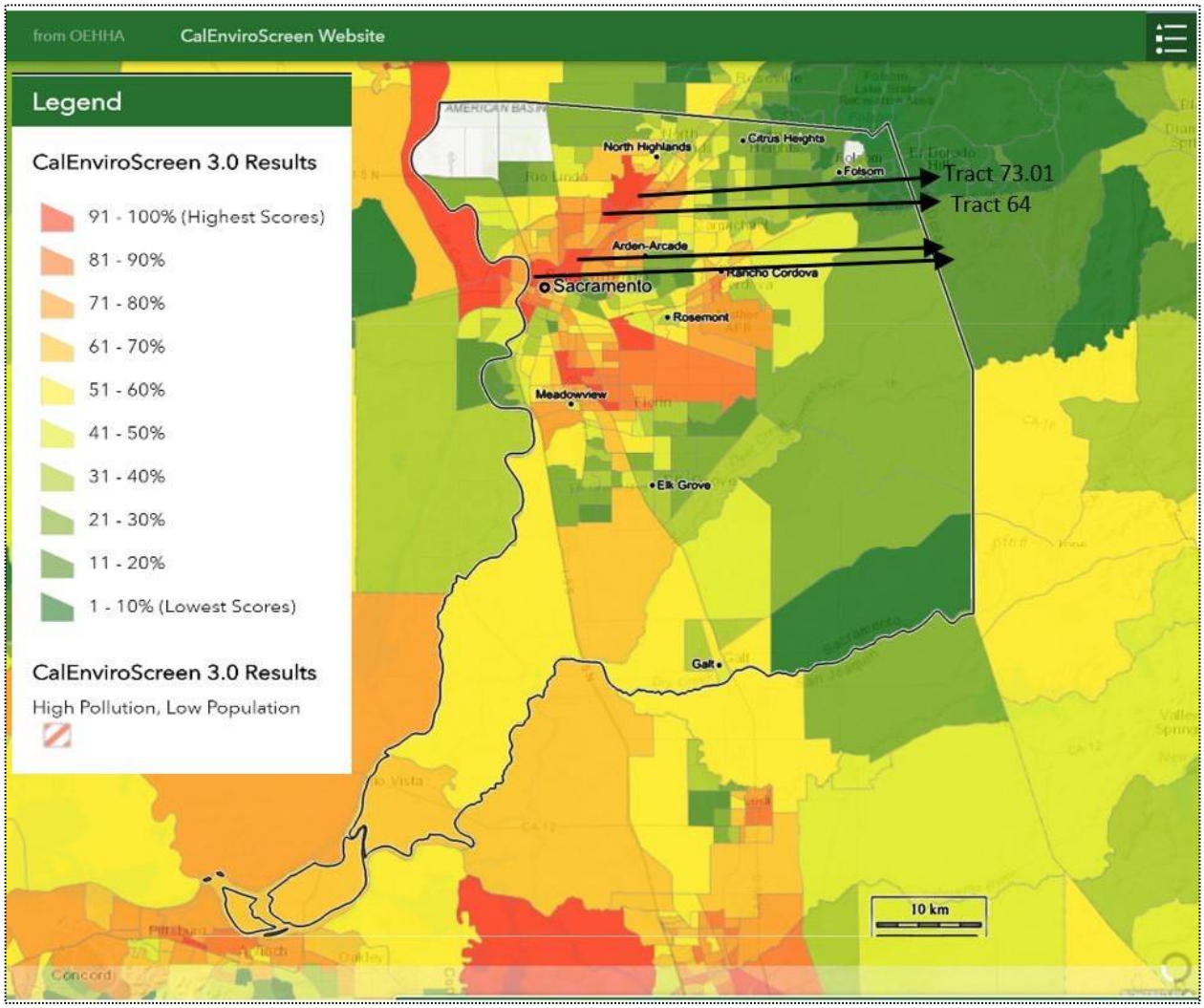


Figure 1. CalEnviroScreen 3.0 Cumulative Impact for Sacramento County

Table 1. Population, Race & Ethnicity, and Age Profiles of Tracts with Highest Cumulative Impact Scores

	Cumulative Impact Score (Percentile)	Population Clusters			Race/Ethnicity (%)						Age	
Census Tract	Pollution Burden Percentile/Population Characteristic Percentile	Unincorporated Communities or Census Designated Places	Incorporated Cities	Total Population	White (%)	African American (%)	Native American (%)	Asian American (%)	Other (%)	Hispanic (%)	Children under 10 (%)	Elderly over 65 (%)
Tract 73.01	91-95% 73/94	North Highlands/ Unincorporated	Sacramento	4,644	52	13	1	4	6	25	18	8
Tract 64.00	91-95% 61/98	East Del Paso Heights	Sacramento (Del Paso Heights Neighborhood)	5,324	41	14	1	12	4	29	16	8
Tract 69.00	91-95% 72/97	North Sacramento	Sacramento	4,392	45	11	1	7	4	31	13	14
Tract 53.01	96-100% 94/97	Southern Pacific/ Richards Blvd.	Sacramento	1,823	33	35	2	4	6	20	11	4
Tract 22.00	91-95% 94/81	Land Park	Sacramento	4,004	32	25	1	17	7	19	20	10
Tract 52.05	91-95% 91/88	South Sacramento	Sacramento	2,109	47	14	1	12	6	21	13	13
Tract 47.02	91-95% 59/99	Unincorporated South Sacramento	Sacramento	4,945	17	18	1	20	4	40	19	9
Tract 45.02	91-95% 71/98	Unincorporated	Sacramento	4,795	17	14	1	12	4	52	20	9
45.01	91-95% 61/99	Unincorporated	Sacramento	3,529	8	7	1	33	3	49	20	6
Tract 50.02	91-95% 64/98	Unincorporated	Sacramento	6,284	21	22	1	21	5	31	17	15

2) Drinking Water Quality

a. CalEnviroScreen 3.0: Drinking Water Contaminants Index:

The indicator combines information about 13 contaminants and 2 types of water quality violations that are sometimes found when drinking water samples are tested. We calculated average concentrations for the contaminants in each water system.

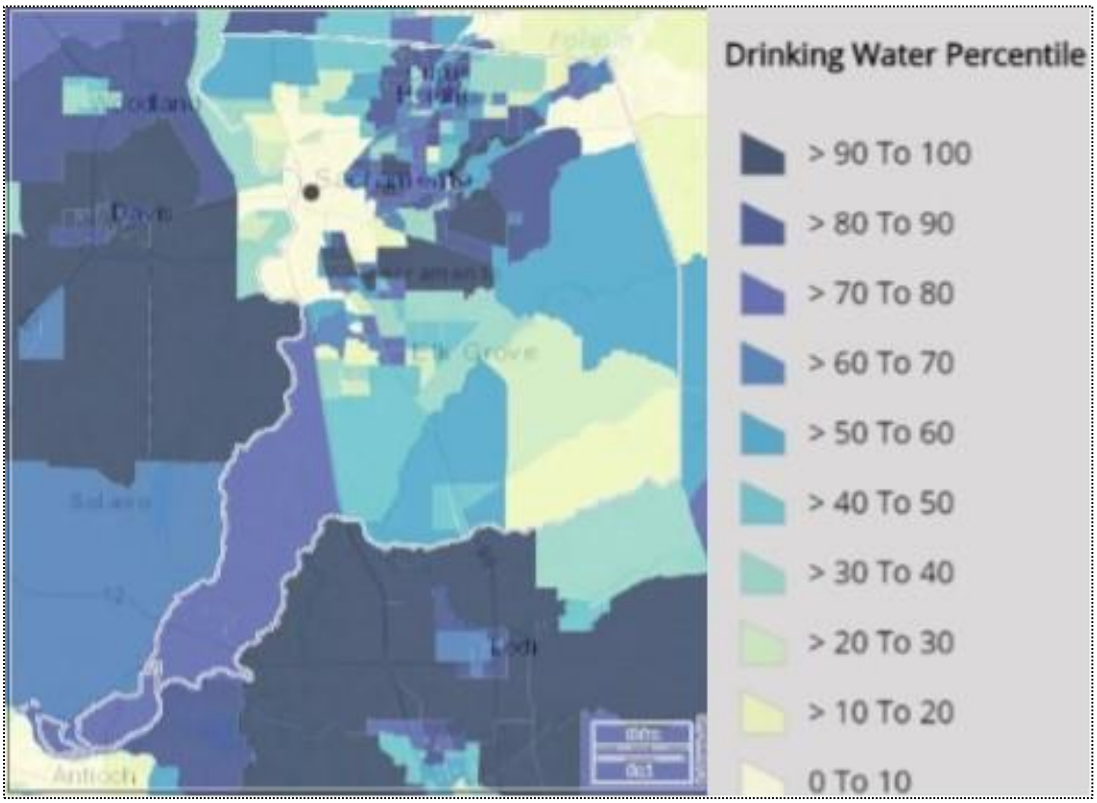


Figure 2. CalEnviroScreen 3.0 Drinking Water Contaminants for Sacramento County. Results parceled out in the next table.

Table 2. Population, Race & Ethnicity, and Age Profiles with respect to Drinking Water Contaminants by Census Tract

	Drinking Water Quality		Population Clusters			Race/Ethnicity (%)						Age	
Census Tract	Percentile	Violations exceeding 50 percentile	Unincorporated Communities	Incorporated Cities	Total Population	White (%)	African American(%)	Native American(%)	Asian American (%)	Other (%)	Hispanic (%)	Children under 10 (%)	Elderly over 65 (%)
45.02	99%	Arsenic Chromium, Hexavalent, DBCP, Lead, Nitrate, Perchlorate, TCE, Uranium, TCP	Unincorporated	Sacramento	4795	17	14		12	4	52	20	9
45.01	95%	Arsenic, Chromium, Hexavalent, DBCP, Nitrate, Perchlorate, TCE, Uranium, TCP	Unincorporated	Sacramento	3529	8	7	1	33	3	49	20	6
46.02	97%	Arsenic, Chromium, Hexavalent, DBCP, Nitrate, Perchlorate, TCE, Uranium, TCP	South Oak Park, Unincorporated	Sacramento	5067	21	11	1	11	3	54	19	8
46.01	97%	Arsenic, Chromium, Hexavalent, DBCP, Nitrate, Perchlorate, TCE, Uranium, TCP	Unincorporated, Fruitridge Manor	Sacramento	7614	18	11	1	18	3	50	19	8
47.02	97%	Arsenic, Chromium, Hexavalent, DBCP, Nitrate, Perchlorate, TCE, Uranium, TCP	Unincorporated	Sacramento	4945	17	18	1	20	4	40	19	9
48.02	97%	Arsenic, Chromium, Hexavalent, DBCP, Lead, Perchlorate, TCE, TCP	Unincorporated, Glen Elder	Sacramento	4485	22	15	1	25	3	35	17	10
92.01	92%	Arsenic, Cadmium, Chromium, Hexavalent, DBCP, Lead, Nitrate, Perchlorate, TCE, TCP	*Army Depot Superfund area	Sacramento	2293	51	7	1	17	4	20	12	19
56.06	94%	Arsenic, Chromium, Hexavalent, DBCP, Lead, Nitrate, TCE, TCP	Unincorporated, Fair Oaks	Sacramento	4029	68	6	0	6	4	16	11	17
50.01	92%	Arsenic, Chromium, Hexavalent, DBCP, Lead, Perchlorate, TCE	Unincorporated	Sacramento	8107	26	13	0	28	5	28	16	10

1 - DBCP: Dibromochloropropane
2- MCL: Maximum Contaminant Level
3- TCE: Trichloroethylene
4- TCP: 1,2,3-TrichloroPropane

*The data is from 2005 to 2013, the most recent complete compliance cycle.

b. Human Right to Water, Compliance Status of Public Water Systems

i. *Under AB685 (2012) California state must ensure "every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes." To fulfill this goal the state's Water Resources Control Board issued a resolution that states: "Water Board staff will work with relevant stakeholders, as resources allow, to develop new systems or enhance existing systems to collect data and identify and track communities that do not have, or are at risk of not having, safe, clean, affordable, and accessible water for drinking, cooking, and sanitary purposes. Water Board staff will also work with relevant groups to develop performance measures to evaluate the Water Boards' progress toward making the human right to water a reality, and such information will be made available to the public."*

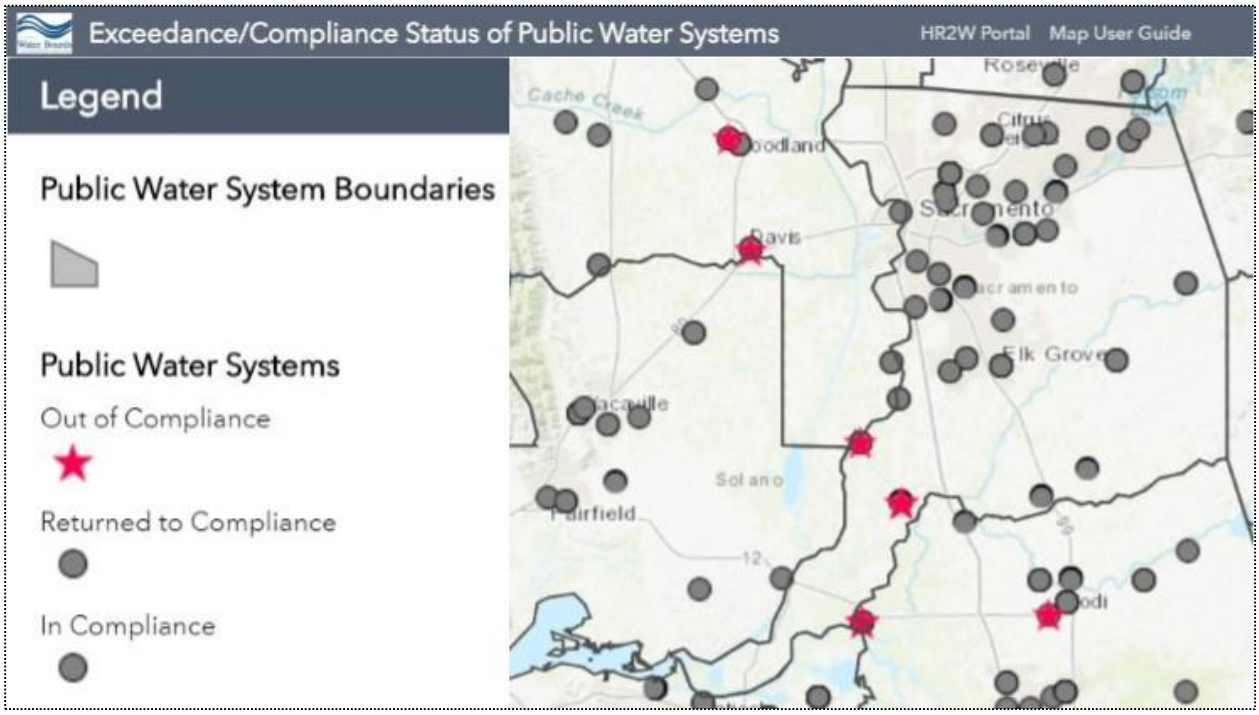


Figure 3. Compliance status of Public Water Systems indicates that there are currently approximately 3 out of compliance PWS within the boundaries of Sacramento county.

2. Clean Up Site Index

a. CalEnviroScreen 3.0: Clean Sites Index

i. Cleanup sites are places that are contaminated with hazardous chemicals and require clean up by the property owners or government. Chemicals at cleanup sites can move through the air or groundwater. People living near these sites have a greater potential to be exposed to chemicals from the sites than people living further away. Some studies have shown that neighborhoods with cleanup sites are generally poorer and have more people of color than other neighborhoods. The land may take many years or decades to clean up, reducing possible benefits to the community.

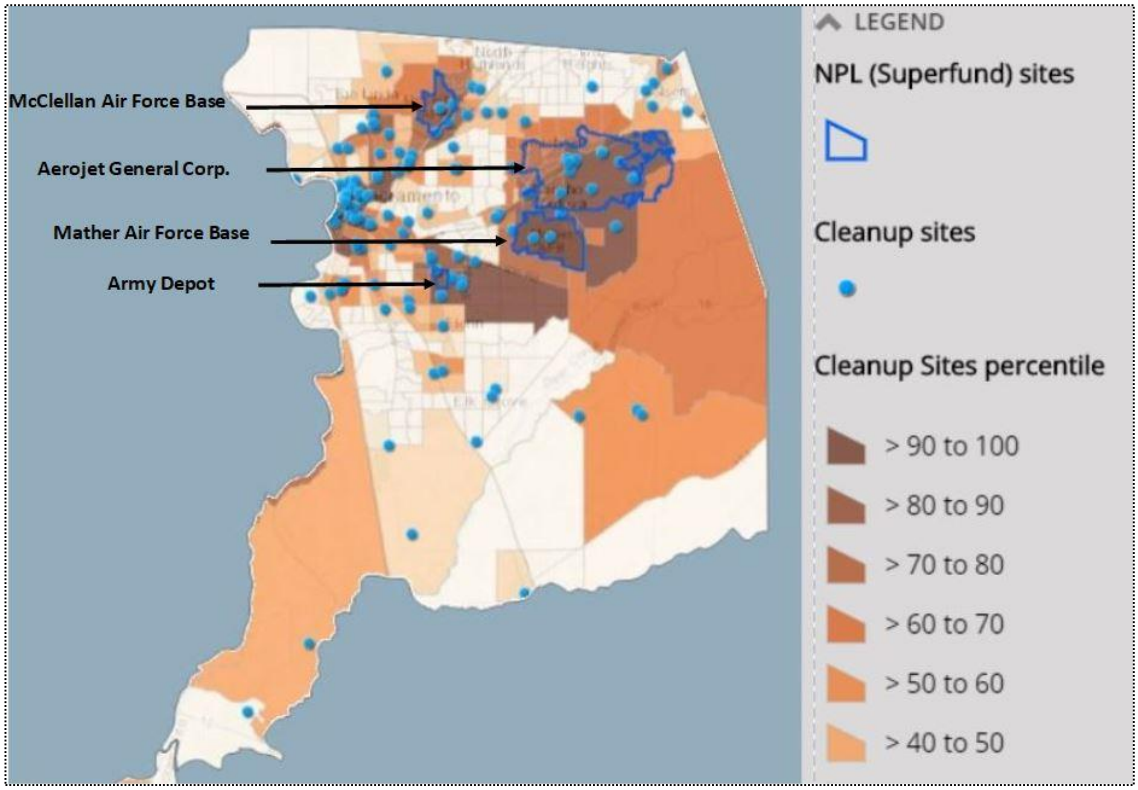


Figure 4: CalEnviroScreen.3 Clean Up Site Index. There are 4 superfund sites in Sacramento County.

ii. *Congress established the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) in 1980. CERCLA is informally called Superfund. It allows EPA to clean up contaminated sites. It also forces the parties responsible for the contamination to either perform cleanups or reimburse the government for EPA-led cleanup work. When there is no viable responsible party, Superfund gives EPA the funds and authority to clean up contaminated sites.*

Table 3. Superfund Sites in Sacramento County			
Superfund Site	**City**	**Area** (acres)	**Pollutants and Clean Up Progress**
Army Depot	Sacramento	486.9	Established in 1945 and located roughly 7 miles from downtown Sacramento, this was a supply depot primarily responsible for the receipt, storage, issuance, maintenance and disposal of electronics supplies. Improper waste disposal practices at the site contaminated soils and groundwater with volatile organic compounds (VOCs) and heavy metals. Cleanup, operation and maintenance activities, and monitoring are ongoing.
Aerojet General Corp.	Rancho Cordova	5,900	½ mile from American River. The aquifer beneath the Aerojet facility and the Rancho Cordova area is part of the San Joaquin groundwater basin, providing drinking water to over a million residents in Sacramento County and nearby areas. Aerojet and Cordova Chemical Company disposed of unknown quantities of hazardous waste chemicals, including TCE and other chemicals associated with rocket propellants, as well as various chemical processing wastes. Some wastes were disposed of in surface impoundments, landfills, deep injection wells, leachate fields, and some were disposed by open burning. A 27-square mile swath of groundwater underneath and around the former aerospace facility is polluted with several compounds, including very high levels of perchlorate -- a main component of rocket fuel -- and a known developmental toxin.
Mather Air Force Base	Sacramento County	3,452	The operation and maintenance of aircraft have involved the use, storage and disposal of hazardous materials, including industrial solvents, caustic cleansers, paints, metal plating wastes, low-level radioactive wastes and a variety of fuel oils and lubricants. The Air Force has identified 326 waste areas of known and suspected contamination. The site's long-term cleanup is ongoing. AC&W Disposal Area: The remedy, selected in 1993, included extraction and treatment of contaminated groundwater by air stripping, with reinjection of the treated groundwater into the ground. This system became operational in 1995. In 1997, the disposal option changed to discharge of the treated groundwater to Lake Mather. The AC&W plume is contained and contaminant concentrations are declining.
McClellan Air Force Base (Ground Water Contamination)	Sacramento County	3,452	The primary contaminants in groundwater are volatile organic compounds (VOCs). Contaminants detected in soil include PCBs, heavy metals, and several non-VOCs. Radionuclides have also been identified in surface soil and in former disposal pits. People may face a health risk if they accidentally ingest or come into direct contact with contaminants. People also may be at risk if they eat foods containing accumulated contaminants or if they inhale contaminated dust or soil vapors. Risks to wildlife and their habitat may occur on and adjacent to the former Base in some areas of the creeks, vernal pools, and other parts of the flood plain. The removal and disposal of some contaminated soil and underground tanks, the capping of the northwestern area of the base, and the installation and operation of a groundwater extraction system and 19 SVE systems treating 26 areas have reduced the potential for exposure to contaminants at the site. Providing an alternate water supply has eliminated the potential for exposure to contaminated drinking water and continues to protect area residents until final site cleanup is complete. Groundwater is extracted and treated at the groundwater treatment plant in the central portion of the facility.

4. Groundwater Threats Results

b. CalEnviroScreen 3.0: Groundwater Threats Index

i. *Hazardous chemicals are often stored in containers on land or in underground storage tanks. Leaks from tanks can contaminate soil and groundwater. Common soil and groundwater pollutants include gasoline and diesel fuels at gas stations, as well as solvents, heavy metals and pesticides. Leaking tanks can affect drinking water and expose people to contaminated soil and air. The land and groundwater may take many years or decades to clean up.*

ii. *This indicator is calculated by considering the number of cleanup sites including Superfund sites on the National Priorities List (NPL), the weight of each site, and the distance to the census tract.*

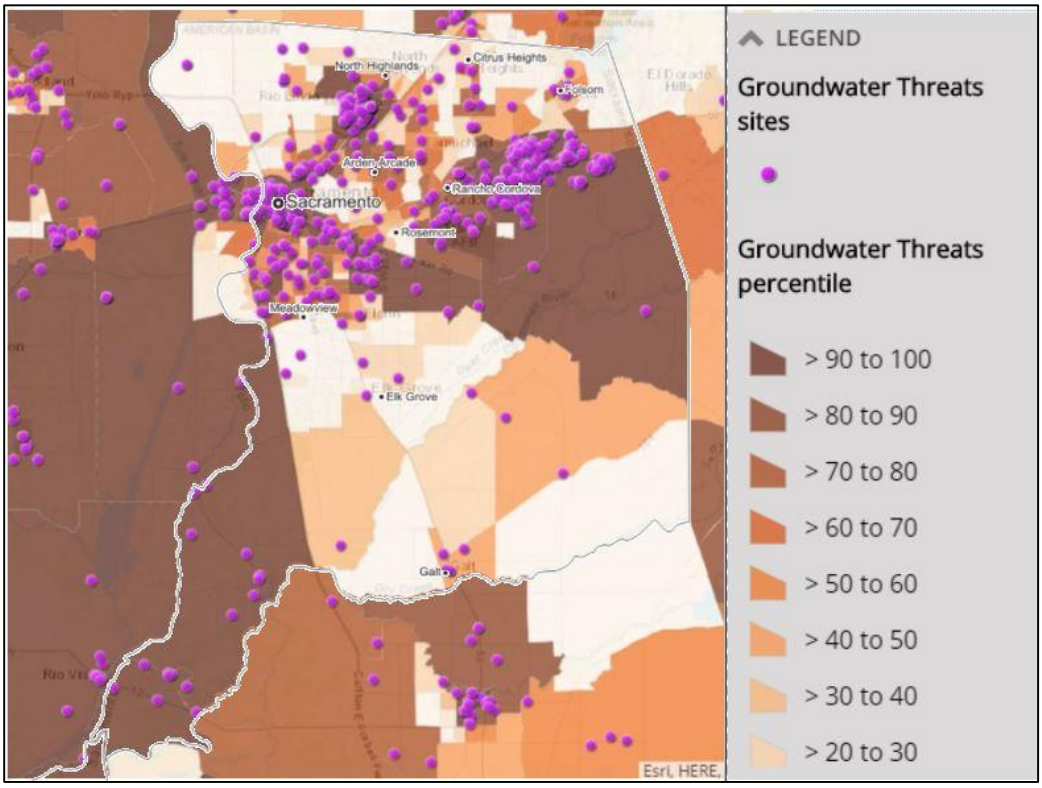


Figure 5. CalEnviroScreen.3 Groundwater Threats Index for Sacramento County which shows strong alignment of groundwater threats with cleanup sites from Figure 4.

c. GAMA Map (Groundwater Ambient Monitoring and Assessment Program) for Sacramento County

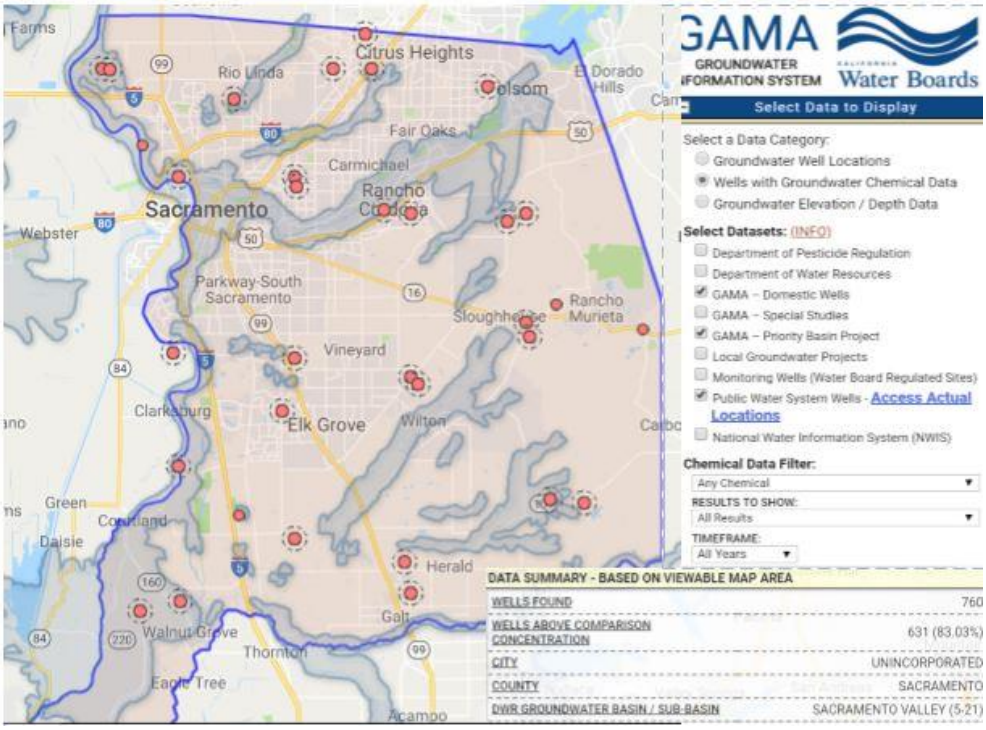


Figure 6. GAMA monitored wells in Sacramento County with chemical data and summary.

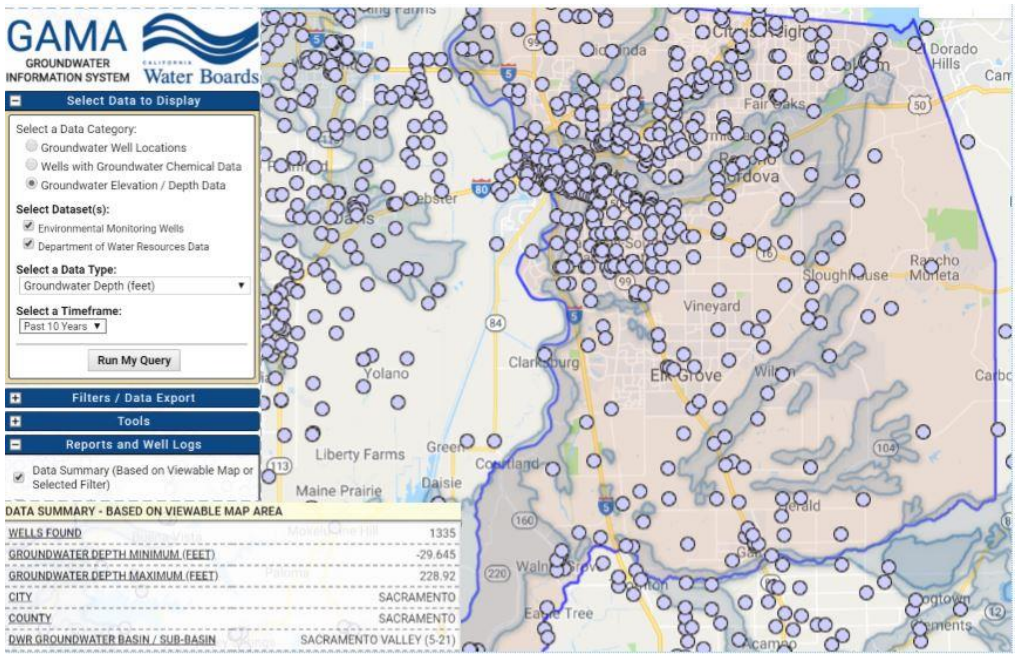


Figure 7. GAMA monitored wells in Sacramento County with groundwater elevation data and summary.

Figure 8. GAMA water quality county wide results, Sacramento County

d. Sustainable Groundwater Management Act (SGMA)

i. *2014, the California Legislature passed the Sustainable Groundwater Management Act (SGMA) and the Governor signed it into law. SGMA provides a framework for sustainable management of groundwater by local water supply, water management and land use agencies. SGMA requires the formation of Groundwater Sustainability Agencies or GSAs to provide governance over each sub-basin in the State. A sub-basin can be governed by one GSA or by multiple smaller GSAs provided that all GSAs work collectively to sustainably manage the entire sub-basin. SGMA mandates that all high and medium priority groundwater basins in California – including the Cosumnes Subbasin - must develop one or more groundwater sustainability plans by 2022 and be managed sustainably over a 20-year implementation period.*

ii. *Sacramento County overlays all or part of five groundwater sub-basins*

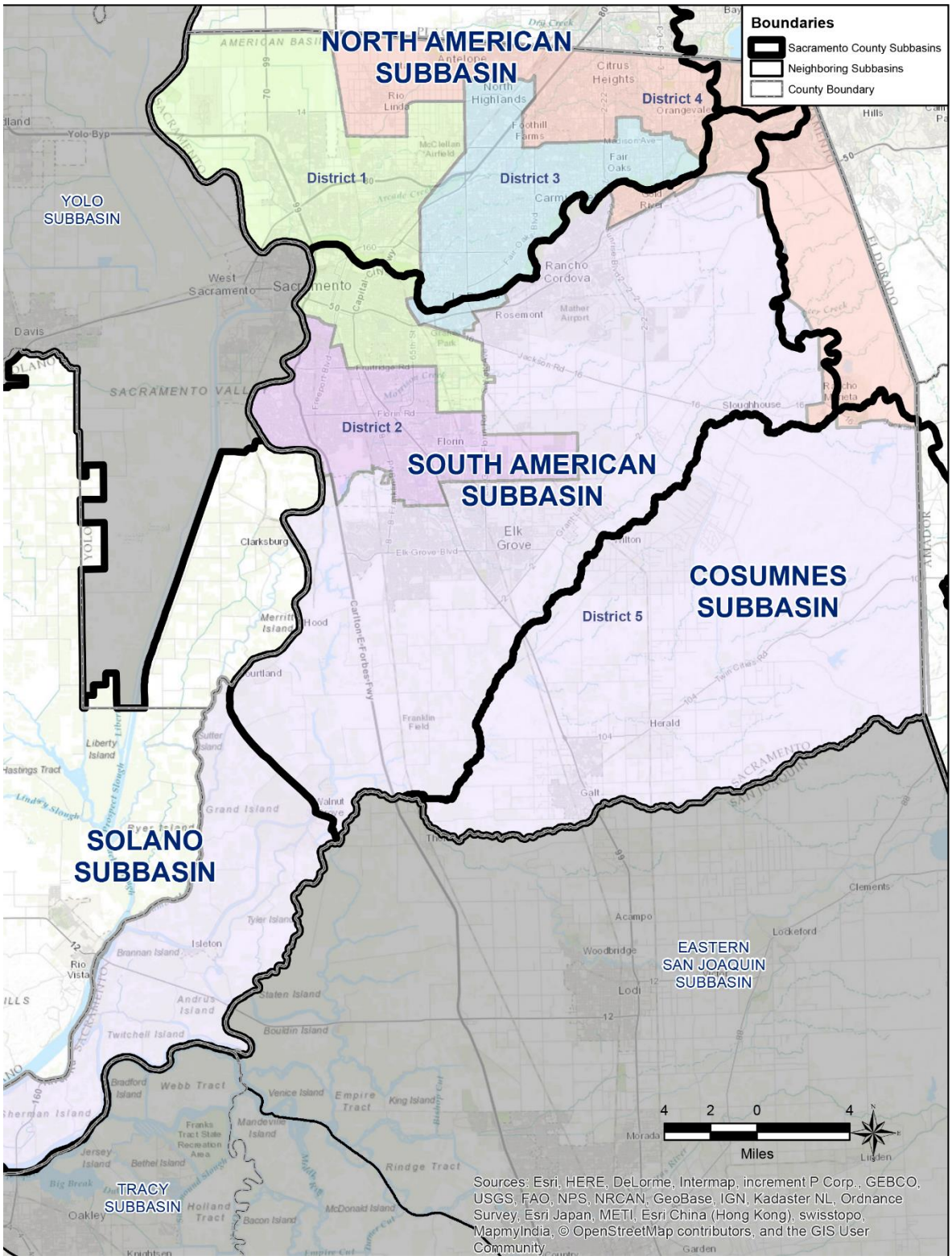


Figure 9. Sacramento County Sub-Basins, details in Table 4.

Table 4. Sub-basins in Sacramento County and SGMA compliance plans[1]		
Sub-Basin	**Geography**	**Management**
North American	This sub-basin is generally bounded by the American River on the south and extends into Sutter and Placer counties.	The Sacramento County portion of this sub-basin is being managed by the Sacramento Groundwater Authority (SGA).
South American	This sub-basin is located entirely within Sacramento County and is generally bounded by the American River, the Sacramento River, the Cosumnes River and the eastern Sacramento County Line.	The majority of this sub-basin has been managed by Sacramento Central Groundwater Authority (SCGA) since 2006, based on their Groundwater Management Plan. SCGA submitted an Alternative to a GSP for the entire sub-basin during December 2016, as allowed by SGMA. As part of a process to change the sub-basin boundary Sloughhouse Resource Conservation District and Omochumne Hartnell Water District submitted GSA applications that overlap the SCGA application, these overlap conditions will need to be resolved.
Cosumnes	This sub-basin is generally bounded by the Cosumnes River on the north, the San Joaquin County line on the south and extends into Amador County to the east.	Currently, seven GSAs have been formed in this sub-basin, including Sloughhouse Resource Conservation District, Omochumne Hartnell Water District, Clay Water District, City of Galt, Amador County, Galt Irrigation District and Sacramento County. Planning and governance activities in this sub-basin are being facilitated through the Water Forum.
Solano	This sub-basin is contained primarily in Solano County but includes the southernmost Delta portion of Sacramento County.	Sacramento County is currently coordinating with interested management entities in this sub-basin
Tracy	This sub-basin is contained primarily in Contra Costa County but includes a small portion of Sacramento County, less than 600 acres.	Sacramento County has discussed a boundary modification with DWR to move the 600 acres into the Solano Sub-basin.

[1] http://www.waterresources.saccounty.net/scwa/Pages/SGMA.aspx

5. Fisheries Health Resources

a. **CalEnviroScreen 3.0: Impaired Water Bodies Index:** *Water bodies like streams, rivers or lakes are used for recreation and fishing or may provide water for drinking or irrigation. When water bodies are contaminated by pollutants, they are considered impaired. These impairments can harm wildlife habitats and prevent recreational and other uses of the water body. Certain groups such as tribal or low income communities may depend on the fish and wildlife in nearby water bodies more than the general public.*[2]

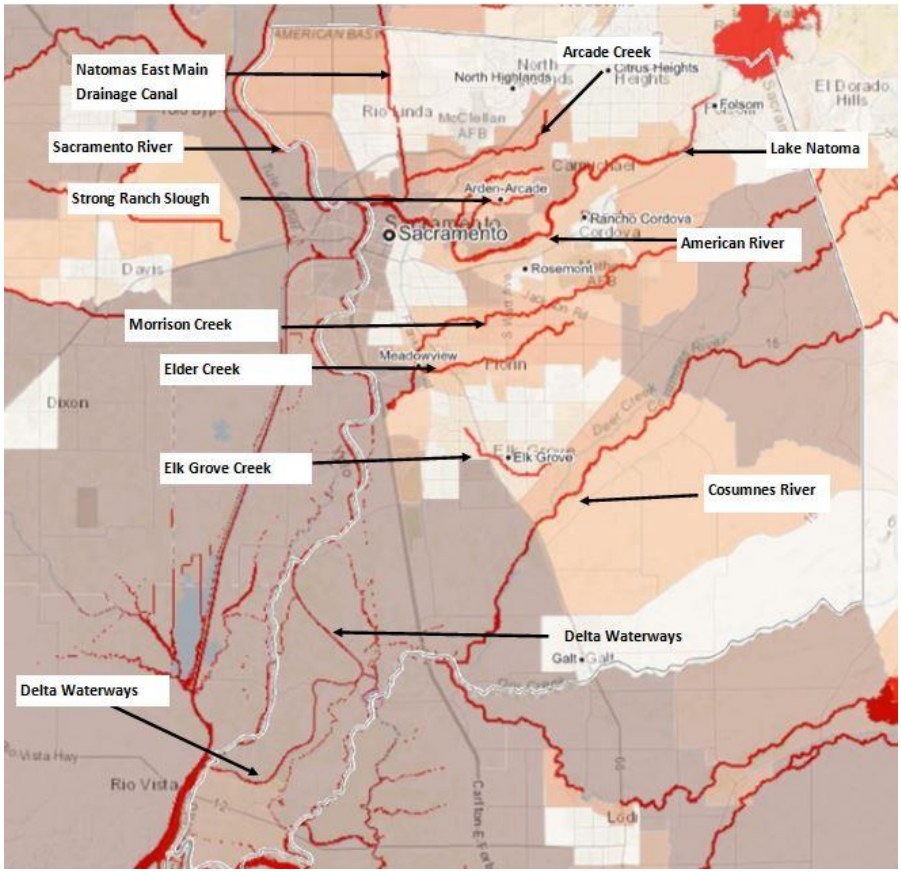


Figure 10: CalEnviroScreen3.0 Impaired Rivers and Waters outlined in red, Sacramento County borders outlined in white. Pollutants and other details parceled in Table 5.

[2] http://oehha.maps.arcgis.com/apps/MapSeries/index.html?appid=8dad35dcd2274285874e60871c404edc

Table 5. Impaired Water Bodies in Sacramento County[3]

	WATER BODY NAME	WATER BODY TYPE	ESTIMATED SIZE AFFECTED	UNIT	POLLUTANT	POLLUTANT CATEGORY	POTENTIAL SOURCES
1	American River, Lower (Nimbus Dam to confluence with Sacramento River)	River & Stream	26.9286	Miles	Mercury, Toxcitcity, Other Organics, Pesticides, Fecal Indicator Bacteria	Metals/Metalloids	Abandoned Mines
2	Arcade Creek	River & Stream	9.9	Miles	Diazinon, Chlorpyrifos	Pesticides	Urban Runoff/Storm Sewers
3	Cosumnes River, Lower (below Michigan Bar; partly in Delta Waterways, eastern portion)	River & Stream	36	Miles	Indicator Bacteria	Fecal Indicator Bacteria	Source Unknown
4	Delta Waterways (eastern portion)	Estuary	2972	Acres	Toxicity	Toxicity	Source Unknown
5	Delta Waterways (northern portion)	Estuary	6795	Acres	DieldrinPCBs (Polychlorinated biphenyls), DDT (Dichlorodiphenyltrichloroethane), Chlorpyrifos, Mercury, Indicator Bacteria, Dieldrin, Toxicity, Chlordane,	Other Organics, Pesticides, Metals/Metalloids,	Agricultural Return Flows, Atmospheric Deposition, Highway/Road/Bridge Runoff, Industrial Point Sources, Municipal Point Sources, Natural Sources, Resource Extraction, Urban Runoff/Storm Sewers
6	Dry Creek (Placer and Sacramento Counties)	River & Stream	26.8052	Miles	Indicator Bacteria	Fecal Indicator Bacteria	Source Unknown
7	Elder Creek	River & Stream	11.0711	Miles	Chlorpyrifos	Pesticides	Urban Runoff/Storm Sewers
8	Elk Grove Creek	River & Stream	6.85	Miles	Diazinon	Pesticides	Urban Runoff/Storm Sewers
9	Feather River, Lower (Lake Oroville Dam to Confluence with Sacramento River)	River & Stream	42	Miles	PCBs (Polychlorinated biphenyls), Toxicity	Other Organics, Toxicity	Source Unknown
10	Laguna Creek (tributary to Cosumnes River, Sacramento County)	River & Stream	24	Miles	Toxicity, Oxygen, Dissolved, Indicator Bacteria	Toxicity, Nutrients, Fecal Indicator Bacteria	Source Unknown
11	Mosher Slough (downstream of I-5; in Delta Waterways, eastern portion)	River & Stream	1.31082	Miles	Organic Enrichment/Low Dissolved Oxygen	Nutrients	Source Unknown
12	Mosher Slough (upstream of I-5; partly in Delta Waterways, eastern portion)	River & Stream	3.47438	Miles	Indicator Bacteria	Fecal Indicator Bacteria	Source Unknown

13	Morrison Creek	River & Stream	26	Miles	Diazinon, Pyrethroids	Pesticides	Urban Runoff/Storm Sewers
14	Natoma, Lake	Lake & Reservoir	484.992	Acres	Mercury	Metals/Metalloids	Source Unknown
15	Natomas East Main Drainage Canal (aka Steelhead Creek, downstream of confluence with Arcade Creek)	River & Stream	3.54304	Miles	PCBs (Polychlorinated biphenyls),Diazinon, Mercury	Other Organics	Ariel deposition, Agriculture
16	Natomas East Main Drainage Canal (aka Steelhead Creek, upstream of confluence with Arcade Creek)	River & Stream	12.2142	Miles	PCBs (Polychlorinated biphenyls)	Other Organics	Source Unknown
17	Sacramento River (Red Bluff to Knights Landing)	River & Stream	81.77	Miles	Mercury, Toxicity, DDT (Dichlorodiphenyltrichloroethane), Dieldrin	Metals/Metalloids, Toxicity, Pesticides	Source Unknown
18	Sacramento River (Knights Landing to the Delta)	River & Stream	16.2676	Miles	Mercury, Chlordane, PCBs (Polychlorinated biphenyls), Toxicity	Metals/Metalloids, Toxicity, Pesticides, Other Organics	Resource Extraction, Abandoned Mines
19	Sacramento Slough	River & Stream	1.66	Miles	Mercury, Toxicity	Metals/Metalloids, Toxicity	Source Unknown
20	Smith Canal (in Delta Waterways, eastern portion)	River & Stream	2.40691	Miles	Indicator Bacteria, Organic Enrichment/Low Dissolved Oxygen,	Fecal Indicator Bacteria, Nutrients	Source Unknown
21	Strong Ranch Slough	River & Stream	6.43	Miles	Chlorpyrifos	Pesticides	Urban Runoff/Storm Sewers

[3] https://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml?wbid=CAE5100000020041005163014

i. **Threats to the impaired Sacramento River**[4]

1. BUILDING SITES RESERVOIR

The state Dept. of Water Resources wants to build several dams to create the Sites off stream storage reservoir west of Maxwell in the Sacramento Valley. This $4 billion reservoir would fill by siphoning water from the Sacramento River through two existing diversion facilities and it would require the construction of a new diversion facility and canal. The reservoir would further modify flows in the Sacramento River to the detriment of the river's fish and wildlife habitat and water quality. It would also flood or destroy more than 16,000 acres of grasslands, oak woodlands, riparian forests, and wetlands that support numerous threatened and endangered wildlife species.

2. RAISING SHASTA DAM

The federal Bureau of Reclamation has developed a Feasibility Report and EIS to raise Shasta Dam by 18 feet to enlarge its reservoir and raise it 20.5 feet. This will further modify flows in the Sacramento River to the detriment of downstream fish and wildlife species, flood more than 5,000 acres of forest and riverside habitat, and harm several rare and endangered wildlife and plant species (including the Shasta snow-wreath, Shasta salamander, and Pacific fisher). It will also violate state law protecting the McCloud River and destroy sacred cultural sites of the Winnemem Wintu Tribe on the McCloud River. In addition, the proposed project would cost in excess of $1.3 billion while yielding a paltry 51,300 acre feet of water annually and cause the expensive relocation of recreational facilities, roads, and other public infrastructure.

3. BUILDING THE DELTA TWIN TUNNELS

The tunnels would be capable of diverting the entire flow of the Sacramento River prior to its reaching the Sacramento-San Joaquin Delta. Existing state and federal diversions have already degraded water quality in the Delta and driven its resident native fish species (including the Delta smelt and Sacramento split-tail) and migrating salmon and steelhead to the brink of extinction. Because the Sacramento River is the Delta's primary source of fresh water, the Delta Tunnels may well be a death sentence for the largest estuary on the West Coast.

b. **Local Projects on Fish Health**[5]

i. Nimbus Fish Hatchery

[4] https://www.friendsoftheriver.org/our-work/rivers-under-threat/sacramento-threat/

[5] https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=57711&inline
https://www.wildlife.ca.gov/Fishing/Hatcheries

Located in eastern Sacramento County, Nimbus Hatchery raises Chinook salmon and steelhead for release to the American River. The completion of Nimbus Dam (1955) and Folsom Dam (1956) prevented salmon and steelhead from reaching most of their historic spawning areas. The Bureau of Reclamation, which operates the dams, built and funds the Nimbus Fish Hatchery to mitigate (make up for) the loss of spawning habitat and help maintain salmon and steelhead populations. The California Department of Fish and Game operates the hatchery, annually producing 4,000,000 Chinook salmon and 430,000 steelhead trout.

ii. American River Hatchery

The American River Hatchery is located in eastern Sacramento County along the scenic American River, and raises trout and inland salmon for recreational fishing. The Hatchery raises rainbow trout and kokanee salmon which are stocked in over 250 lakes and streams across northern and central California for recreational fishing. This hatchery is funded through the sales of fishing licenses and managed by the California Department of Fish and Game.

6. Climate Change Resiliency

a. Climate Change Threats the Sacramento region is prone to:

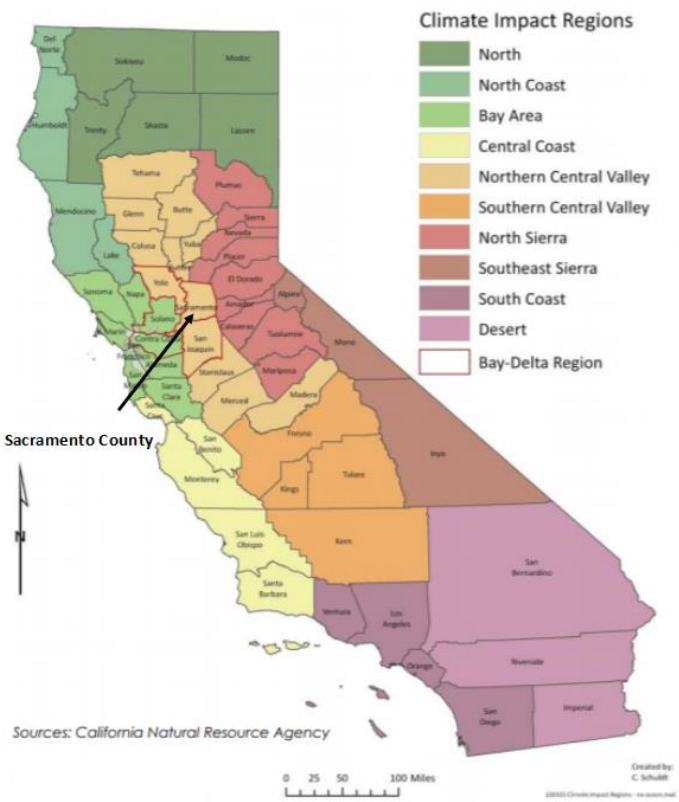


Figure 11. California Climate Impact Regions designated in the California Climate Adaptation Planning Guide. Sacramento County is part of the Northern Central Valley Climate Impact Region.

Subsequent information pulled from the *2017 Climate Change and Health Profile Report*, UC Davis and CDPH[6]

i. Temperature increases from between 3.5 to 6.2 degrees Fahrenheit

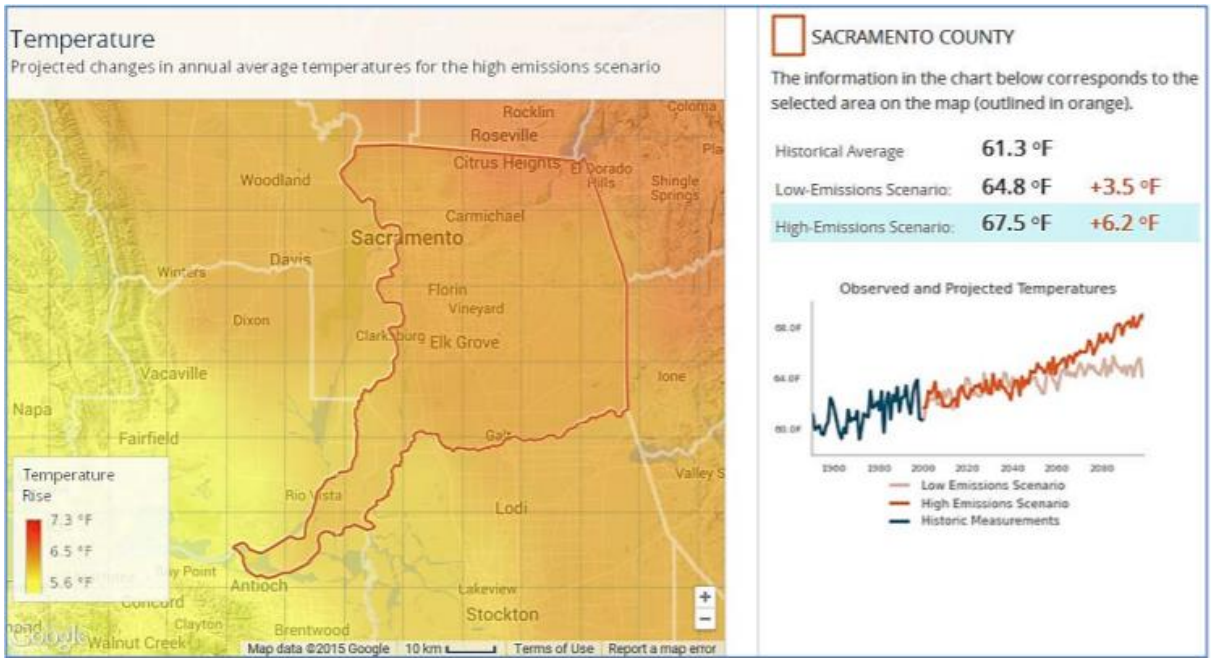


Figure 12. Projected changes in annual average temperature in future carbon emissions scenarios, Sacramento County, 2099

[6] https://www.cdph.ca.gov/Programs/OHE/CDPH%20Document%20Library/CHPRs/CHPR067Sacramento_County2-23-17.pdf

ii. The eastern portion of Sacramento county is projected to see an increased risk for wildfire.

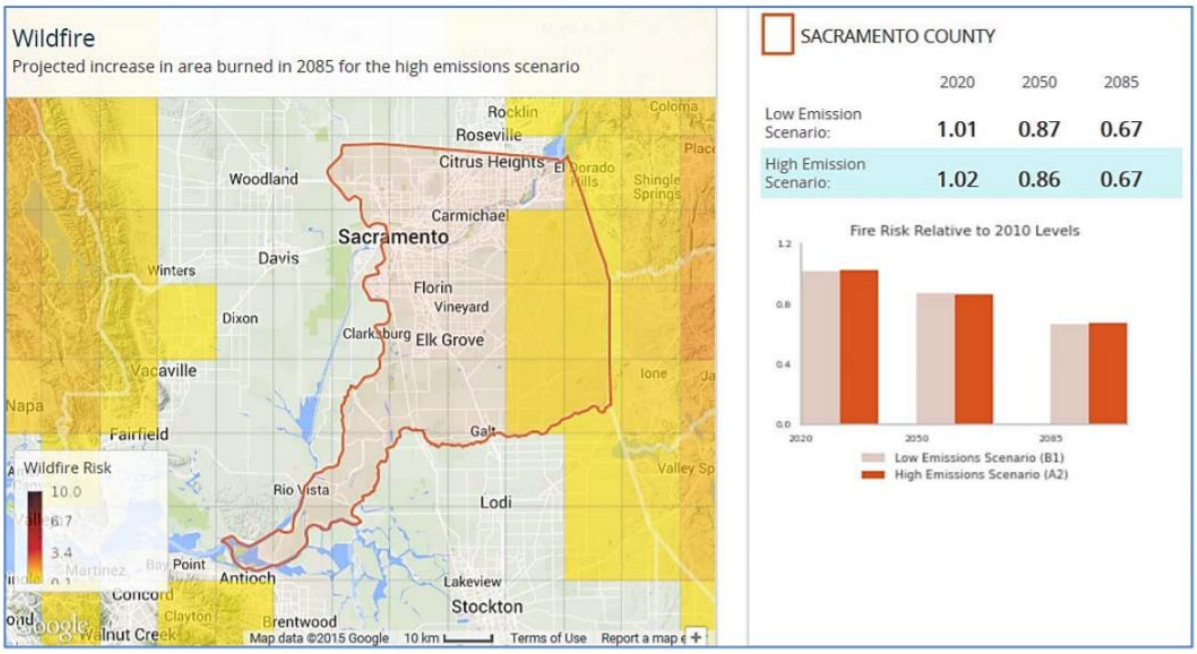


Figure 13. Relative Increase in Wildfire acreage in future carbon emission scenarios

iii. Annual precipitation is expected to decline[7]
iv. Endangered Natural systems and biodiversity
v. Reduced water supply
vi. Flooding

[7] http://climatereadiness.info/climate-impacts-capital-region/

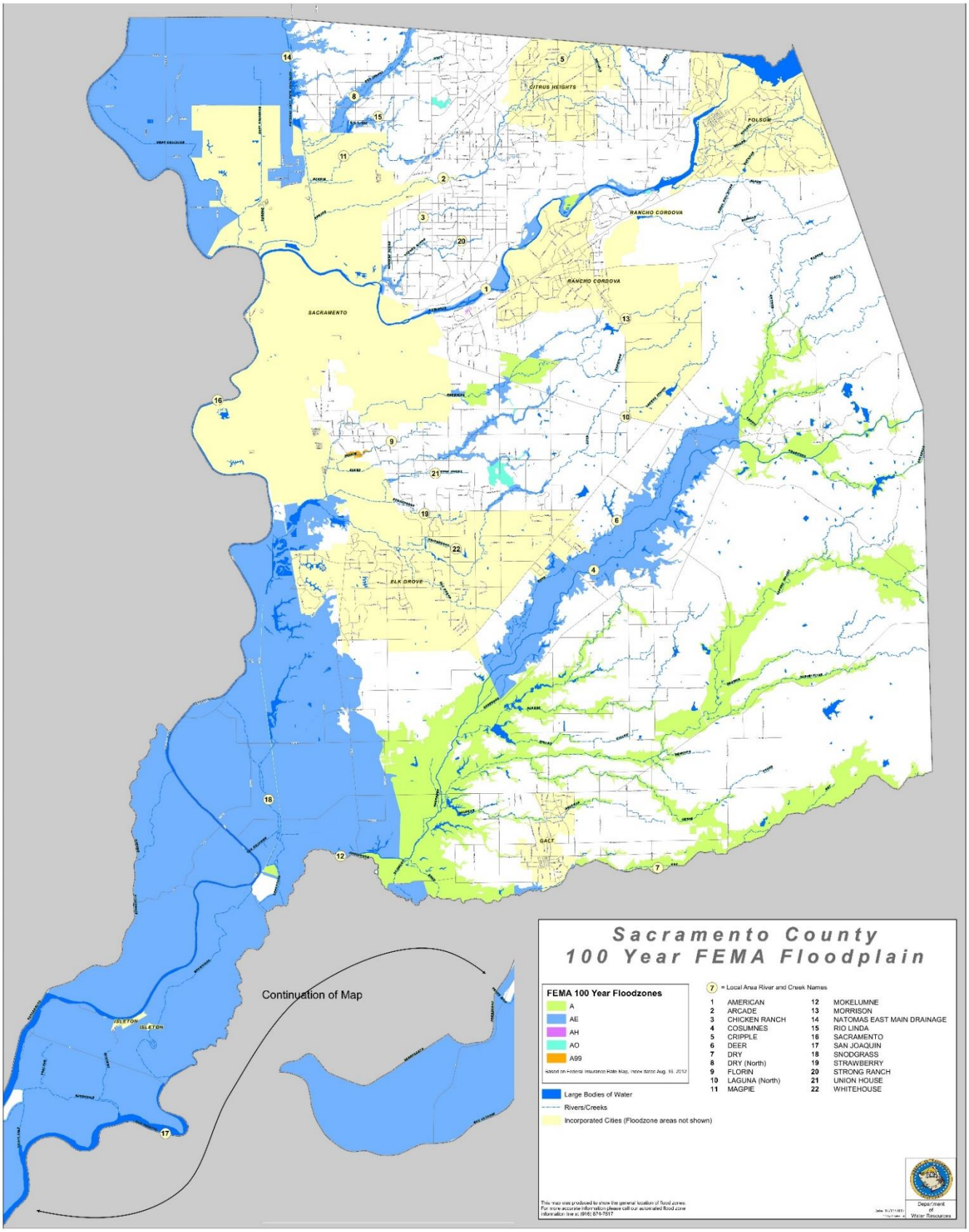


Figure 14. Sacramento County 100-year floodplain FEMA map. Much of the flooded county area is concentrated to the Northwest of Sacramento County and the Southwest portion closest to the delta. Incorporated city flood zone areas are not shown on this map.

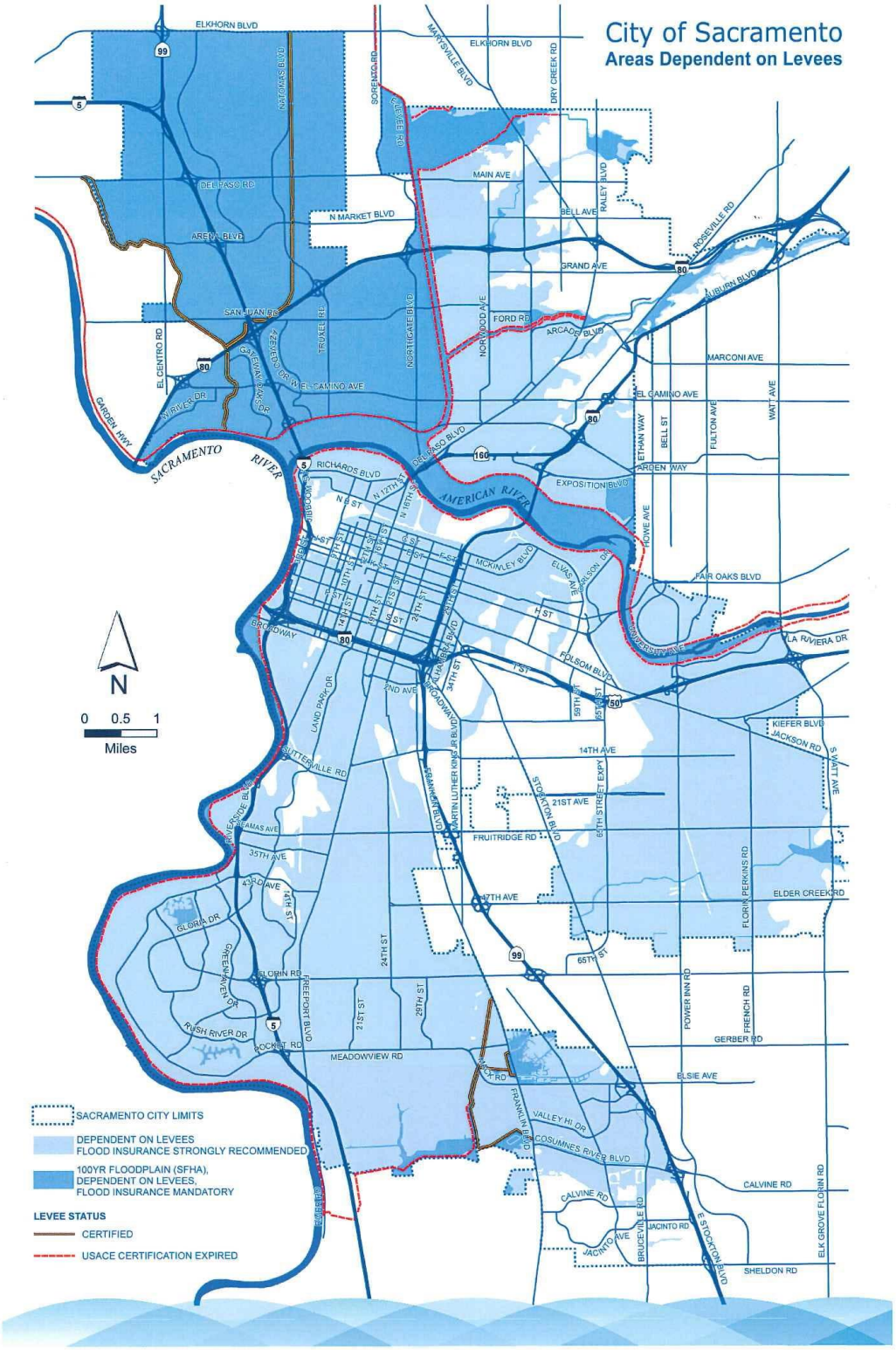
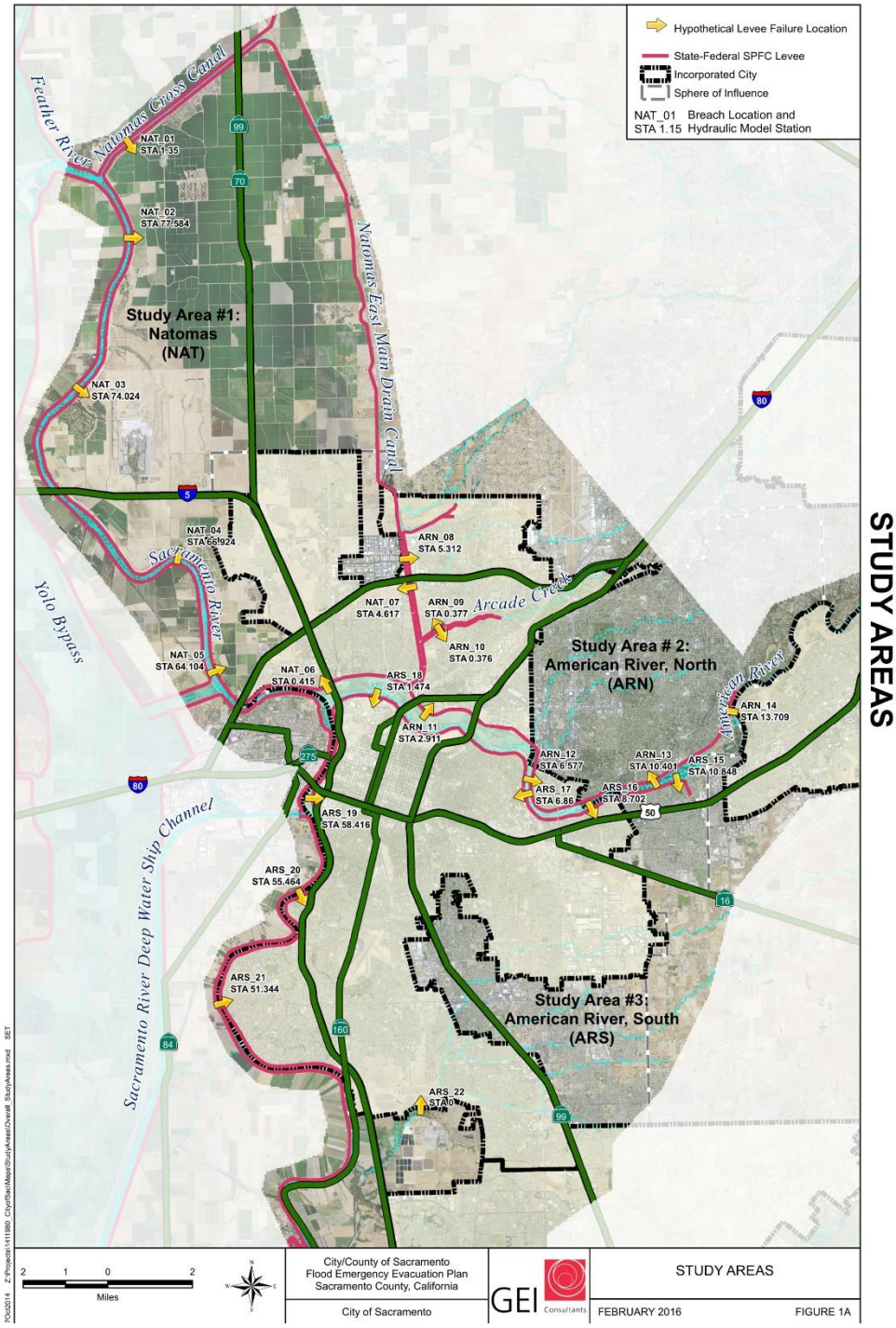


Figure 15. Map of the City of Sacramento, areas dependent on levees for flood protection



STUDY AREAS

Figure 16. City of Sacramento hypothetical levee breach points

Table 6. Sacramento County Planning Area/Unincorporated County Hazard Assessment[8]

Hazard	Geographic Extent	Probability of Future Occurrences	Magnitude/ Severity	Significance	Climate Change Influence
Agricultural Hazards	Significant	Highly Likely	Critical	Medium	Medium
Bird Strike	Limited	Highly Likely	Critical	Medium	Low
Climate Change	Extensive	Highly Likely	Critical	High	–
Dam Failure	Significant	Unlikely	Catastrophic	Medium	High
Drought and Water Shortage	Extensive	Likely/Occasional	Limited	High	High
Earthquake	Limited	Occasional	Critical	Medium	None
Earthquake: Liquefaction	Significant	Occasional	Limited	Medium	None
Flood: 100/200/500-year	Significant	Occasional/Unlikely	Catastrophic	High	High
Flood: Localized Stormwater Flooding	Limited	Highly Likely	Limited	Medium	High
Landslides	Limited	Unlikely	Negligible	Low	Medium
Levee Failure	Significant	Occasional	Catastrophic	High	High
River/Stream/Creek Bank Erosion	Limited	Highly Likely	Limited	Medium	High
Severe Weather: Extreme Temperatures – Cold/Freeze	Extensive	Likely	Limited	Low	High
Severe Weather: Extreme Temperatures – Heat	Extensive	Highly Likely	Critical	High	High
Severe Weather: Fog	Extensive	Highly Likely	Limited	Low	Medium
Severe Weather: Heavy Rains and Storms (Thunderstorms, Hail, and Lightning)	Extensive	Highly Likely	Critical	Medium	High
Severe Weather: Wind and Tornadoes	Limited	Highly Likely	Limited	Low	Medium
Subsidence	Significant	Highly Likely	Limited	Low	Medium
Volcano	Limited	Unlikely	Limited	Low	None
Wildfire (Burn Area/Smoke)	Significant	Highly Likely	Limited	Medium	High

Geographic Extent
Limited: Less than 10% of planning area
Significant: 10-50% of planning area
Extensive: 50-100% of planning area

Probability of Future Occurrences
Highly Likely: Near 100% chance of occurrence in next year, or happens every year.
Likely: Between 10 and 100% chance of occurrence in next year, or has a recurrence interval of 10 years or less.
Occasional: Between 1 and 10% chance of occurrence in the next year, or has a recurrence interval of 11 to 100 years.
Unlikely: Less than 1% chance of occurrence in next 100 years, or has a recurrence interval of greater than every 100 years.

Magnitude/Severity
Catastrophic—More than 50 percent of property severely damaged; shutdown of facilities for more than 30 days; and/or multiple deaths
Critical—25-50 percent of property severely damaged; shutdown of facilities for at least two weeks; and/or injuries and/or illnesses result in permanent disability
Limited—10-25 percent of property severely damaged; shutdown of facilities for more than a week; and/or injuries/illnesses treatable do not result in permanent disability
Negligible—Less than 10 percent of property severely damaged, shutdown of facilities and services for less than 24 hours; and/or injuries/illnesses treatable with first aid

Significance
Low: minimal potential impact
Medium: moderate potential impact
High: widespread potential impact

7. Socio-Economic Demographics

a. CalEnviroScreen 3.0: Pollution Burden and Population Characteristics

i. This map shows the combined Population Characteristics scores, which is made up of indicators from the Sensitive Populations and Socioeconomic Factors components of the CalEnviroScreen model. Population Characteristics represent biological traits, health status, or community characteristics that can result in increased vulnerability to pollution.

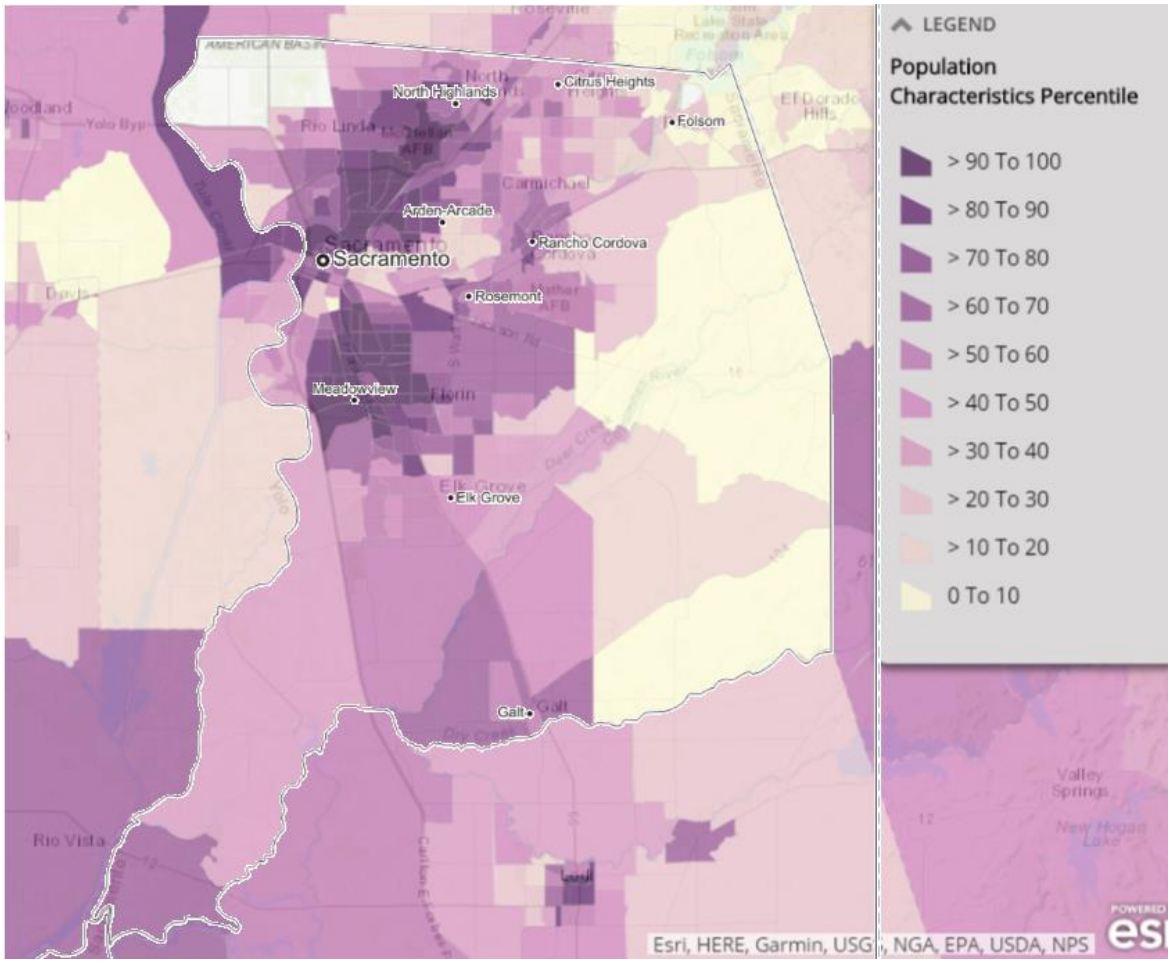


Figure 15. CalEnviroScreen3.0 Population Characteristics Index for Sacramento County averaging rates of asthma, cardiovascular disease, low birth weight, education, housing burden, linguistic isolation, poverty and unemployment. The areas with the highest vulnerabilities to pollution in Sacramento County are concentrated directly north and south of the City of Sacramento's downtown area, in the neighborhoods including Del Paso Heights and South Sacramento.

b. **Regional Opportunity Index (ROI):**[9]

i. The Regional Opportunity Index (ROI) is an index of community and regional opportunity for understanding social and economic opportunity in California's communities. It incorporates both a "people" component and a "place" component, integrating economic, infrastructure, environmental, and social indicators in to a comprehensive assessment of the factors driving opportunity. The Regional Opportunity Index was developed through a joint partnership between the UC Davis Center for Regional Change and Raboba nk, N.A.

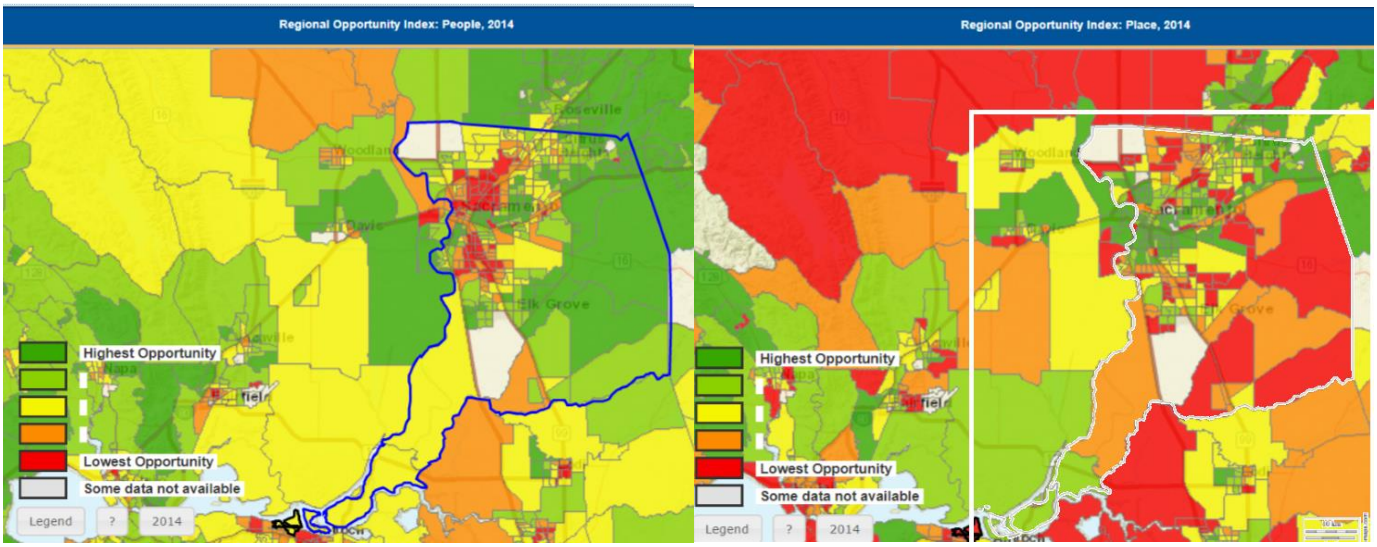


Figure 16. ROI maps for Sacramento County identifying high and low opportunity areas based on factors associated with the demographic characteristics of people, and factors associated with places in which they live.

[9] https://interact.regionalchange.ucdavis.edu/roi/about.html

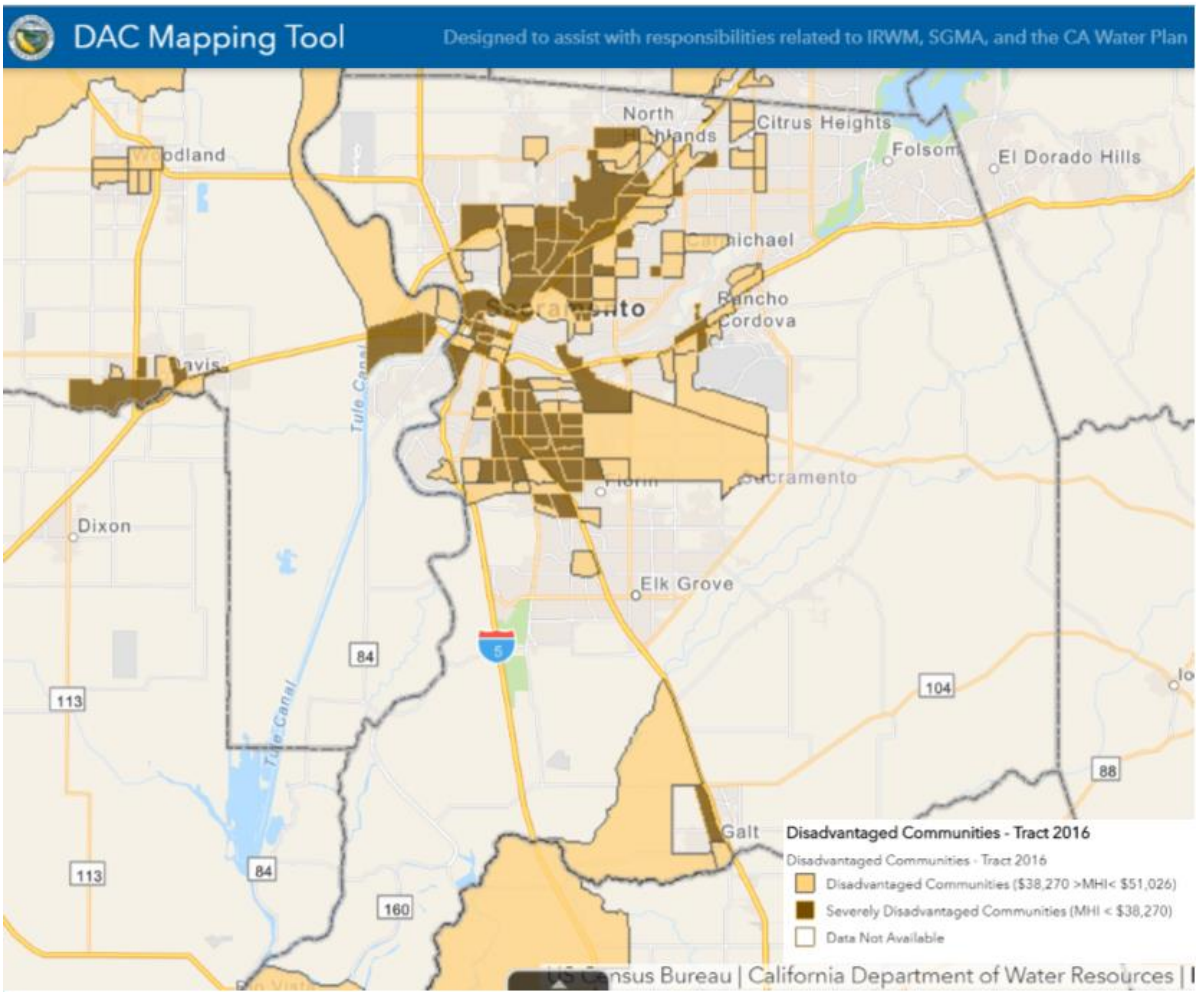


Figure 17. Disadvantaged Community Mapping Tool by Census Tract in Sacramento County

8. **Integrated Regional Water Management Groups Stakeholder Identification and Implementation of Plans:** *Integrated Regional Water Management (IRWM) is a collaborative effort to identify and implement water management solutions on a regional scale that increase regional self-reliance, reduce conflict, and manage water to concurrently achieve social, environmental, and economic objectives. This approach delivers higher value for investments by considering all interests, providing multiple benefits, and working across jurisdictional boundaries. Examples of multiple benefits include improved water quality, better flood management, restored and enhanced ecosystems, and more reliable surface and groundwater supplies.*
    i. **American River Basin IRWM Stakeholders:** *Includes water providers, water agencies, governments, and municipalities, information pulled from ARB IRWM 2018 Update*[10]
        1. Regional Water Authority
        2. Sacramento Area Flood Control Agency
        3. Sacramento County Water Agency
        4. City of Sacramento
        5. Sacramento Suburban Water District
        6. Carmichael Water District
        7. Citrus Heights Water District
        8. City of Folsom
        9. City of Elk Grove
        10. Central Valley Regional Water Control Board
        11. Environmental Justice Coalition for Water
        12. Valley Foothills Watershed Collaborative
        13. Sacramento State University, Office of Water Programs
        14. Sacramento Regional County Sanitation District

[10] https://rwah2o.org/programs/integrated-regional-water-management/american-river-basin-irwmp-2018-update/

ii. ARB IRWM Projects:

Table 7. American River Basin IRWM Ongoing Projects, 2018		
Project Name	**Lead Agency/ Organization**	**Description**
North American Basin Regional Drought Contingency Plan (October 2017)		The NAB RDCP is a collaborative planning effort to explore opportunities to collaborate and cooperate to enhance regional reliability, and to increase the resiliency of the region's water resources in the face of future climate and drought conditions.
Regional Water Reliability Plan	Regional Water Authority	The RWRP is a locally led effort to identify the most promising regional opportunities to improve water supply reliability by evaluating opportunities for intra- and interregional transfers and exchanges, to reduce water use, to support interregional groundwater management and conjunctive use efforts, to support recycled water planning, and to use shared infrastructure and resources. The agency-level vulnerability assessments identify existing and future water supply and demand imbalances.
American River Basin Study		Cost-shared by the U.S. Department of the Interior, Bureau of Reclamation through its WaterSMART Basin Studies Program, the ARBS is examining strategies to integrate or better coordinate local and federal water management practices, incorporating new scientific information on climate change that are specific for the ARB, and addressing significant recent changes in conditions and regulatory requirements related to the Central Valley Project (CVP) and regional water management. A significant element of the ARBS is to develop hydrology under future climate conditions, which will help better estimate future conjunctive use operations.
American River Basin Water Marketing Strategy Project		Cost-shared by a Reclamation WaterSMART Water Marketing Grant, the ARB Water Marketing Strategy Project will focus on leveraging the potential for regional conjunctive use to further enhance existing regional market transfers through surface water reservoir reoperation and individual groundwater substitution practices. The project will evaluate the potential for water market asset development; determine the infrastructure investments needed to realize that market; and formulate an implementation plan that includes recommendations on governance, reporting and monitoring procedures. A key element of the Water Marketing Strategy Project is to evaluate funding sources available through transfers that could be a significant source of funds to implement a conjunctive use program
Shasta Park Reservoir Groundwater Well No. 2 Project	City of Sacramento	
Shasta Park Reservoir and Well Project	City of Sacramento	
Sleepy Hollow Detention Basin Retrofit	City of Elk Grove	

Regional Water Efficiency Drought Measures Program	Regional Water Authority	
Enterprise Intertie Improvements Project	Sacramento Suburban Water District	
Regional Water Conservation Measures Program	Regional Water Authority	
Hazel/50 Intertie Improvements Project	City of Folsom	

Table 8. American River Basin IRWM Completed Projects, as of 2018	
Project Name	**Lead Agency/Organization**
Assessment and Development of Tools for Managing PCE Contamination in the North Sacramento County Groundwater Basin	Sacramento Groundwater Authority
Regional Water Meter Retrofit Acceleration Project	Regional Water Authority
Regional Indoor and Outdoor Water Efficiency Project	Regional Water Authority
Recycled Water for the SMUD Co-Generation Facility	Sacramento Regional County Sanitation District
North Antelope Booster Pump Station	Sacramento Suburban Water District
Willow Hill Pipeline Rehabilitation Project	City of Folsom
Aquatic and Riparian Habitat Enhancement in the Lower American River at River Mile 0.5R	Sacramento Area Flood Control Agency
Upper Unionhouse Creek Flood Protection Project	Sacramento Area Flood Control Agency
Downtown Combined Sewer Upsizing Project	City of Sacramento
Florin Creek Multi-Use Basin	Sacramento Area Flood Control Agency
Separating Fact from Fiction: Assessing the Use of Dry Wells as an Integrated Low Impact Development Tool to Reduce Stormwater Runoff While Protecting Groundwater Quality in Urban Watersheds	City of Elk Grove
Phase 2B Well Rehabilitations	City of Sacramento
Sacramento River Pump Station Modifications	City of Sacramento
Lower American River Pump Station Modifications	City of Sacramento
Striker Well Upgrades	Sacramento County Water Agency
Antelope Booster Pump Station Phase 2	Sacramento Suburban Water District
North Freeway Well Conversion	Sacramento County Water Agency

9. **Indigenous Tribes:**
   a. **Wilton Rancheria**[11]

"As stated in the Federal Register, Vol. 78, No. 176, Notices 55731, on September 11, 2013, the Tribe was designated the geographic boundaries of the Service Delivery Area (SDA) of Sacramento County in the State of California. As the only Federally Recognized Tribe in Sacramento County it is designated administratively as the Tribe's SDA.

The members of Wilton Rancheria are descendants of the Penutian linguistic family identified as speaking the Miwok dialect. The Tribe's Indigenous Territory encompasses Sacramento County. The lands the Tribe's ancestors inhabited were located along a path of massive death and destruction of California Indians caused by Spanish, Mexican, and American military incursions, disease and slavery, and the violence accompanying mining and settlements. Between March 1851 and January 1852, three commissioners hastily negotiated eighteen treaties with representatives of some of the indigenous population in California. The ancestors of the Tribe were party to the treaty signed at the Forks of the Cosumnes. The Treaty of the Forks of the Cosumnes River ceded the lands on which the Wilton Rancheria in Sacramento County was later established, but promised to establish a rancheria beginning at the Cosumnes River, "commencing at a point on the Cosumnes river, on the western line of the county, running south on and by said line to its terminus, running east on said line twenty-five miles, thence north to the middle fork of the Cosumnes river, down said stream to the place of beginning; to have and to hold the said district of country for the sole use and occupancy of said Tribe forever."

The Tribe's ancestors came back from nearly being annihilated only to have their children taken to boarding schools that stripped their indigenous language and culture further. Finally in July of 1928 the United State of America acquired land in trust for the Miwok people that were living in Sacramento County. A 38.77 acre tract of land in Wilton, Sacramento County, California was purchased from the Cosumnes Company which formally established the Wilton Rancheria. In 1958, the United States Congress enacted the Rancheria Act, authorizing the termination of federal trust responsibilities to 41 California Indian Tribes including Wilton Rancheria. The Tribe official lost its Federal Recognition in 1964.

Congress reconsidered their policy of termination in favor of Indian self-determination in the 1970s. In 1991, surviving members of Wilton Rancheria reorganized their tribal government and in 1999 they requested the United States to formally restore their federal recognition. Ten years later a decision of a U.S. District Court Judge gave Wilton Rancheria restoration, restoring the Tribe to a Federally Recognized Tribe in 2009. Wilton Rancheria is a federally recognized Indian Tribe as listed in the Federal Register, Vol. 74, No. 132, p. 33468-33469, as "Wilton Rancheria of Wilton, California". The Tribe passed their constitution in 2011. It stated its four branches of government that includes the Office of the Chair & Vice Chair, the Tribal Council, a Tribal-Court, and the General Council. The Tribe's administration office is located in the City of Elk Grove, Sacramento County in California."

[11] http://wiltonrancheria-nsn.gov/Home/TribalHistory/tabid/305/Default.aspx

10. Control of Water Rights

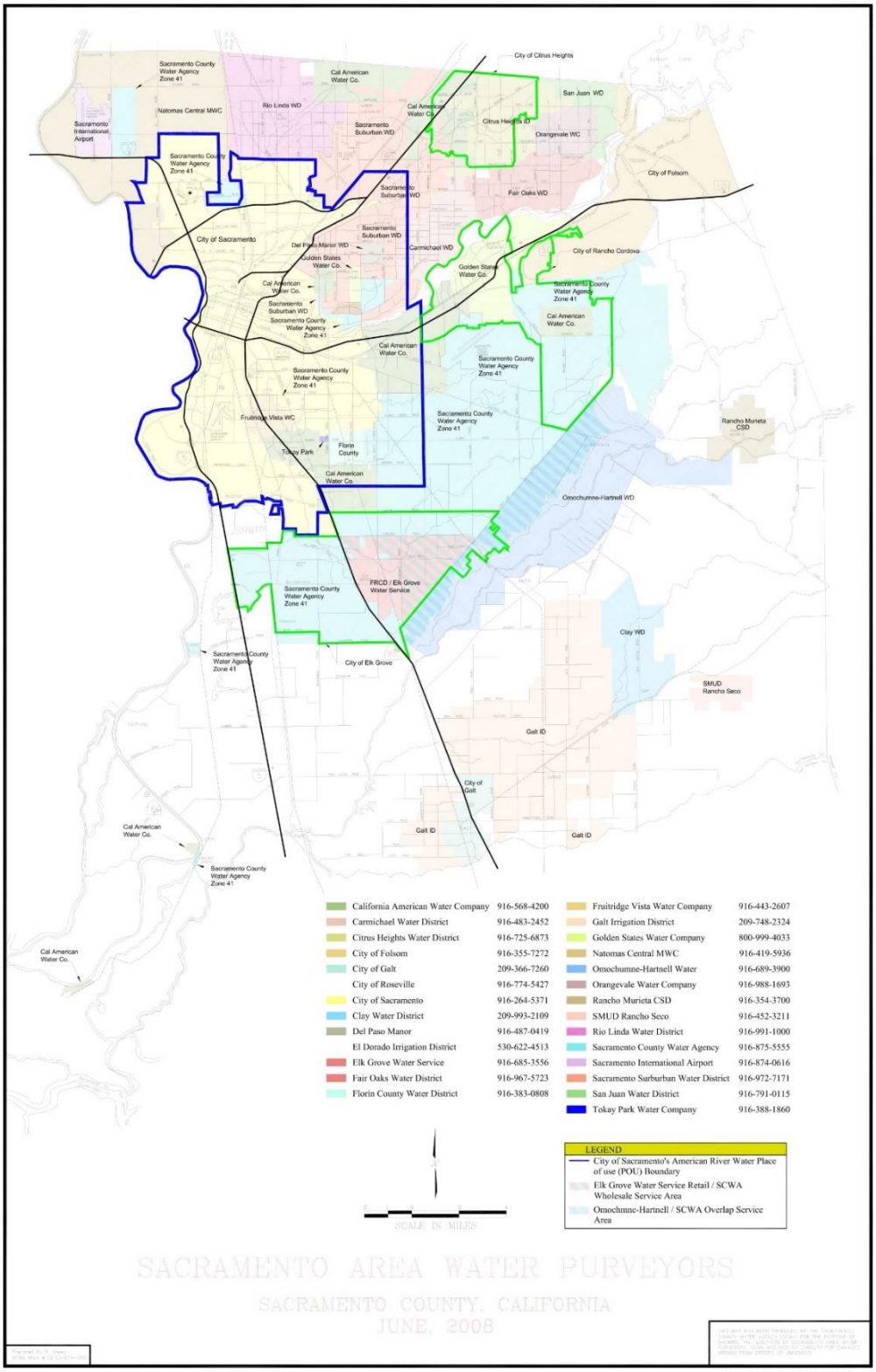


Figure 18. Sacramento County Water Providers

a) **WATER PURVEYORS**[12]

Water for domestic, incidental and irrigation uses is supplied by twenty-five different purveyors that are basically classified into five different categories: (1) dependent water districts, (2) autonomous water districts (which are independent special districts), (3) cities, (4) private and (5) mutual water companies. The operational structure among water agencies is very similar. Each generally has a system of wells or surface water source and distribution system designed to serve the needs of the service area. Maintenance work is done in-house by the agency to the extent of its capability, with the remainder contracted to specialized firms. San Juan Suburban Community Services District is the only independent district which does all of its own work.

i) Dependent Water Districts

Sacramento County Water Agency

The Sacramento County Water Agency was formed pursuant to the Sacramento County Water Agency Act (Water Code Uncodified Act Section 6730a). The agency is operated by the Sacramento County Department of Water Resources, and is authorized to perform water supply, drainage and flood control for all of Sacramento County. Within the Water Agency, separate zones have been used to provide funds for specific projects in specific areas. Zone 13 is authorized to perform all the activities of the Water Agency within the unincorporated area of the County. Zone 40 is a capital construction fund that provides for wholesale water supply in the southern portion of the County. Zone 41 provides potable water to 28,000 customer connections located in 7 separate service areas.

ii) Autonomous Water Districts

There are four types of autonomous water districts in Sacramento County: irrigation districts, California water districts, community service districts, and County water districts.

Irrigation Districts

There are four irrigation districts located partially or wholly in Sacramento County. They include: Carmichael Water District, Fair Oaks Water District, Citrus Heights Water District, and Galt Irrigation District. The enabling legislation for irrigation districts is found in Section 20500 et seq. of the Water Code (California Irrigation District Act).

California Water Districts

There are two water districts in Sacramento County that were formed under provisions of the California Water District Act (Water Code Section 35300 et seq.). The Clay and Omochumne-Hartnell Water Districts are located in the southeastern section of Sacramento County. California Water Districts have the following latent powers: 1. Agricultural and Urban Drainage 2. Sewerage

Community Services District

[12] http://www.saclafco.org/ServiceProviders/SpecialDistricts/Documents/specialdistricts/sac_007056.pdf http://www.saclafco.org/ServiceProviders/SpecialDistricts/Pages/WaterPurveyors.aspx

The San Juan Community Services District provides retail and wholesale water to the northeastern sector of Sacramento County. Rancho Murieta Community Services District provides its own water system. Water is taken from the Cosumnes River and is stored, treated and reclaimed for irrigation.

County Water Districts

Four county water districts were formed pursuant to the California Water District Act (Water Code Section 30000 et seq.). They are the Sacramento Suburban Water District, Florin County Water District, Del Paso Manor County Water District, and the Rio Linda/Elverta Community Water District. The name "county water district" is a misnomer because it implies a dependent district of the county government. However, all are completely autonomous with elected governing bodies.

iii) Cities

The following cities provide their own water service: the City of Galt, the City of Folsom, and the City of Sacramento.

iv) Private Water Companies

There are four private water companies in Sacramento County which are regulated by the Public Utilities Commission. These purveyors are owned by stockholders and are governed by State Statutes set forth in the Public Utilities Code. They include Arden-Cordova Water Service, California American Water Company, Elk Grove Water Service, and Fruitridge Vista Water Company.

v) Mutual Water Companies

There are three mutual companies in Sacramento County. These entities are not regulated by any governmental body, except that when a mutual water company is formed and it sells "securities," or shares of the water system to its users, it must be granted permission to do so by the State Department of Corporations. If a mutual water company is a corporation (some of the smaller mutuals are not incorporated), it also files with the Office of the Secretary of State, like any other corporation. The mutual water companies in Sacramento County are: Tokay Park Water Company, Orangevale Water Company and Natomas Central Mutual Water Company.

b. Oversubscription

"The Sacramento-San Joaquin River Delta, the West Coast's largest estuary and a source of water for much of California, has diminished quantity and quality of water as a result of diversions by cities and farms that have left the Stanislaus, Tuolumne and Merced rivers with less than one-third of the water, on average, that naturally runs there. Diminished flows have left the population of California's fabled salmon at a fraction of its historic numbers. In recent years, only several thousand Chinook have migrated through the delta up the San Joaquin River basin, compared to tens of thousands a few decades ago. The impact on fish has worked its way up the food chain to birds of prey in the Sierra and whales at sea."[13]

[13] https://www.sfchronicle.com/science/article/California-s-water-wars-heat-up-at-Sacramento-13172415.php

11. Topics of concern

a. Delta Tunnels
b. Drought
c. Affordable housing and increasing homeless population

Yolo County Needs Assessment

1) **Water Quality and Environmental Justice Mapping**
    a. **CalEnviroScreen 3.0: Cumulative Impacts:** *CalEnviroScreen is a science-based mapping tool that helps identify California communities that are most affected by many sources of pollution, and that are often especially vulnerable to pollution's effects. CalEnviroScreen uses environmental, health, and socioeconomic information to produce a numerical score for each census tract in the state*

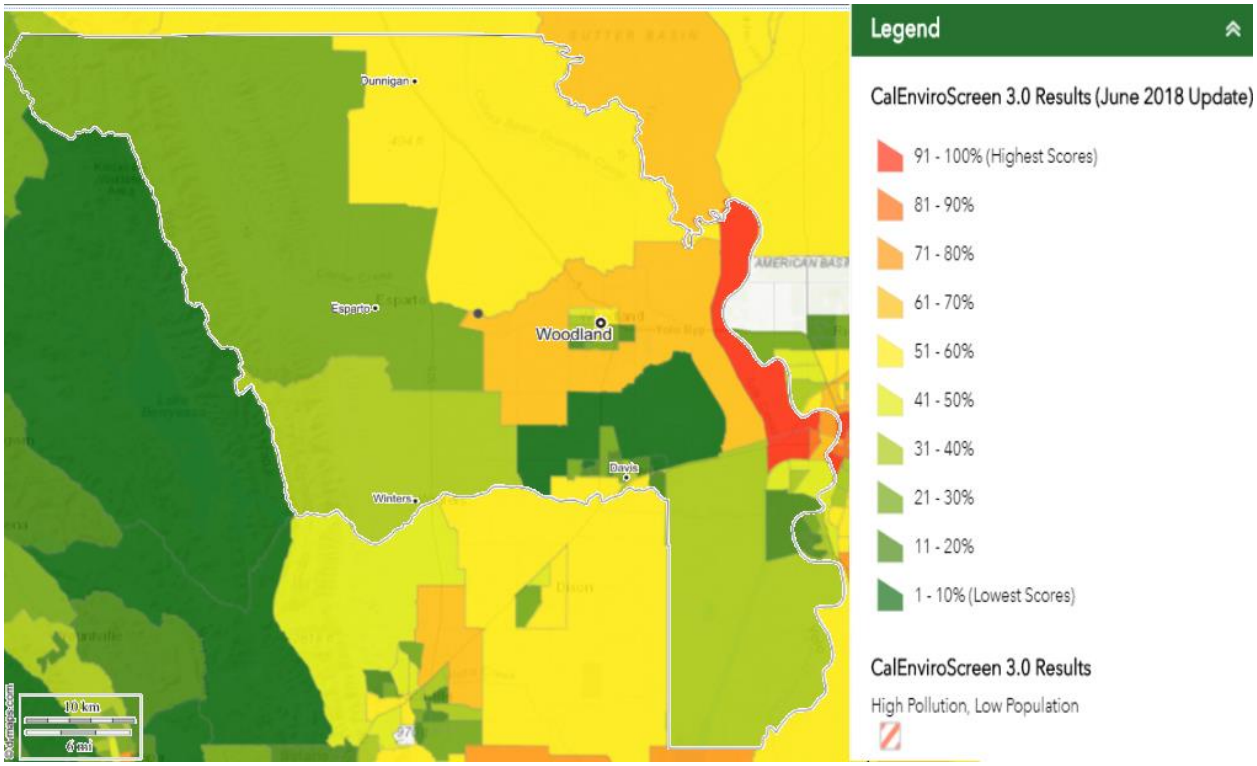


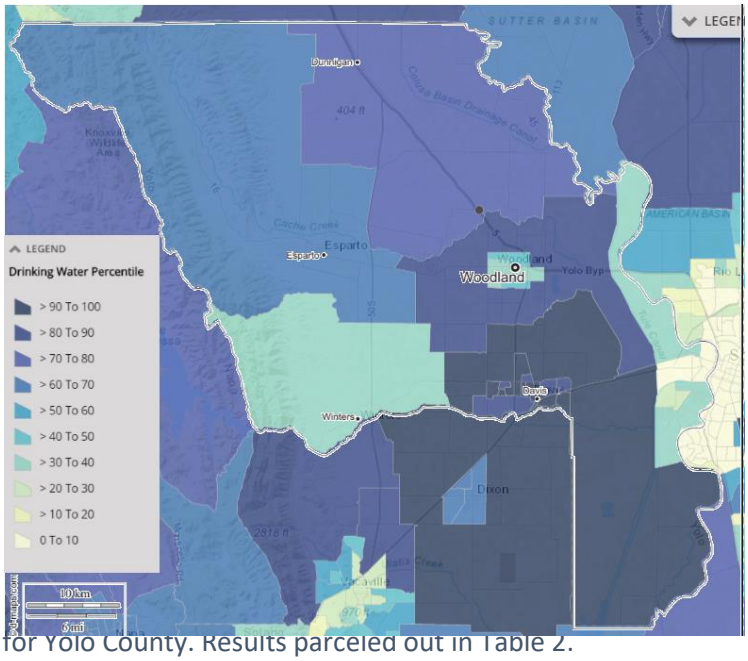
Figure 1. CalEnvironScreen 3.0 Cumulative Impact for Yolo County

Table 1. Population, Race & Ethnicity, and Age Profiles of Tracts with Highest Cumulative Impact Scores

	Cumulative Impact Score (Percentile)	Population Clusters			Race/Ethnicity (%)						Age	
Census Tract	Pollution Burden Percentile/Population Characteristic Percentile	Unincorporated Communities or Census Designated Places	Incorporated Cities	Total Population	White (%)	African American (%)	Native American (%)	Asian American (%)	Other (%)	Hispanic (%)	Children under 10 (%)	Elderly over 65 (%)
02.03	90-95% 92/82		West Sacramento	5,397	38	5	2	7	4	46	18	12
01.02	90-95% 85/82		West Sacramento	7,702	44	2	1	6	4	43	16	11
01.01	75-80% 56/88		West Sacramento	6,645	39	6	1	9	4	41	14	11
02.04	80-85% 81/71		West Sacramento	4,922	51	2	2	5	4	35	13	17
02.01	65-70% 86/48		West Sacramento	2,538	62	1	1	5	3	28	10	14
12.06	60-65% 73/48	Outskirts of Woodland		7,329	50	2	0	11	3	34	14	7
14.00	55-60% 67/48	Knights Landing Dunnigan		4,193	44	3	1	1	2	49	14	15
08.00	55-60% 49/57		Woodland	3,881	38	1	0	3	2	56	16	9
05.01	50-55% 61/42	(UC Davis)	Davis	5,922	38	2	1	41	5	13	5	0

2) Drinking Water Quality

a. CalEnviroScreen 3.0: Drinking Water Contaminants Index:



i. *Most drinking water in California meets health standards. However, drinking water sometimes becomes contaminated with chemicals or bacteria above the standards. Both natural and human sources can contaminate drinking water. Natural sources include rocks, soil, wildlife and fires. Human sources include factories, sewage, and runoff from farms. One common contaminant, arsenic, occurs naturally in some rocks and soil and is often found in groundwater in California. It can cause cancer. Nitrate from fertilizer or manure can leach into groundwater and contaminate wells. Nitrate can cause a blood disorder in infants called blue baby syndrome.*

for Yolo County. Results parceled out in Table 2.

Table 2. Population, Race & Ethnicity, and Age Profiles with respect to Drinking Water Contaminants by Census Tract

	Drinking Water Quality		Population Clusters			Race/Ethnicity (%)						Age	
Census Tract	Percentile	Violations exceeding 50 percentile	Unincorporated Communities	Incorporated Cities	Total Population	White (%)	African American(%)	Native American(%)	Asian American (%)	Other (%)	Hispanic (%)	Children under 10 (%)	Elderly over 65 (%)
04.01	95	Arsenic, Cadmium, Chromium, Hexavalent, DBCP, Lead, NO3, TCE, Uranium,	Clarksburg		4,532	62	2	0	12	4	20	11	15
05.05	93	Arsenic, Chromium, Hexavalent, DBCP, Lead, NO3, TCE, Uranium, Combination Radium 226, 228		Davis	4,807	63	2	0	19	4	12	14	8
06.07	93	Arsenic, Chromium, Hexavalent, DBCP, Lead, NO3, TCE, Uranium, Combination Radium 226, 228		Davis	4,095	67	2	0	15	5	11	12	13
06.08	93	Arsenic, Chromium, Hexavalent, DBCP, Lead, NO3, TCE, Uranium, Combination Radium 226, 228		Davis	5,882	44	2	0	37	4	14	8	3
12.06	84	Arsenic, Chromium, Hexavalent, DBCP, Lead, NO3, Combination Radium 226, 228	Woodland Outskirts		7,329	50	2	0	11	3	34	14	7
14.00	80	Arsenic, Chromium, Hexavalent, DBCP, Lead, NO3, Uranium	Knights Landing, Dunnigan		4,193	44	3	1	1	2	49	14	15
05.12	93	Arsenic, Chromium, Hexavalent, DBCP, Lead, NO3, TCE, Combination Radium 226, 228		Davis	3,406	56	4	0	21	4	15	10	8
05.13	93	Arsenic, Chromium, Hexavalent, DBCP, Lead, NO3, TCE, Combination Radium 226, 228		Davis	2,817	66	1	0	17	4	11	7	4
05.08	93	Arsenic, Chromium, Hexavalent, DBCP, Lead, NO3, TCE, Combination Radium 226, 228		Davis	2,453	72	1	0	13	5	10	8	12

1 - DBCP: Dibromochloropropane
2- MCL: Maximum Contaminant Level
3- TCE: Trichloroethylene
4- TCP: 1,2,3-TrichloroPropane

*The data is from 2005 to 2013, the most recent complete compliance cycle.

b. Human Right to Water, Compliance Status of Public Water Systems

i. *Under AB685 (2012) California state must ensure "every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes." To fulfill this goal, the state's Water Resources Control Board issued a resolution that states: "Water Board staff will work with relevant stakeholders, as resources allow, to develop new systems or enhance existing systems to collect data and identify and track communities that do not have, or are at risk of not having, safe, clean, affordable, and accessible water for drinking, cooking, and sanitary purposes. Water Board staff will also work with relevant groups to develop performance measures to evaluate the Water Boards' progress toward making the human right to water a reality, and such information will be made available to the public."*

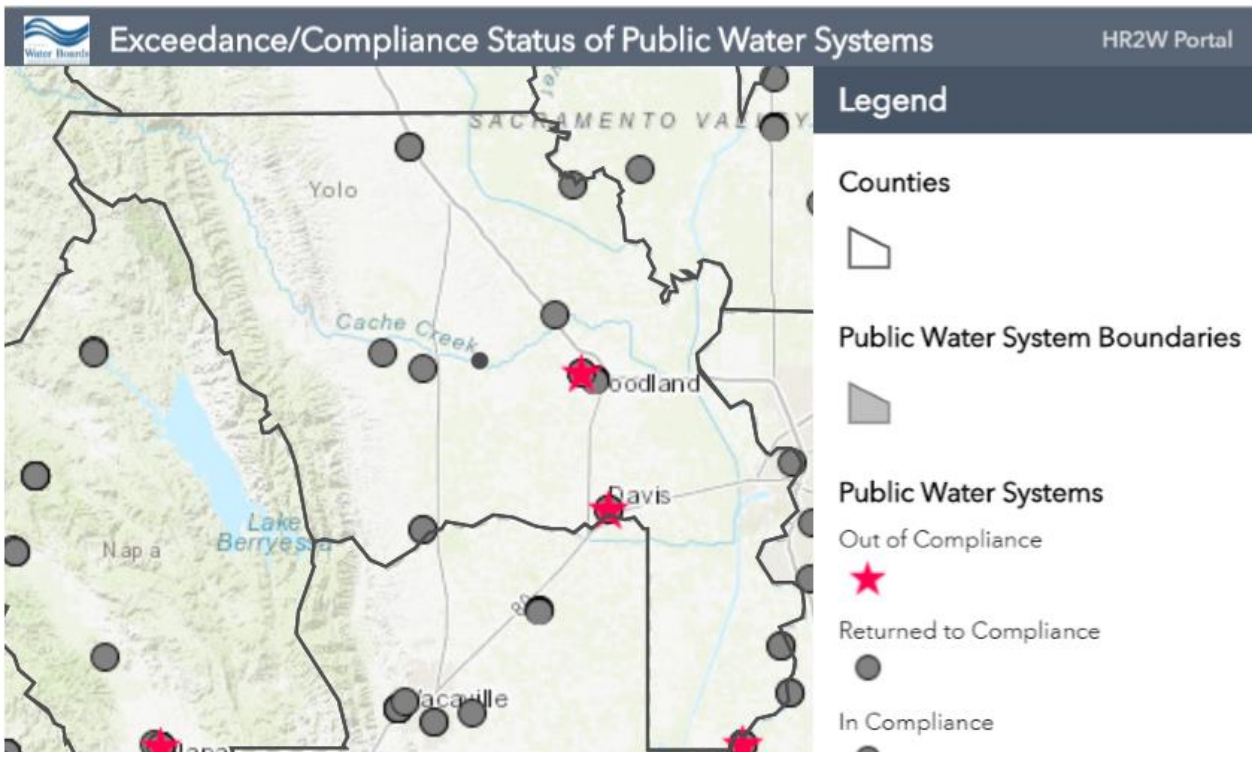


Figure 3. Compliance status of Public Water Systems indicates that there are currently approximately 2 out of compliance PWS within the boundaries of Yolo County

3) Clean Up Site Index

a. CalEnviroScreen 3.0: Clean Sites Index:

i. *Cleanup sites are places that are contaminated with hazardous chemicals and require clean up by the property owners or government. Chemicals at cleanup sites can move through the air or groundwater. People living near these sites have a greater potential to be exposed to chemicals from the sites than people living further away. Some studies have shown that neighborhoods with cleanup sites are generally poorer and have more people of color than other neighborhoods. The land may take many years or decades to clean up, reducing possible benefits to the community*

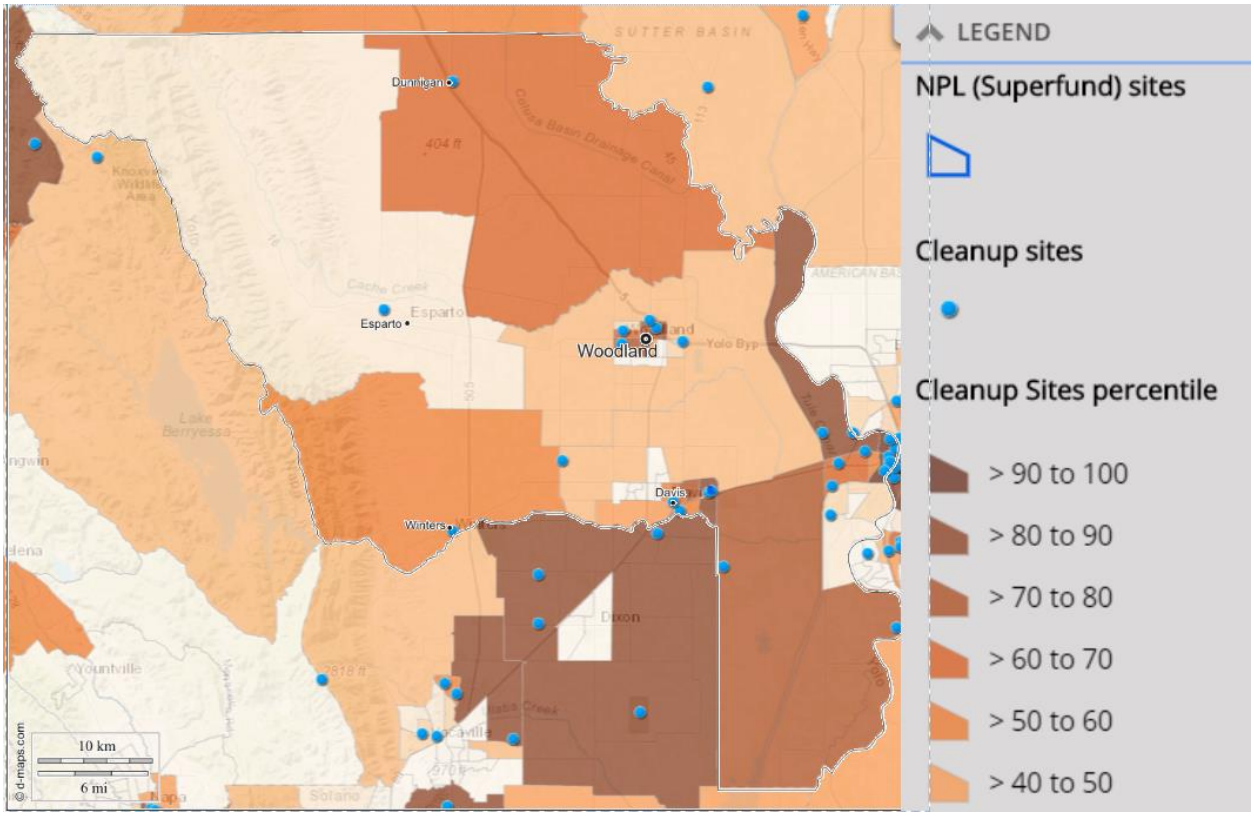


Figure 4. CalEnviroScreen.3 Clean Up Site Index. There are no superfund sites in Yolo County.

4) Groundwater Threats Results

a. CalEnviroScreen 3.0: Groundwater Threats Index:

i. Hazardous chemicals are often stored in containers on land or in underground storage tanks. Leaks from tanks can contaminate soil and groundwater. Common soil and groundwater pollutants include gasoline and diesel fuels at gas stations, as well as solvents, heavy metals and pesticides. Leaking tanks can affect drinking water and expose people to contaminated soil and air. The land and groundwater may take many years or decades to clean up.

ii. *This indicator is calculated by considering the number of cleanup sites including Superfund sites on the National Priorities List (NPL), the weight of each site, and the distance to the census tract.*

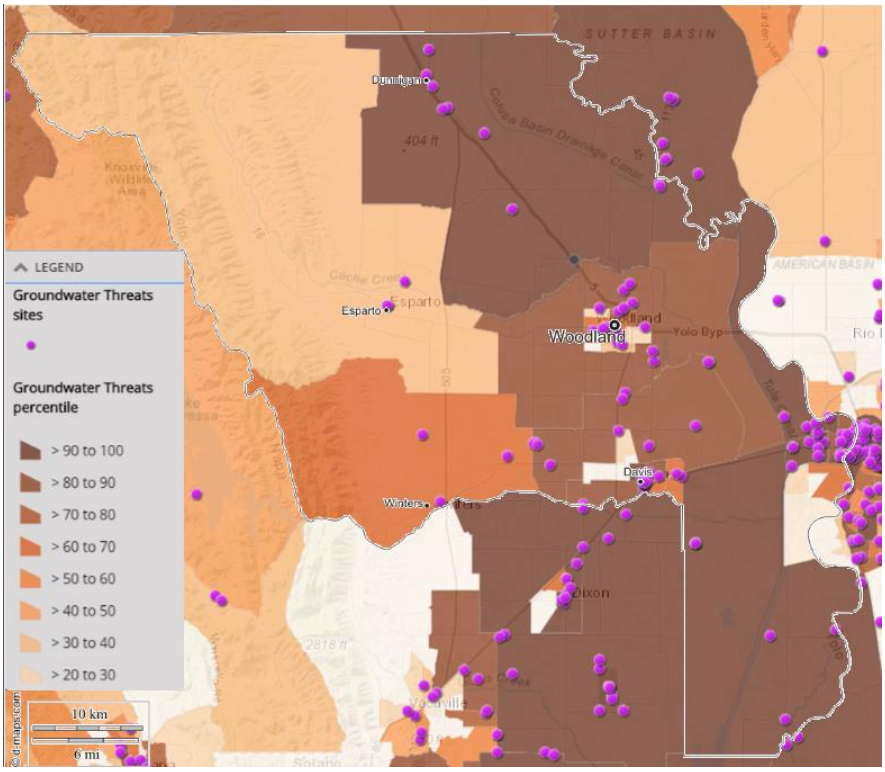


Figure 5. CalEnviroScreen.3 Groundwater Threats Index for Yolo County. Sites are concentrated in Woodland, West Sacramento, and Davis.

b. GAMA Map (Groundwater Ambient Monitoring and Assessment Program

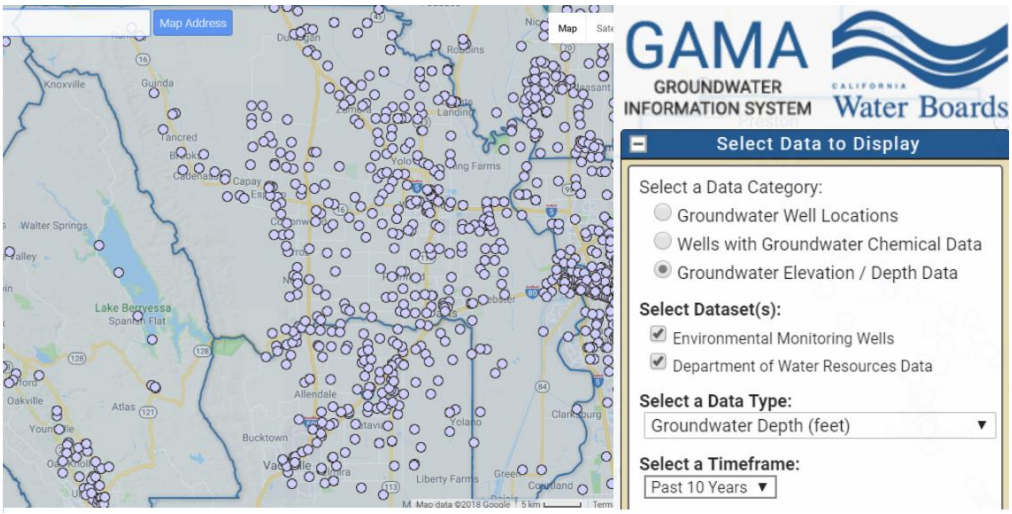


Figure 6. GAMA monitored wells in Yolo County with chemical data and summary

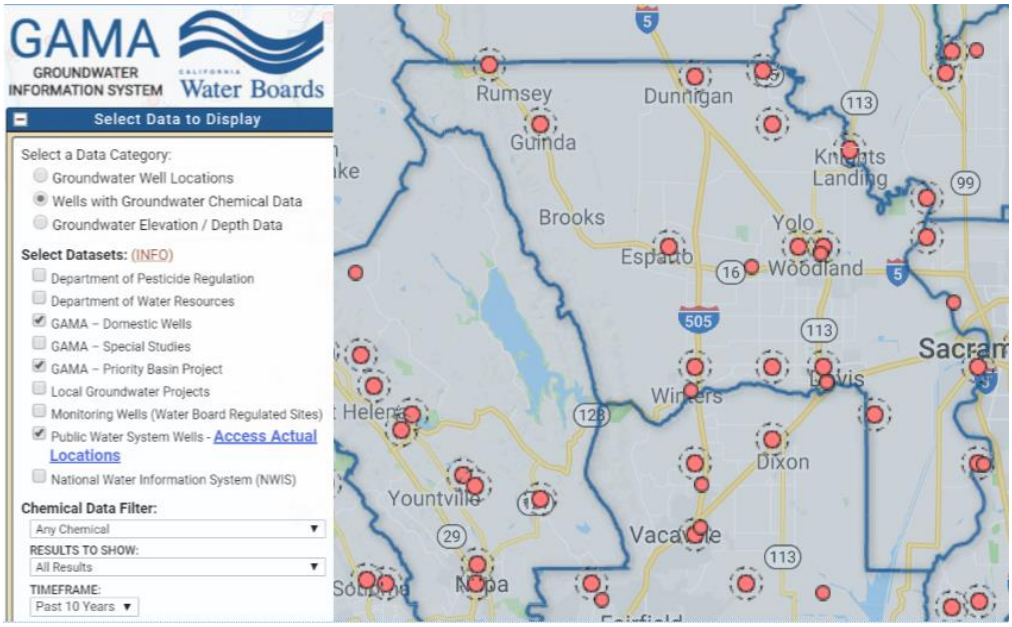


Figure 7. GAMA monitored wells in Yolo County with groundwater elevation data and summary.

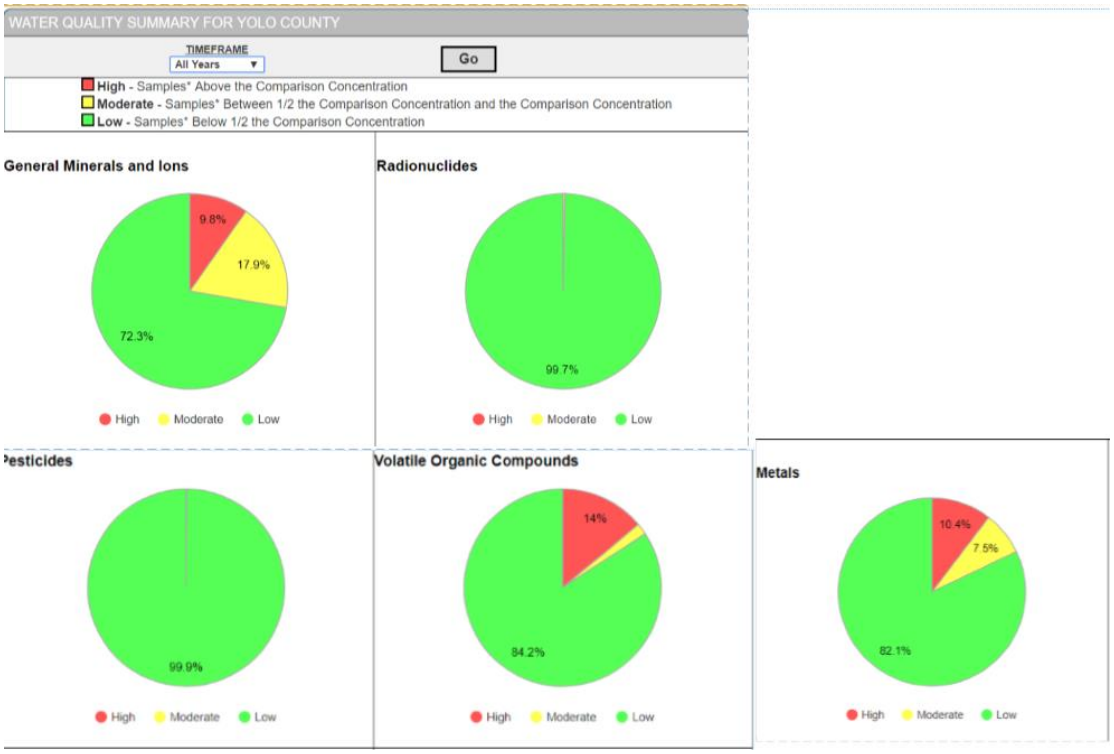


Figure 9. GAMA water quality county wide results, Yolo County

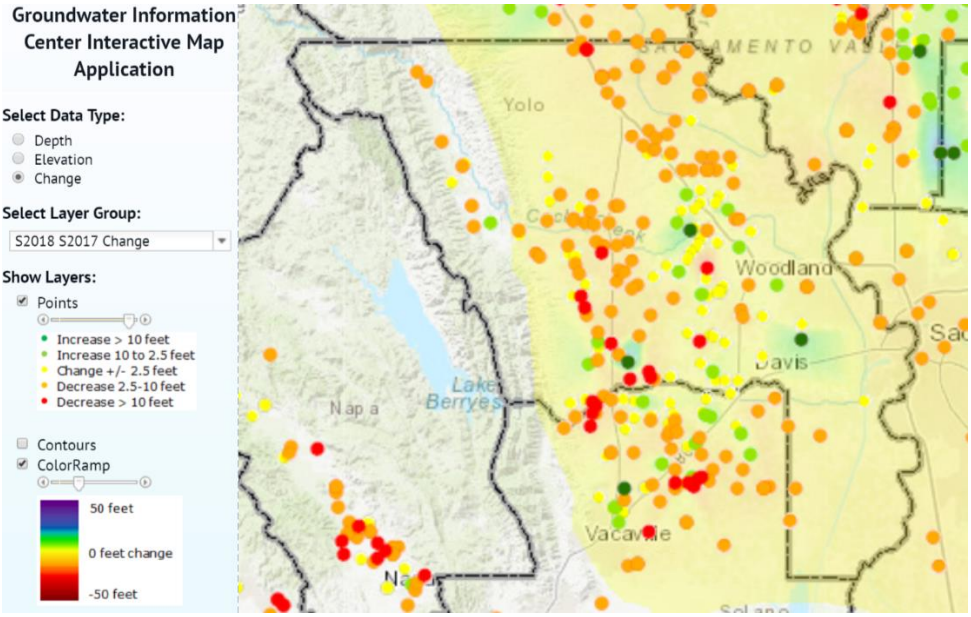


Figure 10. Groundwater elevation change map, showing a majority decrease of 2.5 to 10 feet between 2017 to 2018.

c. **Sustainable Groundwater Management Act (SGMA):** *2014, the California Legislature passed the Sustainable Groundwater Management Act (SGMA) and the Governor signed it into law. SGMA provides a framework for sustainable management of groundwater by local water supply, water management and land use agencies. SGMA requires the formation of Groundwater Sustainability Agencies or GSAs to provide governance over each sub-basin in the State. A sub-basin can be governed by one GSA or by multiple smaller GSAs provided that all GSAs work collectively to sustainably manage the entire sub-basin. SGMA mandates that all high and medium priority groundwater basins in California – including the Cosumnes Subbasin - must develop one or more groundwater sustainability plans by 2022 and be managed sustainably over a 20-year implementation period.*

   i. Historically, there were four groundwater subbasins within Yolo County as defined by DWR's Bulletin 118: Yolo (5-21.67), Colusa (5-21.52), Solano (5-21.66), and Capay Valley (5.21-68) subbasins (see the figure below; 2003).[1]

   ii. The Yolo Subbasin Groundwater Agency is currently working with Reclamation Districts 150 and 999 to submit a Basin Boundary Modification request to modify the Yolo Subbasin boundaries. Incorporating RD 150 and RD 999 into the Yolo Subbasin facilitates holistic, effective management of groundwater in Yolo County, and allows for greater economies of scale in complying with SGMA.

[1] https://yologroundwater.org/index.php/sustainable-groundwater-management-act-sgma-and-yolo-county/yolo-county-groundwater-basin-boundaries/

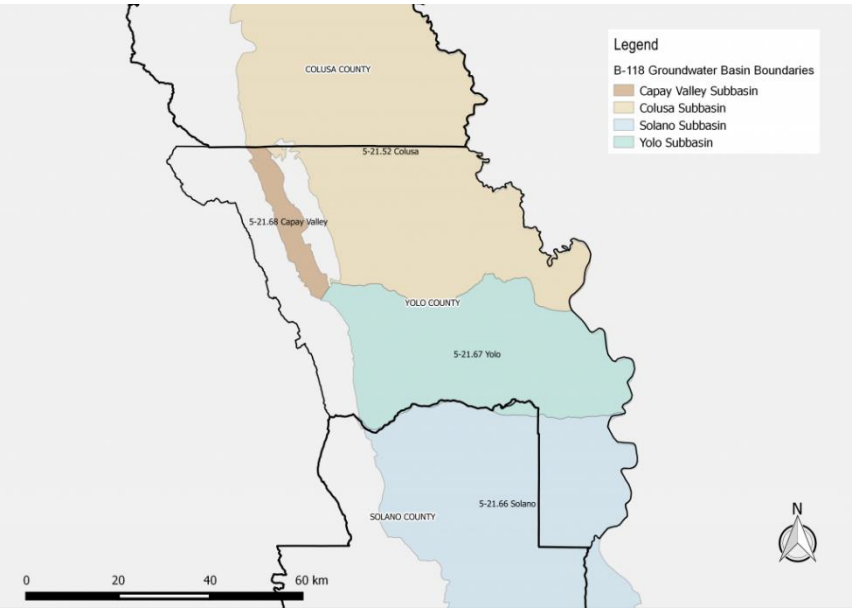


Figure 8. Yolo County historical subbasins

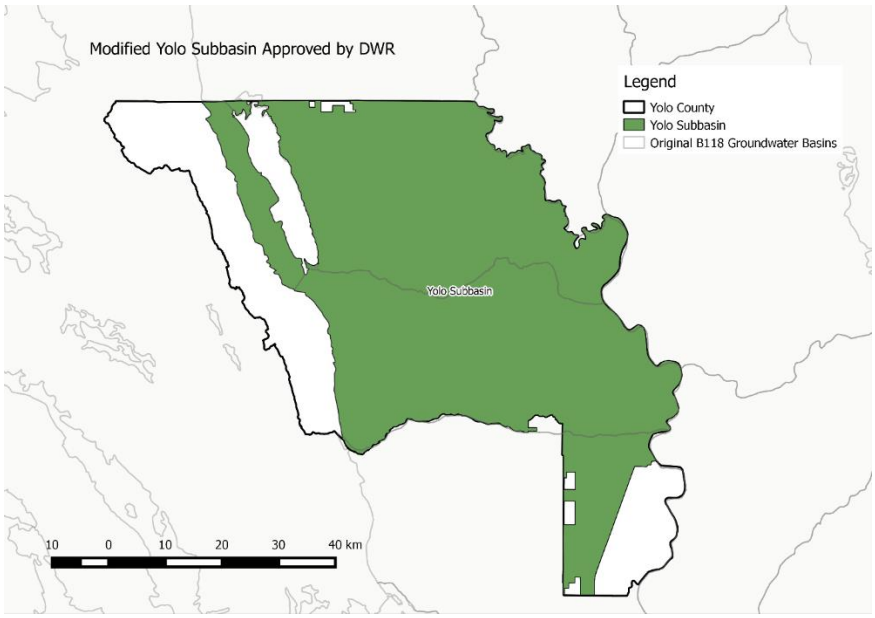


Figure 9. Modified Yolo County sub basin

5) **Fisheries Health Resources**

a. **CalEnviroScreen 3.0: Impaired Water Bodies Index:** *Water bodies like streams, rivers or lakes are used for recreation and fishing or may provide water for drinking or irrigation. When water bodies are contaminated by pollutants, they are considered impaired. These impairments can harm wildlife habitats and prevent recreational and other uses of the water body. Certain groups such as tribal or low income communities may depend on the fish and wildlife in nearby water bodies more than the general public.*[2]

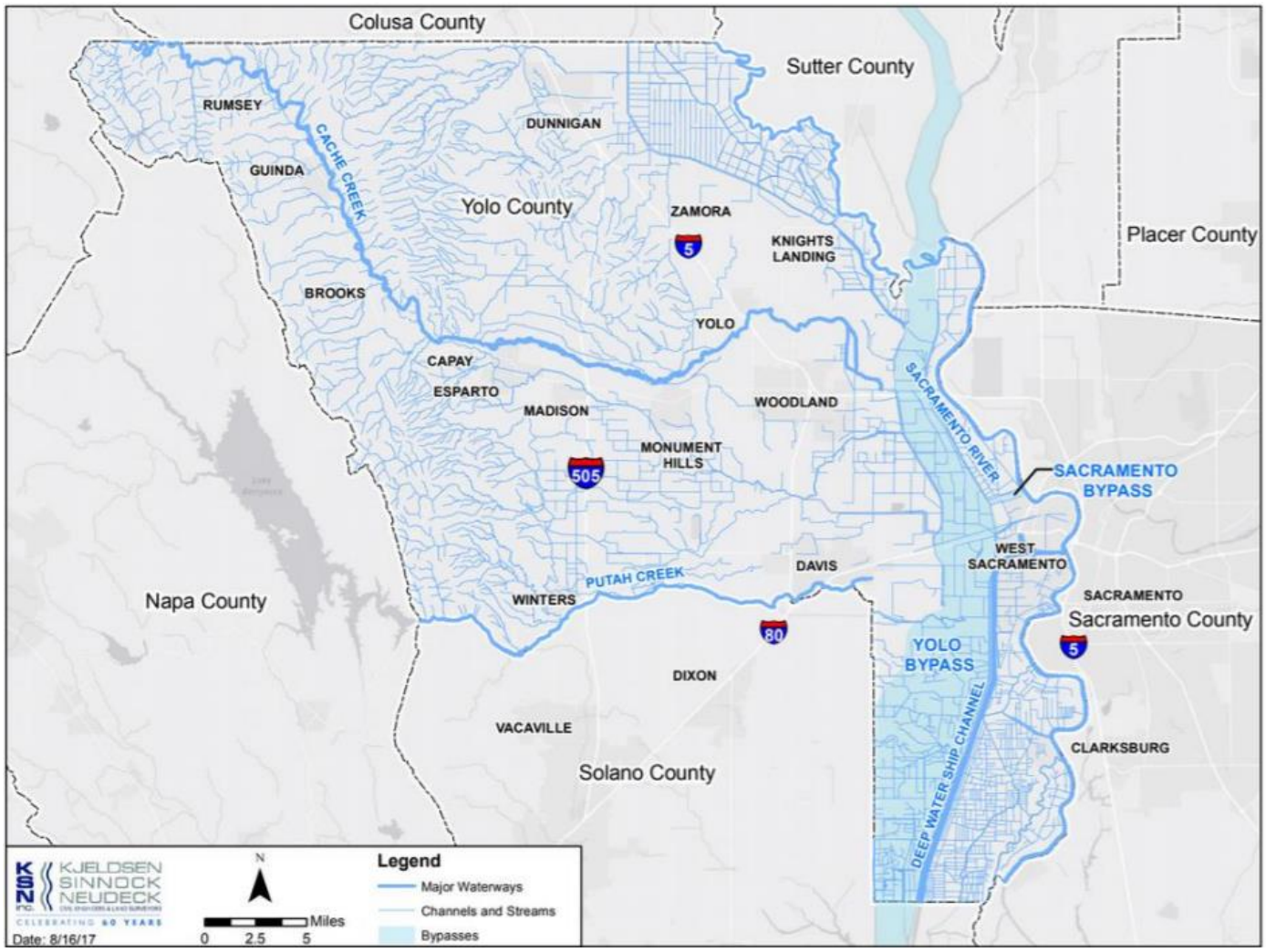


Figure 10. Waterways of Yolo County

[2] http://oehha.maps.arcgis.com/apps/MapSeries/index.html?appid=8dad35dcd2274285874e60871c404edc

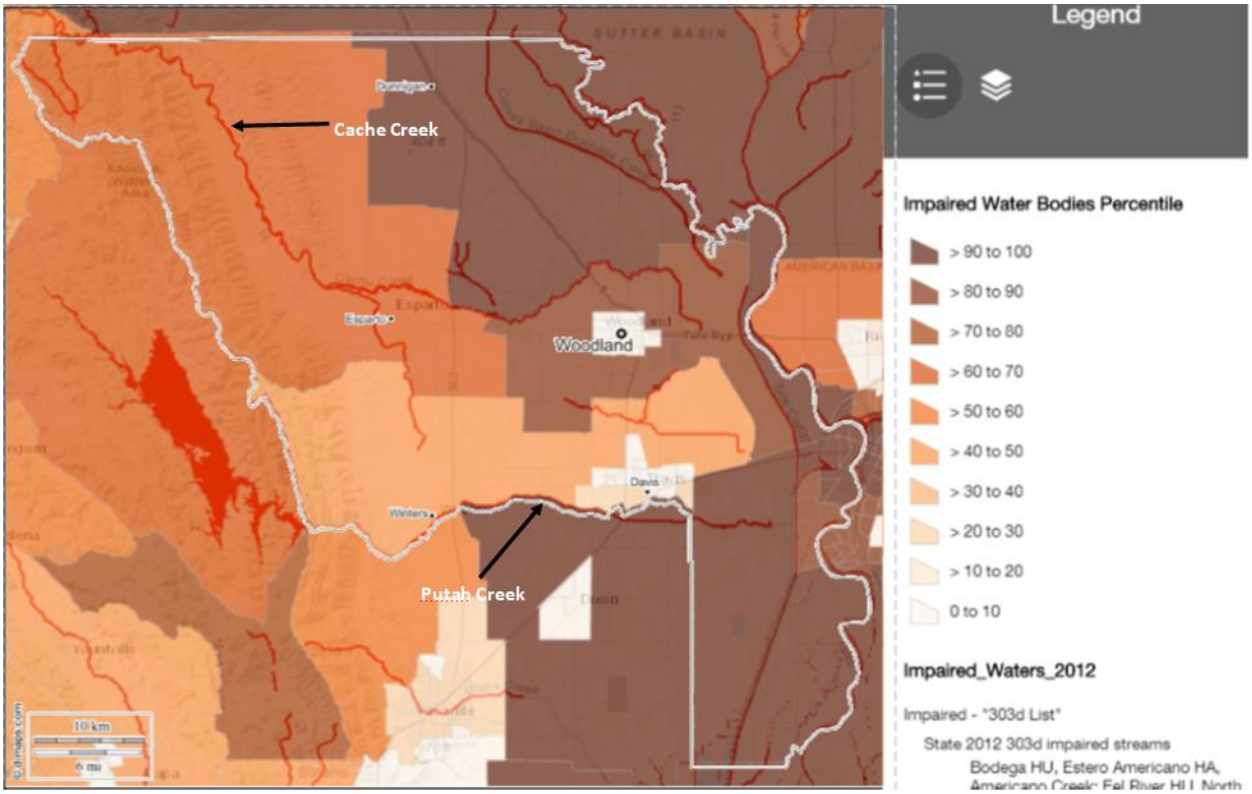


Figure 11. CalEnviroScreen3.0 Impaired Rivers and Waters outlined in red, Yolo County outlined in white. Pollutants and other details parceled out in Table 3.

Table 3. Impaired Water Bodies in Yolo County

	WATER BODY NAME	WATER BODY TYPE	Assessed Area	UNIT	POLLUTANT	POTENTIAL SOURCES
1	Putah Creek	River/Stream	27	Miles	Boron, Mercury	Resource Extraction, abandoned mines
2	Cache Creek, Lower (Clear Lake Dam to Cache Creek Settling Basin near Yolo Bypass)	River/Stream	96	Miles	Mercury, Boron, DDD, DDE, DDT, Fecal Coliform, E.coli, Selenium	Resource Extraction, abandoned mines
3	Willow Slough Bypass	River/Stream	6.2	Miles	Boron, E.coli, Fecal Coliform	Agriculture
4	Winters Canal	River/Stream	15	Miles	Diazinon	agriculture
5	Knights Landing Ridge Cut	River/Stream	13	Miles	Boron, E.coli, Fecal Coliform, Salinity, Oxygen, dissolved	agriculture
6	Sycamore Slough	River/Stream	17	Miles	Oxygen, dissolved	
7	Tule Canal	River/Stream	11	Miles	Boron, E.coli, Fecal Coliform, Salinity,	Agriculture, natural sources

b. **Local Projects on Fish Health**

   i. Partnership with rice farmers to preserve salmon habitat in the Yolo Bypass.

   ii. The revitalization of Putah Creek also has shown promise for restoration projects, as the creek is seeing record numbers of Chinook salmon spawning in the creek after decades of near-absent populations.[3]

5. Climate Change Resiliency:

There is a large scientific consensus about general categories of climate change effects and their likely consequences over continent-scale geography; however, understanding of the magnitude, timing and region-scale geographic effects and the interrelationships between them is still evolving. Adaptation measures establish a basic framework
for integrating climate change risk assessment and management into current planning processes, culminating in an adaptation planning framework to guide preparation for the effects of climate change in Yolo County. [4] The following section also sources information from the Yolo Hazard Mitigation Plan[5]

a. **Climate Change Threats the region is prone to:** Anticipated climate change effects in Yolo County include temperature rise, change in precipitation patterns, impacted water resources, increased risk of wildfires, sea level rise in the Delta, and extreme weather

[3] https://www.davisenterprise.com/local-news/ag-environment/ucd-74-percent-of-native-fish-could-disappear-in-next-100-years/

[4] YOLO COUNTY CLIMATE ACTION PLAN: A Strategy for Smart Growth Implementation, Greenhouse Gas Reduction, and Adaptation to Global Climate Change http://www.yolocounty.org/home/showdocument?id=17993

[5] http://www.yolocounty.org/home/showdocument?id=54349

events. According to the Yolo County Climate Action Plan (CAP), some anticipated consequences of climate change in Yolo County include:

• Rising temperatures, leading to increased electricity use for cooling, especially in the summer. By 2020, this could result in a 1% to 3% increase in electricity demand (CEC, 2007).
• Warm-season horticultural crops (e.g., tomatoes, cucumbers, sweet corn, and peppers) could be less viable by 2050.
• Climate change could worsen air quality by increasing emissions, accelerating chemical processes, and raising inversion temperatures during summer periods of air stagnation.
• Sea level is expected to rise above present levels by 55 inches or more during the next 100 years. This would exacerbate flooding in already vulnerable regions of Yolo County. Combined with increased potential for winter flooding, this could threaten the structural integrity of levee and flood control systems, which would place more people and property at risk from flooding.

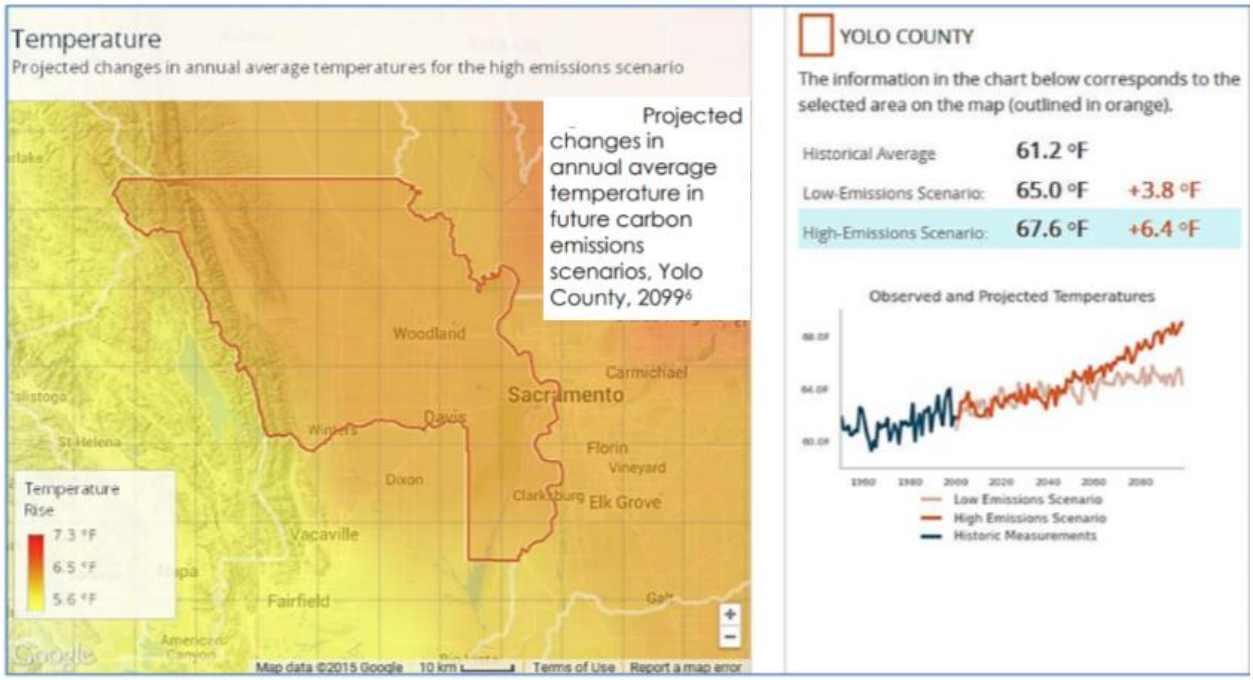


Figure 12. Projected temperature changes for Yolo County.

i. Water Supply

Several recent studies have shown that Yolo County's water supply systems are sensitive to climate change. However, experts are uncertain about what the overall effects will be on water supply. Some models indicate that drier conditions will cause decreased reservoir supplies and river flows. Other models predict wetter conditions with increased reservoir inflows and storage, and increased river flows. Despite this uncertainty, it is still widely accepted that changes in water supply will occur and that water yields from reservoirs are expected to be unreliable. Yolo County must prepare for a future where competition for water resources between farming, cities, and the environment is greater than at the present time. Furthermore, climate change is also expected to result in more variable weather patterns, leading

to longer and more severe droughts, which could lead to lower aquifer levels for those farmer's dependent on groundwater.

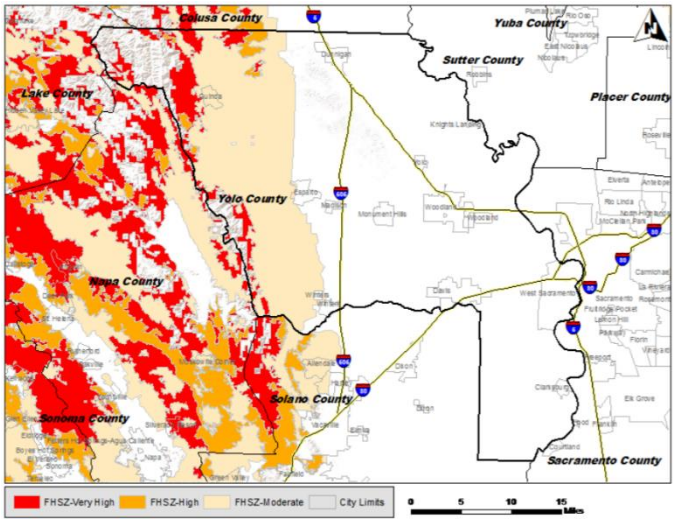
ii. Snowpack and Runoff

Hydrologic models indicate that higher temperatures associated with global warming would affect the timing and magnitude of both snowmelt and runoff in California. Despite uncertainties surrounding climate change precipitation effects, there is very high confidence that higher temperatures will change both snowfall and snowmelt in many watersheds. This is particularly relevant to those areas in Yolo County that are dependent on the Sacramento River. These changes could diminish water supplies, increase flooding, and reduce summer soil moisture.

iii. Air Quality

Throughout California, air quality is highly impaired compared to most of the nation. While predicting the effect of climate change on air quality is difficult due to complex physical, chemical, social, and policy variables, studies indicate that climate change could further worsen air quality throughout the State, including Yolo County. Higher temperatures may lead to increased ozone formation. Emissions of methane and nitrous oxide are projected to increase global ozone concentrations by 4% to 25% by 2100. If ozone levels rise to the high end of this range, attainment of ozone air quality standards could be impaired, which would have local effects in Yolo County. Highly air quality could result in increased incidence of respiratory disease and asthma.

iv. Wildfires



Warmer temperatures cause early runoff, which leads to longer and drier summer conditions, thus resulting in wildfires of greater frequency and duration. Hotter weather increases the incidence of lightning, which is the primary cause of wildfires in the United States. In addition, the increased prevalence of dry conditions provides greater opportunities for arson, which is another source of wildfire. As shown in Figure 12, much of the coast range hills of Yolo County are considered to have a moderate to high risk of wildfire. The mountainous areas of the County are most vulnerable to a large wildfire. While these areas are mostly unpopulated, the Capay Valley and the City of Winters are susceptible. Highway infrastructure, power lines, and public use facilities (including campgrounds) along State Routes 16 and 128 are vulnerable to a wildfire. Cities and communities throughout the valley portion of the County can become susceptible to large grass fires, which can burn homes and businesses. Populated highway corridors, particularly State Route 113 in Davis, are vulnerable to a grass fire.

Figure 13. Current Fire Hazard Severity Zones (FHSZ), Yolo County, 2007, *Note: Map includes only state and local responsibility areas.*

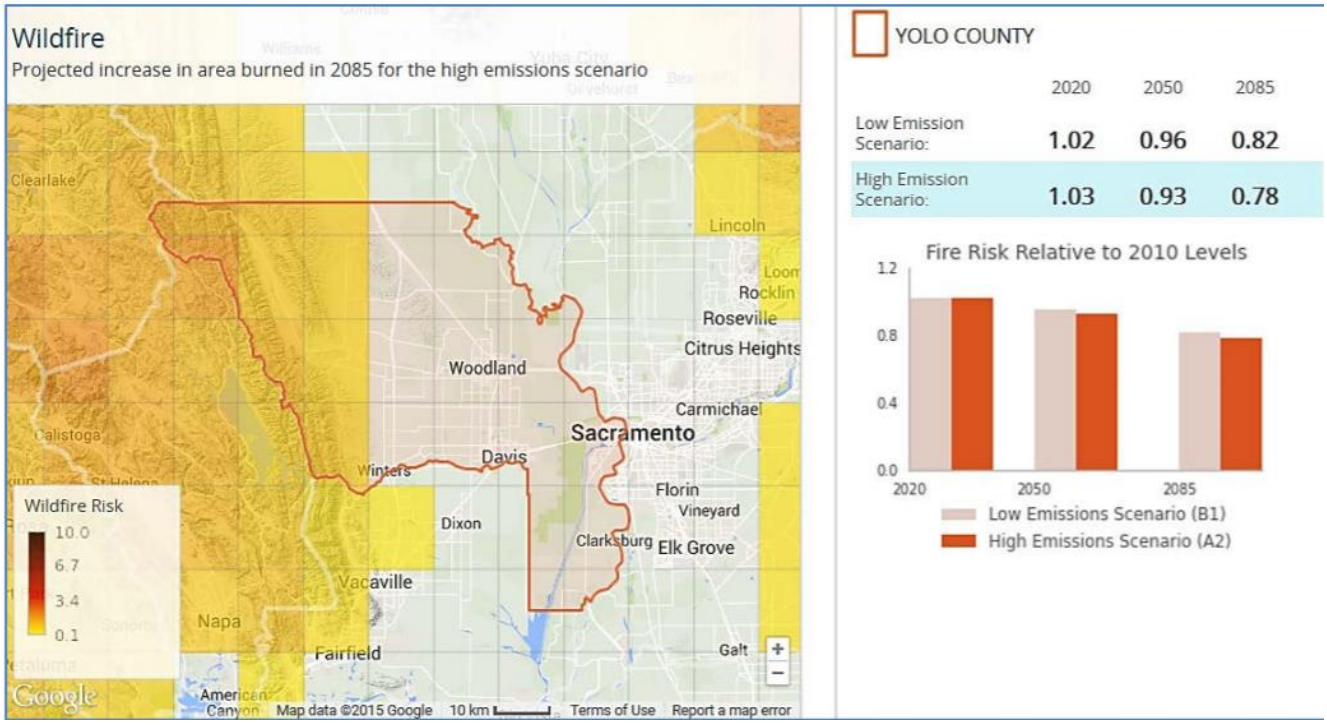


Figure 14. Projected increase in wildfire risk for Yolo County.

v. **Extreme Weather Events**

Climate change effects on weather patterns, storms, and extreme events in California are not well-understood at this time. Some models suggest increased variations in weather cycles and an increase in intense storms. Others point to increased potential for drought resulting from higher temperatures and evaporation with lower precipitation. Still others suggest that the west coast may have fewer extreme droughts than other areas while experiencing higher average annual rainfall. A separate study predicted higher risks of large storms and floods in California. These conflicting conclusions about climate variability and extreme weather events support the need for additional studies employing models that can provide region-scale predictions. Given uncertainties surrounding the type and extent of expected changes in climate variability and the speculative nature of predicting extreme weather events, effects of changing storm patterns and other extreme weather remain unclear.

vi. **Dam Failure:**

In the area around Yolo County there are six dams, of various types of construction and the failure of any one would cause some degree of flooding in Yolo County:

a. Monticello Dam (Putah Creek) – U.S. Bureau of Reclamation

b. Indian Valley Dam (Cache Creek) – Yolo County Flood Control and Water Conservation District
c. Shasta Dam (Sacramento River) – U.S. Bureau of Reclamation
d. Oroville Dam (Feather River) – California Department of Water Resources
e. Folsom Dam (American River) – U.S. Bureau of Reclamation
f. Nimbus Dam (American River) – U.S. Bureau of Reclamation

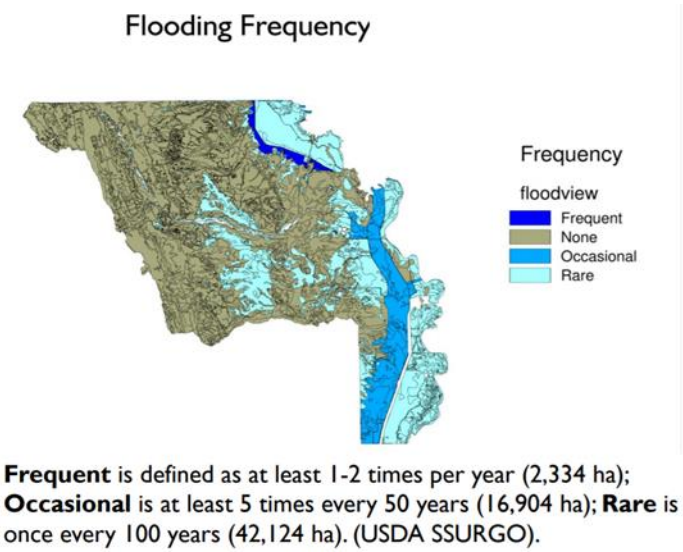


Figure 15. Flooding frequency near the Sacramento River[1]

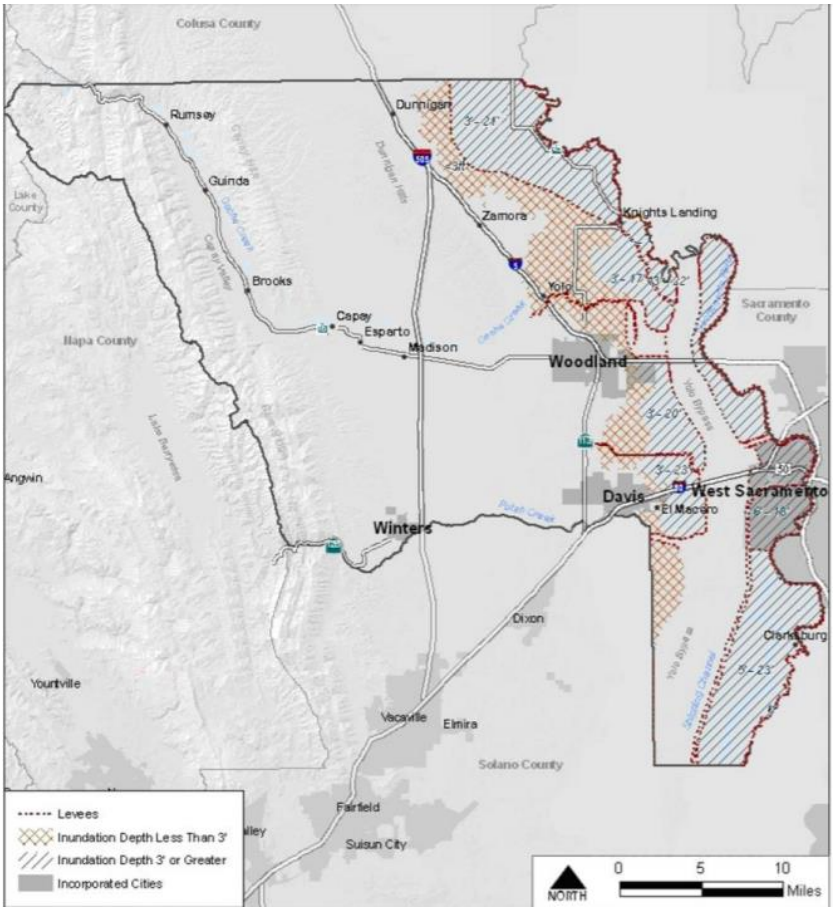
ii. **Flooding:** Yolo County is susceptible to various types of flood events: Regardless of the type of flood, the cause is often the result of severe weather and excessive rainfall, either in the flood area or upstream reach. The area is also at risk to flooding resulting from levee failures and dam failures

Riverine flooding – In Yolo County, riverine flooding can occur anytime from November through April and is largely caused by heavy and continued rains, sometimes combined with snowmelt, increased outflows from upstream dams, and heavy flow from tributary streams. These intense storms can overwhelm the local waterways as well as the integrity of flood control structures. Flooding is more severe when antecedent rainfall has resulted in saturated ground conditions. The warning time associated with slow rise riverine floods assists in life and property protection.

Flash flooding – Flash flooding describes localized floods of great volume and short duration. This type of flood usually results from a heavy rainfall on a relatively small drainage area. Precipitation of this sort usually occurs in the winter and spring. Flash floods often require immediate evacuation within the hour and thus early threat identification and warning is critical for saving lives.

Localized/Stormwater flooding – Localized flooding problems are often caused by flash flooding, severe weather, or an unusual amount of rainfall. Flooding from these intense weather events usually occurs in areas experiencing an increase in runoff from impervious surfaces associated with development and urbanization as well as inadequate storm drainage systems.

viii. **Levee Failure:**



Approximately 150 years ago, the levees of the Sacramento-San Joaquin Delta were raised to prevent flooding on what remains some of the most fertile farmland in the nation. While the peat soils were excellent for agriculture, they were not the best choice to create strong foundations for levee barriers meant to contain a constant flow of river water. Nevertheless, it was these native soils that were primarily used to create the levee system. Levee failure flooding would vary in the County depending on which structure fails and the nature and extent of the failure and associated flooding. This flooding presents a threat to life and property, including buildings, their contents, and their use. Large flood events can affect lifeline utilities (e.g., water, sewerage, and power), transportation, jobs, tourism, the environment, agricultural industry, and the local and regional economies.

Figure 16 Levee Protection Zones in Yolo County. Source: Yolo County General Plan

ix. **Land Subsidence:** In Yolo County, the East Yolo sub-basin area has been affected most dramatically, with communities near Zamora, Knights Landing and Woodland having experienced damage and loss of structural integrity to highways, levees, wells and irrigation canals. Wells have experienced well housing collapses. Land subsidence has the potential to damage drinking water wells and infrastructure throughout Yolo County, particularly in the East Yolo sub-basin where it occurs most significantly. Loss of drinking water for rural communities such as Knights Landing can cause health problems as well as significant financial impacts with the re-drilling and testing of wells and providing alternate potable water sources for citizens. Prolonged drought can exacerbate the impacts from land subsidence. As the water table is drawn down, land can sink even further and damage underground aquifers. Critical infrastructure such as highways and levees can also become undermined due to land subsidence, becoming a threat to public safety and resulting in the devotion of significant financial resources to fix any damages.

x. **Drought**: Agriculture throughout the County is susceptible to drought, which can cause a decrease in crop production. Crops that rely heavily on water, such as rice, are most susceptible while nut crops and vine grown fruit are least susceptible. Communities that rely on well water are susceptible to drought when groundwater levels are lower.

xi. **Sea Level Rise:**
Yolo County's location (more than 50 miles inland from the mouth of the Golden Gate) precludes significant effects from coastal processes, such as wave action. However, low-lying communities in or near the Delta, such as Clarksburg and Elkhorn (with elevation as low as five feet above sea level), would be more susceptible to flooding as sea level rise continues. Rising sea levels affecting the San Francisco Bay along the Napa, Solano, and Contra Costa County boarders may also worsen flooding in Yolo County and expand the county's floodplains. It is also possible that sea level rise could reduce the effectiveness of Delta and river levees within the county (reducing the levee freeboard and increasing levee stresses as a result of the rise in the base level of the adjacent water).

6. Socio-Economic Demographics

a. General Characteristics

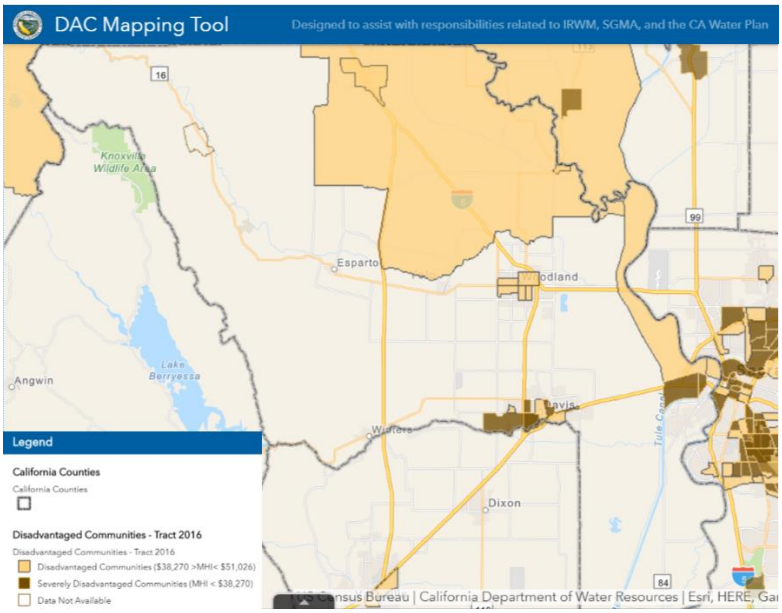


Figure 17. Disadvantaged Community Mapping Tool by Census Tract in Yolo County.

b. CalEnviroScreen 3.0: Pollution Burden and Population Characteristics

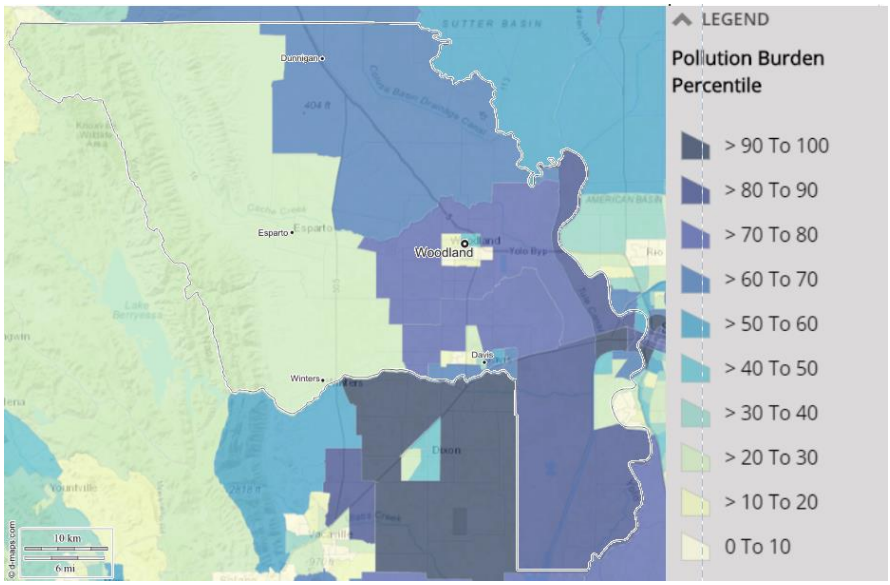


Figure 16. CalEnviroScreen3.0 Pollution Burden Percentile for Yolo County. The highest percentages are concentrated to the eastern half of the county.

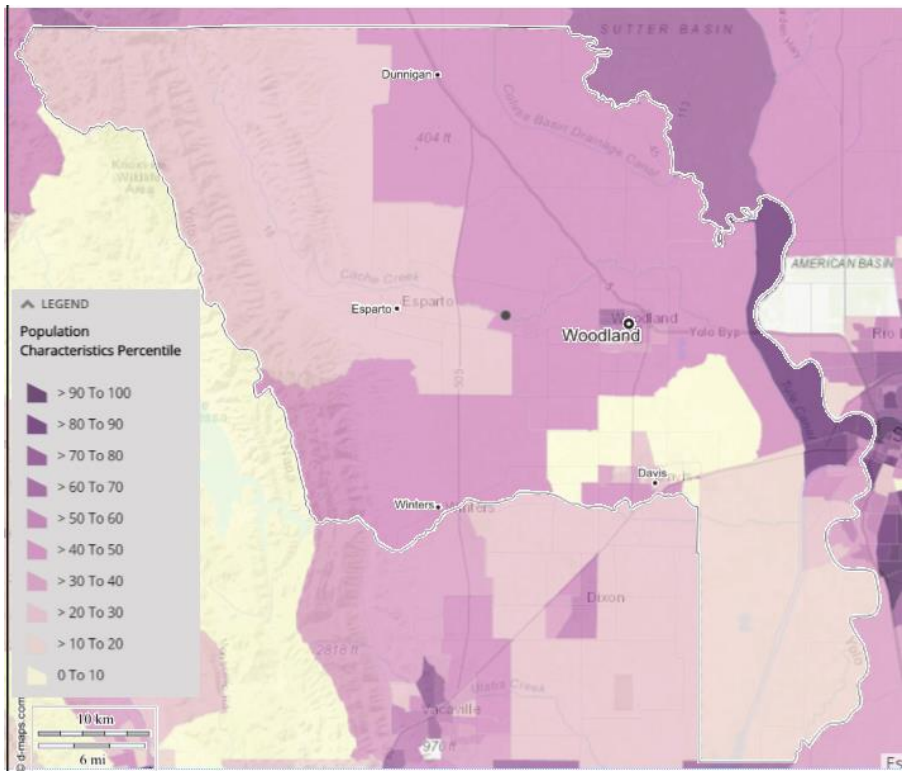


Figure 17. CalEnviroScreen3.0 Population Characteristics Percentile for Yolo County. Vulnerable populations are spread throughout the county, although the highest concentration are in West Sacramento.

c. **Regional Opportunity Index (ROI)**[6]

i. The Regional Opportunity Index (ROI) is an index of community and regional opportunity for understanding social and economic opportunity in California's communities. It incorporates both a "people" component and a "place" component, integrating economic, infrastructure, environmental, and social indicators in to a comprehensive assessment of the factors driving opportunity. The Regional Opportunity Index was developed through a joint partnership between the UC Davis Center for Regional Change and Rabobank, N.A.

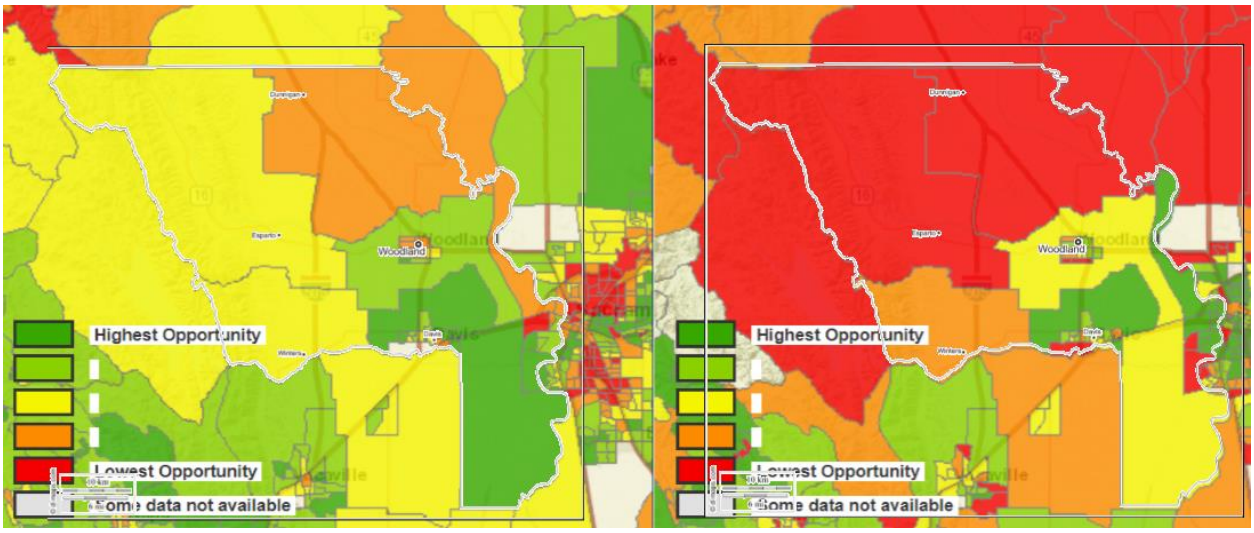


Figure 18. ROI maps for Yolo County.

7. **Integrated Regional Water Management Groups Stakeholder Identification and Implementation of Plans:** *Integrated Regional Water Management (IRWM) is a collaborative effort to identify and implement water management solutions on a regional scale that increase regional self-reliance, reduce conflict, and manage water to concurrently achieve social, environmental, and economic objectives. This approach delivers higher value for investments by considering all interests, providing multiple benefits, and working across jurisdictional boundaries. Examples of multiple benefits include improved water quality, better flood management, restored and enhanced ecosystems, and more reliable surface and groundwater supplies.*

a. **Westside Sacramento IRWM Group Stakeholders**[7]

i. Lake County Watershed Protection District
ii. Napa County Flood Control and Water Conservation District
iii. Solano County Water Agency
iv. Water Resources Association of Yolo County
v. Colusa County Resource Conservation District

[6] https://interact.regionalchange.ucdavis.edu/roi/webmap/webmap.html
[7] http://www.westsideirwm.com/who.html

Table 4. Westside Sacramento IRWM Projects		
Project Name	**Lead Agency/Organization**	**Description**
Westside Brownfields Coalition Assessment Project	Westside Sacramento IRWM	The Brownfields Project will identify, assess, and plan for remediation of mine-scar sites. Three general qualifications will be used to identify primary target brownfield sites: 1) contaminating the watershed, 2) possible public health and environmental health concerns, and 3) inhibiting reuse for open space, economic development or other beneficial uses. The Brownfields Team will identify mine-impacted brownfields on both private and public lands, and will and prioritize sites collectively and consistently for public benefit.
Lower Cache Creek Invasive Species Mapping and Prioritization Project	Cache Creek Conservancy, Westside IRWMP Coordinating Committee	Goals of Project • Map extent & distribution of existing priority invasive species • Map extent & distribution of new priority invasive species • Produce a GIS baseline map of these distributions for adaptive management • Identify & prioritize best areas for riparian restoration
Putah Creek Cleanup	Putah Creek Council	
Solano and Napa County Drought Relief Project	Solano County Water Agency	This project offers drought relief and long-term water savings in the form of a package of water conservation programs to improve water use efficiency throughout eastern Solano County and unicorporated Napa County. The programs include 1) Water-Efficient Landscape Rebates, 2) Weather-Based Irrigation Controller Rebates, 3) High-Efficiency Washer Rebates and 4) the installation of High-Efficiency Toilets and Urinals in commercial and multi-family buildings.

b) Yolo County IRWMP Stakeholders:

1) Yolo Water Regional Authority (WRA) Members:

City of Davis
City of Woodland
City of West Sacramento
City of Winters
University of California Davis
Yolo County
Yolo County Flood Control & Water Conservation District
Reclamation District 108

Reclamation District 2035 (Conaway Preservation Group)
Dunnigan Water District

Table 5. Yolo County IRWMP Projects[8]		
Project Name	**Lead Agency/Organization**	**Description**
Davis-Woodland Water Supply Project	Woodland Davis Clean Water Agency	The regional surface water supply project provides water to more than two-thirds of the urban population of Yolo County, CA. It also serves UC Davis, a project partner. It largely replaces deteriorating groundwater supplies with safe, more reliable surface water supplies from the Sacramento River.
Reclamation District 2035 Sacramento River Diversion & Conveyance Project	RD 2035, Woodland Davis Clean Water Agency (WDCWA)	RD 2035 and the Woodland Davis Clean Water Agency (WDCWA) are partnering to implement and operate a combined diversion facility. The dual-purpose intake would provide environmental and water quality benefits, improve water supply reliability in the region and is consistent with the ecosytem restoration goals of the CALFED Bay-Delta Program. For more details about this Joint Fish Screen/Intake project please visit http://www.wdcwa.com/
Cache Creek Integrated Project - Flood & Water Management Components	The Yolo County Flood Control & Water Conservation District (YCFC&WCD), City of Woodland, and Yolo County	The floodSAFE Yolo program coordinates the flood management efforts associated with the Cache Creek Integrated Action and the Yolo County Sloughs, Canals & Creeks Management Program identified in the Yolo County IRWMP. The IRWMP was adopted by the WRA and its member agencies in July 2007. This joint venture, floodSAFE Yolo, seeks effective solutions to the seasonal flooding of Cache Creek and the localized floodplain that impacts all three jurisdictions in different ways. The YCFC&WCD is taking a leadership role in the jointly-funded $600,000 effort, setting up a new division dedicated to flood and storm issues, and overseeing the project's technical staff and flood control planning activities. Water engineer, Fran Borcalli, is the program manager and an assistant position will be added in the near future. In addition to working on flood control solutions, a priority will be to develop a sustainable funding mechanism for collaborative flood control management after the 2-year pilot program ends.
Dunnigan Integrated Project	Dunnigan Water District	The priorities for this integrated project are reflected in the work plan in this section of this IRWMP for the Dunnigan Integrated Project. They remain unchanged from the draft report. In view of the

[8] http://www.yolowra.org/irwmp_final/09-Section-7%20rev.pdf

		potential for 2,500 to 7,500 new residential units, the Dunnigan Water District adopted a policy statement expressing their interest in being the lead agency for handling water, wastewater, and storm runoff associated with the new development. The discussion for the Dunnigan Integrated Project is essentially the same as presented in the Draft IRWMP.
Sacramento River West Bank Integrated Project	City of West Sacramento Yolo County	The partners for this integrated project devoted considerable effort to reexamine the potential actions in all water management categories, conducted two public meetings, and went through an extensive process for integrating and prioritizing the actions. The results of the partners are presented in this section of this IRWMP under the Sacramento River West Bank Integrated Project and replace the material presented in the Draft IRWMP.
Putah Creek Integrated Project	Lower Putah Creek Coordinating Committee	The priorities for this integrated project are reflected in the work plan in this section. Prioritization for this integrated project was complete and no additional effort for prioritization was required. The discussion for the Putah Creek Integrated Project is essentially the same as presented in the Draft IRWMP.
Yolo Bypass Integrated Project	Yolo Bypass Working Group	For this integrated project, the Working Group devoted considerable effort to getting better organized and reexamining and defining potential actions in all water management categories. New prerequisite tasks were identified and they are described in this section under the Yolo Bypass Integrated Project. The results of the Working Group are presented in this section of this IRWMP under the Yolo Bypass Integrated Project and replace the discussion presented in the Draft IRWMP.
Yolo County Sloughs, Canals, & Creeks Management Program	YCFCWCD and Environmental, Agency, and Landowner Representatives	The group met on several occasions to initiate what it considered to be the beginning point of an ongoing collaborative process of prioritization, integration, and implementation. The group developed three functional categories for the component actions in this integrated project. The approach developed for this integrated project is presented in this section under the Yolo County Sloughs, Canals, and Creeks Management Program. The results of the group's effort in addressing prioritization and integration are presented at the end of the discussion on the Sloughs, Canals, and Creeks Management Program.

COMPLETED (or portions completed) SINCE 2007 ADOPTION OF YOLO COUNTY IRWMP				
Project Title	**Integrated Action**	**Project Cost**	**Year Completed**	**Lead Agency**
Levee Public Access Improvements Project	Putah Creek	$60,000	2007	LPCCC
Cache Creek Hydrology Study Review	Cache Creek	$50,000	2007	City of Woodland/ Ford Consulting
Yolo Bypass Hydraulic Modeling	Yolo Bypass	$5,000/ $2 million	2007	Yolo Basin Found./DWR
Yolo County Subsidence Monitoring Program	Foundational	$74,000	2008 / ongoing	Multiple local partners, DWR
Dry Creek Bank Stabilization Project	Putah Creek	$250,000	2008	LPCCC, City of Winters
Huff's Corner Levee Repair Project	Cache Creek	$1.6 million	2008	Yolo County
Cache Creek Hydrology Update	Cache Creek	~$50,000	2009	floodSAFE Yolo
Groundwater Characterization Study		$31,000	2009	RD 108
Putah Creek Trails Program (UCD trails project)	Putah Creek	$5,000	2009	LPCCC
Removal of Winters Percolation Dam	Putah Creek	$452,000	2009	LPCCC
Russell Ranch Riparian & Grassland Habitat Restoration Project	Putah Creek	$1,075,000	2009	LPCCC, UCD
South Fork Preserve Riparian & Grassland Restoration Project	Putah Creek	$5 million	2009	LPCCC
UC Davis Confined Animals Relocation Project	Putah Creek	$470,000	2009	LPCCC, UCD
Willow Slough/ University Canal Rerouting Project	Putah Creek& Sloughs, Canals, Creeks Program	~$100,000	2009	LPCCC, UCD, YCFCWCD, Yolo RCD
Yolo Bypass Sediment Removal Program	Yolo Bypass	ongoing	2009	DWR
Cache Creek Regional Park Improvement Project (Middle Site Campground)	Sac River West Bank	$355,105	2010	Yolo County
Capay Dam Reliability/Restoration Project	Cache Creek	$4 million	2010	YCFCWCD
Cold Canyon Headwaters Acquisition	Putah Creek	$45,000	2010	Tuleyome
Putah Creek Fishing Access & Campground Project	Putah Creek	ongoing, $200,000	2010	LPCCC, Yolo County Parks
Putah Creek Recreational Facilities Restoration and Expansion Project	Putah Creek	$234,384	2010	LPCCC, Yolo County Parks
Sacramento River Storm Water Sources Monitoring Program	Sac River West Bank	$8,000/yr	2010	Yolo County

Figure 19. Shows successfully completed projects as of June 2011.[9]

[9] http://www.yolowra.org/documents/IRWMP_AccomplishmentsList_Adopted_6-20-11.pdf

8. **Indigenous Tribes**
    a. **Yocha Dehe Wintun Nation**[10]

Previously known as the Rumsey Band of Wintun Indians

For thousands of years, members of California's Wintun Tribes have been guided by a culture rich with an understanding of medicine, technology, food production and land stewardship. The towns and roads of today were the villages and trade routes of our past. Our land was healthy and our early communities thrived.

The arrival of missionaries and European explorers forever altered the course of Native people in California. Many Wintun people were enslaved to serve the missions, while abuse and disease further dwindled our numbers. By the 1800s, many of our ancestors were purged of their home and hunting lands by opportunists driven by gold and greed. Northern California Native people were decimated by the Gold Rush and federal policies that legalized genocide. During this time the Yocha Dehe population declined dramatically and our ancestors were rendered nearly extinct.

In the early 1900s, our Tribe was forcibly removed from our village by the US government and placed on a federally created rancheria—otherwise known as a reservation—in Rumsey, California. Stranded on barren, non-irrigatable land, they struggled to survive. In 1940, our people gained a hard-won relocation to a small parcel of land further south in the Capay Valley, where they managed to cultivate small amounts of food. Without the opportunity to produce more than subsistence levels of crops, our ancestors, who had lived sustainably for thousands of years, became dependent on the US government for survival.

Finally, in the late 1980s, the tide began to turn. Some ancestral lands were restored to our Tribe, providing a land base for housing and economic development. It was at this time that the State of California instituted the California Lottery and the federal government enacted the Indian Gaming Regulatory Act (IGRA). The United States Congress enactment of IGRA in particular provided a means to promote economic development and self-sufficiency with the explicit purpose of strengthening tribal self-governance. This offered the Tribe the opportunity to open Cache Creek Indian Bingo on part of our 188 acres of trust land.

Initially, our Tribe knew little about gaming. We focused our resources on building the necessary foundation for our tribal government to manage assets generated by the bingo hall. Powered by hard work and determination, we developed our own management strategy and expanded the bingo hall into the world-class Cache Creek Casino Resort, eventually providing economic development and stability for our tribal members.

The independence gained from the initial influx of gaming revenue gave the Tribe the wherewithal to reacquire some of our traditional lands, to invest in the future of our children through improved education and to provide philanthropic support for communities in need.

In 2009, the Tribe legally changed our name from the Rumsey Band of Wintun Indians, as we were originally labeled by the federal government, to Yocha Dehe Wintun Nation, named for our homeland in our ancestral Patwin language. The name change represents an important mark in time for the people of Yocha Dehe. It connects our Tribe to our heritage and expresses our sense of pride and hope for the future.

[10] https://www.yochadehe.org/heritage/history

Enterprises
Through carefully planned and diversified economic development, we are building security for future generations. Because we have not forgotten the years of struggle for our own people, we are committed to investing significant resources to benefit the community, state and national programs and other Native tribes.

Through our Compact with the State and the Memorandum of Understanding with Yolo County, we have given $2.5 million to the County to improve roads, including $43,000 annually to maintain road improvements made by the Tribe. We currently generate more than $370 million in direct and indirect economic benefits in Yolo County. And we are the largest private employer in Yolo County, providing jobs to more than 2,500 people.
Yocha Dehe Wintun Nation makes many other contributions that benefit the community, including providing emergency response and public safety services to local communities through the Yocha Dehe Fire Department, the development of a community-focused olive mill and philanthropic contributions through the Yocha Dehe Community Fund, which seeks to build a better quality of life throughout the community.

The Tribe enjoys a productive government-to-government relationship with the State of California and Yolo County. As the Tribe's governing body, the Tribal Council negotiates government-to-government agreements with the State, the County and local agencies. To date, these agreements govern the Tribe's entertainment and hospitality operations, and provide the State and County with fire, police and transportation infrastructure improvements throughout the region. In 2003, the Governor of California bestowed the Tribe with the State's highest and most prestigious environmental honor, the Governor's Environmental and Economic Leadership Award, in connection with its civil services agreement with Yolo County. The Tribe is also a signatory to an unprecedented Fire Mutual Aid Agreement. For the first time in Yolo County history, the Tribe's fire department is a contributing member of the County's emergency response force.

9. **Control of Water Rights:** The primary hydrologic features of the county include the Sacramento River, Tehama Colusa Canal, Cache Creek, Putah Creek, Willow Creek, the Colusa Basin Drain, and the Yolo Bypass. Cache and Putah Creeks drain the foothill portions of the Coast Range and flow east across the valley floor. Willow Creek drains the valley floor area between Cache and Putah Creeks. The eastern boundary of Yolo County is the Sacramento River, which drains the Sacramento Valley before entering the Sacramento-San Joaquin Delta. The Colusa Basin Drain is a manmade channel designed to convey irrigation drainage from the west side of the Sacramento Valley to the Sacramento River. The Yolo Bypass is part of the Sacramento River Flood Control Project and provides flood protection for the City of Sacramento.The IRWMP for Yolo County has identified six groundwater subbasins in Yolo County (Capay Valley, Buckeye Creek, Dunnigan Hills, West Yolo, East Yolo, and Sacramento River), which are part of the larger Sacramento Valley Groundwater Basin.
    a. **Private Water Companies in Yolo County**
       California American Water
       Dunnigan Water Works

b. **Public utilities:** Pulled from the Sacramento Valley Integrated Water Management Plan[11]

Water agencies and private parties have been effective over the years in obtaining and developing water supplies to meet the needs of Yolo County. In the past, most efforts were conducted by individual agencies. Over 20 agencies have land and water management responsibilities in the county. These include the following agricultural water purveyors, urban water purveyors, agencies with flood management responsibilities, and agencies with land use management responsibilities:

• Agricultural Water Purveyors
− Colusa Drain Mutual Water Company
− Dunnigan Water District
− Rumsey Water Users' Association
− University of California Davis (Field Teaching and Research System, and Utility Water System)
− Yolo County Flood Control and Water Conservation District
− Deseret Farms
− River Garden Farms
• Urban Water Purveyors
− City of Davis
− University of California Davis (Domestic System)
− City of West Sacramento
− City of Winters
− City of Woodland

[11] https://www.norcalwater.org/res/docs/IRWMP-section-6.8.pdf

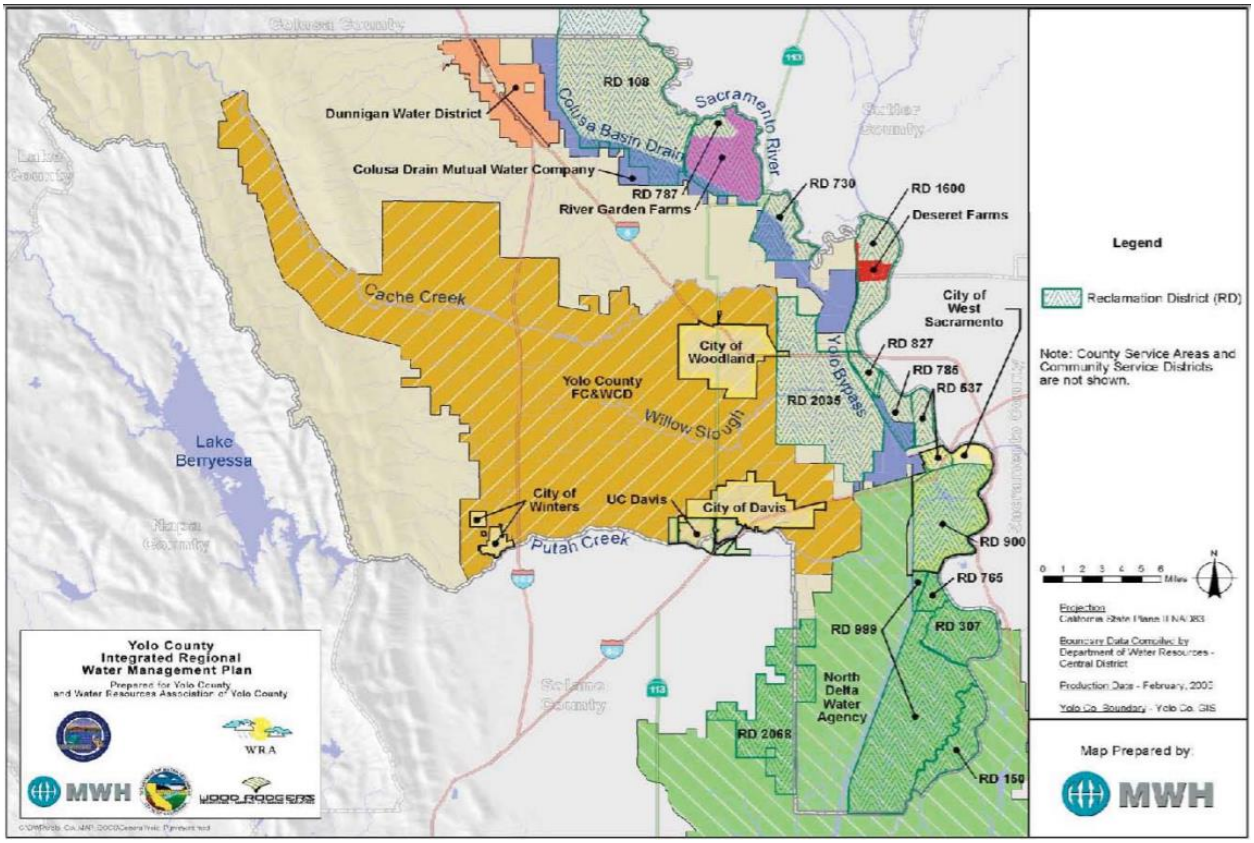


Figure 20 Yolo County Water related Administrative bodies

c. **Oversubscription**

It's unclear how many domestic and agricultural wells there are without an information request to Yolo County, however the existence of a Small Public Water System Program indicates that the practice is widespread throughout the majority rural county.

From the county website," A permit is required for the installation, modification, or abandonment of water wells, test holes, cathodic protection wells, geothermal heat exchange wells, and monitoring wells. Well final inspection is required to give approval to use the well."[12]

10. Topics of concern

- Fire protection and recovery
- Drought recovery

[12] http://www.yolocounty.org/community-services/environmental-health-services/land-environmental-protection/drinking-water-program

Creek Tour Visioning Session

As our last stop on the Urban Creek Restoration Tour, we conducted a visioning session where participants were encouraged to visit different "stations" located around the room to elicit design ideas for Morrison Creek, identify priorities and concerns, and obtain commitments from participants for follow up work on the project. The following are products of this session.

What would a Creek in your neighborhood mean to you?

- A fun place for me to go and have fun when bored
- A place to go and feel safe being around
- A place that I can feel relaxed and observe nature
- Access to nature close to home and a safe place. It would also show that we matter too
- It would mean everything, if the creek was dirty I would tell everyone to help
- If me and my friends could have a place to go out and play instead of video games would be great
- Equity
- Help change the neighborhood by giving it pride
- A safe place to walk or bike
- A safe, relaxing way for my students to get to school (Elder Creek Elementary)
- A place to be outside to relax and recharge

What are your TOP 2 concerns about the creek? (indicated by tally)	
Safety	8
Homelessness	5
Water Quality	7
Dumping/Trash	10
Other	Organizing, maintenance, daily/nightly access

The idea I'm most excited about: (# indicates extra check marks)

- Is to build a skate park (1)
- Is a solar bench to charge your phone (3)
- Add a specific area to skip rocks (1)
- Amphitheater area (3)
- Community garden (3)
- A mural of the history of the neighborhoods (3)
- Artwork from community members
- Zipline (adult-friendly) (1)

- New place to hold events
- Fitness equipment and Light in the creek (2)
- Walk path (1)
- Water fountain (3)
- Trash cans (3)
- Access from George Sim to Elder Creek Elementary (2)
- Make a flat area under the bridge for shade
- Bird sanctuary (1)
- Native plant area to create relaxing, beautiful, shady oasis (4)
- Bike path (1)
- Bathrooms - regulated
- Phone charging stations
- Shade (2)
- Access to lower creek bench
- Happy and health community members

I'd like to help with:

1) **Creek Clean ups:**
   11 commitments

2) **Morrison Creek Community Committee**
   4 commitments

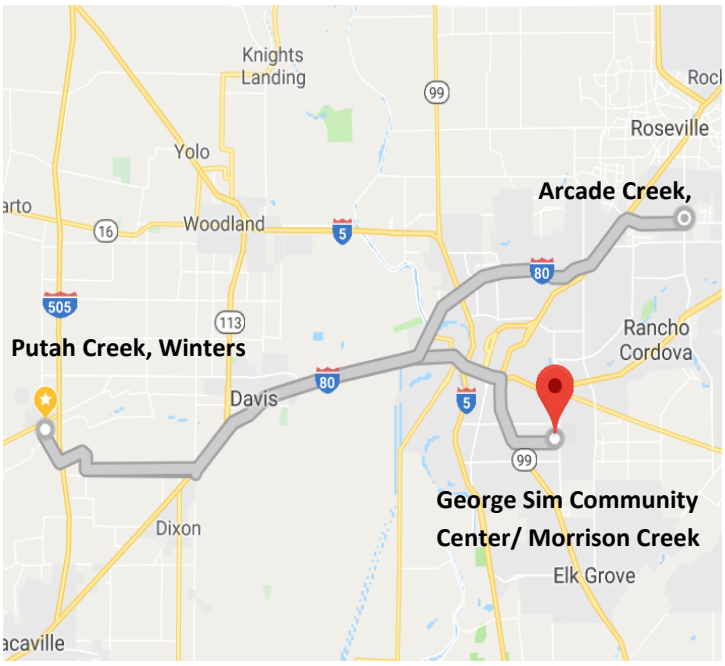
3) **Social Media:**
   2 commitments

4) **Outreach to Elected Officials**:
   2 commitments

MORRISON CREEK REVITALIZATION PROJECT

Urban Creek Restoration Tour

OVERVIEW



The Urban Creek Restoration Tour will provide opportunities for community members to see potential outcomes of the Morrison Creek Revitalization Project by visiting two other creek restoration projects in the Sacramento area. Participants will learn from these other projects about what worked for them, and what they would do differently. Community members will flesh out their ideas developed during the tour through a facilitated visioning discussion at the end of the day to finalize the community's preferred design to move the project into its next phase.

A Brief Project Description

The Morrison Creek Revitalization Project is a holistic approach to improving the quality of life in the South Sacramento neighborhoods through which this creek flows. The MCRP team currently includes several project partners: The Avondale and Glen Elder Neighborhood Association, The Environmental Justice Coalition for Water, Valley Foothill Watersheds Collaborative and Dry Creek Conservancy, California Department of Water Resources Urban Streams Restoration Program, Sacramento Tree Foundation, Walk Sacramento, Sacramento Housing Alliance, CBEC, Inc., Eco Engineering, Kaiser Permanente, and the California Endowment.

The community where the MCRP is focused has had years of practice in advocating for themselves, often as a result of external forces driving development projects that would negatively impact their neighborhood, such as a planned underground natural gas storage facility that was successfully stopped by the community. Having these experiences led community leaders to take a more proactive approach in their neighborhood's development.

One neighborhood asset they identified is Morrison Creek, and cleanup efforts evolved into an ambitious and comprehensive project to transform a mile corridor of Morrison Creek between Power Inn Rd. and 65th St. into a green space with walking and biking paths that would increase safe transportation routes in the area.

Urban Creek Restoration Tour

TOUR STOPS:

Putah Creek

The founding meeting of Putah Creek Council took place on Feb. 3, 1988, with the idea of bringing together people who would protect the creek's remaining riparian habitat and the water level in Putah Creek. During the summers of 1989 and 1990 the lower creek experienced lengthy periods of drying that resulted in substantial fish deaths and a general depression of the overall fish population and consternation on the part of creekside landowners, conservationists, birders, nature lovers and environmentalists.

Arcade Creek

The site is heavily forested with native oak woodland and riparian vegetation. Arcade Creek, a highly degraded urban creek with steep eroding banks, flows through the parcel. Five community outreach events, including site tours, hands-on workshops with local elementary school children , and community meetings were conducted to elicit desires, needs, and concerns of local residents . The project received Statewide Park Development and Community Revitalization Program (Prop 84) funding.

Morrison Creek

Morrison Creek runs from Rancho Cordova through South Sacramento and eventually meets with Laguna Creek to flow into the Sacramento River. By the early 1970's the Army Corps of Engineers, as part of a massive infrastructure project to provide flood protection for the growing Sacramento greater Metropolitan area began channelizing Morrison Creek. Although the project section of Morrison Creek was an engineered channel by about 1978, older neighborhood residents recall still having creek access, and share memories of bike riding between Rancho Cordova and Elk Grove in the creek corridor. Today, this corridor is closed off to the community with posted "No Trespassing" signs. Nevertheless, some intrepid young people manage to use the creek banks as a short-cut from home, to school, to friends, to parks, and to other favorite neighborhood destinations.

Building an Integrated Regional Water Management Collaborative Serving the CABY Region

Manual Grant Award Entry

Sierra Fund

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Nevada City, CA 95959

info@sierrafund.org
O: 530-265-8454
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Alex Keeble-Toll

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FollowUp Form

Instructions

All grantees are required to submit a grant report that describes the work funded by the grant. Unless otherwise noted in your grant contract, your report should contain both a narrative description of activities performed and a financial statement showing how grant funds were spent. You should also provide copies of any deliverables produced during the grant period.

Rose Foundation's policy for the Central Valley Grants Program is that grant reports are due two weeks after the end of each quarter, and final report upon one month after project completion. For example, if your grant period is 24 months, you'll have three quarterly interim grant reports, one every six months, and a final grant report due 25 months from the start of the grant.

Your specific reporting dates and any special reporting requirements are identified in your Grant Contract.

If you have a multi-year grant, please note that Rose Foundation must receive your interim grant report before disbursing grant installments.

If you have any questions about reporting and/or installments, please contact your Program Officer, Laura Fernandez or call (510) 658-0702.

Basic Information

Project Name

Name of Project

Building an Integrated Regional Water Management Collaborative Serving the CABY Region

Grant Period*

Please indicate the start date of the grant period for which you are reporting on

10/17/2017

Amount Awarded

$200,000.00

Area(s) of Emphasis*

Environmental Health & Justice
Water Resources / Watershed Protection

Water Quality Monitoring Categories

Pollution Awareness

Environmental Health & Justice Categories

Toxics

Timeline, Deliverables, & Achievements

Please refer to the template instructions below to fill out the Timeline and Deliverables table. In the document, identify all key deliverables and achievements for the completed milestones of this report, and tie them into the project timeline.

To submit project timeline, deliverables, and achievements:*

1) Click Here to download the Timeline & Deliverables template.
2) Fill out the document with all relevant information. You may refer to the chart that you previously submitted and copy your timeline accordingly.
3) Re-submit the document back to this question.

Timeline and Deliverables_Rose Foundation.pdf

Narrative

Brief Summary*

Please summarize the overall impact of the project so far in terms of activities and accomplishments.

Questions to consider for the project summary: Who/what was helped by the project? What water quality benefits occurred?

In 2018, Rose Foundation increased TSF's capacity to support the engagement of under-represented populations, especially Spanish-speakers and Tribes, in activities that address their water quality and access needs and environmental health exposures. Funding has allowed TSF to retain a Tribal Consultant who actively participates in Integrated Regional Watershed Management (IRWM) group meetings, specifically the Cosumnes, American, Bear, Yuba (CABY) IRWM and in the DWR-mandated Disadvantaged Community Involvement Program (DACIP). This ensures that tribal priorities are incorporated into the CABY Plan Update (underway) and the DAC Needs Assessment. In addition, TSF's bilingual Environmental Justice Community Organizer has conducted outreach to Spanish speakers and low-income residents of Grass Valley to learn about water and environmental health concerns and to provide tools to confront these challenges. A community discussion of environmental health issues is planned for November.

Impact Narrative*

Please describe the impact of the work you conducted with the grant funds. In addition, please describe any unanticipated outcomes, challenges, or other changes that occurred during the project's duration. Please include any lessons learned and/or advice for other organizations facing similar circumstances.

During this reporting period TSF has built our capacity to identify and involve local DAC communities on issues related to water quality, water access and environmental health exposures. Details include:

OBJECTIVE 1 – Engage and educate Spanish-speaking and Tribal community members in the CABY region on issues of water quality and environmental health exposure pathways:

The Sierra Fund leveraged our participation in the Language Accessibility Committee for the Nevada County Voters Choice Act (VCA) pilot to immediately plug our bilingual Environmental Justice Community Organizer Greg Thrush into local outreach efforts. Greg identified apartment buildings within Grass Valley as a venue to capture a wide audience of low-income families and Spanish speakers. In April 2018, Greg began reaching out to apartment complex managers with the goal of connecting renters with outreach materials on two subjects: 1) Nevada County's VCA process, and 2) exposure to legacy mining toxics, including mercury in fish and heavy metals in dust.

Greg translated TSF outreach materials into Spanish, prioritizing those that address human exposure pathways to legacy mining toxics. Translated materials include two educational brochures: Fish, Mercury and You and Abandoned Mines, Dust and You, as well as TSF's Post It Day Fact Sheet describing our annual volunteer event to post state-issued fish consumption advisories. These language-relevant materials allowed Greg to build relationships with and conduct outreach to Spanish speakers in Grass Valley, increasing their capacity to deal with environmental health exposures and to engage in the County's new voting process.

TSF continues to advance public understanding of legacy mining exposures by utilizing new formats to spread the message. In 2017, TSF recorded and broadcasted a Spanish-language public service announcement to advise about which fish are safe to eat. In August 2018, TSF partnered with local film company, Nevada County Television (NCTV), to produce a short video outlining the three critical pieces of information contained in OEHHA fish consumption advisories: 1) species of fish, 2) demographic group and 3) frequency of consumption. The film strategically featured a pregnant mother and child to represent sensitive populations to the health impacts of mercury, a developmental neurotoxin. The film is currently being edited and the final product will consist of two separate videos, one with English captioning and one with Spanish captioning to serve the needs of our language-minority and hearing-impaired community members. The videos will be posted on TSF's website and YouTube channel and shared via our eNews and social media outlets.

TSF has also facilitated meaningful Tribal engagement in planning and decision-making processes related to water. TSF retained Shelly Covert of the Nisenan Tribe as a Tribal Consultant to CABY. In addition, Shelly was nominated along with TSF CEO Elizabeth "Izzy" Martin to serve on the Coordinating Committee for the DWR (Department of Water Resources) Disadvantaged Community Involvement Program (DACIP) for the Mountain Counties Funding Area (MCFA), which includes CABY. DACIP works to assess community capacity and identify water and wastewater needs. Izzy and Shelly attended the most recent DACIP meeting in Sacramento in July 2018 to learn about program activities and provide insight for how best to conduct needs assessment activities in the CABY region (slated for Fall 2019). Shelly has been instrumental in educating CABY stakeholders about the connections between water and culture and advising how to integrate cultural considerations into the update of the CABY IRWM Plan (underway).

Activities

- Translated TSF outreach materials into Spanish, including two educational brochures and the Post It Day Fact Sheet.

- Distributed TSF outreach materials and Nevada County VCA materials in English and Spanish to 10 Grass Valley apartment complexes.
- Produced short video to guide users through reading and interpreting OEHHA fish consumption advisories.
- Supported Tribal engagement in CABY, including plan update process and DAC needs assessment.

OBJECTIVE 2 – Improve local Spanish-speaking and Tribal DAC communities' understanding about mercury in fish through "Post-It Day 2018":

Historic mercury use during the Gold Rush has left the CABY region with a legacy of contamination. Mercury contamination of local fish poses a health risk. Since 2015 TSF has worked to protect public health by increasing the amount and visibility of information about mercury in fish by posting state-issued fish consumption advisories at water bodies where they apply. Last year, at our third annual Post It Day event, volunteers posted regional water bodies with advisories in Spanish for the first time, a crucial activity because through our angler survey research, TSF knows that Spanish speakers are catching and consuming local fish and may eat higher quantities of fish as part of a subsistence diet.

In 2018, OEHHA released an updated fish consumption advisory design, which TSF leveraged by ordering permanent sets of fish consumption advisories (in English and Spanish) to post at a number of lakes managed by long-term supporters of the project. Permanent advisories were installed at four of the eight reservoirs posted by volunteers during Post It Day 2018, extending the life of this important public health message and maximizing volunteer effort. An additional 64 sets of laminated advisories were provided to two agencies who manage multiple reservoirs in our area and have agreed to utilize their staff to post the advisories. To date, 60 volunteers have posted nearly 100 locations at over 20 water bodies in five watersheds in the Sierra. Nine target water bodies have been posted in two languages, Spanish and English.

TSF continues to present to stakeholder groups who may be interested in launching their own volunteer event to post fish consumption advisories. In July 2018, staff presented to an audience of nearly 20 community members at the Lake Oroville Visitor Center. Lake Oroville is located in the heavily mining-impacted Feather River watershed and last year TSF requested that OEHHA translate the site-specific fish consumption advisory into Spanish.

The next step in advancing the Post It Day project is to work toward consistent, statewide posting of fish consumption advisories at all CA reservoirs. We know that some reservoir owners and operators post fish consumption advisories and others do not. In order to learn the barriers to posting advisories, TSF developed a survey that we will distribute to reservoir managers at the CA Lake Management Society (CALMS) Annual Conference in North Lake Tahoe on October 11, 2018. Once we better understand the perspective of reservoir managers, we can work to address specific issues that may be related to awareness, relevance or resources. The CA Department of Public Health has supported this effort by reviewing the draft survey and by donating small-value gifts to distribute as an incentive for reservoir managers to take the survey.

Activities

- Executed fourth annual Post It Day event, resulting in a total of more than 150 fish consumption advisories directly posted by volunteers or distributed to reservoir managers for posting.
- Installed four sets (English and Spanish) of permanent advisories at water bodies managed by long-term supporters of Post It Day.
- Prepared survey to distribute to CA reservoir managers at upcoming conference in order to better understand barriers to posting fish consumption advisories.

OBJECTIVE 3 – Plan and hold informational meetings for low-income, DAC, Tribal and Spanish-speaking community members and those who serve them:

In order to learn about environmental health challenges, including water issues, facing our DAC communities, TSF launched a needs assessment that piloted on October 2, 2018 involving tenants of a Grass Valley apartment complex. Our Environmental Justice Community Organizer forged a unique partnership with apartment managers and the Grass Valley Police Department (GVPD) to co-host the evening meeting. The first hour was devoted to querying participants about their perception of issues related to water, air, fish and dust. During the second hour, GVPD led a discussion about enhancing neighborhood safety through neighborhood watch programs. TSF provided the 25 participants a pizza dinner and GVPD provided dessert. Offering food during evening events is essential because it removes the burden of attendees needing to choose between preparing dinner for their family and engaging in a community event. TSF plans to conduct additional needs assessments at apartment complexes in Grass Valley in the coming months.

In addition, TSF is organizing a public workshop to explore environmental health challenges faced by Gold Country communities and strategies to confront them. The Environmental Health Summit is slated for November and will be held at a church in Grass Valley, which is a central and welcoming gathering space for the community. TSF will offer food, beverage and free child-care during the event. The program consists of TSF staff delivering lightning talks on four issues: mercury in fish, heavy metals in dust, water quality, and air quality. TSF will invite locals with expertise in each issue area to provide a reaction and response to our framing of the issues and be available to provide resources and answer audience questions. A paper survey will be distributed and information gathered will be used to inform the CABY DAC needs assessment process.

Activities

- Conducted first Community Needs Assessment at a Grass Valley apartment complex and piloted a survey to query participants about perceptions regarding water quality and other environmental health issues.
- Planned for TSF's Environmental Health Summit scheduled for November 13, 2018.

Did the grant fund water quality monitoring?*

If the grant did fund water quality monitoring, please include and specify the type of Quality Assurance / Quality Control (QA/QC) procedures that were followed in the question below.

No

Financials

Financials*

Please refer to the line item budget you submitted in your Application Attachments and prepare a corresponding financial statement that shows how the grant funds were actually expended. If there were any variances in any items over 10%, include a brief explanation for the variance. You may paste your financial statement into this section, or include it as an attachment.

Financial Progress Report_Rose Foundation.pdf

There were no budget variances in how grant funds were expended above 10 percent.

Attachments

Please attach or provide a link to any significant deliverables produced with grant funds, such as reports, videos, etc. You may also include other materials such as newsletters, media clippings, or photos that will help us better understand the work you performed under the grant. Please understand that the system limits file sizes - therefore, a few key examples are better than numerous photos or clippings.

Significant Deliverables*

If you produced a report, video, or other significant deliverable with this grant, you may attach it here or paste a URL box below. Use the text box to briefly describe your significant deliverables.

Attachments Q-AD Combined.pdf

The significant deliverables attached here are outlined in the Timeline & Deliverables document above. As noted, Attachments A – P were submitted with our 25% Progress Report (April 15, 2018) and are not included with this 50% Progress Report. The attachments can be furnished upon request at any time. Attachments Q – AD are deliverables for the 50% milestone of this project and are included with this Progress Report.

Newsletters, Media, Photos or Other Attachments

You may attach additional documents or publications here or paste a URL into the text box below. Use the text box to briefly describe your significant deliverables.

Newsletters, Media, Photos, or other Attachments

You may attach additional documents or publications here or paste a URL into the text box below. Use the text box to briefly describe your significant deliverables.

File Attachment Summary

Applicant File Uploads

- Timeline and Deliverables_Rose Foundation.pdf
- Financial Progress Report_Rose Foundation.pdf
- Attachments Q-AD Combined.pdf

Integrating Gold Country DAC Participation in CABY Water Quality Activities II: Project Planning, Bilingual and Tribal Participation, and Community Outreach 2018-19

Timeline & Deliverables		
Milestone	**Tasks**	**Deliverables**
25% complete—6-month mark. (April 15, 2018) Target project period: 24 months	1. Recruit, hire, and train bilingual (Spanish-English) Community Organizer. 2. Identify and retain Tribal Consultant. 3. Identify CABY region organizations serving Spanish speakers. 4. Support bilingual Community Organizer and Tribal Consultant in attending regular CABY meetings.	1. Written job description and resume of qualified, successful applicant (Community Organizer). *ATTACHMENT A: Job Posting Environmental Justice Community Organizer* *ATTACHMENT B: Successful EJ Applicant Cover Letter* *ATTACHMENT C: Successful EJ Applicant Resume* 2. List of key CABY region organizations serving Spanish speakers. *ATTACHMENT D: Organizations Serving Spanish Speakers* 3. List of Tribal contacts. *In Progress* 4. Regular CABY meetings agendas and notes. *ATTACHMENT E: CABY PC Meeting Agenda*
50% complete—12-month mark. (Oct. 15, 2018) Target project period: 24 months	1. Translate existing outreach materials into Spanish. 2. Graphic Consultant to update website to have Spanish language materials. 3. Contact and meet with leaders of organizations serving Spanish speakers and with Tribes. 4. Contact and meet with leaders of organizations serving Spanish speakers and with Tribes regarding participation in Post-It Day 2018. 5. Identify and reach out to local Spanish-language radio stations. 6. Support bilingual Community Organizer in attending regional meetings focused on addressing fish consumption in minority communities. 7. Support bilingual Community Organizer and	1. Print and web-based Spanish language outreach materials. *ATTACHMENT F: Voter's Choice Act Flyer in Spanish* *ATTACHMENT G: Voters Choice Act Bookmark in Spanish* *ATTACHMENT H: Post It Day Fact Sheet* 2. Updated list of key CABY region organizations serving Spanish speakers. *See Attachment D* 3. Updated Tribal contact list. *In Progress* 4. Agendas and notes from at least four meetings with organizations or leadership serving Spanish and DAC community interests. *Planned for Near-Term* 5. Agendas and notes from at least four meetings with Tribal members. *In Progress* 6. Completed scoping questionnaires from at least four meetings with organizations or leadership serving Spanish and DAC community interests. *Planned for Near-Term*

	Tribal Consultant in attending regular CABY meetings.	7. Completed scoping questionnaires from at least four meetings with Tribal members. *Planned for Near-Term* 8. List of posting locations for English and Spanish posting in 2018. *ATTACHMENT I: Post It Day 2018 Signage Plan* 9. Spanish-language public service announcement about mercury in fish for locally broadcasted Spanish radio stations. *ATTACHMENT J: Radio Stations for PSA* *ATTACHMENT K: Action Plan PSA Campaign* 10. Agendas and notes from regional meetings. 11. *ATTACHMENT L: Granite Bay Flycasters Conservation Meeting Agenda* 12. Post-It Day 2017 materials including publicity materials and fish consumption advisories in Spanish and English. *ATTACHMENT M: Updated Statewide Advisory* *ATTACHMENT N: Updated Statewide Advisory in Spanish* 13. Regular CABY meetings agendas and notes. *ATTACHMENT O: CABY PC Meeting Agenda* 14. Grant narrative and financial progress report. *ATTACHMENT P: Financial Progress Report (25%)*
Ongoing Tasks	1. Translate existing outreach materials into Spanish. 2. Contact and meet with DAC community members. 3. Hold annual Post It Day event and work toward consistent posting of advisories at CA lakes and reservoirs. 4. Support bilingual Community Organizer and Tribal Consultant in attending regular CABY meetings and reporting	1. Spanish language outreach materials. *ATTACHMENT Q: Las Minas Abandonadas Brochure* *ATTACHMENT R: Pescado el Mercurio y Tu Brochure* *ATTACHMENT S: El Día de Repartir Advisos Fact Sheet* *ATTACHMENT T: Spanish Captions for Eating Fish Safely Video* 2. DAC meeting materials. *ATTACHMENT U: Grass Valley Apartment Outreach* *ATTACHMENT V: Community Needs Assessment Flyer* *ATTACHMENT W: Community Needs Assessment Survey*

	back to Spanish-speaking and Tribal stakeholders. 5. Maintain lists of key leaders or organizations serving Spanish-speaking and Tribal community members. 6. Recruit CABY members that serve Spanish-speaking and Tribal community members 7. Administer grant.	*ATTACHMENT X: Environmental Health Summit Agenda* 3. Post It Day materials and presentations. *ATTACHMENT Y: Post It Day 2018 Agenda* *ATTACHMENT Z: Post It Day 2018 News Article* *ATTACHMENT AA: Lake Oroville Visitor Center* *Presentation Flyer* *ATTACHMENT AB Reservoir Manager Perspective on Posting Fish Consumption Advisories Survey* 4. CABY meeting agendas. *ATTACHMENT AC: DAC Coordinating Committee Meeting Agenda* *ATTACHMENT AD: CABY RWMG & Stakeholder Group Meeting Agenda* 5. Grant financial progress report: *ATTACHMENT AE:* Financial Progress Report (50%)

PROJECT DELIVERABLES

Attachments A – P were submitted with our 25% Progress Report (April 15, 2018) and are not included with this 50% Progress Report. The attachments can be furnished upon request at any time. Attachments Q-AD are deliverables for the 50% milestone of this project and are included with this Progress Report.

ATTACHMENT A: Job Posting Environmental Justice Community Organizer
ATTACHMENT B: Successful EJ Applicant Cover Letter
ATTACHMENT C: Successful EJ Applicant Resume
ATTACHMENT D: Organizations Serving Spanish Speakers
ATTACHMENT E: CABY PC Meeting Agenda
ATTACHMENT F: Voter's Choice Act Flyer in Spanish
ATTACHMENT G: Voters Choice Act Bookmark in Spanish
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ATTACHMENT N: Updated Statewide Advisory in Spanish
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ATTACHMENT U: Grass Valley Apartment Outreach
ATTACHMENT V: Community Needs Assessment Flyer
ATTACHMENT W: Community Needs Assessment Survey
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ATTACHMENT Y: Post It Day 2018 Agenda
ATTACHMENT Z: Post It Day 2018 News Article
ATTACHMENT AA: Lake Oroville Visitor Center Presentation Flyer
ATTACHMENT AB: Reservoir Manager Perspective on Posting Fish Consumption Advisories Survey
ATTACHMENT AC: DAC Coordinating Committee Meeting Agenda
ATTACHMENT AD: CABY RWMG & Stakeholder Group Meeting Agenda

Two-Year Project Budget

Integrating Gold Country DAC Participation in CABY Water Quality Activities II:
Project Planning, Bilingual and Tribal Participation, and Community Outreach 2017-18
April 2018 - October 2018

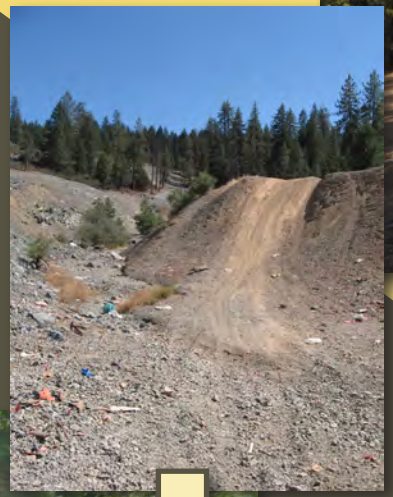
Personnel Expenses	**Totals**	**1st quarter**	**2nd quarter**	**Remaining**
Personnel Subtotal	$ 118,982	$ 27,687	$ 48,400	$ 42,895
Personnel benefits @ 22% (Covers health and retirement benefits)	$ 26,176	$ 4,930	$ 10,650	$ 10,596
Total Personnel	**$ 145,158**	**$ 32,617**	**$ 59,050**	**$ 53,491**
Program Expenses				
Educational Materials				
Design/print outreach and CABY materials in Spanish	$ 700	$ -	$ 35	$ 665
Spanish language translation/print of fish consumption	$ 500	$ 108	$ 392	$ -
Community event materials, event rental space, refreshments, and childcare	$ 1,200	$ -		$ 1,200
Travel				
Organizer travel to meetings with Spanish-speaking community (mileage, perdiem)	$ 850	$ -	$ 280	$ 570
Tribal Consultant to travel to meetings with Tribal community (mileage, perdiem)	$ 850	$ -	$ 300	$ 550
Travel to post fish advisory in Spanish	$ 550	$ -	$ 120	$ 430
Staff travel to community outreach events	$ 500	$ 80	$ 240	$ 180
Staff travel to CABY meetings	$ 800	$ 182	$ 60	$ 558
Other				
Fees to table at community outreach events	$ 300	$ 100	$ 35	$ 165
Tribal Consultant ($800/mo., 22 mo.)	$ 17,600	$ -	$ 2,000	$ 15,600
Graphic Art Consultant to update web-based outreach materials in Spanish langauge (60 hrs. @$15/hr.)	$ 900	$ -		$ 900
Contribution to Sierra Region for DAC Coordination	$ 1,000	$ -	$ 495	$ 505
Total Program Expenses	**$ 25,750**	**$ 470**	**$ 3,957**	**$ 21,323**
Total Personnel + Program Expenses	**$ 170,908**	**$ 33,087**	**$ 63,007**	**$ 74,814**
Program Administration Expenses	**$ 29,054**	**$ 3,151**	**$ 3,595**	**$ 22,308**
Rent, Utilities, Insurance, OH @17% of program & personnel expenses				
Total Project Budget	**$ 199,962**	**$ 36,238**	**$ 66,602**	**$ 97,122**

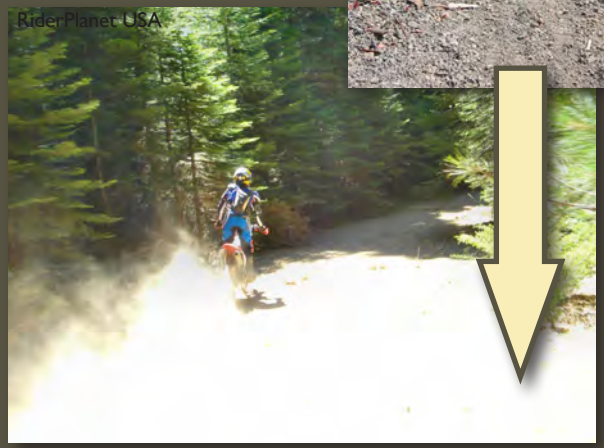
This budget matches a secured grant from DWR for CABY Projects and a secured grant from the Rose Foundation for DAC Participation in CABY, Tribal Consultation, and Post-It Day 2017

La Sierra Nevada es hogar de excelentes senderos, pero también de muchos metales naturales, como el oro, **y otros como el plomo y el arsénico, que son perjudiciales para la salud.**

Muchos de los caminos y senderos que utilizamos en tierras públicas comenzaron como acceso a las minas.

En las ultimas 150 años, se extraía roca, **se trituraba y se dejaba alrededor de las minas.** Esta materia se llama desechos de mina, roca de desecho, el relave, o la cola.





Hoy en día, están casi 47,000 minas en California.

¿Qué puedo hacer yo?

- **Conoce los senderos** Mantente alejado de minas abandonadas y pilas de roca
- Evita montar en las condiciones polvorientas
- Evita andar en el polvo de otras personas
- Evita montar en materiales sueltos proximos de minas abandonadas porque ellos pueden contener más químicos tóxicos y crear más polvo
- ¡Alza la voz! - Plantea el asunto de minas abandonadas a tus familiares, amigos, clubs, y funcionarios electos

Es mucho más probable que uno esté expuesto al arsénico, el plomo o el amianto de rocas trituradas alrededor de minas abandonadas durante condiciones polvorientas.

¡Quédate Afuera, Quédate Vivo!

Además de los riesgos de exposición tóxica, **puede morir o resultar gravemente herido al ingresar a una mina abandonada.** Las características físicas peligrosas incluyen agujeros ocultos, gases tóxicos y túneles inestables. Para más información visita www.msha.gov

Si montas en la Sierra Nevada, necesitas saber sobre minas abandonadas.

Arsénico, Plomo y Asbesto/Amianto

Se pueden encontrar altos niveles de arsénico, plomo y amianto en sitios antiguos de las minas. Se sabe que estos materiales causan problemas serios de salud, como cáncer, enfermedades cardíacas y problemas de desarrollo infantil.

La principal forma en que se puede estar expuesto a estos químicos es por respirar polvo o ensuciar la boca o la piel.

Infórmate del suelo, lodo y polvo.

- El polvo que se forma al montar puede afectar a las personas que andan detrás de ti o acampar cerca.
- El lodo o el polvo en tu ropa se puede rastrear en tu automóvil o tu casa, donde otras personas pueden estar expuestas.
- Incluso si no van contigo, los niños pueden estar expuestos al suelo contaminado en tu ropa o en tu vehículo. Son extremadamente sensibles a los tóxicos, especialmente al plomo. A los niños les encanta meterse cosas en la boca y puede ingerir tóxicos por objetos polvorientos.

No arriesgues tu salud.

Todavía se necesitan más estudios para saber cómo estos químicos puedan afectar a las personas que se recrean acerca de las minas abandonadas. Los hechos que tenemos ahora demuestran que hay buenas razones para tomar precauciones para protegerte y tu familia.

THE SIERRA FUND

Impactos de la Fiebre del Oro

La huella de la Fiebre del Oro de California se extiende desde la sierra hasta el mar e incluye la distribución generalizada de tóxicos como el mercurio, arsénico y plomo.

Desde 2006, The Sierra Fund ha trabajado para abordar los impactos heredados de la Fiebre del Oro con el fin de mejorar la resiliencia en nuestra región.

Agradecemos a RiderPlanet USA (www.riderplanet.com), Chris Collard de Overland Journal, y Departamento de Conservación de California (www.conservation.ca.gov) por el uso de fotos.

Sobre The Sierra Fund

La misión de The Sierra Fund es restaurar la resiliencia de los ecosistemas y las comunidades en la Sierra Nevada.

www.sierrafund.org

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Las Minas Abandonadas, el Polvo... y Tú

Lo que debes saber cuando te recreas en la Sierra Nevada

Abordar los Impactos de la Fiebre del Oro en la Sierra Nevada

¿Que Puedo Hacer Yo?

1 Busca pautas para el consumo de pescado.

Visita el web : www.oehha.ca.gov/fish o mira al reverso de tu folleto de regulaciones de pesca y busca los lugares donde vas a pescar para obtener información sobre qué cantidad de pescado de cada tipo se puede comer con seguridad en aquel lugar.

¿No hay información? No es decir que es seguro.
Si el lugar o tipo de pez que te interesa no está en la lista, NO significa que el pescado es saludable para comer. Simplemente significa que no hay información suficiente para determinar si es saludable o no.

Si el lago o embalse donde pescas no está específicamente mencionado, se recomienda seguir las pautas emitidas por el estado a la derecha: →

2 Infórmate de los peces.

La información que se provea en este folleto está diseñada para ayudarte hacer buenas decisiones sobre los peces que atrapas, basado en cuales contienen más mercurio que otros.

Lo que sí sabemos:

- Los peces más pequeños y más jóvenes contienen menos mercurio que los peces mayores y más grandes.
- Peces depredadores (los que comen otros peces, como el róbalo o la trucha marrón) contienen un nivel de mercurio más alto.
- Los peces que se han sido plantados, en general, contienen menos cantidad de mercurio.

3 ¡Alza la voz!

Merecemos comer pescado que atrapamos, y tener buena información sobre cómo protegernos y nuestras familias. Dile a tus funcionarios electos que es hora de limpiar el mercurio de lagos y ríos en la Sierra, y brindan más información acerca de qué pescados se puede comer con seguridad.

Guía para Consumir Pescado de Lagos y Embalses de California

Que No Cuentan Con Recomendaciones Sitio-Específico

Mujeres (18-45 Años) / Niños (1-17 Años)	Mujeres (46+ Años) / Hombres (18+ Años)
2 PORCIONES EN TOTAL A LA SEMANA	6 PORCIONES EN TOTAL A LA SEMANA
1 PORCION EN TOTAL A LA SEMANA	2 PORCIONES EN TOTAL A LA SEMANA
0 NO LA CONSUMA	1 PORCION EN TOTAL A LA SEMANA

Coma el Pescado Bueno
Comer pescado que es bajo en productos químicos puede proporcionar beneficios para la salud de los niños y adultos.

Evite el Pescado Malo
Comer pescado con altos niveles de productos químicos como mercurio o PCBs puede causar problemas de salud en niños y adultos.

Elija el Pescado Mejor
Los productos químicos pueden ser más perjudiciales para los bebés por nacer y niños.

Trucha Arcoiris (Rainbow Trout)
alto en omega-3s

Bagre (Catfish)

Bagre Cabeza de Toro (Bullhead)

Especies de Pez Luna (Sunfish Species)

Trucha Marrón 16 pulgadas o menos (Brown Trout 16 inches or less)
alto en omega-3s

Especies de Róbalo Negro (Black Bass Species)

Carpa (Carp)

Trucha Marrón más de 16 pulgadas (Brown Trout over 16 inches)

Una Porción

Una porción de pescado es aproximadamente del tamaño y grosor de su mano. Dé a los niños porciones más pequeñas.

Para Adultos | Para Niños

Preparación de Pescado

Algunos productos químicos son más altos en la piel, la grasa y las tripas.

Coma sólo el filete sin piel | Coma sólo la carne

Más Información

Muchos lagos y embalses en la Sierra Nevada tienen asesoramiento sitio-específico para consumo el pescado. Para obtener información sitio-específica sobre los localidades donde pescas, visite: www.oehha.ca.gov/fish.

web www.oehha.ca.gov/fish
email fish@oehha.ca.gov
phone (916) 324-7572

Para obtener más información, expresar tus preocupaciones o participar, visita el sitio web: www.sierrafund.org

Este folleto es producido por The Sierra Fund, y distribuido con fondos del California Department of Water Resources.

Si comes pescado, debes saber sobre el mercurio.

Mercurio: Tóxico en el Cuerpo

- El mercurio puede dañar el cerebro, el sistema nervioso central, el sistema inmune, los riñones y el corazón.
- Para mujeres embarazadas, el mercurio puede causar discapacidades permanentes de aprendizaje en el feto en desarrollo, incluso a niveles muy bajos.
- Los niños son particularmente vulnerables.
- Si cree que tú, tu bebe o tu hijo puede estar en riesgo, habla con un médico.
- ¿Estas embarazada o planeas estar embarazada? El mercurio se queda en el cuerpo humano por aproximadamente un año. Puedes comenzar tomar decisiones saludables ahora.

Comer Pescado de Forma Segura

- Evita los grandes pescados depredadores ya sea de capturados en la naturaleza o comprados en la tienda.
- Coma pescados más pequeños y más jóvenes. Ellos generalmente contienen menos mercurio.
- Mercurio está guardado en el cuerpo entero del pescado. No se puede extirpar la cabeza, las entrañas, la grasa y la piel para deshacerte de él. Sin embargo, estas partes pueden almacenar otros toxicos, como los BPC, así que recortarlas es una buena idea.
- Verifique los pescados que planeas comer en los sitios web de la EPA y OEHHA. También puedes visitar un sitio web que tiene una calculadora de mercurio como el de www.gotmercury.org.

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Impactos de la Fiebre del Oro

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Desde 2006, The Sierra Fund ha trabajado para abordar los impactos heredados de la Fiebre del Oro con el fin de mejorar la resiliencia en nuestra región.

Agradecemos a California Indian Environmental Alliance (CIEA) y OEHHA por el uso de materias incluido en este folleto.

www.ciea-health.org
www.oehha.ca.gov

Sobre The Sierra Fund

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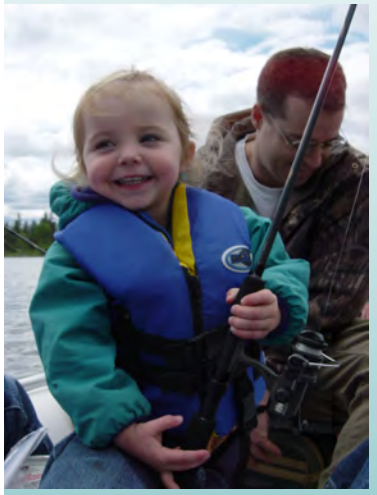
Pescado, el Mercurio y Tú



Cómo comer pescado de forma segura en la Sierra Nevada

Abordar los Impactos de la Fiebre del Oro en la Sierra Nevada

El Día de Repartir Avisos

Un proyecto para repartir avisos de consumo de pescado emitidos por el estado en los embalses de la Sierra

El mercurio fue llevado a la región Sierra Nevada para procesar el oro durante la época del Fiebre del Oro en California. La amenaza para la salud más significante derivado de la extracción de recursos de esa época es la exposición al mercurio por consumo del pescado contaminado.

Información general: Desde 2015, The Sierra Fund (TSF) ha organizado un evento anual para repartir avisos de consumo del pescado, emitidos por el Evaluación de Peligros para la Salud Ambiental de la Oficina de California (OEHHA), con información a la corriente relacionada a cuerpos de agua regionales. El asesoramiento sobre el consumo de pescado se comunica en términos de especies, grupos demográficos y la cantidad máxima recomendada de raciones que pueden consumirse de forma segura en una semana. ***La meta de este proyecto es incrementar el acceso a información como guía para hacer decisiones sobre el consumo del pescado, especialmente para personas con un riesgo de exposición más alto.***

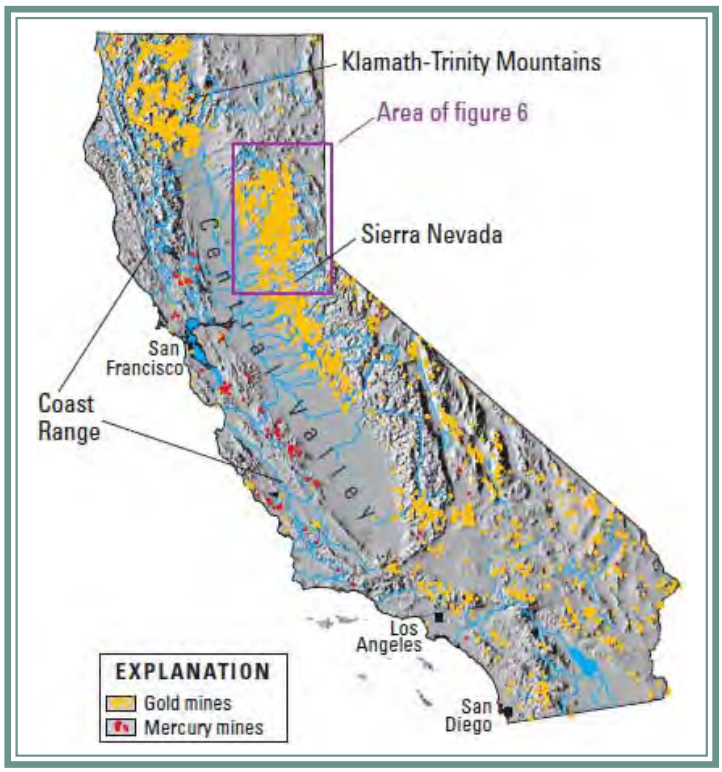
¿Quién está de riesgo de exposición? Mercurio es una neurotoxina del desarrollo. Poblaciones vulnerables incluyen mujeres de edad fértil y los niños. Poblaciones adicionales que están de alto riesgo son grupos que consumen pescado a una tasa mayor que la población general, como para dietas culturales o de subsistencia.

¿Porque la necesidad? Mientras OEHHA publica avisos de consumo del pescado, ninguna agencia está mandado publicar esta información en lugares donde la gente pesca. Los avisos de consumo de pescado se publican de manera irregular en las cuencas hidrográficas de California y la ausencia de uno pueda crear una percepción falsa que los peces en un lugar que no tiene aviso son saludables para comer.

Próximos pasos: Informado por 3 años de organizar El Día de Repartir Avisos, TSF publicó un protocolo que describe los pasos y las mejores prácticas para planificar y ejecutar eventos de publicación de asesoramiento regional de consumo de pescado. TSF continuará presentar este protocolo a agencias que trabajan en las cuencas hidrográficas impactadas por el mercurio para alentar la publicación robusta de avisos de consumo de pescado en todo el estado. OEHHA con frecuencia emite nuevos avisos específicos del sitio y TSF aprovechará el impulso en torno a estos lanzamientos mediante la identificación y el contacto con las entidades regionales que puedan estar en una posición única para dirigir el evento de publicación.

Por los números:

En **3 años**, **60 voluntarios** han repartido avisos en casi **100 ubicaciones** en más de **20 cuerpos de agua** en **5 cuencas hidrográficas** en la Sierra. Se han publicado **9 cuerpos de agua objetivo** en **2 idiomas**, español e inglés.



El mercurio fue extraído del área costera de California y transportado a la Sierra Nevada para mejorar la recuperación de oro, ya que el mercurio es una amalgama del oro.

Fuente del mapa: USGS Fact Sheet 2005_3014_v1.1

¡GRACIAS FINANCIADORES DEL PROYECTO!

Los financiadores de proyectos pasados y presentes incluyen: Clarence E. Heller Charitable Foundation, California Department of Water Resources, California Environmental Protection Agency, California Wellness Foundation and Rose Foundation for Communities and the Environment.

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VIDEO: Como Comer de Forma Segura Pescado Atrapado Localmente

SPANISH CAPTIONS

TITLE SLIDE

Comer Pescado con Seguridad
de las masas de agua de California
Producido por The Sierra Fund

INTRO VOICE OVER

"Los peces en muchas de las masas de agua en California contienen mercurio a niveles que pueden ser perjudiciales para la salud humana si se consumen."

SCRIPT

HIJO: Mamá, ¿qué es ese letrero?

MADRE: Pues, parece que habla de pescado en los lagos y los embalses de California. Parece que algunos pescados contienen alto nivel de mercurio, y otros contienen niveles más bajo. Oh, fíjate. Mujeres entre 18-45 años, como yo, y chamacos [1-17 años], como tú, debemos comer menos pescado que los hombres y las mujeres de mayor edad. Entonces, papá puede comer más pescado que nosotros.

HIJO: ¿Qué tipo de pescado podemos comer?

MADRE: Pues, parece que podemos comer más trucha arco iris, lo que debe tener más bajo nivel de mercurio. Mira, pero tú y yo, nosotros no podemos comer el róbalo, la carpa, o la trucha marrón [más largo de 16 pulgadas].

HIJO: Papá nos lleva pescado.

MADRE: Si, lo hace. Debemos sacar una foto de este letrero para él. Y mira, hay un sitio web donde podemos buscar más información. Bueno, ahora a ver si podemos encontrar algunos pescados.

CLOSING VOICE OVER

"La cantidad de pescado que puedes consumir con seguridad depende de donde pescas, que tipo de pescado comes, y quien eres."

SLIDE TEXT TO EMPHASIZE CLOSING VOICE OVER

Verifica Tres para Estar Seguro
Busca esta información en cada aviso:

- La especie del pez
- Tu edad y sexo
- La cantidad que puedes comer

CLOSING SLIDE

Para obtener más información, visita:
www.sierrafund.org
(530) 265-8454
info@sierrafund.org

GRASS VALLEY APARTMENT OUTREACH

ORGANIZATION/PERSON(s)	ADDRESS	PHONE	E-MAIL	VCA Materials	Fish and Dust Brochures	Community Meeting
Housing/Domestic	Address	Phone	Email			
Orchard Hill Apartments	932 W Main St #66, Grass Valley, CA 95945i	(530) 272-1809				
Gold Country Village	465 Bennett St, Grass Valley, CA 95945	(530) 271-2222	goldcountryvillage@fpimgt.com	yes	yes	said no to idea
Grass Valley Terrace Apartments	275 Dorsey Dr, Grass Valley, CA 95945	(530) 477-0370				
Nevada Woods Apartments / Nevada Meadows (seniors)	360 Sutton Way	530-273-0117	brandie.luthy@ppmil.com	yes	yes	in discussion with Brandie & Tina
Valley Commons Apartments / Valley Commons East	1444 Segsworth Way, Grass Valley, CA 95945	(530) 272-2528				in discussion with Brandie & Tina
Berryhill Apartments	126 W Berryhill Dr, Grass Valley, CA 95945	(530) 272-5486		no	yes	
Eastridge Apartments	85 Rockwood Dr, Grass Valley, CA 95945	(530) 272-1888		yes		
Valley View ApartmentsCourtyards at Penn Valley	115 E Berryhill Dr, Grass Valley, CA 95945	(530) 272-4175	valleyview@awic.com			
Olympia Garden Apartments	304 Sutton Way, Grass Valley, CA 95945	(530) 273-5681 916-296-6746 (Alan owner)				
Kate Hayes Apartments	619 Kate Hayes St, Grass Valley, CA 95945	(530) 274-8702		yes	yes	
Springhill Gardens I & II	244 Dorsey Dr, Grass Valley, CA 95945	(530) 272-4696		yes	yes	Joan sent my proposal to Corporate
Mill Street Apartments	335 Mill St, Grass Valley, CA 95945	(530) 273-9041		yes	yes	discussed with Sandra. Got okay but no community space to hold
Crown Point Apartments	408 Colfax Ave, Grass Valley, CA 95945	(530) 615-1190		yes	yes	discussed with Maria. Got okay but no community space to hold
Nevada City Senior Apartments	841 Old Tunnel Rd # 61, Grass Valley, CA 95945	(530) 477-5356				
Hilltop Commons Senior Living	131 Eureka St, Grass Valley, CA 95945	(530) 264-8934				
Glenbrook Apartments	265 Sutton Way	530-273-5540	glenbrook@cresapts.com	yes	yes	10/2/2108
Oak Ridge Apartments	228 Sutton Way	530-273-0996	oakridge@cresapts.com	yes	yes	10/2/2108
Cedar Park Apartments	210 Sutton Way	530-273-5010	cedarpark@cresapts.com	yes	yes	10/2/2108

What does your neighborhood need?

Eat pizza and share your ideas.

Tuesday, September 18, 2018 at 6:30pm

Location Details Here

The Sierra Fund, a local non-profit in Nevada County, invites you to discuss neighborhood needs related to environmental and community health. We want to hear from everyone so please stop by.

For more information, call Greg Thrush at The Sierra Fund, 530-265-8454 ext 212 or visit www.sierrafund.org/community

¿Qué necesita tu vecindario?

Comparte una pizza y tus ideas.

martes el 18 de septiembre, 2018 a las 6:30pm

Location Details Here

The Sierra Fund, una organización sin fines de lucro en el Condado de Nevada, te invita a una charla para analizar las necesidades del vecindario relacionadas con la salud ambiental y comunitaria. Nos interesan las perspectivas de todos, así por favor venga.

Para más información, llame a Greg Thrush en The Sierra Fund, 530-265-8454 ext 212 www.sierrafund.org/comunidad

Environmental Screening and Needs Identification

The Sierra Fund is trying to better understand the needs and strengths of residents in Western Nevada County in order to help guide our work. I am visiting as many neighborhoods as I can to ask people what they think and am inviting you to add your perspectives tonight. TSF values your attendance and participation.

1. How long have you lived in Nevada County? <5 years <10 10 or more How many were born here?

2. How long have you lived in your current residence? <1 <2 <3 4 or more

3. Do you have any issues or concerns related to water quality or access? This could be anything from antiquated plumbing or flooding to well water quality or drought.
   For all water users
   Do you drink water from the tap? Y N
   Do you filter your water? Y N
   Do you drink bottled water instead of tap? Y N Drink Both
   For well water users
   Have you had your water tested in the past 3 years? Y N
   For all users
   Would you be interested in testing your water? Y N

4. Do you have any issues or concerns related to air quality? This could be anything from asthma to ozone to fire or heat events.
   Does anyone in your family have a respiratory-related medical condition? Y N
   Do you get information about air quality? Y N
   If yes, how do you get it? _____
   Do you have the ability to recirculate or filter indoor air when outside air quality is poor? Y N
   Can you maintain your residence at a comfortable temperature during hot weather? Y N
   Have you registered for Code Red, the County's fire and emergency alerts system? Y N
   If you have children at home
   Do the school(s) that your child(ren) attend have a response plan for poor air quality days? Y N DK
   During poor air quality days, do your children have indoor recreation options? Y N DK

5. Do you have any issues or concerns related to dusty exposure and/or heavy metals? This could be about rural roads, work conditions, recreation choices, living close to mine contaminants, or any other dusty conditions.
   Do you use local trails for hiking, biking, Off-Highway-Vehicle or equestrian use? Y N
   Are you aware of any historical mine sites in your area? Y N
   Would you be able to identify abandoned mine sites in areas where you are not familiar? Y N
   Do you work in conditions that involve dusty exposure like landscaping, agriculture, forestry, construction? Y N

6. Do you have any issues or concerns related to mercury in our local lakes, rivers and reservoirs?
   Does anyone in your family eat fish from local waters? Y N DK
   If yes, How often does your family eat locally caught fish? _____ What kinds? _____

7. Are there other important things to think about that we haven't talked about? What other aspects of living in this area do you think about or have concerns about? It could be about the economy, housing, health, safety, anything.

8. TSF will be holding a Health Summit this fall with speakers to talk about environmental health issues in our area. Would you be interested to know more about this event? Y N contact info _____

Environmental Health Summit

Unique Challenges and Strategies to Confront Issues
Faced by Gold Country Communities

Hosted by The Sierra Fund

FREE Public Workshop
Tuesday, November 13, 2018
6:00 pm – 8:00 pm
Peace Lutheran Church
828 West Main Street, Grass Valley, CA 95945

AGENDA

6:00 Welcome and Sign In – Light Refreshments Available

6:05 Introduction & Vision
- Elizabeth "Izzy" Martin, *The Sierra Fund*

6:10 Lightning Talks – Environmental Health Challenges in the Sierra Nevada
- Alex Keeble-Toll, *The Sierra Fund* – Mercury in Fish
- Carrie Monohan, PhD, *The Sierra Fund* – Heavy Metals in Dust
- Greg Thrush, *The Sierra Fund* – Water Quality and Water Access
- Elizabeth "Izzy" Martin, *The Sierra Fund* – Forest Health, Wildfire and Air Quality

6:30 Panel Reactions & Response
- Amy Irani*, Director, *Nevada County Environmental Health Department*
- Tim Kiser*, City Manager, *City of Grass Valley*
- Susan Rogers*, Vice Chair, *Coalition of Firewise Communities*
- Shelly Covert*, Spokesperson, *Nisenan Tribe of the Nevada City Rancheria*
- Nohemi Mead*, Promotora, *Family Resource Center*

7:00 Discussion & Questions
- Moderated by Elizabeth "Izzy" Martin, *The Sierra Fund*

7:45 Environmental Health Survey
- Please Complete and Return Before You Depart

8:00 Meeting Adjourns

* Invited panelists

POST IT DAY 2018

Agenda

Sunday, May 6, 2018
9:00 am – 2:00 pm

The Sierra Fund
103 Providence Mine Road, Suite 101
Nevada City, CA 95945

Time	Item	Lead
9:00 am – 9:15 am	**Welcome** Coffee and Pastries Volunteer Waivers	All
9:15 am – 9:25 am	**Project Background** Post It Day Since 2015	Kelsey Westfall, TSF
9:25 am – 9:40 am	**Gold Rush History** Mining and Mercury in Sierra Watersheds	Alex Keeble-Toll, TSF
9:40 am – 9:50 am	**Recognize Project Supporters** Amy Irani, County of Nevada Monica Reyes, Nevada Irrigation District Heather Newell, Tahoe National Forest Evans Phelps, Nevada City Council Member	Izzy Martin, TSF
9:50 am – 10:00 am	**Volunteer Logistics** Posting Assignments and Materials	Kelsey Westfall, TSF
10:00 am – 10:10 am	**Volunteers Depart** Volunteers Travel to Posting Site(s)	All
12:30 pm – 2:00 pm	**Volunteers Return** Ending Times will Vary Based on Posting Assignment	All

Volunteers post fish consumption advisories at popular Sierra fishing locations with new, permanent signage

Submitted to The Union

May 9, 2018

On May 6, 16 volunteers, organized by nonprofit The Sierra Fund, traveled to popular fishing locations in the Sierra to post information about which locally caught fish are safe to eat, and which fish should be avoided because of mercury, according to a release.

Mercury is a persistent and pervasive remnant of the California Gold Rush. The main pathway of human exposure to mercury is through fish consumption. Mercury is a developmental neurotoxin that can lead to permanent developmental delays in children.

The Sierra Fund has organized an annual volunteer "Post It Day" event since 2015. For the last two years, volunteers have posted in both Spanish and English.

The California Office of Environmental Health Hazard Assessment issues fish consumption advisories that outline how many servings per week of different species of fish can be safely consumed, based on mercury levels in fish tissue.

All state-issued fish consumption advisories are available on OEHHA's website, http://www.oehha.ca.gov/fish (https://oehha.ca.gov/fish), for those wishing to obtain this information.

The Sierra Fund has recently published a Fish Consumption Advisory Posting Protocol document, developed from lessons learned in the first three years of Post It Day. Over the next year, The Sierra Fund will take this document "on the road" to encourage community organizations and agencies to launch a fish advisory posting effort in their area.

To learn more about these projects, visit The Sierra Fund's website at http://www.sierrafund.org (www.sierrafund.org).

Source: Sierra Fund

0 Comments Sort by **Newest**

Add a comment...

Facebook Comments Plugin

The Sierra Fund presents

Mercury in Fish

Making Safe Local Fish Consumption Choices

Wednesday, July 11, 2018 at 7:00 pm
Lake Oroville Visitor Center
917 Kelly Ridge Road, Oroville, CA 95966

The primary human exposure pathway to mercury is through consuming contaminated fish. Since 2015, The Sierra Fund has worked to protect public health by posting state-issued fish consumption advisories at popular fishing locations to give the public the tools they need to make healthy fish consumption choices.

On Wednesday, July 11, The Sierra Fund's Program Manager, Alex Keeble-Toll, MA, MSc., and Outreach Coordinator, Kelsey Westfall will discuss the history of mining and mercury in the Sierra Nevada, how mercury gets into fish and how you can safely consume the fish you catch locally.

For more information contact:
Mike Hubbartt
(530) 538-2219
Michael.hubbartt@parks.ca.gov

THE SIERRA FUND

103 Providence Mine Rd
Suite 101
Nevada City, CA 95959
P: 530.265.8454
F: 530.265.8176
E: info@sierrafund.org
www.sierrafund.org

SURVEY: Posting Fish Consumption Advisories at California Reservoirs: An Owner/Operator's Perspective

INTRODUCTION: The Sierra Fund wants to better understand reasons why some reservoir owner/operators post fish consumption advisories at California reservoirs and others do not.

Responses will remain anonymous and will be shared in aggregate form via a Fact Sheet.

I. Perspective on Posting Fish Consumption Advisories:

1. What is your role in the management of a California reservoir?
   - ☐ Owner
   - ☐ Operator
   - ☐ Recreation Director/Manager
   - ☐ Other – (Position: _____)

2. How long have you held this position?
   - ☐ <1 Year
   - ☐ 1-5 Years
   - ☐ 5-10 Years
   - ☐ >10 Years

3. How many California reservoirs do you manage?
   - ☐ 1
   - ☐ 2
   - ☐ 3
   - ☐ 4
   - ☐ 5
   - ☐ >5

NOTE: if you manage more than one reservoir and your answers to the following questions vary significantly by reservoir, please make a note(s) on this survey or consider filling out additional surveys for each reservoir.

4. Is the reservoir(s) you oversee 303(d) listed for mercury impairment?
   - ☐ Yes
   - ☐ No
   - ☐ Not Sure

5. Has the California Office of Environmental Health Hazard Assessment (OEHHA) issued a site-specific fish consumption advisory for the reservoir(s)?

DRAFT

- ☐ Yes (Skip to 7)
- ☐ No (Proceed to 6)
- ☐ Not Sure (Proceed to 6)

6. Are you aware of the OEHHA Statewide Advisory for California Lakes and Reservoirs Without Site-Specific Advice, which applies to all CA lakes and reservoirs that *do not* have site-specific advice published for the water body?
   - ☐ Yes
   - ☐ No
   - ☐ Not Sure

7. Does your agency post OEHHA-issued fish consumption advisories at the reservoir(s)?
   - ☐ Yes (Proceed to 8)
   - ☐ No (Skip to 9)
   - ☐ Not Sure (Skip to 10)

8. What is the primary reason that your agency ***does*** post fish consumption advisories at the reservoir(s)?
   - ☐ Mandated by a higher authority. (Authority: _____)
   - ☐ Encouraged to post by community members or other stakeholders.
   - ☐ Consistent with your mission to protect recreational users.
   - ☐ Other. (Explain: _____)

9. What is the primary reason that your agency ***does not*** post fish consumption advisories at the reservoir(s)?
   - ☐ Not aware of fish consumption advisories.
   - ☐ Lack the resources to post fish consumption advisories.
   - ☐ Lack of infrastructure at the reservoir on which to post advisories, e.g. information kiosks.
   - ☐ OEHHA has not published a site-specific advisory for the reservoir.
   - ☐ The species listed on the Statewide Advisory are not representative of those that occur in the reservoir.
   - ☐ The OEHHA advisory is not available in a format conducive to printing and posting.
   - ☐ Posting OEHHA advisories interferes with tourism.
   - ☐ Posting OEHHA advisories may not change fish consumption behavior.
   - ☐ Reservoir is catch-and-release only.
   - ☐ Reservoir is not publicly accessible.
   - ☐ Reservoir is not 303(d) listed as impaired for mercury.
   - ☐ Other. (Explain: _____)

For questions 10 – 15, please indicate how strongly you agree or disagree with the statement.

10. It is important to communicate the risk of eating mercury-contaminated fish to the public.
    - ☐ Strongly Agree
    - ☐ Agree

DRAFT

- ☐ Neutral
- ☐ Disagree
- ☐ Strongly Disagree

11. Posting OEHHA advisories at the reservoir is an effective way to protect public health from mercury exposure.
    - ☐ Strongly Agree
    - ☐ Agree
    - ☐ Neutral
    - ☐ Disagree
    - ☐ Strongly Disagree

12. OEHHA advisories are easy to read and understand.
    - ☐ Strongly Agree
    - ☐ Agree
    - ☐ Neutral
    - ☐ Disagree
    - ☐ Strongly Disagree

13. Posting OEHHA advisories is an expensive activity.
    - ☐ Strongly Agree
    - ☐ Agree
    - ☐ Neutral
    - ☐ Disagree
    - ☐ Strongly Disagree

14. Posting OEHHA advisories at reservoirs should be the responsibility of the reservoir owner/operator.
    - ☐ Strongly Agree
    - ☐ Agree
    - ☐ Neutral
    - ☐ Disagree
    - ☐ Strongly Disagree

15. Posting OEHHA advisories at reservoirs should be the responsibility of government agencies.
    - ☐ Strongly Agree
    - ☐ Agree
    - ☐ Neutral
    - ☐ Disagree
    - ☐ Strongly Disagree

16. Can The Sierra Fund contact you to learn more about your responses or clarify a response as warranted?
    - ☐ Yes (Complete Section II: Contact Information)
    - ☐ No (End Survey)

DRAFT

II. Contact Information

Name	
Title, Affiliation	
Phone Number	
Email Address	
Name of Reservoir(s) You Own/Operate	

END SURVEY

DRAFT

MOUNTAIN COUNTIES FUNDING AREA DAC COORDINATING COMMITTEE

July 17th, 2018
10:00 a.m. – 2:30 p.m.
Department of Water Resources
901 P St., Sacramento
Oceanside 224- Meeting Room (Bonderson)

Toll number: +1 (916) 573-2034, access code: 46709015 (Dial-in Number) English (United States)
Find a local number<https://dialin.lync.com/464bff6b-35d5-4089-a809-0d998fd161ce?id=46709015>
Conference ID: 46709015 (same as access code above)
Forgot your dial-in PIN?<https://mysettings.lync.com/pstnconferencing>

Agenda

Objectives:

- Understanding of MCFA Disadvantaged Community and Tribal Involvement (DACTI) Program activities to date
- Discussion and options to for DACI Committee, TAC, and Prop 1 Implementation

	TIME	ITEM	PRESENTER
1.	**10:00**	**Welcome** **Introductions**	**Jonathan Kusel**, Executive Director, Sierra Institute for Community & Environment, Facilitator
2.	**10:10**	**Agenda and Meeting Materials Review** (2-3 mins) **Overview of Program Progress to Date** (35-40 mins) • Community capacity assessment • Water/wastewater needs assessment • Tribal workshops	**Lauren Miller,** Research Associate, Sierra Institute **Liz Mansfield,** Executive Director, Sierra Water Workgroup **Sherri Norris,** Executive Director, California Indian Environmental Alliance (CIEA)

	TIME	ITEM	PRESENTER
3.	**10:55**	**Workshop Reflections from Participants** • Upper Feather River, Yosemite-Mariposa, Tuolumne-Stanislaus	**Workshop Participants**
4.	**11:10**	**Select Topics:** • **Tribal Advisory Committee (TAC)** o Tribal representation (15 mins) • **Disadvantaged Community Involvement Committee (Community Engagement- 2.3)** o Establishing a new committee o Reviewing what was agreed to (15 mins)	**Sherri Norris, Shelly Covert, Trina Cunningham** **All** **Jonathan Kusel, Lauren Miller** **All**
5.	**11:40**	**DWR Draft PSP** • Update of process • Comments and proceeding forward (30 mins)	**Rachel Ballanti,** Program Manager 1, Department of Water Resources
6.	**12:05**	**Lunch Break**	
7.	**12:50**	**Prop 1, Round 1- MFCA Implementation Funding Plan** • Implementation Funding o DWR Timeline o Available funding o Possibly a DWR Coordinator for the MCFA o Options Presented & Discussed (55 mins) • IRWM Plan Incorporation of needs assessment o Community capacity o Water/Wastewater needs o Tribal capacity and needs (25 mins)	**Liz Mansfield, Jonathan Kusel, Sherri Norris**
8.	**2:10**	**Budget Review** **Next Steps** • Tasks and Timeline	**Jonathan Kusel, Lauren Miller** **All**
9.	**2:30**	**Adjourn**	

CABY IRWM UPDATE 2019
STAKEHOLDER KICKOFF MEETING

AGENDA

WEDNESDAY, OCTOBER 3, 2018 AT 9:30 A.M. – 12:00 P.M.
SIERRA NEVADA CONSERVANCY CONFERENCE ROOM
11521 BLOCKER DR, SUITE 205
AUBURN, CA 95603

Cosumnes, American, Bear & Yuba River
Integrated Regional Water Management

Agenda Items

1.1 Introductions

2.1 CABY Plan Overview Process, Roles of RWMG, Dudek and Stakeholders

3.1 Review of the Master Project Schedule and Agreement on the Master Project Schedule.

- *The Master Project Schedule serves as the Charter for the Project of Updating the IRWM Plan*

4.1 Review of Stakeholder Engagement Plan and Adoption of the Stakeholder Engagement Plan

5.1 Discussion and Revision of Plan Sections and Updates Required per the 2016 Guidelines from DWR

5.1.1 Discussion of the Governance Chapter

5.1.2 Discussion of Climate Change Chapter

- *Revisions to the Climate Change Chapter will begin in this meeting. Due to the nature of the topic in impacting all sections of the Plan, the climate change conversation will be included in subsequent meetings as other Chapters are reviewed and revised.*

5.1.3 Discussion of the RMS Chapter

- *Revisions to the RMS Chapter will begin in this meeting. Due to the nature of the topic in impacting all sections of the Plan, the RMS conversation will be included subsequent meetings as other Chapters are reviewed and revised.*

6.1 Stakeholder Items for the November Meeting

7.1 Immediate Next Steps

8.1 Adjourn

Stanislaus County Water Stewardship Campaign

Central Valley Disadvantaged Community Water Quality Grants Program 4

Tuolumne River Trust

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829 13th Street
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patrick@tuolumne.org
O: 209-236-0330
F: 415-882-7253

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FollowUp Form

Instructions

All grantees are required to submit a grant report that describes the work funded by the grant. Unless otherwise noted in your grant contract, your report should contain both a narrative description of activities performed and a financial statement showing how grant funds were spent. You should also provide copies of any deliverables produced during the grant period.

Rose Foundation's policy for the Central Valley Grants Program is that grant reports are due two weeks after the end of each quarter, and final report upon one month after project completion. For example, if your grant period is 24 months, you'll have three quarterly interim grant reports, one every six months, and a final grant report due 25 months from the start of the grant.

Your specific reporting dates and any special reporting requirements are identified in your Grant Contract.

If you have a multi-year grant, please note that Rose Foundation must receive your interim grant report before disbursing grant installments.

If you have any questions about reporting and/or installments, please contact your Program Officer, Laura Fernandez or call (510) 658-0702.

Basic Information

Project Name

Name of Project

Stanislaus County Water Stewardship Campaign

Grant Period*

Please indicate the start date of the grant period for which you are reporting on

04/01/2018

Amount Awarded

$100,000.00

Area(s) of Emphasis*

Environmental Education
Environmental Health & Justice
Water Resources / Watershed Protection

Water Quality Monitoring Categories

Water Quality Monitoring
Wetland, Waterbody, Riparian Habitat Conservation or Protection
Pollution Prevention
Pollution Awareness

Environmental Health & Justice Categories

Toxics

Timeline, Deliverables, & Achievements

Please refer to the template instructions below to fill out the Timeline and Deliverables table. In the document, identify all key deliverables and achievements for the completed milestones of this report, and tie them into the project timeline.

To submit project timeline, deliverables, and achievements:*

1) Click Here to download the Timeline & Deliverables template.
2) Fill out the document with all relevant information. You may refer to the chart that you previously submitted and copy your timeline accordingly.
3) Re-submit the document back to this question.

Tuolumne River Trust - Rose Foundation Interim Report B Timeline and Deliverables.pdf

Narrative

Brief Summary*

Please summarize the overall impact of the project so far in terms of activities and accomplishments.

Questions to consider for the project summary: Who/what was helped by the project? What water quality benefits occurred?

The Airport Neighborhood leaders are gaining momentum. They have taken increasingly impactful leadership roles that directly affect water quality of the Tuolumne River. From submitting a letter to the editor in response to a misinformed and offensive local media article to teaching others (including youth) how to participate in water quality monitoring activities, the Airport Neighborhood residents are active and eager to stay involved.

In addition to the Airport Neighborhood, community residents throughout Modesto are stepping up to improve the quality of the Tuolumne River, the parks it flows through, and the communities it sustains. Through river and community clean-ups and education through hands-on recreation and learning, Modestans are taking ownership of the health of their community slowly but surely. Some highlights from

the reporting period include 5 water quality monitoring activities, 10 river clean ups, and 581 volunteer participants, and 13 educational presentations.

Impact Narrative*

Please describe the impact of the work you conducted with the grant funds. In addition, please describe any unanticipated outcomes, challenges, or other changes that occurred during the project's duration. Please include any lessons learned and/or advice for other organizations facing similar circumstances.

Water Quality Monitoring

During this reporting period we have completed 5 monthly water monitoring events, engaged 15 adults and 23 youth with four of the adults being new this period. Participants continue to gain skills and confidence in the monitoring process and have become more curious about water quality in general. They are especially interested in drinking water quality. Resident leaders have asked to bring in water samples from their homes, different water bottle companies and the school to test periodically, which will lead to better oversight of drinking water quality in the neighborhood in the future. Youth who have participated in water quality monitoring events have also shown increase in skills and understanding of what is being monitored and why it is important for the environment and community health.

AN youth had the opportunity to engage in water monitoring activities through two venues: during two week-long family summer camp and monthly monitoring with resident leaders. We engaged 56 youth ages 6 – 12 in two one-week Family Summer Camps for AN residents. During each camp session campers learned and practiced Leave No Trace principles, participated in a clean-up and engaged in water quality monitoring at Legion Park. Legion Park is part of the Tuolumne River Regional Parks (TRRP). Additionally, 23 AN youth accompanied their parents at monthly monitoring activities led by resident leaders. Monitoring with the parents in particular is a powerful experience as youth see their parents as active river stewards and positive role models.

Pollution Prevention Campaign

It is through our continuous and varied actions of engaging with diverse stakeholders that we believe the perception of the Tuolumne River is changing. By engaging in activities such as water quality monitoring, river clean-ups, local meetings, and recreation, community residents that live near the river are using their personal experiences to trust that the water is safe to swim in, a place of beauty and solace, and a space that offers a wealth of recreational opportunities that contributes to the health and wellness of their families. This is evident as a result of Airport Neighborhood Water Quality Monitoring -- more families are participating in swimming, fishing and paddling activities organized at Family Days and Fun Fridays at the Park community events.

TRT has been at the forefront of collaborative and organizing efforts (with various recreational organizations) that has led to the development of positive community-wide recreational events at the TRRP which include the Modesto RecFest -- a family-friendly event that provides participants an opportunity to explore a variety of recreational opportunities such as fishing, paddling, orienteering, nature walks, and trail running-- and the National Kids Day to the Park -- a nationwide celebration of the great outdoors designed to connect kids and families with their local, state, and national parks and public lands.

TRT continues to dialogue about the gem of Stanislaus County, the Tuolumne River, through various educational presentations through the Adopt-Our-River Program. We have completed 13 Adopt-Our-River educational presentations to the following groups in the community: Modesto City Council, TRRP Commission and Citizens Advisory Commission, Modesto Parks and Recreation Department, Modesto Public Works Department, Modesto Environmental Services Department, Stanislaus County Department of Environmental Resources, Modesto Police Department, South Modesto Resident Leaders, Adelante

Community Gathering – South Modesto, Aspire Public School, Airport Neighborhood Collaborative, Airport Neighborhood community venues, such as Active Airport Resident Committee and the Community Chats, Gallo Glass Administration and Staff, and Pepsi Bottling Company.

Three different businesses are actively supporting and participating in the Adopt-Our-River Program (Gallo Glass Pepsi Bottling Company, and Feather-Raft), three City of Modesto (Modesto Parks, Recreation, Environmental Services and Public Works), and one Stanislaus County Department (Environmental Resources). As a result of our solicitations, they provide beverage and food donations, supplies, and equipment, and staff for the cleanups. Additionally, we are working in collaboration with the City of Modesto Parks and Recreation Department to finalize the Adopt-Our-River Equipment Donation Program and subsequently the online platform, which is currently live on our website (https://www.tuolumne.org/?s=adopt-our-river). Since the beginning of the grant period, we have successfully completed ten Adopt-Our-River cleanups with a total of 581 volunteers participating collected a total of 43 tons of garbage, 61 shopping carts and 173 tires that have been recycled.

Water Literacy Campaign

Trekking the Tuolumne classroom lessons and field trips for the 2017-2018 school year were completed and reported on in Interim Report A. Classroom lessons and field trips for the 2018 – 2019 school year will be taking place later in the fall of 2018. We estimate that 65 5th grade students will be engaged. We continue to encounter challenges working with Orville Wright Elementary due to staff turnover, with two of the 3 teachers new this year. Staff turnover makes it incredibly difficult to build continuity. In addition, the school has a high number of English-language learners, low performing, and special needs students which require thoughtful program adjustments, additional adult supervision and small group size. While the exit of two of the 5th grade teaching team last school year hindered our ability to get a monitoring club up and running before the end of the year, we were able to engage a significant number of the students over the summer and are already working with this year's 5th grade team to design and schedule a water quality monitoring club that will start after the fall field trips.

Challenges:

Water quality monitoring (WQM) is best done in small groups. There are significant challenges to engaging over 70 students simultaneously, however, breaking up classrooms has been a challenge. Students need to be broken out into small enough groups that they can be well-supervised and engaged while out collecting data. To address this, we are working with the 5th grade team to assess the possibility of creating a "club" that students would either sign up for or rotate attendance in so that no more than 20 – 25 students are out monitoring each month. We will also provide students with WQM opportunities during summer vacation on a first-come-first-serve basis. Details are still being worked out.

The US 9th Circuit Court of Appeals ruled on homelessness, which resulted in the City of Modesto's designating Beard Brook park as a temporary tent city. As a result, much of our work to break down the stigma and build trust with residents about the safety of their river and parks has been in question. Concerns include safety and pollution.

One particularly upsetting reality is the fact that residents living in neighborhoods near parks affected by the court ruling, bear the brunt of illegal dumping. Local businesses and residents from other communities take their garbage to the Airport Neighborhood and Legion Park to dump instead of their local landfill. This instills fear in the community about the safety of the places they have come to love to recreation and relax in.

While we are excited to work in partnership with the City of Modesto on the Adopt-Our-River program, communication between the agency and our organization has been difficult due to the red tape surrounding government work.

Residents in the Airport Neighborhood felt particularly marginalized and underrepresented, when local news media wrote an article about Legion Park becoming an "unofficial county dump." Community residents felt hurt that no one in the broader community cared to ask them their opinion on the subject or what work they do to keep their community clean. In response, an AN resident leader submitted a Letter to the Editor on behalf of the community that was published, inviting members of the community to join them as they work to clean up their community in solidarity with those that live there.

As mentioned above, the most significant challenge to date with the Water Literacy Campaign with Orville Wright Elementary has been the extensive turnover in administration and staff since this proposal was initially submitted in 2015.

Best Practices

Research and visit well-established organizations that have similar programs (Adopt-Our-Stream/American River Parkway Foundation Volunteer Steward Program) and volunteer coordination guides such as Adopt-a-Stream and the Great Sierra River Cleanup Coordinator Guide to inform your program development processes

Provide clear, consistent information to effectively engage and recruit businesses, community organizations, neighborhood residents, and the greater community for the Adopt-Our-River Program

Have continuous dialogue with the Adopt-Our-River Steward Volunteer Groups and the Adopt-Our-River partners to ensure continuous buy-in and collaboration in the development and continuation of the Adopt-Our-River Program.

Combine cleanups or water quality monitoring activities with park outings. In other words, this will provide multiple benefits for our river park systems, including a clean, an open safe space for recreation by both volunteer steward groups, the greater community and especially residents that live adjacent to the river parks.

Remain tireless in your efforts to get a program off the ground. It may take a while to convince potential partners to come onboard, but respectfully show them benefits, past results, and details that assure them they will be supported along the way.

Did the grant fund water quality monitoring?*

If the grant did fund water quality monitoring, please include and specify the type of Quality Assurance / Quality Control (QA/QC) procedures that were followed in the question below.

Yes

Types of Quality Assurance

Type(s) of Quality Assurance/Quality Control (QA/QC) procedures followed*

QA/QC can be from the EPA or CA State Water Resources Board, for example. Click here for information about QA/QC

We have been working towards developing QA/QC procedures using EPA as our guideline. One of the first steps we have taken is converting existing data into a more user-friendly format using Excel. Past data had been saved by different users in different formats. Currently, we are working on creating an easy-to-use calibration guide for all our field equipment, which will get us one step closer to our goal of developing effective QA/QC.

Financials

Financials*

Please refer to the line item budget you submitted in your Application Attachments and prepare a corresponding financial statement that shows how the grant funds were actually expended. If there were any variances in any items over 10%, include a brief explanation for the variance. You may paste your financial statement into this section, or include it as an attachment.

TuolumneRT financial report for Rose April 1 to Sept. 30 2018 Oct 12 18.xlsx

Attachments

Please attach or provide a link to any significant deliverables produced with grant funds, such as reports, videos, etc. You may also include other materials such as newsletters, media clippings, or photos that will help us better understand the work you performed under the grant. Please understand that the system limits file sizes - therefore, a few key examples are better than numerous photos or clippings.

Significant Deliverables*

If you produced a report, video, or other significant deliverable with this grant, you may attach it here or paste a URL box below. Use the text box to briefly describe your significant deliverables.

Adopt-Our-River Flyer Spanish.pdf
https://www.tuolumne.org/?s=adopt-our-river

Newsletters, Media, Photos or Other Attachments

You may attach additional documents or publications here or paste a URL into the text box below. Use the text box to briefly describe your significant deliverables.

ADOPT-~1.PDF
News articles referenced in "Challenges" section of Narrative

Airport Neighborhood Residents write back:
1a. Modesto Bee - An ‘unofficial county dump’. Piles of garbage growing in Modesto park
https://www.modbee.com/news/local/crime/article217461020.html
1b. Modesto Bee Letter to the Editor - We’re working to clean up a mess in Modesto; come help us - https://www.modbee.com/news/local/crime/article217461020.html

US 9th Circuit Court of Appeals ruling on homelessness (and its effects on Tuolumne River Regional Parks we've worked hard to de-stigmatize)
2a. Modesto Bee - Court: It’s no crime for homeless to sleep outside when shelter is not an option https://www.modbee.com/news/article217927195.html
2b. LA Times - Homeless people in California, Western states cannot be prosecuted for sleeping outside if shelter access is lacking, court rules http://www.latimes.com/local/lanow/la-me-ln-homeless-9th-circuit-20180904-story.html

Newsletters, Media, Photos, or other Attachments

You may attach additional documents or publications here or paste a URL into the text box below. Use the text box to briefly describe your significant deliverables.

TRT201~1.PDF

Summer 2018 Tuolumne River Trust "Tuolumne Cascade" newsletter article highlighting summer camp and recreation opportunities.

File Attachment Summary

Applicant File Uploads

- Tuolumne River Trust - Rose Foundation Interim Report B Timeline and Deliverables.pdf
- TuolumneRT financial report for Rose April 1 to Sept. 30 2018 Oct 12 18.xlsx
- Adopt-Our-River Flyer Spanish.pdf
- ADOPT-~1.PDF
- TRT201~1.PDF

Tuolumne River Trust Interim Report October 2018

Timeline & Deliverables			
Milestone	**Tasks**	**Deliverables**	**Achievements**
25% complete—6 month mark. Target project period: 24 months	1. Recruit and train families for Community water quality monitoring 2. Begin obtaining monthly water quality monitoring datasets and sharing with partners 3. Select and train teachers and administrators participating in Trekking the Tuolumne River 4. Trekking field trip classroom presentation	1. 12 community members recruited and trained 2. Water Quality Monitoring begins 3. Teachers recruited (minimum of 2 teachers at Orville Wright Elementary, reaching between 50 and 60 students) 4. Trekking pre-field trip completed	1. Successfully recruited and trained 26 community members in water quality monitoring. 2. Successfully recruited and trained one administrator (the principal) and two 5th grade teachers, reaching 70 5th grade students. 3. Successfully completed Trekking classroom presentations and pre-field trip.
50% complete—12 month mark Target project period: 24 months	1. Trekking post-field trip to Tuolumne River 2. Trekking post-field trip classroom presentation 3. Develop *Adopt-a-River* flyers, River project informational materials and online platform. 4. Contact with 10 potential educational presentations.	1. Trekking field trip completed (two classrooms/50-60 students reached) 2. Trekking post-field trip completed 3. Outreach material developed for *Adopt-a-River* 4. Contact with 10 potential businesses for *Adopt-a-River* 5. 6 monthly river cleanups completed 6. Submit mid-year grant report	1. Post-Trekking classroom presentations and post-field trip will be taking place later in the fall of 2018 with an estimated 65 5th grade students that will be engaged. 2. Successfully developed outreach material for Adopt-Our-River Program and launched an online platform on the TRT website. 3. Successfully completed 13 *Adopt-Our-River* educational presentations. 4. Reached 3 businesses and 3 City and 1 County Departments. 5. Completed 10 river cleanups.

75% complete—18 month mark Target project period: 24 months	1. Continue to obtain monthly water quality monitoring datasets and sharing with partners 2. Solicit in-kind donations of equipment and services for Adopt-a-River initiative 3. Secure and train 6-8 *Adopt-a-River* adopting businesses/groups cleanups 4. Begin monthly *Adopt-a-River* cleanups	1. Monthly water quality monitoring. 2. *Adopt-a-River* businesses identified and equipment secured 3. *Adopt-a-River* businesses trained 4. *Adopt-a-River* cleanups begin ((4 river cleanups during this period, 10 total)	Describe Here
100% complete—24 month mark Target project period: 24 months	1. Continue to obtain monthly water quality monitoring datasets and sharing with partners. 2. Continue monthly *Adopt-a-River* cleanups and evaluate as needed	1. Monthly water quality monitoring continues 2. Monthly *Adopt-a-River* cleanups continue (at least 4 clean ups in this period, 14 total) 3. Submit final grant report	Describe Here
Ongoing Tasks	1. Outreach to businesses will be completed before the next reporting period 2. Online platform will be launched in a few weeks. 3. Post-Trekking classroom presentations and post-field trip will be taking place later in the fall of 2018		

Program partial Finance Report for Oct. 1st to 12, 2018

Salaries and taxes		1,847.50
Fringe benefits		166.25
Personnel subtotal		2,013.75
Contractors		
Program Supplies		
Travel		
Direct Program subtotal		
Admin. Overhead		
Total Interim Costs	$	2,013.75

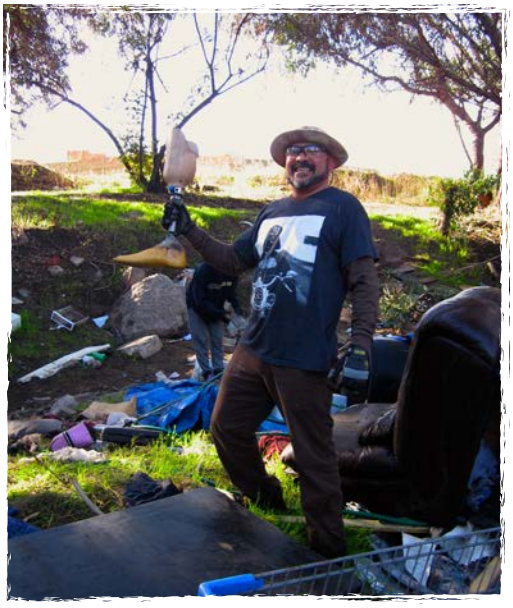
To Date		
Oct. 1, 2017-Mar. 31 2018		22,420
Apr. 1 2018-Sep. 30 2018		25,574
Oct. 1-12, 2018		2,014
	$	50,008

Submitted November 7 2018
Marisol O'Connor, Finance Director
Tuolumne River Trust

Tuolumne River Trust

Adoptar-Nuestro-Río

Programa de Donación de Equipo para Las Limpiezas



Nos Puede Ayudar a Mantener Nuestra Comunidad Limpia

El Programa de Adoptar-Nuestro-Río involucra a voluntarios negocios y organizaciones en el mantenimiento, embellecimiento, y preservación de las secciones del río Tuolumne que atraviesa el corazón de nuestra comunidad.

Juntos podemos asegurarnos de que nuestros parques cercanos al pie del rio este limpios y seguros para que todos los disfruten.

Si tiene interes en donar para este programa favor de comunicarse con Edgar Garibay at (209)236-0330 ó edgar@tuolumne.org

www.tuolumne.org/program/adopt-our-river

Tuolumne River Trust

ADOPT-OUR-RIVER/WATER QUALITY MONITORING/TREKKING PHOTOS

La Loma Jr. High/STAR CENTER, Feb., 17th, 2018

Water Quality Monitoring, August, 29th, 2018

Community Chats, September 14th, 2018

Trekking Orville Wright, March 19th, 2018

Water Quality Monitoring, March 27th, 2018

Tuolumne River Trust Summer Day Camps

Meg Gonzalez
Central Valley Education Director

Edgar Garibay
Community Relations Manager

Juan Telles
TRAC Coordinator

Start with hot Central Valley days, add a cool meandering Tuolumne River, shady Valley oak trees, dragonflies and watermelon, and the result is a perfect setting for a family summer camp! For two weeks TRT staff and volunteers excited and wowed more than 60 Airport Neighborhood children and their families during our Summer Day Camp at the Tuolumne River Regional Park in Modesto. Campers learned important lessons and skills such as river safety and Leave No Trace principles through educational games at the river's edge. They developed a connection with the riparian habitat by building tree houses, chasing butterflies, and sleuthing for signs of wildlife. But the highlight of each session was "River Day" when campers paddled, swam, fished and played in the waters of the Tuolumne River.

As we know well, the opportunity to interact with your environment in a positive way is transformative, and for many of the youth, they experienced a deeper connection with nature for the first time. Our hope is that camp is one experience in a series of building block moments that develops future stewards of the land and water.

Above: Real-life Fortnite fort-building! Left: Sensory observation exercise. Below: Learning river safety. Photos by Edgar Garibay and Juan Telles.

Above: Students wield their mighty trash-picker-uppers on the bank of the river. Below: Campers display their "Awesome Kid" Awards. Photos by Edgar Garibay.

Áreas para Adoptar del Río Tuolumne

1 Área 1 del Parque Gateway
Groupo Voluntario: Vocational Coaching & Development Institute, Inc.

2 Área 2 del Parque Gateway
Groupo Voluntario: Feather Raft & Dutcher Middle School

3 Área 3 del Parque Gateway
Groupo Voluntario: La Loma Jr. High School & STAR Center

4 Parque Beard Brook
Groupo Voluntario: La Loma Jr. High School & STAR Center

5 Parque de la Legión
Groupo Voluntario: Airport Neighborhood & Gallo Glass

6 Parque Mary Grogan Grove/TRRP
Groupo Voluntario: Airport Neighborhood & Gallo Glass

7 Parque Mancini
Groupo Voluntario: Disponible

Promoting Citizen Science for Bear River Watershed Improvement

Central Valley Disadvantaged Community Water Quality Grants Program 3

Sierra Streams Institute

Joanne Hild
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Nevada City, CA 95959

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O: (530) 477-7132

Katy Janes

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Nevada City, California 95959

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FollowUp Form

Instructions

All grantees are required to submit a grant report that describes the work funded by the grant. Unless otherwise noted in your grant contract, your report should contain both a narrative description of activities performed and a financial statement showing how grant funds were spent. You should also provide copies of any deliverables produced during the grant period.

Rose Foundation's policy for the Central Valley Grants Program is that grant reports are due two weeks after the end of each quarter, and final report upon one month after project completion. For example, if your grant period is 24 months, you'll have three quarterly interim grant reports, one every six months, and a final grant report due 25 months from the start of the grant.

Your specific reporting dates and any special reporting requirements are identified in your Grant Contract.

If you have a multi-year grant, please note that Rose Foundation must receive your interim grant report before disbursing grant installments.

If you have any questions about reporting and/or installments, please contact your Program Officer, Laura Fernandez or call (510) 658-0702.

Basic Information

Project Name

Name of Project

Promoting Citizen Science for Bear River Watershed Improvement

Grant Period*

Please indicate the start date of the grant period for which you are reporting on

10/01/2017

Amount Awarded

$122,000.00

Area(s) of Emphasis*

Environmental Health & Justice
Water Resources / Watershed Protection

Water Quality Monitoring Categories

Water Quality Monitoring
Watershed Assessment

Environmental Health & Justice Categories

[Unanswered]

Timeline, Deliverables, & Achievements

Please refer to the template instructions below to fill out the Timeline and Deliverables table. In the document, identify all key deliverables and achievements for the completed milestones of this report, and tie them into the project timeline.

To submit project timeline, deliverables, and achievements:*

1) Click Here to download the Timeline & Deliverables template.
2) Fill out the document with all relevant information. You may refer to the chart that you previously submitted and copy your timeline accordingly.
3) Re-submit the document back to this question.

Timeline and Deliverable template.docx

Narrative

Brief Summary*

Please summarize the overall impact of the project so far in terms of activities and accomplishments.

Questions to consider for the project summary: Who/what was helped by the project? What water quality benefits occurred?

The Rose Foundation provided funding to SSI for the Promoting Citizen Science for Bear River Watershed Improvement project, an effort to improve planning and restoration project development in the Bear River watershed through baseline monitoring of the watershed, in collaboration with citizen scientists and watershed stakeholders. The primary activities and accomplishments for the project to date include:

- Development of a Monitoring Plan to guide monitoring and survey efforts
- Recruitment and training of citizen scientists to assist with monitoring and surveys
- Collection of 12 months of water quality data (10/2017 - 10/2018)
- Collection of macroinvertebrate and algae data in June and October 2018
- Completion of wildlife and vegetation surveys for Year 1
- Award of a grant to develop restoration prioritization models for the watershed
- Development of restoration projects with BYLT, USFWS, CDFW and watershed stakeholders
- Hosting two stakeholder meetings in June and August 2018

Impact Narrative*

Please describe the impact of the work you conducted with the grant funds. In addition, please describe any unanticipated outcomes, challenges, or other changes that occurred during the project's duration. Please include any lessons learned and/or advice for other organizations facing similar circumstances.

The Rose Foundation provided funding to SSI for the Promoting Citizen Science for Bear River Watershed Improvement project, an effort to improve planning and restoration project development in the Bear River watershed through baseline monitoring, in collaboration with citizen scientists and watershed stakeholders. The following provides a summary impact narrative for the project to date:

- Development of a Monitoring Plan to guide monitoring and survey efforts: A primary achievement of the grant funded project was development of a Monitoring Plan, in collaboration with watershed stakeholders, to guide monitoring and survey efforts during the project. In support of this project, a grant awarded by the Azavea Summer of Maps program in April 2018 enabled SSI to refine the focus of monitoring and survey efforts under Task 7 Wildlife and Vegetation Surveys, with the guidance of habitat suitability and species distribution models developed by the Summer of Maps intern. The models highlight areas that contain suitable habitat and probable distributions of rare species, including sensitive wildlife and endemic plant species only found in the Bear River watershed. In addition to benefiting this grant funded project, the deliverables provide useful tools for organizations who work in the Bear River watershed and focus on monitoring and conservation of rare species, such as the California Native Plant Society and Wolf Creek Community Alliance. The grant from Azavea and development of models to inform monitoring and survey efforts, was an unanticipated outcome of the grant funded project.
- Recruitment and training of citizen scientists to assist with monitoring and surveys: Volunteer and intern citizen scientists were recruited to participate in the grant funded project, to assist with monitoring and survey efforts under Task 4, 5, 6 and 7, and with data entry and analysis under Task 8. Numerous citizen scientist volunteers were recruited and trained to participate in water quality monitoring at sites in the Bear River watershed, which enabled SSI to include additional monitoring sites at key locations on the Bear River mainstem and in tributaries where monitoring data is scarce. During the spring of 2018, SSI staff scientists and AmeriCorps members recruited five summer interns from local and regional universities to assist with monitoring and survey efforts between May and August 2018. Citizen scientist interns assisted with several grant funded tasks including water quality monitoring, and played an important role in facilitating completion of macroinvertebrate and algae collection in June 2018, physical habitat assessments in July 2018, and wildlife and plant surveys between May and July 2018. In addition to helping SSI complete grant funded tasks as part of this project, citizen scientist volunteers and interns played an important role in the community, assisting other local non-profit watershed groups with monitoring and assessment projects, and facilitating collaboration and project development between groups with similar goals and objectives that work in the Bear River watershed.
- Collection of 12 months of water quality data between 10/2017 - 10/2018: In collaboration with Friends of Spenceville SSI began limited monitoring in the Dry Creek watershed in 2014, and with the support of the U.S. Bureau of Reclamation (USBR) started an expanded monitoring effort at several locations on the Bear River mainstem and major tributaries in 2015/16. As part of this grant funded project, monitoring sites were added in key tributaries where historical data is scarce and sensitive species are potentially present, to provide baseline water quality data that will inform future monitoring efforts and development of projects to improve water quality and protect human health. There are numerous challenges associated with collecting water quality data across a large watershed such as the Bear River, particularly with volunteer citizen scientists leading monitoring efforts. To address the challenges associated with volunteer water quality monitoring across a large geographic area, SSI's lab manager and AmeriCorps members collaborate with citizen scientist volunteers to ensure that water quality monitoring data is collected on a regular basis and that volunteers have the support they need. The establishment of a watershed-wide water quality monitoring program supported by citizen scientists in the Bear River has the potential to provide a lasting impact in the watershed, as volunteer supported monitoring programs can provide a sustainable method for acquiring high-quality data over the long-term, and provide important data to inform and support restoration project development in the Bear River watershed.

- Collection of macroinvertebrate and algae data in June and October 2018: Limited macroinvertebrate sampling previously occurred in the Bear River watershed, as part of special studies including Federal Energy Regulatory Commission (FERC) licensing projects in specific areas of the watershed, with time series data on macroinvertebrate populations at the watershed scale essentially non-existent. While water quality data collection started by SSI in the watershed in 2014, no macroinvertebrate samples were collected at those sites until this grant award, when samples were collected at sites throughout the watershed in June and October 2018. This data, in combination with the water quality data, can be used to characterize the health of aquatic habitats in the watershed, and inform future project development to target areas where water quality and aquatic habitat are degraded and need improvement, and where waters of high quality and value should be protected. One of the primary challenges associated with macroinvertebrate collection is that samples are time-intensive to process at the lab, even for well-trained aquatic ecologists. To address this challenge and ensure the data has the intended impact of enabling project development, SSI established a macroinvertebrate identification lab where several volunteer citizen scientists with the support of SSI staff process samples on a regular basis. Groups of citizen scientists collaborate with the SSI lab manager and AmeriCorps members and gather once a week in the lab to sort, process and identify macroinvertebrate samples. This process and support of citizen scientists enables macroinvertebrate data to be processed and available for decision making in a timely manner.
- Completion of wildlife and vegetation surveys for Year 1: Wildlife and vegetation surveys started in April 2018, guided by the Monitoring Plan that was drafted during the first quarter of this project, with support of SSI staff scientists and AmeriCorps members, and several citizen scientist volunteers and interns. Wildlife surveys targeted California Natural Diversity Database (CNDDB) rare and sensitive species throughout the Bear River watershed, including amphibians, reptiles, birds and mammals with plant surveys targeting CNDDB rare, sensitive, and endemic plant species across several vegetation communities in the watershed. In many cases, surveys to document the distribution of CNDDB plant and wildlife species took place in locations or targeted species in which previous survey information is lacking, particularly in the case of plant species with limited distributions. In addition to completing surveys, SSI collaborated with resource managers including United States Fish and Wildlife Service (USFWS), CDFW and Beale Air Force Base to plan surveys for salmon and steelhead in Dry Creek during the fall, winter and spring of 2018/19. The information collected during plant and wildlife surveys has impacted restoration project development, with surveys informing species distributions and providing baseline data at sites such as Garden Bar, where SSI is collaborating with Bear Yuba Land Trust (BYLT) to develop projects that restore and protect wetland habitat.
- Award of a grant in April 2018 for an intern to develop restoration prioritization models for the Bear River watershed: In March 2018 SSI applied for a grant award from the Azavea Summer of Maps program, for an intern to develop habitat suitability, species distribution and restoration prioritization models in ArcGIS. In April 2018, SSI was notified of the successful grant award from Azavea, to work with a Summer of Maps fellow on SSI's proposed project, Prioritizing Restoration Projects in a Sierra Nevada, CA Watershed: Using Suitability Analysis and Prioritization Models. SSI staff and AmeriCorps members worked with the Summer of Maps fellow to develop, parameterize, and refine the models. The goal of the project was to create habitat suitability and species distributions models for ten CNDDB plant and wildlife species, and to use geospatial data to develop a model that prioritized restoration sites in the watershed, to inform development of future restoration projects.
- Development of restoration projects with BYLT, USFWS, CDFW and watershed community stakeholders: An important impact is that this funding enabled SSI to continue work with watershed community stakeholders to develop monitoring and restoration projects in the Bear River watershed. In support of Task 9 of the project, SSI hosted community meetings and collaborated with local organizations including BYLT and resource managers from State and Federal governments including CDFW and USFWS, to develop restoration projects in the Bear River watershed. Projects were developed in collaboration with watershed stakeholders, based on priorities in different areas of the watershed. This included ongoing development of collaborative projects to improve instream and riparian habitat in Dry Creek with USFWS and CDFW, to restore and protect wetland habitat along the Bear River with BYLT, and to improve forest health with private landowners in the upper Bear River watershed.

Did the grant fund water quality monitoring?*

If the grant did fund water quality monitoring, please include and specify the type of Quality Assurance / Quality Control (QA/QC) procedures that were followed in the question below.

Yes

Types of Quality Assurance

Type(s) of Quality Assurance/Quality Control (QA/QC) procedures followed*

QA/QC can be from the EPA or CA State Water Resources Board, for example. Click here for information about QA/QC

Water quality monitoring followed standard methods outlined in the Yuba-Bear Watershed Council's (YBWC) Quality Assurance Project Plan, approved by the State Water Resources Control Board (SWRCB), and SSI's Standard Operating Procedures. Macroinvertebrate and algae sampling, and physical habitat assessments followed protocols developed by the SWRCB Surface Water Ambient Monitoring Program (SWAMP). SSI participates in YBWC Technical Advisory Committee (TAC) meetings with the SWRCB and local stakeholder groups to review data and make updates to the QAPP as needed. All data was collected by SSI's team of citizen science volunteers, interns and staff members. Volunteers were trained by a SSI staff member to meet QAPP, SOP, and SWAMP standards.

Financials

Financials*

Please refer to the line item budget you submitted in your Application Attachments and prepare a corresponding financial statement that shows how the grant funds were actually expended. If there were any variances in any items over 10%, include a brief explanation for the variance. You may paste your financial statement into this section, or include it as an attachment.

SSI_Financials.pdf

Grant Budget: Sierra Streams Institute uses QuickBooks to track grant expenditures and prepare monthly financial and grant reports for each grant funded project or contract. A monthly Grant Report was produced for each month during Year 1 of the grant, to track financial expenditures and the grant budget by project task. A financial statement (Grant Report) for the project as of October 2018 was prepared and is provided as an attachment to this submission.

Matching Funds: SSI applied for a grant in March 2018 from the Azavea Summer of Maps program for a geospatial intern to develop habitat suitability, species distribution and restoration prioritization models. In April 2018 SSI was notified of the successful grant application and award, to work with an Azavea-funded intern through August 2018. The value of this project and grant award was $20,713. The award from Azavea represents matching funds in support of this grant funded project. A copy of the budget for the Summer of Maps program grant award is provided as an attachment to this submission.

Attachments

Please attach or provide a link to any significant deliverables produced with grant funds, such as reports, videos, etc. You may also include other materials such as newsletters, media clippings, or photos that will help us better understand the work you performed under the grant. Please understand that the system limits file sizes - therefore, a few key examples are better than numerous photos or clippings.

Significant Deliverables*

If you produced a report, video, or other significant deliverable with this grant, you may attach it here or paste a URL box below. Use the text box to briefly describe your significant deliverables.

SSI_Rose Water Quality Data.pdf

Rose Foundation funding, with the support of a grant received in April 2018 from Azavea's Summer of Maps program and AmeriCorps members from the Sierra Nevada AmeriCorps Partnership, enabled SSI to collaborate with a geospatial intern to develop species distribution, habitat suitability and restoration prioritization models for the Bear River watershed. The Summer of Maps collaboration primarily supported Task 2 (Monitoring Plan), Task 7 (Wildlife and Vegetation Surveys) and Task 9 (Restoration Project Development) of this grant funded project. A video of the final Summer of Maps presentation is available for viewing here: https://www.youtube.com/watch?v=oGgmFkzgjYg

Water quality monitoring data was collected by SSI staff and citizen scientist volunteers and interns between October 2017 and October 2018, at several sites in the Bear River watershed. Water quality data for Year 1 of the grant funded project is provided as a deliverable to this submission.

Newsletters, Media, Photos or Other Attachments

You may attach additional documents or publications here or paste a URL into the text box below. Use the text box to briefly describe your significant deliverables.

SSI_Rose_Photos_Year1.pdf

A series of photos taken in the field during water quality monitoring and wildlife surveys with citizen scientist volunteers, and site visits with resource managers from California Department of Fish and Wildlife, is provided as a deliverable to this submission.

Newsletters, Media, Photos, or other Attachments

You may attach additional documents or publications here or paste a URL into the text box below. Use the text box to briefly describe your significant deliverables.

Bear Monitoring Plan.pdf

The Monitoring Plan that was developed during the first quarter of the project is provided as a deliverable to this submission.

File Attachment Summary

Applicant File Uploads

- Timeline and Deliverable template.docx
- SSI_Financials.pdf
- SSI_Rose Water Quality Data.pdf
- SSI_Rose_Photos_Year1.pdf
- Bear Monitoring Plan.pdf

Timeline & Deliverables			
Milestone	**Tasks**	**Deliverables**	**Achievements**
25% complete—6 month mark. Target project period: 24 months	1. Project Management 2. Developing monitoring plan 3. Recruiting and training of core volunteer monitors	Monitoring plan document delivered to Rose Foundation and watershed community stakeholders Quarterly Report delivered to Rose Foundation and watershed community stakeholders	During the first six months of the project between October 1, 2017 and March 31, 2018, the primary project tasks included project administrative and fiscal management, development of the monitoring plan, and recruitment and training of citizen scientist volunteers and interns. Task 1 Project Management: The primary achievements during the first quarter of the project included execution of the grant contract with Rose Foundation at the end of October 2017, review and development of an internal budget for tracking grant progress by task, regular meetings with staff scientists to discuss monitoring plan and restoration project development, development of the Monitoring Plan, and submission of the first Quarterly Report to the Rose Foundation. Task 2 Developing Monitoring Plan: The primary achievement during the first quarter of the project included planning and development of the Monitoring Plan. This included meetings with staff

			scientists to develop the Monitoring Plan, site visits to evaluate site accessibility and the suitability of monitoring sites, and landowner and stakeholder outreach to establish site access for monitoring. This was an important achievement for the project, as the Monitoring Plan guides the efforts in Tasks 4 – 8, related to water quality monitoring, heavy metal sampling, macroinvertebrate and algae sampling, wildlife and vegetation surveys, and data analysis. Task 3 Recruiting and Training of Core Volunteer Monitors: To support the efforts in the plan, citizen scientist volunteers and interns were recruited and trained to participate in water quality monitoring, macroinvertebrate and algae sampling, wildlife and vegetation surveys, and to assist with data entry and analysis. Volunteers and interns were recruited from local high schools and charter schools, colleges including Sierra College, Sacramento State and Humboldt State, local groups including Audubon and Gold Country Fly Fishers.
50% complete—12 month mark	4. Water Quality Monitoring 5. Heavy Metal Sampling 6. Macroinvertebrate and	Quarterly Report delivered to Rose Foundation and watershed community stakeholders	From April 1, 2018 – September 30, 2018, the primary project tasks included water quality monitoring, macroinvertebrate and algae sampling, wildlife and

Target project period: 24 months	Algae Sampling 7. Wildlife and Vegetation Surveys 8. Data Analysis 9. Disadvantaged Community Outreach and Restoration Project Development	1 meeting to community reporting results	vegetation surveys, data entry, community outreach, and restoration project development. Ongoing project tasks during this reporting period included project administrative and fiscal management, recruitment and training of citizen scientist volunteers and interns, and disadvantaged community outreach and restoration project development. Task 1 Project Management: The primary achievements during the second quarter of the project included project administrative and fiscal management, regular meetings with staff scientists to discuss monitoring, assessments and surveys and to develop restoration projects, and submission of the second Quarterly Report to the Rose Foundation. Task 3 Recruiting and Training of Core Volunteer Monitors: To support the efforts in the monitoring plan, citizen scientist volunteers and interns were recruited and trained to participate in monitoring, assessment, and survey efforts. Several interns were recruited from regional universities to assist with data collection efforts during the spring and summer months. Citizen scientist volunteers and interns assisted with

			water quality monitoring, macroinvertebrate and algae collection, physical habitat assessments, plant surveys, wildlife surveys including amphibian, reptile and bird surveys, and data entry. Task 4 Water Quality Monitoring: The primary achievement during the second quarter was collection of water quality monitoring data on a monthly basis at sites throughout the Bear River watershed between October 2017 and September 2018. Data collection took place at sites on the Bear River mainstem and several key tributaries to the Bear River where there is a lack of historical water quality monitoring data. Monitoring parameters included dissolved oxygen, specific conductivity, pH, turbidity, water and air temperature, nutrients (orthophosphate and nitrate), and bacteria (Total Coliform and *E. coli*). Nutrient and bacteria samples were processed at the Sierra Streams Institute lab. Water quality monitoring, sample processing and analysis followed the methods outlined in the Yuba-Bear Watershed Council's Quality Assurance Project Plan (QAPP) that is approved by the State Water Resources Control Board,

			and Sierra Streams Institute's Standard Operation Procedures. Task 5 Heavy Metal Sampling: The Heavy Metals Sampling portion of the Monitoring Plan was completed in April 2018. During the second quarter of the project, ongoing planning in preparation of heavy metal sampling during the third quarter of the project, between October 2018 and March 2019, took place in consultation with watershed community stakeholders. During a Bear River watershed stakeholder meeting in June 2018, SSI staff scientists discussed heavy metal sampling with watershed community stakeholders including the United States Geological Survey (USGS). Based on previous sampling undertaken by watershed stakeholders such as SSI, Nevada Irrigation District (NID) and the USGS, plans were finalized for moving forward with the heavy metals sampling portion of the project, to ensure sampling will help fill important data gaps and inform the development of restoration projects that address the legacy of heavy metal contamination and sedimentation in the watershed. It is anticipated that heavy metal sampling will start in November or December 2018, based on

			the timing of significant fall or winter precipitation events. Task 6 Macroinvertebrate and Algae Sampling: The primary achievement during the second quarter of the project was collection of macroinvertebrate and algae samples and completion of physical habitat assessments at water quality monitoring sites in the Bear River watershed in June and July 2018, and collection of macroinvertebrate and algae samples in October 2018. Sample collection followed the methods outlined in State Surface Water Ambient Monitoring Program (SWAMP) protocols. Samples will be collected at the same monitoring sites again in 2019 to provide a second year of data that will help inform the health of aquatic habitats in the Bear River watershed. Task 7 Wildlife and Vegetation Surveys: The primary achievements during the second quarter of the project included commencement of plant and wildlife surveys at several sites throughout the Bear River watershed, and ongoing collaboration with watershed community stakeholders to inform the assessment and survey efforts. This included plant

			surveys in several important vegetation communities, including wetland, forested areas and chaparral habitats, and wildlife surveys for rare species including birds, amphibians, and reptiles. In addition, SSI staff scientists collaborated with watershed community stakeholders and resource managers, including United States Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW) and Beale Air Force Base (Beale AFB), to plan fisheries surveys for Chinook salmon and steelhead trout in Dry Creek in fall 2018 through winter 2019. Task 8: The primary achievement during the second quarter of the project included data entry, in preparation for data analysis and reporting of results to the Rose Foundation and watershed community stakeholders, and spatial data analysis using ArcGIS. With the assistance of citizen scientists, data collected during the first and second quarter, including water quality, algae, wildlife, and plant data, was organized and entered for subsequent data analysis. With the assistance of a grant-funded summer intern through the Summer of Maps program, SSI completed spatial data analysis in ArcGIS to develop habitat

			suitability and species distribution models for rare and sensitive wildlife and plant species, and to help prioritize areas to target for restoration. This spatial data analysis effort will help inform future plant and wildlife surveys in the watershed, and the development of projects to conserve sensitive species within disadvantaged communities of the Bear River watershed. Task 9: The primary achievements during the second quarter of the project included ongoing outreach to watershed community stakeholders, and collaboration with local stakeholders and resource managers to develop grant funded projects that benefit disadvantaged communities in the Bear River watershed. Two community meetings were held in the second quarter of the project, including a Bear River watershed stakeholder group meeting in June 2018, and Summer of Maps community meeting in August 2018. At the June 2018 meeting stakeholders discussed and prioritized restoration projects by their location in the watershed and made suggestions for topics to discuss at future stakeholder meetings. At the August 2018 meeting,

			the results of the Summer of Maps spatial analysis were presented and discussed with community stakeholders, including the results of the species distribution and restoration prioritization models. The results of these models will inform future monitoring and conservation efforts for rare species, and development of high priority restoration projects in the Bear River watershed. In the second quarter of the project SSI staff scientists continued collaboration with watershed community stakeholders and resource managers to develop and fund restoration projects in the Bear River watershed. In March 2018 SSI submitted a successful proposal (Prioritizing Restoration Projects in a Sierra Nevada, CA Watershed: Using Suitability Analysis And Prioritization Models) to the Azavea Summer of Maps program to develop habitat suitability, species distribution and restoration prioritization models during the summer of 2018. During 2018 SSI staff scientists collaborated with the Bear Yuba Land Trust to develop a proposal for the Wildlife Conservation Board, to fund wetland restoration at the Garden Bar Preserve in the middle Bear River watershed, where habitat for the

			threatened California black rail habitat is present. In June 2018, SSI staff met with the California Department of Fish and Wildlife (CDFW) to discuss management within Spenceville Wildlife Area, in an effort to develop projects that would protect the creek and salmonid habitat from cattle grazing. In addition, SSI is currently investigating the potential to implement restoration projects involving beaver and beaver dam analogues on Dry Creek within the CDFW Spenceville Wildlife Area, to improve spawning and rearing habitat for salmon and steelhead.
75% complete—18 month mark Target project period: 24 months	4. Water Quality Monitoring 5. Heavy Metal Sampling 6. Macroinvertebrate and Algae Sampling 7. Wildlife and Vegetation Surveys 8. Data Analysis 9. Disadvantaged Community Outreach and Restoration Project Development	Quarterly Report delivered to Rose Foundation and watershed community stakeholders 1 meeting to community reporting results	Not yet applicable.
100% complete—24 month mark Target project	8. Data Analysis and writing Final Report of results 9. Disadvantaged Community Outreach and Restoration Project Development	Report of monitoring results delivered to Rose Foundation, watershed community stakeholders, and state and regional water boards via TAC and CEDEN Restoration Plan prioritizing projects	Not yet applicable.

period: 24 months		1 meeting to community reporting results	
Ongoing Tasks	1. Project Management 3. Recruiting and training volunteer monitors 4 – 7. Data will be entered as it is collected 9. Disadvantaged Community Outreach and Restoration Project Development		

SIERRA STREAMS INSTITUTE

GRANT REPORT

DATE	11/9/18		REPORT PERIOD	as of 10/31/2018
GRANT NAME	Promoting Citizen Science for Bear River Watershed Improvement			
GRANT NUMBER	10/1/2017 - 9/30/2019			

GRANTOR NAME	Rose Foundation for Communities and the Environment		
ADDRESS	201 4th Street, Suite 102		
CITY/STATE/ZIP	Oakland, CA 94607		
CONTACT PERSON	Laura Fernandez	CONTACT PHONE NUMBER	510-658-0702

	PROJECT BUDGET CATEGORIES	BUDGETED EXPENSES	EXPENSES THIS REPORTING PERIOD	YEAR TO DATE (YTD) EXPENSES	BALANCE (Budgeted expenses less YTD Expenses)	PERCENT OF ACTUAL YTD EXPENSES TO BUDGETED EXPENSES
Task 1	Project Management (35.70/hr)	$ 11,310.00	$ 340.65	$ 7,174.06	$ 4,135.94	63.43%
Task 2	Developing/writing Monitoring plan (35.70/hr)	$ 4,668.00		$ 4,513.83	$ 154.17	96.70%
Task 3	Recruit/Train Volunteer/Citizen Scientists (35.70/hr)	$ 6,256.00		$ 887.15	$ 5,368.85	14.18%
Task 4	Water Quality (hours, lab, mileage)	$ 18,149.00	$ 1,240.23	$ 8,165.92	$ 9,983.08	44.99%
Task 5	Heavy Metal Sampling (hours, lab, mileage)	$ 17,959.00	$ 107.10	$ 1,747.50	$ 16,211.50	9.73%
Task 6	Macros & Algae (hours, materials, mileage)	$ 10,191.00	$ 35.70	$ 2,454.77	$ 7,736.23	24.09%
Task 7	Wildlife/Vegetation (hours, materials, mileage)	$ 17,089.00		$ 3,866.02	$ 13,222.98	22.62%
Task 8	Data Analysis, Report writing (35.70/hr)	$ 10,707.00		$ 518.40	$ 10,188.60	4.84%
Task 9	Disadvantaged Comm Outreach/Development/Writing (35.70/hr)	$ 26,744.00	$ 17.85	$ 11,422.03	$ 15,321.97	42.71%
	TOTAL PROJECT COSTS	**$ 123,073.00**	**$ 1,741.53**	**$ 40,749.68**	**$ 82,323.32**	**33.11%**

Retention	$ -	Cumulative Retention	$ -

Budget

The following budget is an estimate for the cost of implementing the proposed project.

Tasks	Commercial Amount	Non-Profit Discount	Total
Task 1: Review and Process Data	$2,896	$(290)	$2,606
Task 2: Suitability Analysis	2,152	(215)	1,937
Task 3: Species Distribution Modeling	2,144	(215)	1,929
Task 4: Prioritization Model	3,520	(352)	3,168
Task 5 (Optional): Vernal Pools Analysis	1,824	(182)	1,642
Task 6 (Optional): Additional Modeling	3,056	(306)	2,750
Task 6: Present Results	2,608	(261)	2,347
Task 7: Revise Results	760	(76)	684
Task 8: Project Management	4,056	(406)	3,650
Labor Subtotal for Required Tasks	**$18,136**	**$(1815)**	**$16,321**
Labor Subtotal for Optional Tasks	**$4,880**	**$(488)**	**$4,392**
Labor Subtotal Including All Tasks	**$23,016**	**$(2303)**	**$20,713**
Other			
Licenses			--
Materials			--
Hosting			--
Travel (2 people)			--
Other Subtotal			**$ 0**
Labor + Other Subtotal (Required Tasks)			**$16,321**
Labor + Other Subtotal (All Tasks)			**$ 20,713**
Discount: Azavea Summer of Maps Program			**$ (20,713)**
Total Estimate			**$ 0**

Promoting Citizen Science for Bear River Watershed Improvement - Water Quality Monitoring Data: October 2017 - October 2018

Site	Date	Air Temperature (deg C)	PO4_Mean (mg/L)	NO3_Mean (mg/L)	pH Mean	Conductivity Mean (uS/cm)	Turbidity Mean (NTU)	Dissolved Oxygen Mean (mg/L)	Water Temperature Mean (deg C)	Total Coliform (MPN)	*E. coli* (MPN)
2: Bear River Abv Steephollow Creek	10/4/17	14.3	0.08	0.00	7.46	55.13	0.11	9.16	13.95	77.6	2
2: Bear River Abv Steephollow Creek	11/8/17	10			6.88	25.07	1.41	10.65	11.27		
2: Bear River Abv Steephollow Creek	12/6/17	8.8	0.02	0.00	6.96	35.00	0.99	12.84	6.97	18.5	3.1
2: Bear River Abv Steephollow Creek	1/10/18	8.7			7.15	48.93	2.38	11.78	7.20		
2: Bear River Abv Steephollow Creek	2/7/18	14.3			6.98	55.60	0.19	12.19	7.65		
2: Bear River Abv Steephollow Creek	3/7/18	16	0.01	0.00	7.12	62.30	0.51	11.95	6.88	30.5	1
2: Bear River Abv Steephollow Creek	4/4/18	20.1	0.00	0.00	7.03	45.70	0.94	13.96	5.22	12.8	1
2: Bear River Abv Steephollow Creek	5/9/18	22.3			7.27	52.13	0.46	9.24	11.52		
2: Bear River Abv Steephollow Creek	6/6/18	24.8	0.04	0.01	7.47	43.40	0.36	10.42	14.07	280.9	69.7
2: Bear River Abv Steephollow Creek	7/11/18	37.9	0.04	0.01	7.43	37.07	0.25	8.91	18.38	770.1	3.1
2: Bear River Abv Steephollow Creek	8/8/18	34.4	0.03	0.01	7.50	31.20	0.25	10.39	17.87	162.4	4.1
2: Bear River Abv Steephollow Creek	9/3/18	24.7	0.04	0.00	7.30	86.10	0.15	8.69	20.05	1553.1	9.7
2: Bear River Abv Steephollow Creek	10/2/18	28.9	0.05	0.00	8.04	59.93	1.33	9.15	19.27	866.4	1
3: Steephollow Creek abv Bear River	10/4/17	15.2	0.08	0.00	7.26	98.70	0.31	8.64	13.35	1732.9	5.2
3: Steephollow Creek abv Bear River	11/8/17	10.3			7.09	99.20		9.74	10.62		
3: Steephollow Creek abv Bear River	12/6/17	9.1	0.04	0.00	7.30	96.83	0.16	11.37	6.00	33.1	1
3: Steephollow Creek abv Bear River	1/10/18	9			7.22	70.00	6.00	10.68	9.20		
3: Steephollow Creek abv Bear River	2/7/18	16.3			7.21	86.83	0.32	11.34	7.80		
3: Steephollow Creek abv Bear River	3/7/18	18.1	0.03	0.01	7.24	81.10	1.20	13.43	6.38	104.6	1
3: Steephollow Creek abv Bear River	4/4/18	20.2	0.02	0.00	7.20	60.73	3.16	11.18	9.88	31.5	1
3: Steephollow Creek abv Bear River	5/9/18	21.2			7.41	89.03	0.51	7.99	15.47		
3: Steephollow Creek abv Bear River	6/6/18	23.9	0.07	0.01	7.27	89.93	0.09	8.61	17.23	161.6	8.5
3: Steephollow Creek abv Bear River	7/11/18	35.1	0.15	0.01	7.28	86.77	0.20	7.61	20.35	613.1	5.2
3: Steephollow Creek abv Bear River	8/8/18	34.9	0.08	0.02	7.40	97.27	0.10	8.78	21.03	1203.3	26.9
3: Steephollow Creek abv Bear River	9/3/18	24.9	0.01	0.00	7.53	33.83	0.28	8.68	19.93	579.4	5.1
3: Steephollow Creek abv Bear River	10/2/18	28.8	0.04	0.00	7.54	97.10	0.15	8.50	20.30	1203.3	11
8: Bear River at Hwy 70	10/3/17	24.4	0.20	0.00	7.45	165.70	7.33	9.01	14.95	1986.3	39.7
8: Bear River at Hwy 70	11/10/17	14.2			7.21	161.90	5.21	9.25	13.75		
8: Bear River at Hwy 70	12/7/17	11.3	0.07	0.05	7.41	85.87	5.49	10.91	10.45	980.4	71.7
8: Bear River at Hwy 70	1/11/18	12.9			6.99	96.70	21.70	8.69	10.85		
8: Bear River at Hwy 70	2/8/18	19.5			7.40	169.07	17.57	9.87	12.40		
8: Bear River at Hwy 70	3/8/18	16.2	0.08	0.10	7.16	99.37	12.14	9.94	10.40	2419.6	67
8: Bear River at Hwy 70	4/2/18	18.2	0.08	0.02	7.04	94.37	11.79	10.23	13.28	1732.9	30.1
8: Bear River at Hwy 70	5/8/18	22.7			7.35	111.93	10.60	8.88	17.40		
8: Bear River at Hwy 70	6/8/18	20.9	0.11	0.00	7.29	139.93	10.30	7.57	22.40	2419.6	54.5
8: Bear River at Hwy 70	7/12/18	29	0.08	0.00	7.30	101.73	4.84	7.47	23.50	>2419.6	272.3
8: Bear River at Hwy 70	8/2/18	22.6	0.09	0.00	7.16	119.87	2.44	6.81	24.30	>2419.6	56.5
8: Bear River at Hwy 70	9/6/18	27.3	0.17	0.00	7.16	177.50	3.68	6.31	20.75	>2419.6	68.3
8: Bear River at Hwy 70	10/4/18	25.2	0.20	0.00	7.52	163.17	1.77	7.55	21.37	>2419.6	224.7
9: Wooley Creek	10/3/17	21.6	0.00	0.01	7.64	82.40	0.99	10.68	10.70	2419.6	1046.2
9: Wooley Creek	11/7/17	13.5			7.67	151.00	0.97	10.58	7.80		
9: Wooley Creek	12/5/17	9	0.00	0.41	7.36	132.57	0.89	12.50	6.10	248.9	73.3
9: Wooley Creek	1/8/18	11.5			7.31	128.50	1.36	10.35	9.55		
9: Wooley Creek	2/8/18	13.7			7.18	130.07	1.00	11.32	8.32		
9: Wooley Creek	3/5/18	14.3	0.08	0.56	6.62	124.50	4.02	11.45	6.62	461.1	79.4
9: Wooley Creek	4/3/18	19.3	0.01	0.35	7.05	120.80	1.62	11.92	10.78	277.8	34.1
9: Wooley Creek	5/7/18	21.4			7.29	129.23	1.39	10.76	13.35		
9: Wooley Creek	6/4/18	30.3	0.01	0.04	7.66	111.37	1.39	9.13	19.85	547.5	159.4
9: Wooley Creek	7/9/18	31.5	0.05	0.05	7.60	103.30	1.42	9.82	16.95	1986.3	1203.3
9: Wooley Creek	8/7/18	33.2	0.05	0.01	7.76	81.73	1.62	9.30	17.90	1986.3	686.7
9: Wooley Creek	9/3/18	34.3	0.00	0.01	7.72	85.50	1.34	9.36	17.20	2419.6	127.4
11: Magnolia Creek Below LOP	10/4/17	19	3.77	0.01	7.56	321.37	1.84	7.66	11.10	161.9	83.6
11: Magnolia Creek Below LOP	11/8/17	14.2			7.56	297.53	3.04	8.00	9.92		
11: Magnolia Creek Below LOP	12/6/17	8.1	2.15	0.49	7.34	325.23	3.18	10.32	5.77	2419.6	198.9
11: Magnolia Creek Below LOP	1/10/18	11.9			6.97	192.97	7.39	9.20	11.00		
11: Magnolia Creek Below LOP	2/7/18	16.2			7.41	221.30	1.70	10.51	9.03		
11: Magnolia Creek Below LOP	3/7/18	16.7	0.42	0.23	7.05	157.33	1.57	12.59	8.85	816.4	11.4
11: Magnolia Creek Below LOP	4/4/18	19.3	0.24	0.29	7.19	204.47	1.36	8.28	13.85	998.2	202.2
11: Magnolia Creek Below LOP	5/9/18	21.5			7.41	220.60	1.56	8.09	17.65		
11: Magnolia Creek Below LOP	6/6/18	20.2	0.87	0.02	7.21	273.60	2.24	7.64	17.38	1442.4	313.9
11: Magnolia Creek Below LOP	7/11/18	30.0	1.84	0.01	7.72	375.70	2.71	7.60	20.05	>2419.6	298.7
11: Magnolia Creek Below LOP	8/6/18	24.3	1.83	0.01	7.43	243.50	3.44	5.99	18.07	>2419.6	1553.1
11: Magnolia Creek Below LOP	9/5/18	26.7	2.65	0.00	7.44	212.30	1.82	6.88	18.55		
11: Magnolia Creek Below LOP	10/3/18	21.7	1.72	0.02	7.47	177.50	1.20	7.04	17.35	>2419.6	>2419.6
12: Dry Creek blw Lower Dry Creek	10/1/17	25.1	0.04	0.00	7.85	157.60	0.16	9.70	14.70	488.4	25.6
12: Dry Creek blw Lower Dry Creek	11/6/17	18.7			7.93	237.83	0.19	10.38	12.20		
12: Dry Creek blw Lower Dry Creek	12/4/17	21.9	0.12	0.16	8.03	232.93	0.58	11.23	8.52	107.1	16.9
12: Dry Creek blw Lower Dry Creek	1/8/18	11.5			7.66	189.67	6.74	11.05	9.80		
12: Dry Creek blw Lower Dry Creek	2/5/18	19.5			7.86	210.63	1.49	12.38	10.02		
12: Dry Creek blw Lower Dry Creek	3/5/18	14.3	0.04	0.11	7.64	140.53	11.33	14.16	7.05	1119.9	261.3
12: Dry Creek blw Lower Dry Creek	4/2/18	22.2	0.02	0.04	7.83	180.57	3.30	11.06	14.70		
12: Dry Creek blw Lower Dry Creek	5/8/18	27.5			8.00	209.33	0.72	10.58	18.77		
12: Dry Creek blw Lower Dry Creek	6/4/18	31.2	0.04	0.01	7.93	195.87	0.50	8.84	20.63	1413.6	119.8
12: Dry Creek blw Lower Dry Creek	7/9/18	36.5	0.06	0.03	7.92	161.23	0.37	8.67	21.13	>2419.6	45.7
12: Dry Creek blw Lower Dry Creek	8/2/18	27.5	0.00	0.00	8.02	153.27	0.28	8.00	22.60	1553.1	57.3
12: Dry Creek blw Lower Dry Creek	9/3/18	27.5	0.07	0.00	7.90	146.47	0.26	9.23	19.45	2419.6	42
12: Dry Creek blw Lower Dry Creek	10/5/18	20.6	0.00	0.00	7.86	164.83	0.16	9.31	16.80		
13: Dry Creek Hwy 65	10/3/17	26.2	0.00	0.00	7.98	211.43	1.39	8.92	17.45	2419.6	31.5
13: Dry Creek Hwy 65	11/10/17	15.9			7.35	243.53	1.62	7.85	13.90		
13: Dry Creek Hwy 65	12/7/17	13.8	0.06	0.07	7.83	239.67	1.42	11.49	8.15	435.2	123.6
13: Dry Creek Hwy 65	1/11/18	14.1			7.46	145.40	12.83	10.75	11.20		
13: Dry Creek Hwy 65	2/8/18	17.2			7.80	128.83	10.37	9.18	12.35		
13: Dry Creek Hwy 65	3/8/18	17.6	0.08	0.16	7.79		4.74	11.52	12.25	203.5	63.1
13: Dry Creek Hwy 65	4/2/18	20.4	0.02	0.16	7.81	220.87	1.67	9.68	18.00	1299.7	191.8
13: Dry Creek Hwy 65	5/8/18	25.3			7.86	248.13	1.59	8.15	21.32		
13: Dry Creek Hwy 65	6/8/18	20	0.01	0.06	7.75	236.00	1.07	7.86	22.75	2419.6	42.6
13: Dry Creek Hwy 65	7/12/18	28.7	0.05	0.00	7.47	275.70	0.95	5.49	26.55	>2419.6	137.9
13: Dry Creek Hwy 65	8/2/18	24	0.06	0.00	7.40	397.07	2.28	5.01	25.87	>2419.6	>2419.6
13: Dry Creek Hwy 65	9/6/18	28	0.04	0.00	7.41	220.00	1.04	5.94	22.95	>2419.6	29.2
13: Dry Creek Hwy 65	10/4/18	25.1	0.01	0.00	7.48	186.00	1.18	6.35	21.15	2419.6	187.2

SSI
Citizen Scientists Water Quality Monitoring on the Bear River

Bear River at high flow during water quality monitoring
SSI

Citizen Scientists in the field during water quality monitoring

Citizen Scientists in the field during water quality monitoring
SSI

Waldo Bridge over Dry Creek, Spenceville Wildlife Area. Dry Creek provides spawning and rearing habitat for Chinook salmon and Steelhead trout.

SSI

Citizen Scientists in the field during Bioassessments

Citizen scientists water quality monitoring in the Bear River Watershed

Instream and riparian habitat in Dry Creek, Spenceville Wildlife Area

SSI

Potential spawning habitat for salmon and steelhead in Dry Creek, Spenceville Wildlife Area

Riparian habitat along Dry Creek, Spenceville Wildlife Area, during a site visit with CDFW to discuss cattle grazing

Citizen Science in Disadvantaged Communities for Bear River Watershed Improvement

Monitoring Plan

A Report to the Rose Foundation
Prepared by Sierra Streams Institute

SIERRA Streams INSTITUTE
Nevada City, California
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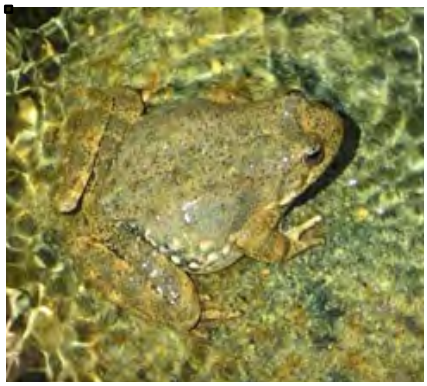
April 2018



This monitoring plan supports watershed goals from the Bear River Watershed Restoration Plan. Sierra Streams Institute staff and citizen scientists will monitor water quality, macroinvertebrates and algae, sample for heavy metals, survey special-status species (rare, threatened or endangered plants and animals) and characterize wildlife and vegetation communities at sites of strategic importance for riparian ecosystem restoration in the Bear River Watershed.

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Introduction

The Bear River Watershed, on the western slopes of the northern Sierra Nevada, is one of the most impacted, and simultaneously least-studied, watersheds in the state. It is home to a diversity of plant, wildlife, and human communities, and has a complex history of development and anthropogenic impact. The major tributaries into the Bear River include the Steephollow Creek, Greenhorn Creek, Wolf Creek, Magnolia Creek, Rock Creek, and Dry Creek (Figures 1, 2). Elevations range from slightly above sea-level to 5,500 ft. As part of this project, Sierra Streams Institute staff and citizen scientists will monitor water quality, macroinvertebrates and algae, collect water samples for heavy metals analysis, and special-status species (rare, threatened or endangered), and will characterize wildlife and vegetation communities at sites of strategic importance for riparian ecosystem restoration in the Bear watershed. Citizen engagement is at the heart of all our work and has enabled us to greatly expand overall stewardship of the Bear River watershed. Sierra Streams is currently engaging many disadvantaged community members as stakeholders in the Bear restoration planning process, and empowering residents to shape the monitoring and restoration priorities for their home watershed. As part of this monitoring program, we will train additional residents as citizen scientists to collect monitoring data, thus enhancing community understanding of ecological processes, increasing pride of place, and growing residents into activists and volunteers. Creating a community of "citizen scientists" who understand the value of local stewardship and monitoring is a contribution to a larger body of knowledge. Volunteer and landowner engagement will be critical at all stages of the project, including data gathering and monitoring.

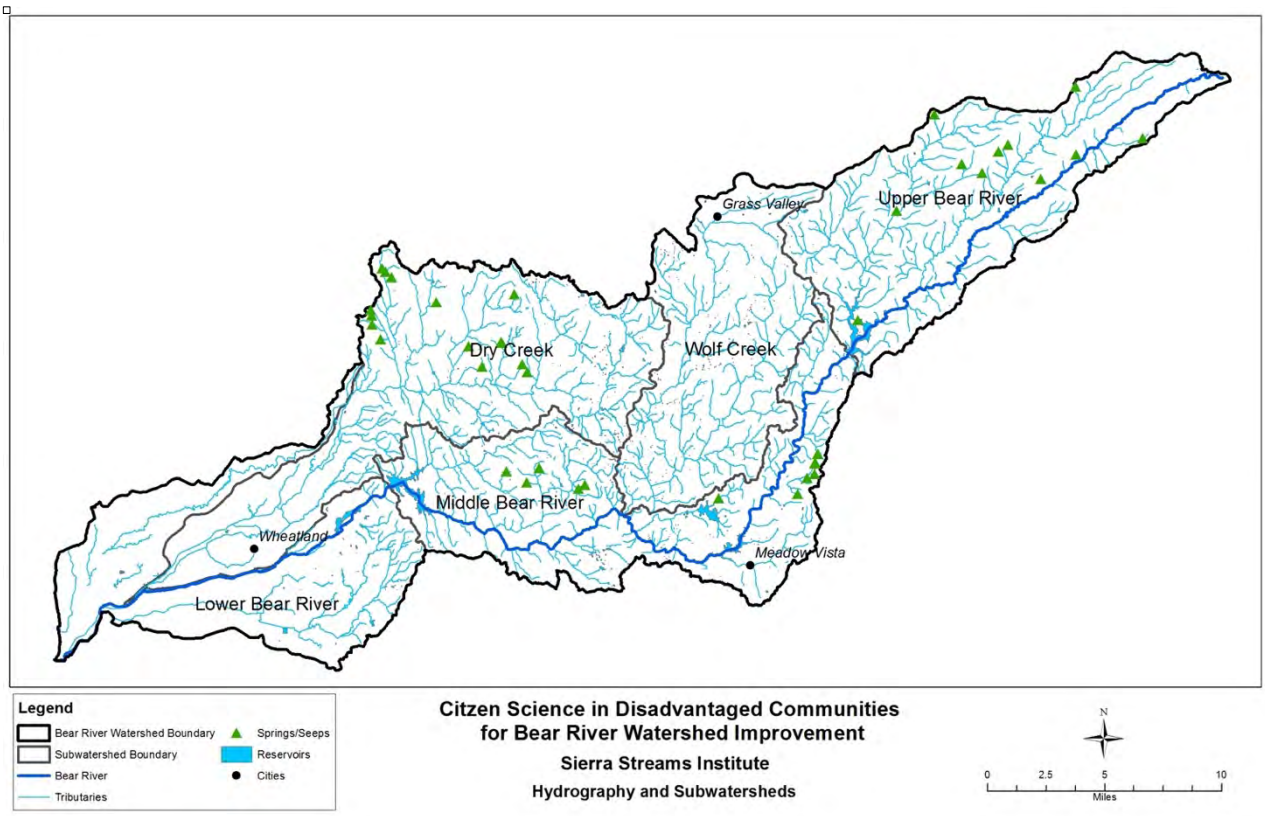

Figure 1: Map of the Bear River watershed, including major subwatershed boundaries and tributaries.

Goals

Information from monitoring activities will support the goals of the Bear River Watershed Restoration Plan, and other conservation-related actions, on an ecosystem scale in order to effectively protect and restore the Bear River Watershed. Data will be used to prioritize projects that simultaneously benefit water quality, as well as plant and wildlife populations and habitats.

Objectives

1. Implement specified sections of water quality, macroinvertebrate and algae, heavy metals, and vegetation and wildlife monitoring plan and data gathering
2. Identify additional long-term monitoring or data gathering actions
3. Train citizen scientists to collect monitoring data and engage volunteers and landowners

Water quality monitoring will occur on a monthly basis, year-round during 2018 and 2019. Macroinvertebrate and algae collection will take place during June and October of 2018, with instream physical habitat data collected in June 2018, based on Surface Water Ambient Monitoring Program protocols (Fetscher et al., 2010). Heavy metals sampling will occur during the fall and winter of 2018 and 2019, during periods of runoff caused by precipitation events. The majority of wildlife and vegetation surveys will occur during the spring and summer, during the most active season for most wildlife species and the flowering season for most plants, while fisheries surveys will be completed between summer of 2018 through spring 2019, during the time periods in which juvenile salmonids may be present in the summer through fall and winter spawning, and spring rearing seasons. Community members will accompany staff river scientists, biologists, and geologist during the monitoring and survey events, providing exciting opportunities for residents to learn about and enjoy the species with which they share a watershed.

Objectives include:

• Identify, protect and restore populations of rare, native, special-status species and the specific habitat characteristics that best support their survival and reproduction
• Identify, protect and increase populations of rare and special-status plant species
• Identify and reduce non-native invasive plant species.
• Identify, protect and restore populations of wildlife species that hold special cultural and spiritual significance to local indigenous people and all people.
• Identify, prevent or reduce the spread of emerging wildlife diseases and invasive wildlife species.
• Identify, protect and increase populations of rare fungi and non-vascular plant species.
• Improve data availability of plant species and vegetation community spatial locations.
• Identify reference (control) sites to guide restoration prioritization and actions.
• Address priority watershed pollutants through water quality monitoring and heavy metal sampling including:

- mercury, for which the Bear River is 303(d) listed;

- heavy metals from historical gold mining in the area, including arsenic, cadmium, and lead;
- pathogenic bacteria, particularly E. coli, for which the Bear's tributary Wolf Creek is 303(d) listed;
- nutrients including phosphates and nitrates.

• Improve the understanding of wildlife ecology in the watershed through sound science.
• Improve the understanding of plant community ecology in the watershed through sound science.
• Educate landowners, agencies and the public about the ecosystem services provided by native plant communities, and about local wildlife, their habitat needs and threats, conservation practices and restoration opportunities.

Water Quality

Surface water in the Bear River Watershed is crucial for a range of consumptive and non-consumptive uses. Maintaining high surface water quality has important socioeconomic benefits, in addition to the more obvious human and ecological health needs. Beyond municipal and domestic water supply, surface waters from the Bear and its tributaries are also used for agriculture (irrigation and stock watering), power generation, and recreation. Recreational activities range from those with direct contact with water, such as swimming, fishing, and rafting, to those not directly in water including riverside hiking and hunting. Surface waters also provide wildlife habitat; essential warm and cold freshwater habitat for non-anadromous fish, and potential migration, spawning and rearing habitat for salmon and steelhead. It is thus of economic, agricultural, recreational, and ecological interest to maintain high surface water quality.

Impairment to surface water quality has resulted in multiple reaches within the Bear watershed currently that are 303(d) listed under the Clean Water Act, all at stages of varying Total Daily Maximum Load (TMDL) development. This includes 21 miles of the lower Bear River, below Camp Far West Reservoir, listed for mercury, copper, and pesticide-use; 23 miles of Wolf Creek and 2 miles of French Ravine, listed for fecal coliform; and all three major reservoirs, Camp Far West, Rollins, and Lake Combie, listed for mercury (California Water Board 2016). More information on the 303(d) listing and TMDL development process, as well as pesticide use and mercury contamination in the watershed, can be found in the Bear River Watershed Disturbance Inventory and Existing Conditions Assessment (Campbell *et al*. 2016).

Despite these issues, water quality in the majority of the Bear River Watershed has remained unmonitored for nearly a decade prior to 2016, except in portions of subwatersheds within the Bear River drainage. This project is an effort to build on recent monitoring efforts by Sierra Streams Institute and the US Bureau of Reclamation undertaken since 2016, and other organizations, to continue water quality monitoring in critical reaches of the Bear River watershed and provide a current dataset data to inform management and restoration efforts.

Monitoring or Project Locations

The following sites will be monitored for water quality as part of this project (Figure 2):

- Site 2 – Mainstem Bear River downstream of Chicago Park Powerhouse, immediately upstream of the confluence with Steephollow Creek
- Site 3 – Steephollow Creek immediately upstream of its confluence with the Bear River
- Site 4 – Greenhorn Creek at You Bet Road, upstream of Rollins Reservoir
- Site 8 – Mainstem Bear River at Highway 70, downstream of the confluence with Dry Creek and upstream of the Feather River confluence
- Site 9 – Wooley Creek, upstream of the confluence with Lake Combie and the mainstem Bear River
- Site 11 – Magnolia Creek downstream of Lake of the Pines
- Site 12 – Dry Creek downstream of Little Dry
- Site 13 – Dry Creek at Highway 65

Monitoring Protocols

Surface water quality monitoring will follow standard methods outlined in the "Citizen Water Monitoring Quality Assurance Project Plan for the Yuba Watershed Monitoring Committee" (Friends of Deer Creek, 2008). SSI's water quality instruments will be used for monitoring water quality in the field, and samples for bacteria and nutrient analysis will be processed at SSI's in-house lab.

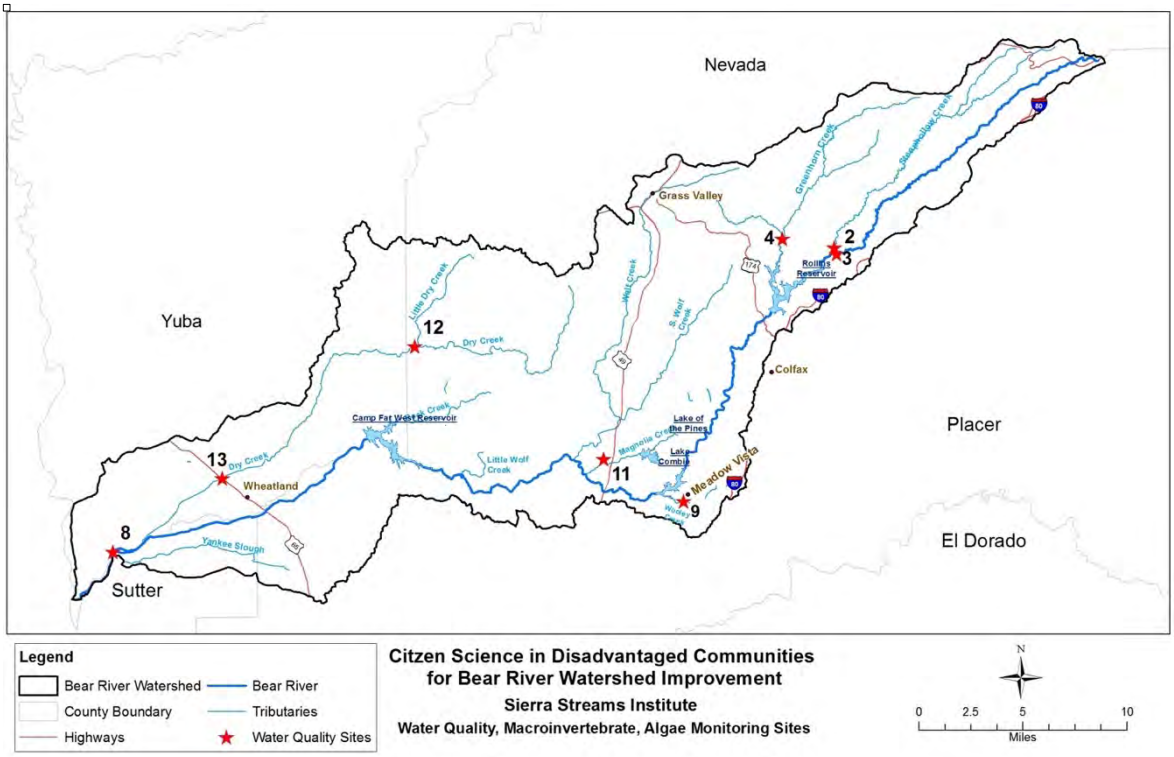

Figure 2: Map of Sierra Streams Institute Water Quality, Macroinvertebrate, and Algae Monitoring Sites in the Bear River.

Macroinvertebrates, Algae, and Physical Habitat

Benthic macroinvertebrates (BMI) are biological indicators of ecological condition and function. They are widespread in river systems, long-lived, relatively sedentary, low on the food chain, and are sensitive to pollution. These characteristics make BMI ideal bio-sentinels for assessing stream health, as they can reflect long-term and short-term effects of activities within a watershed and specific reaches. Besides being useful biological indicators of chemical, physical, and biological water quality conditions, BMI are an integral part of the food web for fish, amphibians, reptiles, and birds.

Benthic algae (periphyton) are a major component in a river system's food web acting as autotrophs that convert the sun's energy into organic molecules through photosynthesis (SSI, 2011). Because benthic algae are attached to the substrate and are at the beginning of the aquatic food chain, the assemblages present in a particular reach are good indicators of physical, chemical, and biological disturbances that have occurred during the time the algae developed (Barbour et al. 1999). Excessive algae growth can indicate pollution in a river system and is a concern in the managed waterways of California and the Sierra Nevada (SRWP 2010; Fetscher et al. 2010). Algal blooms can affect aquatic communities by altering DO levels, fixed carbon production, nutrient cycling, pH, food web structures, and health of fish (SRWP 2010). Measuring algae density and identifying community structures can help pinpoint ecological stressors such as nutrient loading, elevated water temperatures, land disturbances, and more (SRWP 2010). Disturbances, modifications, and development, such as riparian zone degradation, altered or diverted flows, land uses (e.g. agricultural and urban), and presence of a wastewater treatment plant can result in nutrient loading and elevated water temperatures which in turn promote algal growth in streams (SSI, 2011).

Monitoring or Project Locations

Benthic macroinvertebrates and algae will be collected, and physical habitat surveys will be completed, at the following sites as part of this project (Figure 2):

- Site 2 – Mainstem Bear River downstream of Chicago Park Powerhouse, immediately upstream of the confluence with Steephollow Creek
- Site 3 – Steephollow Creek immediately upstream of its confluence with the Bear River
- Site 4 – Greenhorn Creek at You Bet Road, upstream of Rollins Reservoir
- Site 8 – Mainstem Bear River at Highway 70, downstream of the confluence with Dry Creek and upstream of the Feather River confluence
- Site 9 – Wooley Creek, upstream of the confluence with Lake Combie and the mainstem Bear River
- Site 11 – Magnolia Creek downstream of Lake of the Pines
- Site 12 – Dry Creek downstream of Little Dry
- Site 13 – Dry Creek at Highway 65

Monitoring Protocols

Benthic macroinvertebrate and algae collection, and physical habitat assessments will follow standard methods outlined by the Surface Water Ambient Monitoring Program (SWAMP) in the Standard Operating Procedures for Collecting Benthic Macroinvertebrate Samples and Associated Physical and Chemical Data for Ambient Bioassessment in California (Ode, 2007), and the Standard Operating Procedures for Collecting Stream Algae Samples and Associated Physical Habitat and Chemical Data for Ambient Bioassessments in California (Fetscher et al., 2010). SSI's field sampling equipment and gear will be used for collecting benthic macroinvertebrates and algae and completing physical habitat assessments in the field during the project.

Heavy Metals Sampling

Sierra Streams Institute, under the guidance of our staff geologist, will conduct heavy metal sampling at key sites within the Upper Bear River watershed during at least two storm events. Grab samples and automatic water samplers (when feasible) will be used to collect water samples for heavy metals analysis, testing for total arsenic, cadmium, mercury, lead, and total suspended solids, nutrients and bacteria, and standard water quality parameters. Volunteer citizen scientists will assist staff members with storm sampling, although due to safety concerns, staff members will collect the measurements and samples.

Monitoring or Project Locations

Water samples for analysis of heavy metals will be collected within specific subwatersheds of the Bear River watershed, with sampling focused on areas in the Upper Bear River watershed within the Steephollow Creek subwatershed (Figure 3). Previous sample results collected in the lower Steephollow Creek watershed indicate the need to collect additional samples at locations farther upstream within the watershed, in an effort to better characterize tributary source loading to Steephollow Creek and the Bear River, and identify heavy metals sources for targeted remediation efforts.

Monitoring Protocols

During storm-events, samples will be collected as close as possible to peak flows at all sites, when feasible and safe to do sample. If available, samples during high flow events will be collected from the downstream side of bridges with a specialized sampling bucket. At sites where bridge access is not available, samples will be collected from the shoreline using an extendable pole, sampling from fast-moving, well-mixed water, or using automatic water samplers. Detailed sampling methods are provided in Appendix J.

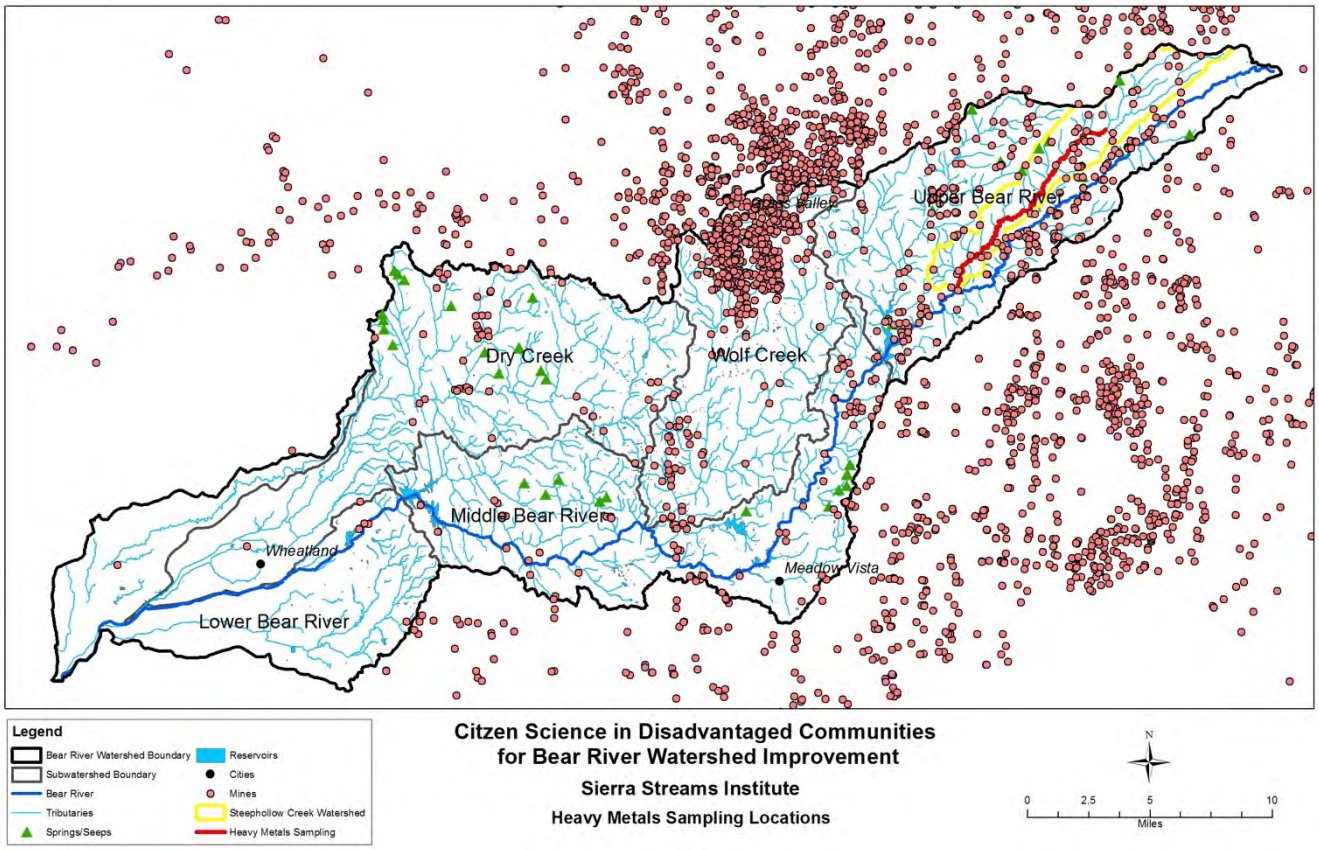

Figure 3: Map showing watershed areas and creeks targeted for heavy metals sampling, rivers and primary tributaries within the Bear River watershed, springs, and mine locations.

Rare Species

Knowledge of species-specific occurrence patterns is essential for determining the impacts and threats to rare species in the Bear Watershed, as well as the conservation and restoration activities necessary to prevent their extirpation and help facilitate species recovery (Lesica and Allendorf, 1992; 1995). Surveys for special-status species (plants and animals that are legally protected or otherwise considered sensitive by federal, state, or local resource conservation agencies and organizations) have been completed for only a small portion of the Bear River Watershed. The results from many of these surveys have been published to the California Natural Diversity Database (CNDDB) Table 1 (CDFW, 2015). CNDDB species location maps are located in Appendix A. The CNDDB list is limited to documented occurrences and is not a complete list of all sensitive species as surveys and reporting for special-status plants and wildlife have been completed for only a small portion of the Bear River Watershed. There is a great need to increase the knowledge of rare plant diversity, abundance and location in the watershed and increase access to data that is already available.

Twenty special-status wildlife species had been documented in the Bear Watershed by CNDDB prior to 2016 (Campbell *et al*. 2016). Forty-seven special-status bird species have been

documented in the Bear River Watershed by CNDDB (2015) or a subset of curated experts at eBird (2016).

Table 1: CNDDB Special-status Species Documented in the Bear River Watershed

Species	Status
Bank swallow (*Riparia riparia*)	State Threatened
Brandegee's clarkia (*Clarkia biloba ssp. Brandegeeae*)	CNDDB Sensitive Species
Brazilian watermeal (*Wolffia brasiliensis*)	CNDDB Sensitive Species
Brownish beaked rush (*Rhynchospora capitellata*)	CNDDB Sensitive Species
Button's Sierra sideband (*Monadenia mormonum buttoni*)	CNDDB Sensitive Species
California black rail (*Laterallus jamaicensis coturniculus*)	State threatened
California linderiella (*Linderiella occidentalis*)	CNDDB Sensitive Species
Coast horned lizard (*Phrynosoma blainvillii*)	CNDDB Sensitive Species
Dubious pea (*Lathyrus sulphureus* var. *argillaceus*)	CNDDB Sensitive Species
Dwarf downingia (*Downingia pusilla*)	CNDDB Sensitive Species
Elongate copper moss (*Mielichhoferia elongata*)	CNDDB Sensitive Species
Felt-leafed violet (*Viola tomentosa*)	CNDDB Sensitive Species
Finger rush (*Juncus digitatus*)	CNDDB Sensitive Species
Foothill yellow-legged frog (*Rana boylii*)	CNDDB Sensitive Species
Giant garter snake (*Thamnophis gigas*)	Federally and State Threatened
Grasshopper sparrow (*Ammodramus savannarum*)	CNDDB Sensitive Species
Long-eared owl (*Asio otus*)	CNDDB Sensitive Species
Obscure bumblebee (*Bombus caliginosus*)	CNDDB Sensitive Species
Pine Hill flannelbrush (*Fremontodendron decumbens*)	Federally Endangered, State Rare
Sanford's arrowhead (*Sagittaria sanfordii*)	CNDDB Sensitive Species
Scadden Flat checkerbroom (*Sidalcea stipularis*)	State Endangered
Sheldon's sedge (*Carex sheldonii*)	CNDDB Sensitive Species
Sierra blue grass (*Poa sierrae*)	CNDDB Sensitive Species
Sierra Nevada mountain beaver (*Aplodontia rufa californica*)	CNDDB Sensitive Species
Sierra Nevada Red Fox (*Vulpes vulpes necator*)	State Threatened
Song sparrow (Modesto population) (*Melospiza melodia*)	CNDDB Sensitive Species
Stebbins phacelia (*Phacelia stebbinsii*)	CNDDB Sensitive Species
Stebbins' morning glory (*Calystegia stebbinsii*)	Federally and State Endangered
Steelhead - Central Valley DPS (*Oncorhynchus mykiss irideus*)	Federally Threatened
Swainson's hawk (*Buteo swainsoni*)	State Threatened
Tricolored blackbird (*Agelaius tricolor*)	CNDDB Sensitive Species
Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)	Federally Threatened
Vernal pool fairy shrimp (*Branchinecta lynchi*)	Federally Threatened
Vernal pool tadpole shrimp (*Lepidurus packardi*)	Federally Endangered
Western pond turtle (*Actinemys marmorata*)	CNDDB Sensitive Species
Yellow warbler (*Setophaga petechia*)	CNDDB Sensitive Species

Vegetation Communities

Forests

The Sierran mixed conifer, montane hardwood-conifer, montane hardwood habitats are various assemblages of white fir, Douglas-fir, ponderosa pine, sugar pine, incense-cedar, and California black oak, and canyon live oak. They comprise approximately 30% of the watershed's vegetation communities and are primarily found in the upper watershed. These forest communities are prone to wildfire.

Monitoring Locations

- Locations of tree mortality, bark beetle, and other pests or pathogens will be identified and documented when observed
- Locations with priority fuel reduction or vegetation treatment needs will be identified and documented when observed
    - Observations and documentation will be limited to sites with potential restoration opportunities and willing landowners, including public land
- SSI will complete at least four monitoring sessions on BLM land in the Steephollow sub-watershed
- SSI will complete at least one monitoring session at BYLT's Bear River PG&E Planning Unit (Figure 4)
- Possible additional locations include other BYLT lands, Placer Land Trust lands

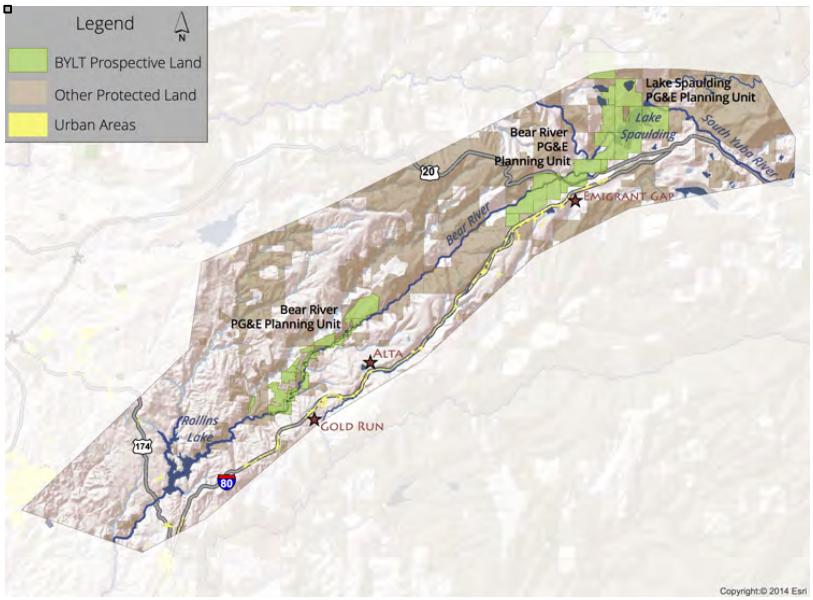

Figure 4: Map of planning units and protected lands in the Upper Bear River Watershed.

Monitoring Protocols

No specific protocol will be used except general observation. Documentation will include notes, photos, or maps. Data gathering will be goal based and may include tree size, health, habitat, and associated species.

Oak Woodlands

Blue oak and blue oak-foothill pine habitats occur across large areas in the middle watershed. However, protected mature woodlands are uncommon. Valley oak woodland is found in only 0.38% of the watershed. Heavy grazing can indirectly affect oak recruitment increasing soil compaction and reducing organic matter, making it difficult for oak roots to penetrate the soil. (Swiecki, Bernhardt 1998). Oak woodlands have long been impacted from firewood harvesting, agricultural conversions and residential and commercial development.

Monitoring or Project Locations

- SSI will complete at least one monitoring session at BYLT's Garden Bar Preserve to identify protection or restoration needs of oak woodlands, specifically regarding effects of grazing
- Possible additional locations include other BYLT lands, Placer Land Trust lands, Spenceville Wildlife Area

Monitoring Protocols

No specific protocol will be used except general observation. Documentation will include notes, photos, or maps. Data gathered will be goal based and may include tree size, health, habitat, and associated species.

Chaparral

Chaparral vegetation can be found in patches throughout the watershed and supports wildlife by providing food, protection, nesting sites, and shade which is particularly important in hot weather (CWHR, 1988).

Monitoring or Project Locations

Rare plants such as Stebbins' morning-glory and Pine Hill flannelbush, grow among chaparral and are associated only with gabbro serpentine soils. Within the Bear watershed they are only known to occur at the Nevada County Facilities on McCourtney Rd, Grass Valley.

Monitoring Protocols

Data from the Web Soil Survey of the USDA, gathered by the National Cooperative Soil Survey of the Natural Resources Conservation Service, will be used to identify monitoring locations.

Riparian

Riparian zones are highly valuable for wildlife, providing shade, water, cover, migration corridors, nesting, and feeding opportunities. Very little valley foothill riparian habitat (1.3% of watershed) is found in the Bear watershed, mainly at lower elevations within large patches of annual grassland and cropland. At least 50 permanent or transient amphibian and reptile species, 147 nesting or winter visitant bird species, and 55 mammal species are known to utilize valley foothill riparian areas (CWHR, 1988). Montane riparian zones may host a wide variety of amphibians, reptiles, birds, and mammals, including the Sierra Nevada red fox (CWHR, 1988), and are found in the upper watershed.

Monitoring or Project Locations

- SSI will complete at least monitoring sessions at the following sites to identify protection or restoration needs for valley foothill riparian areas
    - One site to be determined along the Bear River located just below Camp Far West Reservoir
    - One site to be determined on Dry Creek for restoration of salmonid habitat
    - One site at BYLT's Garden Bar Preserve
- SSI will complete at least two monitoring sessions on BLM land in the Steephollow sub-watershed
- SSI will complete at least one monitoring session at BYLT's - PG&E Bear River Planning Units for montane riparian areas
- Possible additional locations include other BYLT lands, Placer Land Trust Preserves and CDFW Spenceville Wildlife Area

Monitoring Protocols

No specific protocol will be used except general observation. Documentation will include notes, photos, or maps. Data gathered will be goal based and may include tree size, health, habitat, and associated species.

Wetlands

Wetlands provide a number of important ecosystem services, including maintenance of biodiversity, water storage, flood mitigation, carbon sequestration and aesthetic value. Mapping of wetlands can be used to prioritize conservation and restoration areas to protect vulnerable wetland flora and fauna. Freshwater wetlands are considered one of the habitats more sensitive to change in hydrology and climate change since change in precipitation, evaporation, and evapotranspiration are likely to affect groundwater levels. Even minor fluctuations in water availability can affect the suitability of habitat for some wetland plants (Kutner and Morse, 1996). The U.S. Fish and Wildlife's National Wetlands Inventory Wetland Mapper database was used to identify the following percentage and location of vegetated wetland types in the Bear River Watershed. Maps can be found in Appendix B.

- 1,148 acres freshwater emergent wetland, herbaceous marsh, swale, wet meadow (17.8%)
- 1,013 acres freshwater forested or shrub wetland (15.7%)
- 800 acres of riverine wetland (12.4%)
- 43 acres of other wetland types (farmed wetland, spring, and vernal pool 0.007%)

Monitoring or Project Locations

- SSI will complete at least two field verifications and assessments of strategic wetlands identified in the National Wetlands Inventory
- Possible locations include Bear Valley, an easily accessible montane meadow at the top of the watershed where both wet and dry meadow characteristics can be observed.

- SSI will complete at least one monitoring session at BYLT's Garden Bar preserve for wetland habitat

Monitoring Protocols

No specific protocol will be used except general observation. Documentation will include notes, photos, and maps. Data gathered will be goal based and may include species composition and indicators of wetland health. A wetland delineation is required to certify jurisdictional wetlands.

Vernal Pools

Vernal pools are covered by shallow water for variable periods from winter to spring, but may be completely dry for most of the summer and fall. The unique environment of vernal pools provides habitat for numerous rare plants and animals that are able to survive and thrive in these harsh conditions. More than 90% of California's vernal pools have already been lost. Beale Air Force Base is the home of numerous highly sensitive vernal pool wetlands and their associated wildlife species. Monitoring of vegetation composition and residual dry matter of biomass in vernal pools and grasslands is used to inform cattle grazing regimes on the Base. Sustainable grazing practices can positively affect vernal pool health by removing competing non-native grasses and forbs (Marty, 2005).

Monitoring or Project Locations

- SSI will complete at least two monitoring sessions at pools outside of Beale AFB
- SSI will complete research on potential vernal pool habitat in watershed and prioritize for protection
- Pools at Beale Air Force Base are monitored by contractors of the base. Data will be requested.

Monitoring Protocols

No specific protocol will be used except general observation. Documentation will include notes, photos, and maps. Data gathered will be goal based and may include species composition and indicators of vernal pool health.

Springs

There are 39 recognized springs in the watershed, which are defined by the USGS as places where water seeps naturally from the ground. It is certain there are more springs in the Bear watershed. At least 12 were found in lower Steephollow sub-watershed in 2016 alone. Not all springs are considered wetlands. Springs provide valuable habitat and are critical for the watershed.

Monitoring or Project Locations

- SSI will complete at least two monitoring sessions on BLM land in the Steephollow sub-watershed

- Locations occur throughout the watershed; species will be identified and documented when observed during field surveys.

Monitoring Protocols

No specific protocol will be used except general observation. Documentation will include notes, photos, and maps. Protocols should be goal based and could include species composition and health.

Rare Plants

Table 2 includes plants species documented as CNDDB occurrences found in the Bear watershed and all species with potential to occur. There is a great need to increase the knowledge of rare plant diversity, abundance and location in the watershed and increase access to data that is already available. SSI's monitoring will support this critical data gap. Appendix C provides a plant communities map for the Bear River watershed.

Plants documented within the Bear River watershed that have special status include Scadden Flat checkerbloom, brownish beaked rush, red-anthered rush, Stebbins's morning glory, Follett's monardella, Pine Hill flannelbush (Federal Endangered), Cantelow's lewisia, Butte County fritillary. Bryophytes include Norris's beardmoss, and bog clubmoss, Brazilian watermeal (*Wolffia brasiliensis*), and elongate copper moss (*Mielichhoferia elongate*).

Monitoring or Project Locations

- Possible locations occur throughout the watershed and will be identified and documented when observed
- SSI will revisit at least <u>four</u> documented rare species occurrences for verification
- SSI will complete at least <u>two</u> monitoring sessions on BLM land in the Steephollow sub-watershed
- SSI will complete at least <u>one</u> monitoring session at BYLT's Garden Bar Preserve
- SSI will complete at least <u>one</u> monitoring session at BYLT's - PG&E Bear River Planning Units

Monitoring Protocols

- CDFW and CNPS's "Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities" (Appendix D) will be used for monitoring rare plants

Table 2: CNDDB Special-status Plant Species Documented in the Bear River Watershed.

Allium jepsonii	Jepson's onion	None	None	1B.2	USFS:S, BLM:S
Balsamorhiza macrolepis	big-scale balsamroot	None	None	1B.2	USFS:S, BLM:S
Buxbaumia viridis	buxbaumia moss	None	None	2B.2	USFS:S, BLM:S
Calystegia stebbinsii	Stebbins' morning-glory	Endangered	Endangered	1B.1	
Carex sheldonii	Sheldon's sedge	None	None	2B.2	
Carex xerophila	chaparral sedge	None	None	1B.2	
Chlorogalum grandiflorum	Red Hills soaproot	None	None	1B.2	BLM:S
Chloropyron molle ssp. hispidum	hispid salty bird's-beak	None	None	1B.1	BLM:S
Clarkia biloba ssp. brandegeeae	Brandegee's clarkia	None	None	4.2	USFS, BLM_S
Downingia pusilla	dwarf downingia	None	None	2B.2	
Eriogonum umbellatum var. ahartii	Ahart's buckwheat	None	None	1B.2	USFS:S, BLM:S
Fissidens pauperculus	minute pocket moss	None	None	1B.2	USFS:S
Fremontodendron decumbens	Pine Hill flannelbush	Endangered	Rare	1B.2	
Fritillaria eastwoodiae	Butte County fritillary	None	None	3.2	USFS:S
Gratiola heterosepala	Boggs Lake hedge-hyssop	None	Endangered	1B.2	BLM:S
Juncus digitatus	finger rush	None	None	1B.1	
Juncus leiospermus var. leiospermus	Red Bluff dwarf rush	None	None	1B.1	USFS:S, BLM:S
Lathyrus sulphureus var. argillaceus	dubious pea	None	None	3	
Legenere limosa	legenere	None	None	1B.1	BLM:S
Lewisia cantelovii	Cantelow's lewisia	None	None	1B.2	USFS:S, BLM:S
Lewisia serrata	saw-toothed lewisia	None	None	1B.1	USFS:S
Mielichhoferia elongata	elongate copper moss	None	None	4.3	USFS:S
Packera layneae	Layne's ragwort	Threatened	Rare	1B.2	
Peltigera gowardii	western waterfan lichen	None	None	4.2	USFS:S
Penstemon personatus	closed-throated beardtongue	None	None	1B.2	USFS:S, BLM:S
Phacelia stebbinsii	Stebbins' phacelia	None	None	1B.2	USFS:S
Poa sierrae	Sierra blue grass	None	None	1B.3	USFS:S
Rhynchospora capitellata	brownish beaked-rush	None	None	2B.2	
Sidalcea stipularis	Scadden Flat checkerbloom	None	Endangered	1B.1	
Viola tomentosa	felt-leaved violet	None	None	4.2	
Wolffia brasiliensis	Brazilian watermeal	None	None	2B.3	

Invasive plant species

Invasive plant species can out-compete native plants and significantly alter plant and animal communities, threatening entire ecosystems. The focus of invasive species control in the Bear River watershed should be on those posing the greatest threat to native ecosystems, including *Lepidium latifolium* (perennial pepperweed), *Arundo donax* (giant reed), *Onopordum acanthium* (Scotch thistle), *Sesbania punicea* (scarlet wisteria), *Lythrum salicaria* (purple loosestrife). Species that are widespread in the Bear River watershed include *Centaurea solstitialis* (yellow starthistle), *Centaurea stoebe ssp. micranthos* (spotted knapweed), and *Cytisus scoparius* (Scotch broom).

Monitoring or Project Locations

- Locations occur throughout the watershed; species will be identified and documented when observed during field surveys.

Monitoring Protocols

No specific protocol will be used except general observation. Documentation will include notes, photos, or maps.

Wildlife

Amphibians

Amphibians are a critical component of various aquatic and terrestrial ecosystems. In addition to the strong role they play in trophic food webs, amphibians are often regarded as important indicators of ecosystem health due to their high sensitivity to changes in the environment. Special-status amphibians such as foothill yellow-legged frogs are highly sensitive to changes in water quality. Monitoring amphibian diversity and demography is essential to understanding the ecological integrity of biological systems and identifying areas of concern for restoration. Remarkably, many species are relatively under-studied. Amphibians are currently suffering from severe declines and extinctions on a global scale, due to a combination of threats including habitat loss, pollution, climate change, diseases (e.g. chytridiomycosis), invasive species, and commercial exploitation (Mendelson et al. 2006). The need for amphibian research and conservation is even more pressing in the context of this environmental crisis.

Rare and Special-Status Species

Foothill yellow-legged frogs (FYLF- *Rana boylii*) are characteristically associated with shallow streams (less than 3 feet deep) with cobble or gravel substrates and little to no aquatic or emergent vegetation.California Department of Fish and Wildlife range maps indicate that foothill yellow-legged frogs may be found year-round throughout the majority of the upper Bear watershed. Activities that alter streambeds and flows, such as mining and water releases from reservoirs, should be managed to minimize impacts on foothill yellow-legged frog breeding habitat (CaliforniaHerps, 2015).

California red-legged frogs (*Rana draytonii*) typically inhabit foothill streams with dense shrubby or emergent riparian vegetation. Adults forage, breed, and lay their eggs in still or slow-moving pools more than 2 feet deep that are shaded by low overhanging branches (e.g., willows) and concealed by emergent vegetation (e.g., cattails). The species is listed as US ESA Threatened, a CDFW Species of Special Concern, and IUCN Vulnerable. While no occurrences of the California Red-legged Frog have recently been documented within the watershed, the species is known to have historically inhabited the area.

Sierra Nevada yellow-legged frogs (*Rana sierrae*) are characteristically found in sunny river margins, meadow streams, isolated pools, and lake borders in the Sierra Nevada (IUCN Red List, 2015). The upper elevation (>4,400 ft) of the Bear Valley Meadow is the only potential habitat for Sierra Nevada yellow-legged frogs along the Bear River. Surveys documented favorable habitat characteristics but did not find Sierra Nevada yellow-legged frogs (NID and PG&E, 2010c; American Rivers, 2010).

Western spadefoots (*Scaphiopus hammondii* or *Spea hammondii*) primarily inhabit grasslands below 3000 ft in elevation, but occasionally populate valley-foothill hardwood woodlands (CDFW, 2015b; NID and PG&E, 2011b). Eggs are laid in vernal pools, attached to underwater vegetation or detritus (CaliforniaHerps, 2015). The western spadefoot has suffered from extensive habitat loss, and is currently listed as a Species of Special Concern by the California Department of Fish and Wildlife and a Sensitive Species by the Bureau of Land Management. This species has not been observed within the Bear watershed, though suitable habitat within its range is found at the lower elevations of the watershed.

Monitoring or Project Locations

- SSI will complete at least <u>four</u> monitoring sessions on BLM land in the Steephollow sub-watershed
- SSI will complete at least <u>one</u> monitoring session at BYLT's Garden Bar Preserve
- SSI will complete at least <u>one</u> monitoring session at BYLT's - PG&E Bear River Planning Units

Monitoring Protocols

Various non-invasive sampling methods will be utilized, depending on the habitat being surveyed. Monitoring will begin in April or May 2018 and continue seasonally through spring-2019. Detailed methodology is presented in Appendix E.

A four-tiered approach derived from Welsh & Hodgson (1997), will be applied for visual and physical sampling of adults and larvae in stream habitats: (1) visual encounter surveys, (2) stream environment-based area searches, (3) timed visual surveys of seep environments, and (4) timed visual surveys of adjacent upland environments. Sampling will be conducted on a bimonthly schedule, starting in April. Sample units will be 300 m reaches for each method. Stream environment-based area searches will follow the "rubble rousing" or area constrained search technique (Bury & Corn, 1991). Rubble rousing will be season-limited, and not take place during breeding season when R. boylii egg masses and small larvae may potentially be present.

Six randomly placed belt transects (10 m x 1 m) – three in slow pools and three in riffles – will be intensively surveyed at each site in a downstream-to-upstream fashion. One individual will overturn large objects and rake through gravel and cobble, making observation and catching all organisms by hand while another individual catches dislodged organisms downstream with a dip net. PVC pipes arrays (Boughton et al., 2000) will be placed in transects adjacent to sampling sites to target captures of Sierra Chorus Frogs (*Pseudacris sierra*), the only known tree frog in these watersheds.

Anadromous Fish

Native fish species in California are currently in a state of decline. Overall, 22% of fish species are threatened with extinction in the near future (Moyle & Davis 2000). The situation is even more dire for salmonid species, as 65% of these species are in danger of going extinct within the next century (Moyle et al., 2008). Special-status fish species such as Central Valley Chinook Salmon and Central Valley Steelhead Trout are highly sensitive to water quality impairments and changes to aquatic habitat. Monitoring fish species is of utmost importance to track and potentially counter this decline. Furthermore, fish provide an important indicator of stream health, as native salmonids are primarily found in healthy, ecologically-functioning streams. Studying and monitoring fish in addition to macroinvertebrates will provide important information regarding stream health, as different levels of biological organization are known to respond differently to changes in stream health (Clements 2000).

Special-Status Species

The Central Valley Distinct Population Segment of steelhead (Oncorhynchus mykiss irideus) is federally listed as threatened under the Endangered Species Act since 1998 (CDPR, 2015). The National Marine Fisheries Service's 2014 Recovery Plan lists the Bear River as a Core 3 watershed for steelhead because populations are intermittently present, and the existence of these populations depends on straying from nearby populations (National Marine Fisheries Service, 2014). Intermittent populations such as these hold ecological importance since the juvenile movement and the straying of adults provides buffer populations that may allow the species to exist after periodic catastrophic disturbances in core habitat areas (NMFS, 2014). Currently, the lowest reach of the Bear River below Camp Far West Reservoir is designated as critical habitat for Central Valley Steelhead, due to its use for non-natal rearing and as spawning grounds in the winter during periods of high flows (Campbell *et al*. 2016). The South Sutter Irrigation District Dam forms an impassable barrier to anadromous fish, and limits steelhead distribution to below the dam.

The lower Bear River watershed below Camp Far West Reservoir is designated as critical habitat for Central Valley spring-run Chinook salmon (National Marine Fisheries Service, 2014). The lower Bear River was classified by NMFS as occupied habitat for Central Valley spring-run Chinook, a state- and federally-threatened Evolutionarily Significant Unit (ESU), citing a public comment that it was used for non-natal rearing (NMFS, 2005). NOAA ranked the lower Bear River as having high conservation value to this ESU because it was likely used by at least two populations (i.e. Feather and Yuba Rivers) for this unique life-history strategy of non-natal

rearing (NMFS, 2005). However, the most current recovery plan for steelhead and Chinook salmon does not list the Bear as a watershed currently containing a population of Chinook salmon (National Marine Fisheries Service, 2014; Campbell *et al*. 2016). Historically, spring-run Chinook salmon were not present in the Bear River watershed. Instead, the 15-mile reach below present-day Camp Far West supported a fall-run of Chinook salmon of significant size (Yoshiyama et al., 2001; Campbell *et al*. 2016). It is currently unclear to what extent salmon are found in the lower Bear River or which migration runs utilize existing habitat (Campbell *et al*. 2016).

Monitoring or Project Locations

Anadromous fish surveys will take place in the Dry Creek subwatershed, from the confluence with the Bear River upstream to the fish passage barrier at Beale Air Force Base (Figure 5).

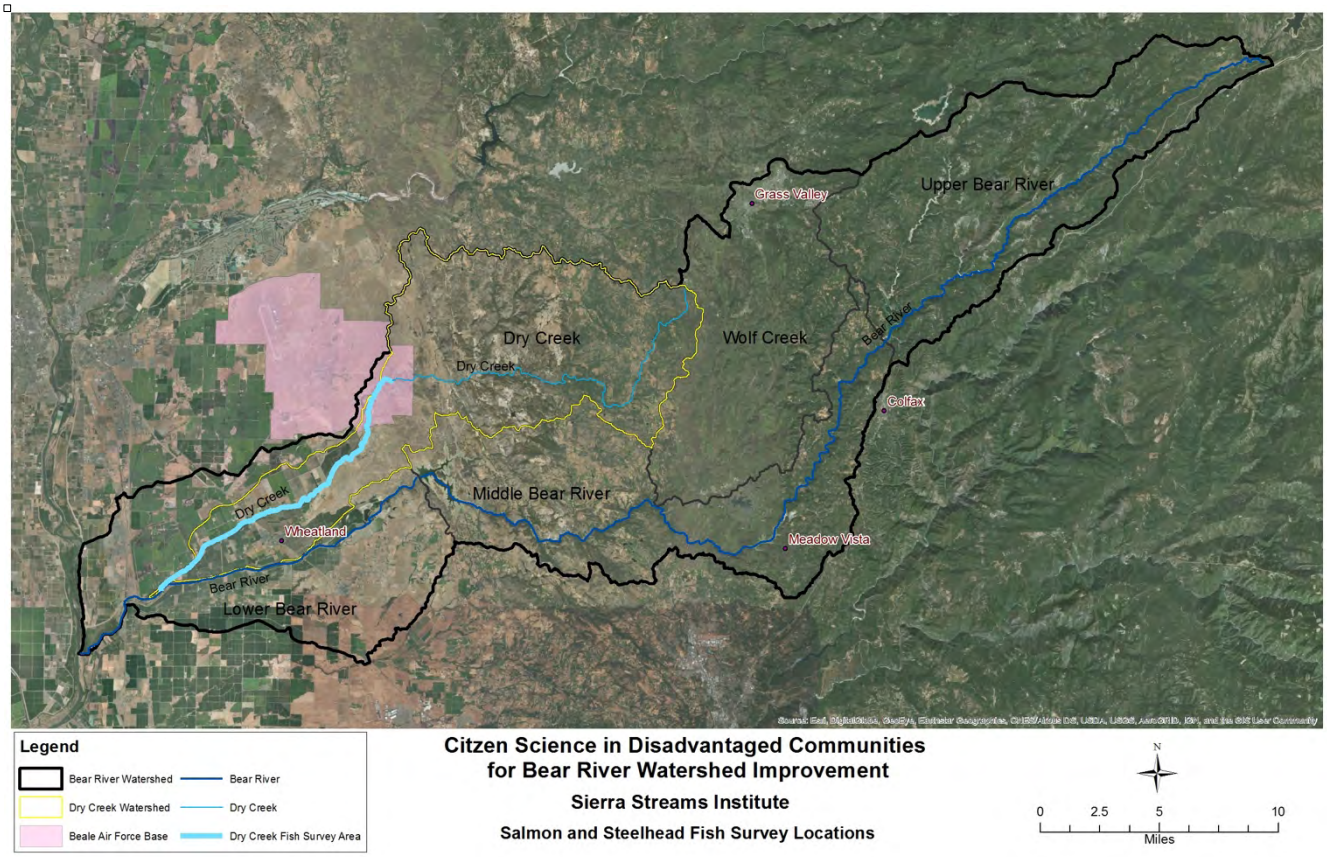

Figure 5: Map of anadromous fish survey locations in the Dry Creek subwatershed.

Monitoring Protocols

Several methods will be used to monitor anadromous fish including instream snorkel and streambank surveys to document presence/absence and enumerate adult and juvenile salmonids; instream surveys to quantify the amount of spawning activity and suitable spawning habitat; snorkel surveys to document the presence of juvenile rearing and suitable rearing habitat; eDNA sampling to document the presence/absence of summer rearing juvenile steelhead (Appendix F).

Birds

Bird species diversity is an important, and visible, indicator of watershed biodiversity and can be affected by degradation of habitat and changes in land use, such as development, deforestation and conversion to agriculture.

Special-status birds

The Bear River Watershed provides vital habitat for nesting, wintering, and/or migratory stop-over sites for over 200 bird species, including 47 species of special conservation concern (CNDDB, 2015; eBird, 2016). These special-status species are listed by the California Endangered Species Act (CESA), US Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW), US Forest Service (USFS), Bureau of Land Management (BLM), and/or California Department of Forestry (CDF) as endangered (E), threatened (T), fully protected (FP), species of special concern (SSC), bird of conservation concern (BCC), sensitive (S), or watch list (WL). Except for where noted, all species described below have been observed and publicly documented within the Bear River Watershed by the CNDDB (2015) or a subset of curated experts at eBird (2016).

Flow, bank and floodplain dynamics are particularly significant for several of these species, which are associated with wetlands and riparian areas. Bank swallows (*Riparia riparia*, CESA:T, BLM:S) nest on tall, sheer riverbanks with recent scour and friable soils. California black rails (*Laterallus jamaicensis coturniculus*, CESA:T, CDFW:FP, USFWS:BCC, BLM:S) nest and forage at foothill elevations in shallow marshes and wet meadows characterized byrushes and sedges. Yellow warblers (*Setophaga petechia*, CDFW:SSC, USFWS:BCC), yellow-breasted chats (*Icteria virens*, CDFW:SSC), and song sparrows (*Melospiza melodia*, low-elevation "Modesto" population is CDFW:SSC) nest and forage in riparian shrubs. White-faced ibis (*Plegadis chihi,* CDFW:WL) are found in wetlands and flooded rice fields in the watershed's lower elevations. Tricolored blackbirds (*Agelaius tricolor*, CDFW:SSC, USFWS:BCC, BLM:S) are found in freshwater cattail marsh, riparian scrub, and other dense vegetation and forage in wetlands and nearby grasslands and agricultural fields.

American white pelicans (*Pelecanus erythrorhynchos*, CDFW:SSC) and double-crested cormorants (*Phalacrocorax auritus,* CDFW:WL) forage for fish in the watershed's lakes. Migrating ducks such as redhead (*Aythya americana*, CDFW:SSC) and Barrow's goldeneye (*Bucephala islandica*, CDFW:SSC) have been observed passing through the watershed and feeding in its wetlands.

The diversity of habitats in the Bear River Watershed support an extraordinary diversity of special-status raptors. Northern goshawks (*Accipiter gentilis*, CDFW:SSC, USFS:S, BLM:S, CDF:S) are found in coniferous forests of the upper watershed. Sharp-shinned and Cooper's hawks (*Accipiter striatus*, CDFW:WL; *Accipiter cooperii*, CDFW:WL) are found in a variety of elevations and wooded habitats. Golden eagles (*Aquila chrysaetos*, CDFW:FP &WL, USFWS:BCC, BLM:S, CDF:S) and American peregrine falcons (*Falco peregrines anatum*, CDFW:FP, USFWS:BCC, CDF:S) have been observed hunting in the canyons and meadows of the middle and upper portions of the watershed and may nest on secluded cliffs. These species hunt low-elevation sites in the

winter season, along with wintering ferruginous hawks (*Buteo regalis*, CDFW:WL, USFWS:BCC). Swainson's hawks (*Buteo swainsonii*, CESA:T, USFWS:BCC, BLM:S) have been documented nesting in riparian trees of the lower watershed and hunting over open grasslands and agricultural fields, along with white-tailed kites (*Elanus leucurus*, CDFW:FP, BLM:S), which additionally inhabit the middle watershed's oak woodlands. Northern harriers (*Circus cyaneus*, CDFW:SSC) hunt in low-elevation marshes and grasslands, and nest in secluded locations on the ground. Bald eagles (*Haliaeetus leucocephalus*, CESA:E, CDFW:FP, USFWS:BCC, USFS:S, BLM:S, CDF:S) and osprey (*Pandion haliaetus*, CDFW:WL, CDF:S) catch fish in the Bear River and lakes and nest in large trees. Merlin (*Falco columbarius*, CDFW:WL) hunt and nest in a variety of open and wooded habitats.

Nesting long-eared owls (*Asio otus*, CDFW:SSC) have been documented in the watershed, and short-eared owls (*Asio flammeus*, CDFW:SSC) may visit low-elevation grasslands and wetlands in winter. The Bear Watershed also provides potential nesting and foraging habitat for California spotted owls (*Strix occidentalis occidentalis*, CDFW:SSC, USFWS:BCC, USFS:S, BLM:S), burrowing owls (*Athene cunicularia*, CDFW:SSC, USFWS:BCC, BLM:S), flammulated owls (*Otus flammeolus*, USFWS:BCC), and great gray owls (*Strix nebulosa*, CESA:E, USFS:S, CDF:S), although documentation is not available for these species because owl survey effort in the watershed has been limited, and location information for these owls is protected due to the sensitivity of these species.

Special-status woodpeckers known to inhabit the Bear Watershed include the oak woodland-associated Lewis' woodpecker (*Melanerpes lewis*, USFWS:BCC) and Nuttall's woodpecker (*Picoides nuttallii*, USFWS:BCC), the coniferous forest-associated white-headed woodpecker (*Picoides albolarvatus*, USFWS:BCC), and the primarily burned forest-associated black-backed woodpecker (*Picoides arcticus*, USFS:S).

Shrub- and tree-nesting songbirds of special conservation concern in the Bear Watershed's include the low-elevation loggerhead shrike (*Lanius ludovicianus*, CDFW:SSC, USFWS:BCC), Lawrence's goldfinch (*Spinus lawrencei*, USFWS:BCC) and black-chinned sparrow (*Spizella atrogularis*, USFWS:BCC; oak titmouse (*Baeolophus inornatus*, USFWS:BCC). and the high-elevation olive-sided flycatcher (*Contopus cooperi*, CDFW:SSC, USFWS:BCC). Ground-nesting songbirds of special conservation concern include low-elevation grasshopper sparrows (*Ammodramus savannarum*, CDFW:SSC) and California horned larks (*Eremophila alpestris actia*, CDFW:WL). Yellow-billed magpie (*Pica nuttalli*, USFWS:BCC) also nests and forages in the watershed's valley foothill riparian areas, oak woodlands and agricultural fields.

Willow flycatchers (*Empidonax traillii*, CESA:E, USFWS:BCC, USFS:S) have been reported to migrate through the Bear Watershed. Greater sandhill cranes (*Grus canadensis tabida*, CESA:T, CDFW:FP, USFS:S, BLM:S) are frequently heard calling over the watershed while migrating. Rufous hummingbirds (*Selasphorus rufus*, USFWS:BCC) are vital pollinators for Bear Watershed flowers as they migrate through the watershed.

Monitoring or Project Locations

- SSI will complete at least four monitoring sessions on BLM land in the Steephollow sub-watershed
- SSI will complete at least two monitoring sessions at BYLT's Garden Bar Preserve
- SSI will complete at least one monitoring session at BYLT's - PG&E Bear River Planning Units
- SSI will complete at least one site to be determined location on Dry Creek

Monitoring Protocols

Protocols follow Point Reyes Bird Observatory methodology (Appendix G) for point counts for general species presence. Special status species, such as California spotted owl, will follow state and federal approved survey protocols.

Reptiles

Reptiles play an important role in riverine and wetland systems. Many reptile species utilize wetlands as a primary food source and/or habitat for breeding and refuge. Understanding how reptiles in riparian systems respond to local threats, such as pollution and erosion, regional threats, such as habitat loss and the spread of invasive species, and global threats, such as climate change, will allow us to identify areas of concern in the watershed and enhance restoration targets. Like amphibians, reptiles are experiencing widespread declines due to a combination of stressors, making the assessment of reptile communities of immediate importance. The purpose of this effort is to monitor reptilian populations and construct a baseline species list of reptiles that may reside within the Bear River watershed and begin to estimate population sizes. Understanding how reptiles in riparian systems respond to local threats, such as pollution and erosion, will allow SSI to identify areas of concern and enhance restoration targets.

Rare Species

Western pond turtles (*Actinemys marmorata*) (CDFW:SSC,BLM:S, USFS: S) are highly aquatic, often associating with permanent ponds, lakes, streams, irrigation ditches, or marshes along intermittent streams below an elevation of 6,000 ft (CDFW, 2015b). Riparian forests are critical habitat for this species, as they serve as nesting grounds (River Partners, 2011). Suitable habitat and turtles have been observed throughout the watershed.

Coast horned lizards (*Phrynosoma blainvillii*) (CDFW:SSC,BLM:S) inhabit open habitats such as grassland, oak savannah, chaparral, and natural openings in denser habitats. Coast horned lizards have been documented at several sites throughout the Bear River Watershed (CNDDB 2015). Additional surveys are needed to determine this species' full distribution within the region.

Giant garter snakes (*Thamnophis gigas*) (FESA:T, CESA:T) inhabit sloughs, marshes, low-gradient streams, flooded rice fields, ponds, irrigation and drainage ditches, and adjacent upland habitats in California's Central Valley. The effects of water quality on giant garter snake health are also under investigation, particularly in regard to methylmercury, selenium, and cholinesterase-

inhibiting insecticides such as diazinon and chlorpyriphos (Hansen *et al*., 2011). Giant garter snakes were observed in the Bear River Watershed in 1986 (CNDDB, 2015). Survey effort in this watershed has been limited in recent years, so it is unknown whether the species currently persists here.

Monitoring or Project Locations

- SSI will complete at least four monitoring sessions on BLM land in the Steephollow sub-watershed
- SSI will complete at least two monitoring sessions at BYLT's Garden Bar Preserve
- SSI will complete at least one monitoring session at BYLT's - PG&E Bear River Planning Units
- SSI will complete at least one monitoring session at site to be determined

Monitoring Protocols

A four-tiered approach, derived from Welsh & Hodgson (1997), will be applied for visual and physical sampling of individuals in riparian habitats: (1) visual encounter surveys, (2) stream environments based area searches, (3) timed visual surveys of seep environments, and (4) timed visual surveys of adjacent upland environments. This method, which is primarily used by SSI scientists for sampling stream amphibians, can also be useful for surveying reptile species such as the Western pond turtle. Sample units will be 150 m reaches for each method.

Timed visual surveys of seep and adjacent upland environments will be supplemented with coverboards will be randomly placed on stream banks and locations adjacent to sampling sites and checked periodically for salamanders, snakes, and lizards. All individuals will be released promptly into the field after capture.

Upland habitats will be surveyed according to a modified Multiple Species Inventory & Monitoring (MSIM) protocol. Permanent sampling plots (1 acre) will be installed parallel to both sides of creek monitoring sites. Researchers will walk a looping transect line, carefully investigating all substrates for reptiles and recording species by visual identification. Sampling will occur during the spring and fall, between 1000 and 1800 hours. Please refer to Appendix H for detailed reptile survey methodology.

Mammals

Small mammals are a large component of their respective ecosystems. They assist in seed dispersal, consume vegetation, and act as prey for larger predators. Large mammals can act as keystone or foundation species and help to regulate prey population sizes. Both large and small mammals are also good indicators of ecosystem health, and population monitoring helps to assess success or failure of management actions (Manley et al 2004) or even restoration projects. The purpose of this effort is to monitor both large and small mammal populations to continue to assist in the construction of a baseline list of mammals that reside within the Bear River watershed, both in riparian and upland habitat sites. This effort will serve as a means to monitor "before" and "after" conditions at restoration sites, to better gauge ecosystem response to vegetative and hydrologic restoration. This study may also successfully identify local indicator

species or foundation/keystone species which may be monitored as indicators of health of the whole system or community being monitored (Wilcox, 1984, Fleischman et al., 2000, Landres et al., 1988), as well as test relationships among other habitat parameters. Data collected in this study will be an invaluable supplement to data collected for CDFW's California Essential Habitat Connectivity project and other mammal programs.

Rare Species

Sierra Nevada red fox (*Vulpes vulpes necator*) is found mostly above 4,00-7,000 feet elevation (CDFW, 2015) According to the NatureServe database, the species has been documented in the Upper Bear watershed, however no confirmed recent records exist outside of Lassen Peak and Sonora Pass despite surveys using baited camera traps.

Ringtails (*Bassariscus astutus*) are fully protected under the California Department of Fish and Wildlife and found throughout much of California, occurring in riparian habitats and brush stands of forest and shrub habitats at low to middle elevations. CONFIRMED by Camera

Sierra marten (*Martes caurina sierrae*) has been found in Nevada and Placer counties (NatureServe, 2015). At elevations below 6,500 feet, martens exhibit a strong preference for riparian lodgepole associations over brush, mixed conifer, and Jeffery pine (NatureServe, 2015).

Fishers (*Pekania pennanti*) are uncommon permanent residents of the Sierra Nevada, and a current estimate of population size ranges from 100-600 (NatureServe, 2015), ranked as imperiled, and is a proposed threatened species under the U.S. Endangered Species Act. While it historically inhabited the northern Sierra Nevada, the only known populations are in the southern Sierra except for one observation in 1995 in Plumas County (NatureServe, 2015).

Mountain beaver (*Aplodontia rufa*) There has been one recorded sighting of a mountain beaver within the Bear River watershed, dating back to 1912 (within a 5 mile radius of Blue Canyon in the upper watershed. Since, their presence has not been recorded within the watershed.

Sierra Nevada snowshoe hares *(Lepus americanus tahoensis)* primarily inhabit montane riparian habitat from 4,800-7,000 feet elevation (Collins, 1998; Timossi *et al*., 1995). They have been documented near the Bear River Watershed in the Yuba Gap/Cisco Grove area (Collins, 1998), and may occur in suitable riparian, aspen, montane chaparral, and early-seral conifer habitats in the higher-elevation portions of the Bear River Watershed.

American badgers (*Taxidea taxus*) are uncommon, permanent residents found throughout most of the state, although they have decreased substantially in abundance since historic times (Zeiner *et al*., 1990). The American badger is listed by CDFW as a California Species of Special Concern.

Four bat species with potential to occur in the Bear River Watershed are of particular conservation concern: Townsend's big-eared bat (*Corynorhinus townsendii*), pallid bat (*Antrozous pallidus*), western red bat (*Lasiurus blossevillii*), and western mastiff bat (*Eumops perotis californicus*). These species forage for flying insects above a variety of habitats including grasslands, woodlands, agricultural fields, marshes, open water, and urban areas, although each

is most commonly found in a narrower range of preferred habitats. Although these special-status bats have not yet been documented in the Bear River Watershed, bats that nest in small colonies are typically under-reported due to their nocturnal nature and the relatively sparse research and monitoring of these species.

Monitoring or Project Locations

- SSI will complete at least four monitoring sessions on BLM land in the Steephollow sub-watershed
- SSI will complete at least two monitoring sessions at BYLT's Garden Bar Preserve
- SSI will complete at least one monitoring session at BYLT's - PG&E Bear River Planning Units
- SSI will complete at least one site to be determined location on Dry Creek

Monitoring Protocols

Remote camera trapping will be used to monitor medium and large mammals. Small mammal trapping may be used to support remote camera trapping efforts when deemed appropriate and feasible. Appendix I provides detailed methods to support the mammal survey efforts.

Invertebrates

Rare Species

Valley elderberry longhorn beetles (*Desmocerus californicus dimorphus*) are patchily distributed throughout riparian habitats of the Central Valley and Sierra foothills up to approximately 2,260 ft elevation (USFWS, 2014b). These beetles require elderberry shrubs (*Sambucus* spp.), typically 1 inch or greater in diameter when measured at ground level, for reproduction and survival. There are documented locations in riparian habitat along portions of the main stem Bear River and several tributary streams and sloughs. Valley elderberry longhorn beetles are likely to occur at a large number of additional sites in the Bear River Watershed that have not yet been surveyed. Valley elderberry longhorn beetles are listed as threatened under the federal Endangered Species Act.

Vernal pool fairy shrimp (*Lepidurus packardi*), vernal pool tadpole shrimp (*Branchinecta lynchi*), and California linderiella (*Linderiella occidentalis*, are restricted to vernal pools, swales, and other seasonal wetlands within California's low-elevation grasslands and oak savannahs. The vernal pool fairy shrimp is listed as threatened under the federal Endangered Species Act, and the vernal pool tadpole shrimp is federally listed as endangered. Habitat loss and fragmentation are the largest threats to the recovery of vernal pool species (USFWS, 2005).

Button's Sierra sideband (*Monadenia mormonum buttoni*) has been confirmed in the upper watershed in Bear Valley near Emigrant Gap. *M. m. buttoni* is listed as Critically Imperiled (NatureServe, 2015). Conservation actions should include maintenance of interconnected areas of undisturbed forest with rock talus, woody debris, and riparian areas (USFS, 2009; Duncan, 2005). Fire management that includes reducing the intensity, duration, or frequency of fire through prescribed burning or other methods of fuels reduction could reduce the risk of catastrophic natural fires (Duncan, 2005).

Pollinator species of particular concern in the Bear River Watershed include the obscure bumblebee (*Bombus caliginosus*), a CNDDB sensitive species classified as Vulnerable by the IUCN, and the western bumblebee (*Bombus occidentalis*), which was recently designated by the US Forest Service as a Sensitive Species on National Forests in California

Monitoring or Project Locations

Locations occur throughout the watershed; species will be identified and documented when observed during field surveys.

Monitoring Protocols

No specific protocol will be used except general observation. Documentation will include notes, photos, and maps.

Invasive wildlife species

Several animal species within the Bear River Watershed are introduced exotic species that prey upon, parasitize, and compete with native wildlife, and act as reservoirs for diseases that affect native wildlife. Invasive species currently impacting the Bear River Watershed include the American bullfrog (*Lithobates catesbeianus*), red-eared slider (*Trachemys scripta elegans*), spiny soft-shell turtle (*Apalone spinifera*), brown-headed cowbird (*Molothrus ater*), Eurasian collared-dove (*Streptopelia decaocto*), European starling (*Sturnus vulgaris*), house sparrow (*Passer domesticus*), wild pigs (*Sus scrofa*), and feral cats (*Felis catus*). Additional invasive animal species that are reproducing in watersheds adjacent to the Bear Watershed include New Zealand mud snails (*Potamopyrgus antipodarum*), Asian clams (*Corbicula fluminea*), northern water snakes (*Nerodia sipedon*), and southern water snakes (*Nerodia fasciata*). Non-native species such as these significantly reduce the survival and reproduction of native wildlife populations.

Monitoring or Project Locations

Locations occur throughout the watershed; species will be identified and documented when observed during field surveys.

Monitoring Protocols

No specific protocol will be used except general observation. Documentation will include notes, photos, and maps.

Citizen Science Engagement

SSI will engage volunteers and citizen scientists to assist with monitoring as they learn about the natural resources, watershed health, and engage in its protection.

Training

Citizen scientists will be trained in all monitoring and species survey protocols. Classroom and field trainings will be held for water quality, plant, amphibian, bird, fisheries, macroinvertebrate/algae, physical habitat, and mammal monitoring.

Monitoring and Data Collection

Citizen scientists who have been trained will accompany SSI biologists, river scientists, and geologists during monitoring to record data and assist with surveys. To avoid compromising data quality, only one-to-two residents per day will accompany SSI staff during monitoring.

Summary

SSI biologists, river scientists, geologists, and volunteer citizen scientists will perform surveys for special-status species (rare, threatened or endangered plants and animals), monitor water quality, collect macroinvertebrates, algae and storm water samples, and will characterize the overall wildlife and vegetation communities at several sites of strategic importance for instream, riparian and upland ecosystem restoration in the Bear River watershed. These surveys will move the ongoing watershed restoration planning process forward to help prioritize the sites at which water quality, special-status and riparian species may simultaneously benefit.

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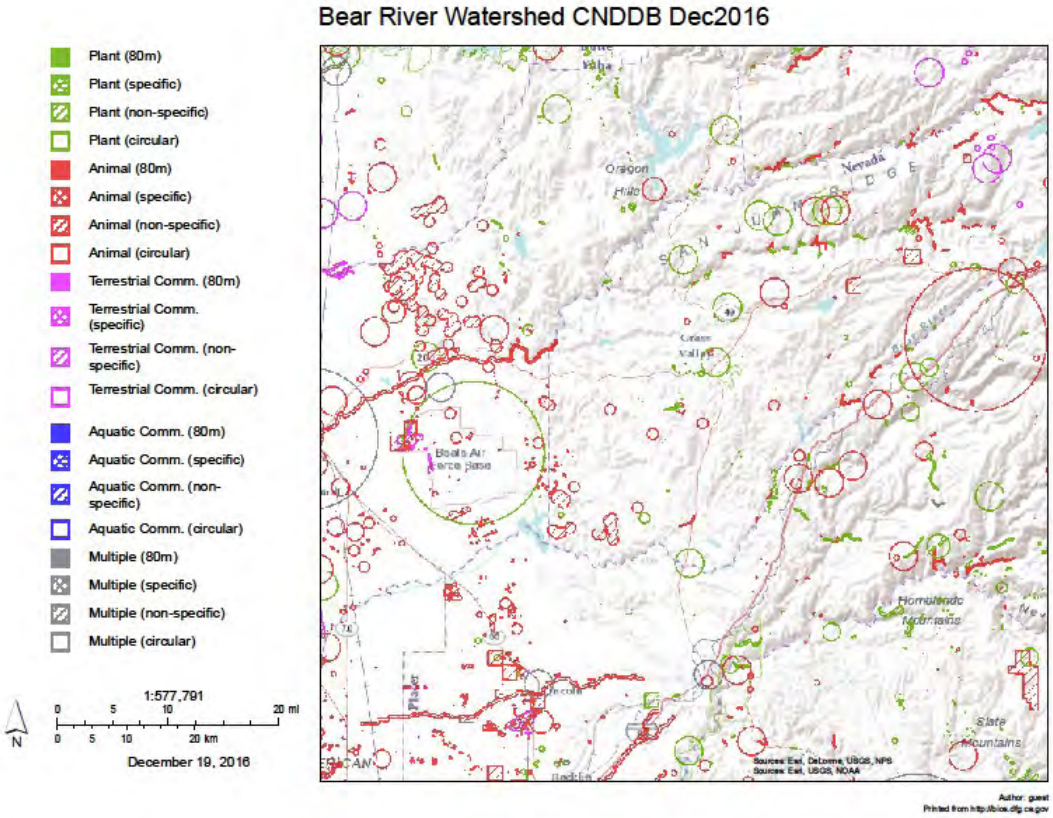
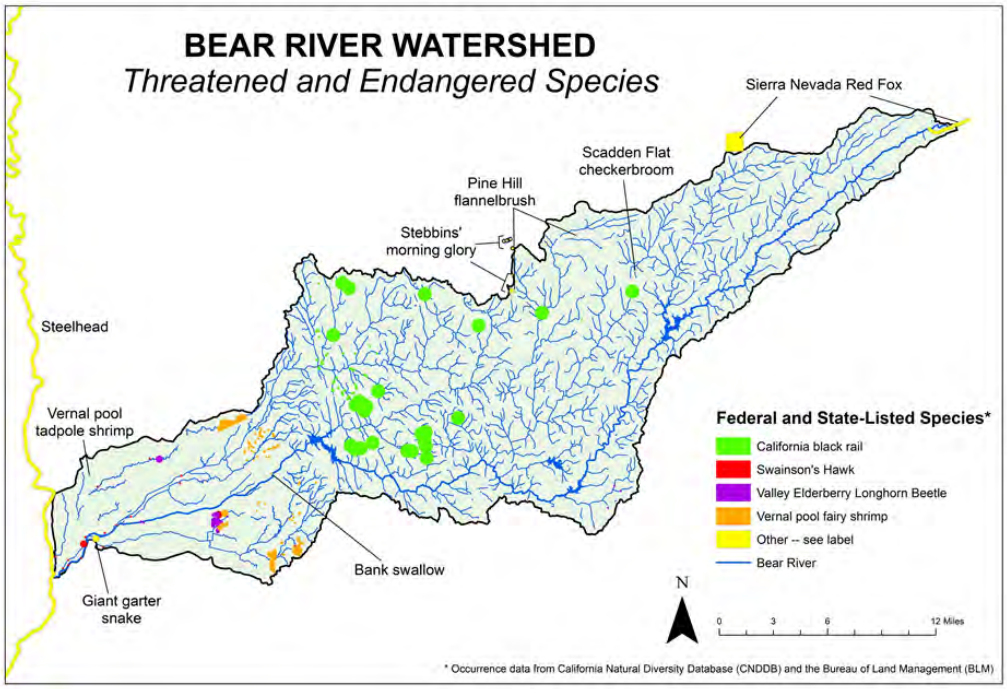
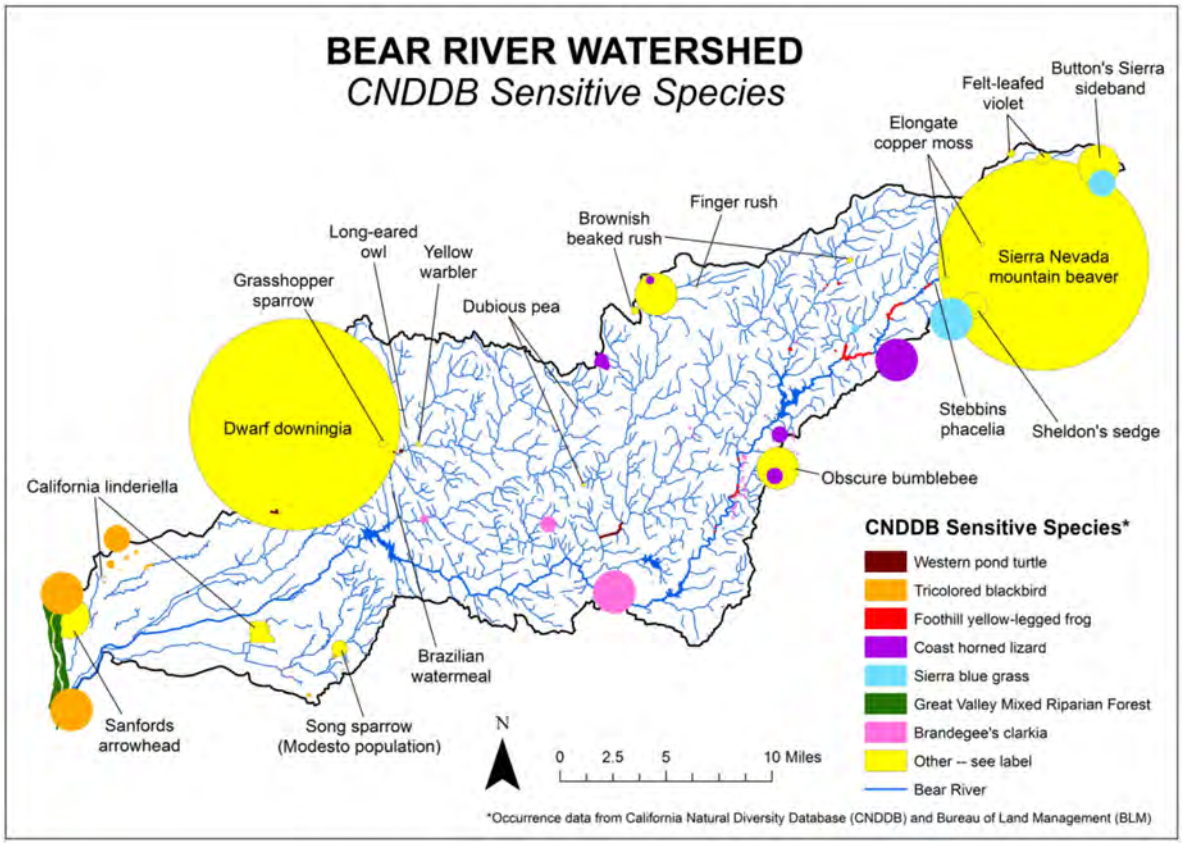
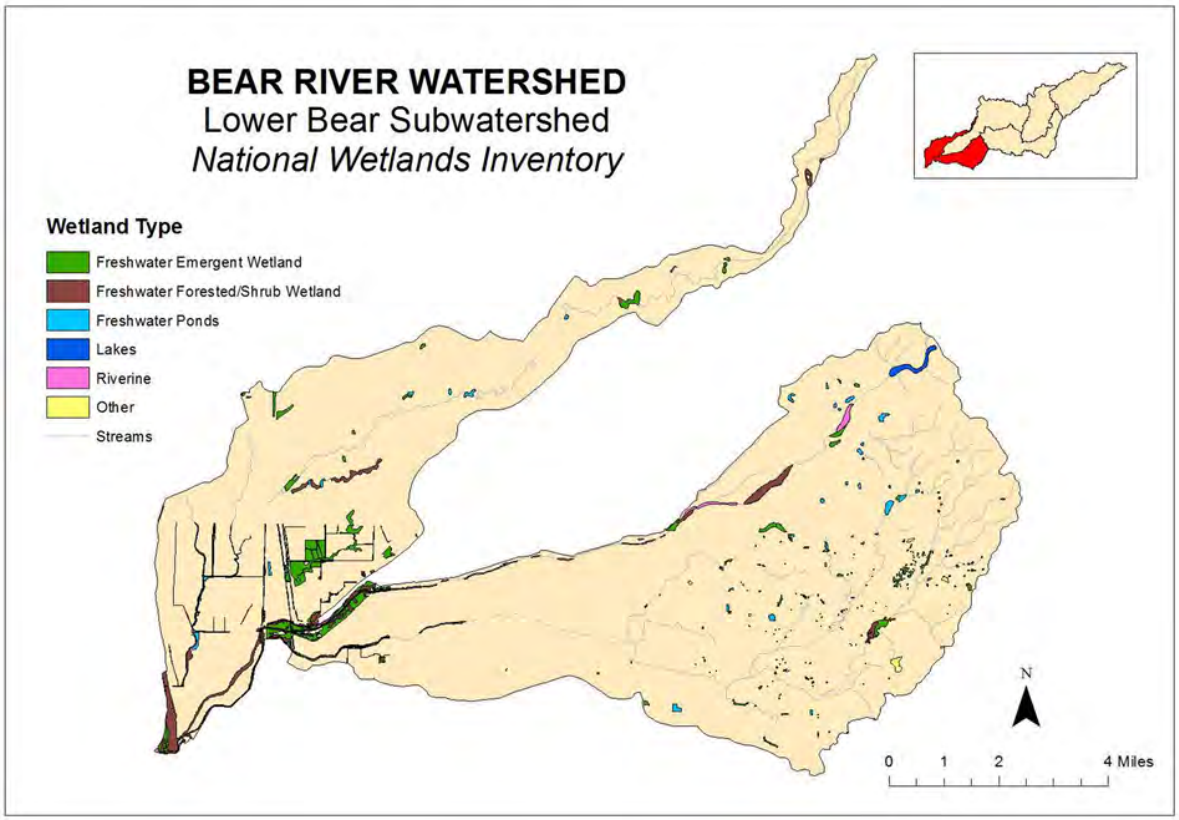
Appendix A: CNDDB Rare Species Map

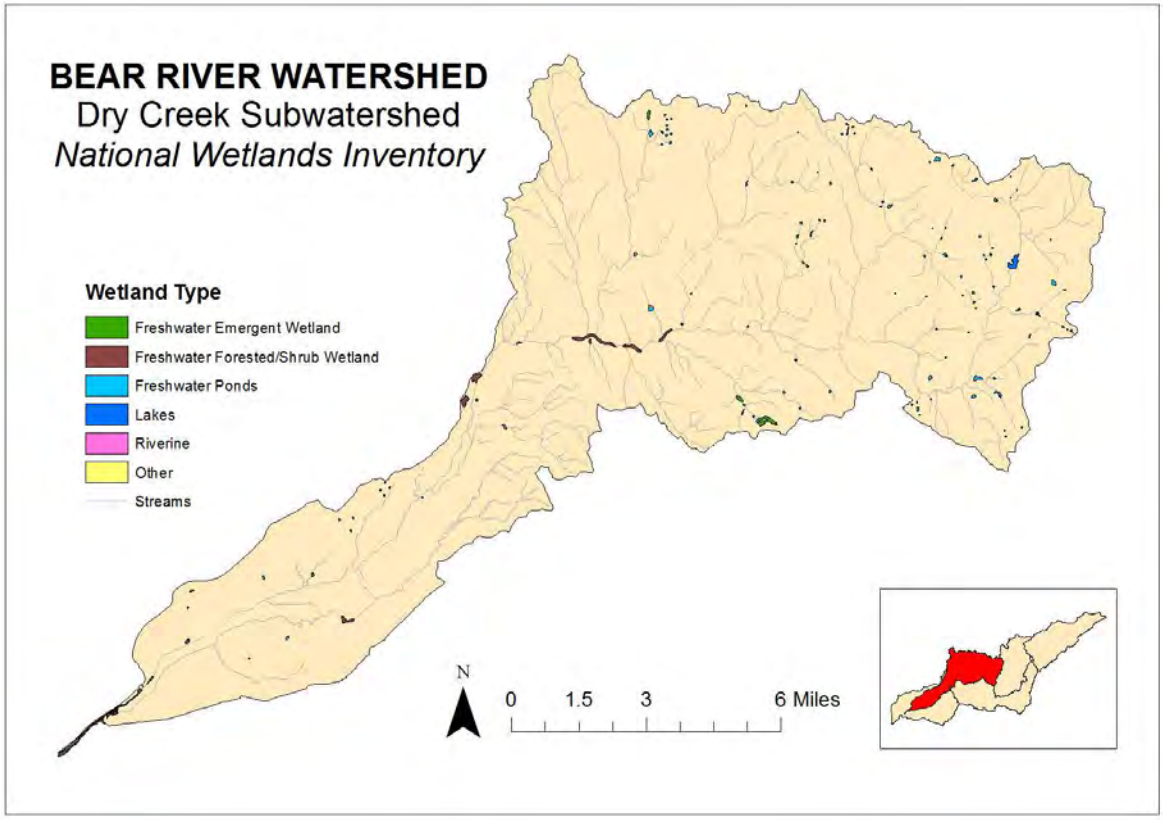


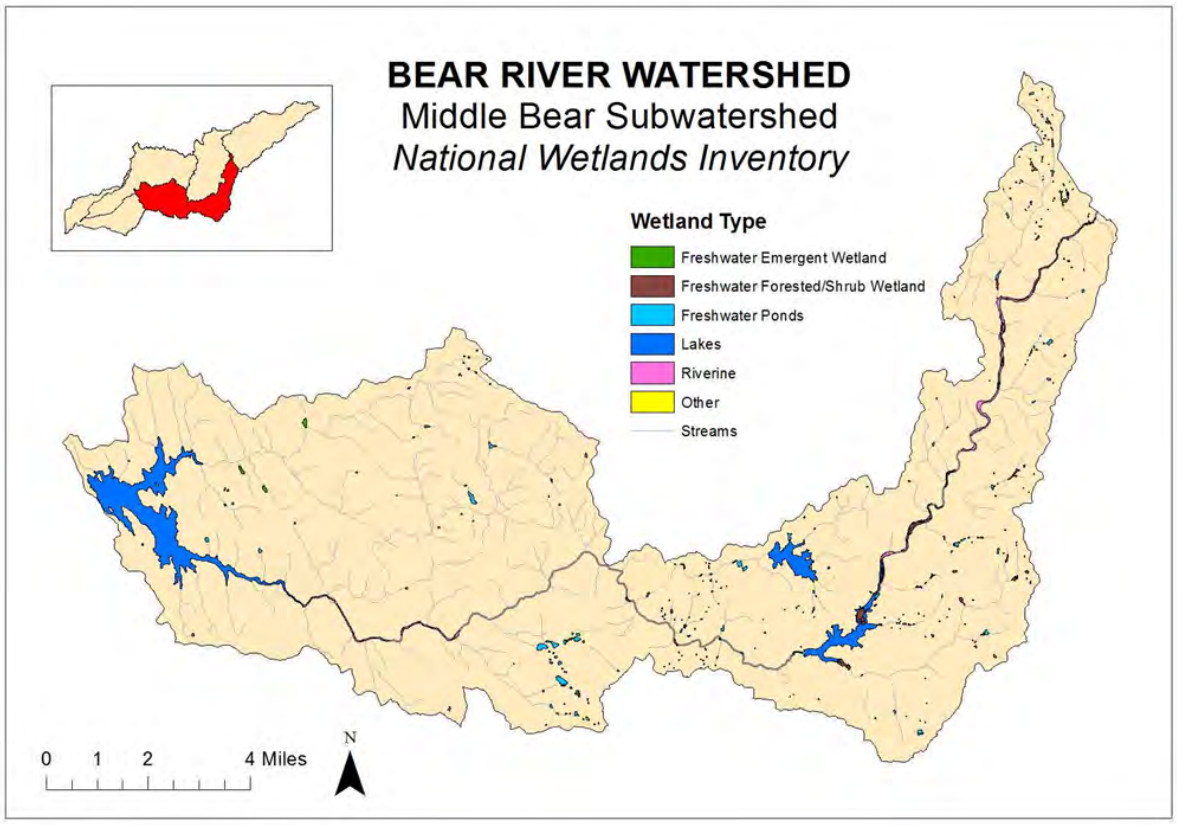


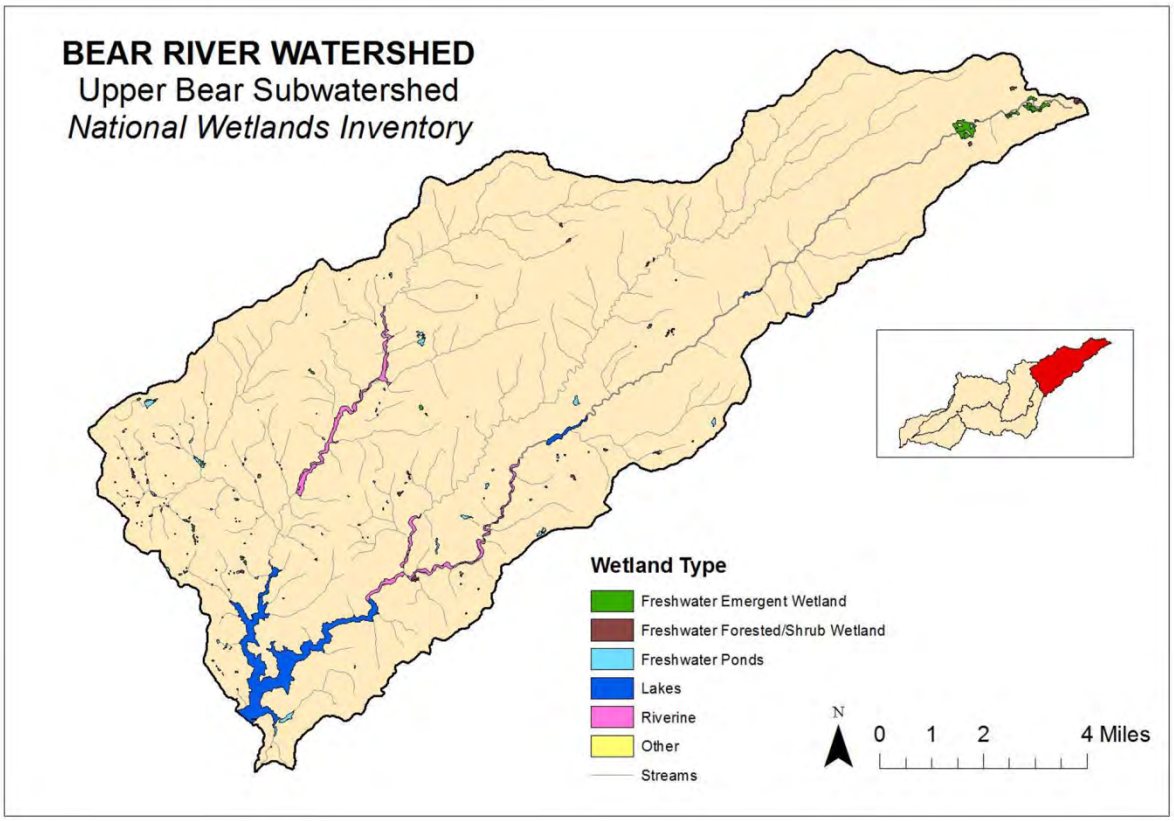

BEAR RIVER WATERSHED
CNDDB Sensitive Species
Button's Sierra sideband
Felt-leafed violet
Elongate copper moss
Finger rush
Brownish beaked rush
Long-eared owl
Yellow warbler
Grasshopper sparrow
Dubious pea
Sierra Nevada mountain beaver
Dwarf downingia
Stebbins phacelia
Sheldon's sedge
Obscure bumblebee
California linderiella
Brazilian watermeal
Sanfords arrowhead
Song sparrow (Modesto population)
N
0 2.5 5 10 Miles
CNDDB Sensitive Species*
Western pond turtle
Tricolored blackbird
Foothill yellow-legged frog
Coast horned lizard
Sierra blue grass
Great Valley Mixed Riparian Forest
Brandegee's clarkia
Other -- see label
Bear River
*Occurrence data from California Natural Diversity Database (CNDDB) and Bureau of Land Management (BLM)

Appendix B: National Wetlands Inventory Maps

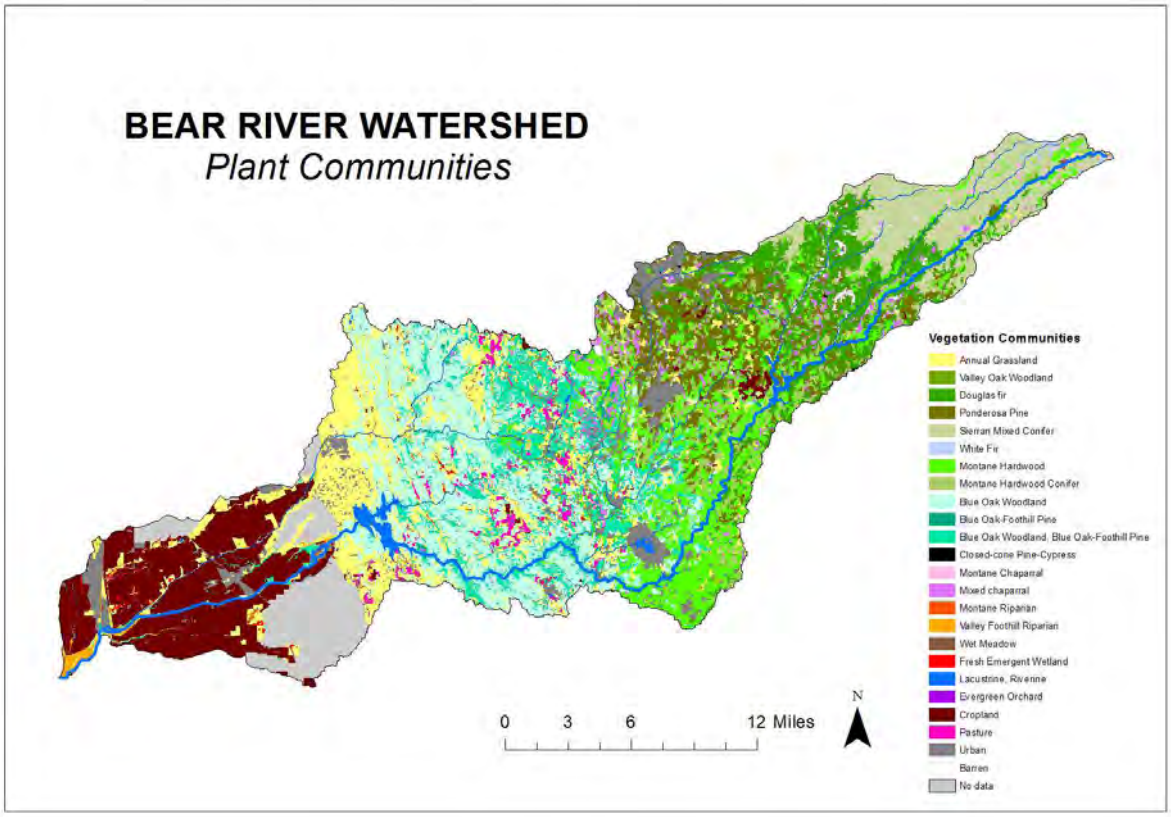





BEAR RIVER WATERSHED
Middle Bear Subwatershed
National Wetlands Inventory
Wetland Type
Freshwater Emergent Wetland
Freshwater Forested/Shrub Wetland
Freshwater Ponds
Lakes
Riverine
Other
Streams
0 1 2 4 Miles
N


BEAR RIVER WATERSHED
Upper Bear Subwatershed
National Wetlands Inventory
Wetland Type
Freshwater Emergent Wetland
Freshwater Forested/Shrub Wetland
Freshwater Ponds
Lakes
Riverine
Other
Streams
N
0 1 2 4 Miles

Appendix C: Plant Communities Map



Appendix D: Rare Plant Survey Protocols

Rare plant surveys will follow the survey methodology outlined in Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities (CDFW, 2018).

BOTANICAL FIELD SURVEYS

Evaluate the need for botanical field surveys prior to the commencement of any activities that may modify vegetation, such as clearing, mowing, or ground-breaking activities. It is appropriate to conduct a botanical field survey when:

- Natural (or naturalized) vegetation occurs in an area that may be directly or indirectly affected by a project (project area), and it is unknown whether or not special status plants or sensitive natural communities occur in the project area;
- Special status plants or sensitive natural communities have historically been identified in a project area; or
- Special status plants or sensitive natural communities occur in areas with similar physical and biological properties as a project area.

Survey Objectives

Conduct botanical field surveys in a manner which maximizes the likelihood of locating special status plants and sensitive natural communities that may be present. Botanical field surveys should be floristic in nature, meaning that every plant taxon that occurs in the project area is identified to the taxonomic level necessary to determine rarity and listing status. "Focused surveys" that are limited to habitats known to support special status plants or that are restricted to lists of likely potential special status plants are not considered floristic in nature and are not adequate to identify all plants in a project area to the level necessary to determine if they are special status plants. For each botanical field survey conducted, include a list of all plants and natural communities detected in the project area. More than one field visit is usually necessary to adequately capture the floristic diversity of a project area. An indication of the prevalence (estimated total numbers, percent cover, density, etc.) of the special status plants and sensitive natural communities in the project area is also useful to assess the significance of a particular plant population or natural community.

Survey Preparation

Before botanical field surveys are conducted, the botanical field surveyors should compile relevant botanical information in the general project area to provide a regional context. Consult the CNDDB and BIOS for known occurrences of special status plants and sensitive natural communities in the project area prior to botanical field surveys. Generally, identify vegetation and habitat types potentially occurring in the project area based on biological and physical properties (e.g. soils) of the project area and surrounding ecoregion. Then, develop a list of special status plants and sensitive natural communities with the potential to occur within the vegetation and habitat types identified. The list of special status plants with the potential to occur in the project area can be created with the help of the CNDDB QuickView Tool which allows the user to generate lists of CNDDB-tracked elements that occur within a particular U.S. Geological Survey 7.5' topographic quad, surrounding quads, and counties within California. Resulting lists should only be used as a tool to facilitate the use of reference sites, with the understanding that special status plants and sensitive natural communities in a project area may not be limited to those on the list. Botanical field surveys and subsequent reporting should be

comprehensive and floristic in nature and not restricted to or focused only on a list. Include in the botanical survey report the list of potential special status plants and sensitive natural communities that was created, and the list of references used to compile the background botanical information for the project area.

Survey Extent
Botanical field surveys should be comprehensive over the entire project area, including areas that will be directly or indirectly impacted by the project. Adjoining properties should also be surveyed where direct or indirect project effects could occur, such as those from fuel modification, herbicide application, invasive species, and altered hydrology. Surveys restricted to known locations of special status plants may not identify all special status plants and sensitive natural communities present, and therefore do not provide a sufficient level of information to determine potential impacts.

Field Survey Method
Conduct botanical field surveys using systematic field techniques in all habitats of the project area to ensure thorough coverage. The level of effort required per given area and habitat is dependent upon the vegetation and its overall diversity and structural complexity, which determines the distance at which plants can be identified. Conduct botanical field surveys by traversing the entire project area to ensure thorough coverage, documenting all plant taxa observed. Parallel survey transects may be necessary to ensure thorough survey coverage in some habitats. The level of effort should be sufficient to provide comprehensive reporting. Additional time should be allocated for plant identification in the field.

Timing and Number of Visits
Conduct botanical field surveys in the field at the times of year when plants will be both evident and identifiable. Usually this is during flowering or fruiting. Space botanical field survey visits throughout the growing season to accurately determine what plants exist in the project area. This usually involves multiple visits to the project area (e.g. in early, mid, and late-season) to capture the floristic diversity at a level necessary to determine if special status plants are present. The timing and number of visits necessary to determine if special status plants are present is determined by geographic location, the natural communities present, and the weather patterns of the year(s) in which botanical field surveys are conducted.

Reference Sites
When special status plants are known to occur in the type(s) of habitat present in a project area, observe reference sites (nearby accessible occurrences of the plants) to determine whether those special status plants are identifiable at the times of year the botanical field surveys take place and to obtain a visual image of the special status plants, associated habitat, and associated natural communities.

Use of Existing Surveys
For some project areas, floristic inventories or botanical survey reports may already exist. Additional botanical field surveys may be necessary for one or more of the following reasons:

- Botanical field surveys are not current;
- Botanical field surveys were conducted in natural systems that commonly experience year to year fluctuations such as periods of drought or flooding (e.g. vernal pool habitats or riverine systems);

- Botanical field surveys did not cover the entire project area;
- Botanical field surveys did not occur at the appropriate times of year;
- Botanical field surveys were not conducted for a sufficient number of years to detect plants that are not evident and identifiable every year (e.g. geophytes, annuals and some short-lived plants);
- Botanical field surveys did not identify all plants in the project area to the taxonomic level necessary to determine rarity and listing status;
- Fire history, land use, or the physical or climatic conditions of the project area have changed since the last botanical field survey was conducted;
    - Changes in vegetation or plant distribution have occurred since the last botanical field surveys were conducted, such as those related to habitat alteration, fluctuations in abundance, invasive species, seed bank dynamics, or other factors; or
    - Recent taxonomic studies, status reviews or other scientific information has resulted in a revised understanding of the special status plants with potential to occur in the project area.

Negative Surveys

Adverse conditions from yearly weather patterns may prevent botanical field surveyor from determining the presence of, or accurately identifying, some special status plants in the project area. Disease, drought, predation, fire, herbivory or other disturbance may also preclude the presence or identification of special status plants in any given year. Discuss all adverse conditions in the botanical survey report.

The failure to locate a known special status plant occurrence during one field season does not constitute evidence that the plant occurrence no longer exists at a location, particularly if adverse conditions are present. For example, botanical field surveys over a number of years may be necessary if the special status plant is an annual or short-lived plant having a persistent, long-lived seed bank and populations of the plant are known to not germinate every year. Visiting the project area in more than one year increases the likelihood of detecting special status plants, particularly if conditions change. To further substantiate negative findings for a known occurrence, a visit to a nearby reference site may help ensure that the timing of botanical field surveys was appropriate.

REPORTING AND DATA COLLECTION

Adequate information about special status plants and sensitive natural communities present in a project area will enable reviewing agencies and the public to effectively assess potential impacts to special status plants and sensitive natural communities and will guide the development of avoidance, minimization, and mitigation measures. The information necessary to assess impacts to special status plants and sensitive natural communities is described below. For comprehensive, systematic botanical field surveys where no special status plants or sensitive natural communities were found, reporting and data collection responsibilities for botanical field surveyor remain as described below, excluding specific occurrence information.

Special Status Plant and Sensitive Natural Community Observations

Record the following information for locations of each special status plant and sensitive natural community detected during a botanical field survey of a project area.

- The specific geographic locations where the special status plants and sensitive natural communities were found. Preferably this will be done by use of global positioning system

(GPS) and include the datum in which the spatial data was collected and any uncertainty or error associated with the data. If GPS is not available, a detailed map (1:24,000 or larger) showing locations and boundaries of each special status plant population and sensitive natural community in relation to the project area is acceptable. Mark occurrences and boundaries as accurately as possible;

- The site-specific characteristics of occurrences, such as associated species, habitat and microhabitat, structure of vegetation, topographic features, soil type, texture, and soil parent material. If a special status plant is associated with a wetland, provide a description of the direction of flow and integrity of surface or subsurface hydrology and adjacent off-site hydrological influences as appropriate;
- The number of individuals in each special status plant population as counted (if population is small) or estimated (if population is large);
- If applicable, information about the percentage of each special status plant in each life stage such as seedling, vegetative, flowering and fruiting;
- The density of special status plants, identifying areas of relatively high, medium and low density of each special status plant in the project area; and
- Digital images of special status plants and sensitive natural communities in the project area, with diagnostic features.

Special Status Plant and Sensitive Natural Community Documentation

When a special status plant is located, data must be submitted to the CNDDB. Data may be submitted in a variety of formats depending on the amount and type of data that is collected. The most common way to submit data is the Online CNDDB Field Survey Form, or equivalent written report, accompanied by geographic locality information (GPS coordinates, GIS shapefiles, KML files, topographic map, etc.). Data submitted in digital form must include the datum in which it was collected. If a sensitive natural community is found in a project area, document it with a Combined Vegetation Rapid Assessment and Relevé Field Form and submit the form to VegCAMP.

Voucher Collection

Voucher specimens provide verifiable documentation of special status plant presence and identification and a scientific record. This information is vital to conservation efforts and valuable for scientific research. Collection of voucher specimens should be conducted in a manner that is consistent with conservation ethics, and in accordance with applicable state and federal permit requirements (e.g. scientific, educational, or management permits pursuant to Fish & G. Code, § 2081, subd. (a)). Voucher collections of special status plants (or possible special status plants) should only be made when such actions would not jeopardize the continued existence of the population. A plant voucher collecting permit is required from CDFW prior to the take or possession of a state-listed plant for voucher collection purposes, and the permittee must comply with all permit conditions. Voucher specimens should be deposited in herbaria that are members of the Consortium of California Herbaria no later than 120 days after the collections have been made. Digital imagery can be used to supplement plant identification and document habitat. Record all relevant collector names and permit numbers on specimen labels (if applicable).

Botanical Survey Reports

Botanical survey reports provide an important record of botanical field survey results and project area conditions. Botanical survey reports containing the following information should be prepared whenever botanical field surveys take place, and should also be submitted with project environmental documents:

Project and location description

- A description of the proposed project;
- A detailed map of the project area that identifies topographic and landscape features and includes a north arrow and bar scale;
- A vegetation map of the project area using Survey of California Vegetation Classification and Mapping Standards at a thematic and spatial scale that allows the display of all sensitive natural communities;
- A soil map of the project area; and

- A written description of the biological setting, including all natural communities; geological and hydrological characteristics; and land use or management history.

Detailed description of survey methodology and results

- Names and qualifications of botanical field surveyor(s);
- Dates of botanical field surveys (indicating the botanical field surveyor(s) that surveyed each area on each survey date), and total person-hours spent;
- A discussion of the survey preparation methodology;
- A list of special status plants and sensitive natural communities with potential to occur in the region;
- Description(s) of reference site(s), if visited, and the phenological development of special status plant(s) at those reference sites;
- A description and map of the area surveyed relative to the project area;
- A list of all plant taxa occurring in the project area, with all taxa identified to the taxonomic level necessary to determine whether or not they are a special status plant;
- Detailed data and maps for all special status plants and sensitive natural communities detected. Information specified above under the headings "Special Status Plant and Sensitive Natural Community Observations," and "Special Status Plant and Sensitive Natural Community Documentation," should be provided for the locations of each special status plant and sensitive natural community detected. Copies of all California Native Species Field Survey Forms and Combined Vegetation Rapid Assessment and Relevé Field Forms should be sent to the CNDDB and VegCAMP, respectively, and included in the project environmental document as an Appendix;
- A discussion of the potential for a false negative botanical field survey;
- A discussion of how climatic conditions may have affected the botanical field survey results;
- A discussion of how the timing of botanical field surveys may affect the comprehensiveness of botanical field surveys;
- Any use of existing botanical field surveys and a discussion of their applicability to the project;
- The deposition locations of voucher specimens, if collected; and
- A list of references used, including persons contacted and herbaria visited.

Assessment of potential project impacts

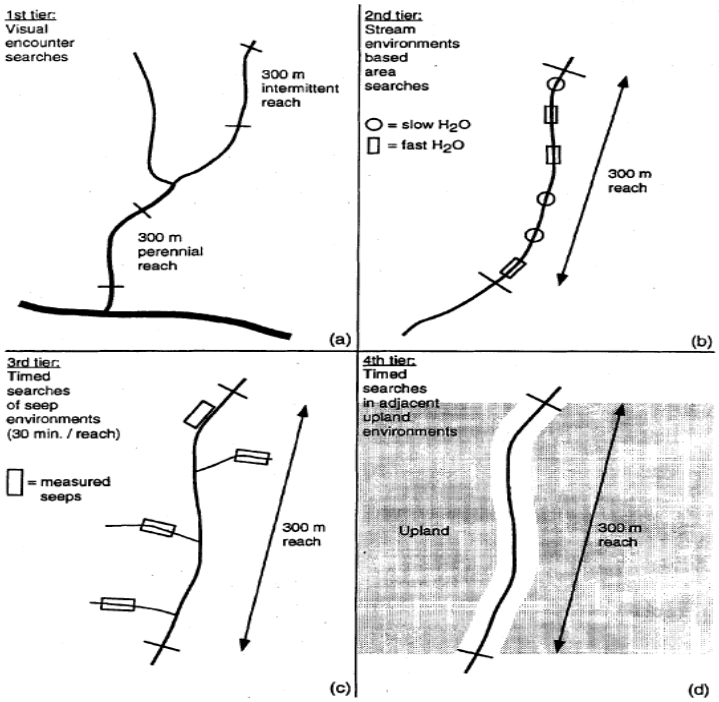
- A discussion of the significance of special status plant populations in the project area considering nearby populations and total range and distribution;
- A discussion of the significance of sensitive natural communities in the project area considering nearby occurrences and natural community distribution;
- A discussion of project related direct, indirect, and cumulative impacts to special status plants and sensitive natural communities;
- A discussion of the degree and immediacy of all threats to special status plants and sensitive natural communities, including those from invasive species;
- A discussion of the degree of impact, if any, of the project on unoccupied, potential habitat for special status plants; and
- Recommended measures to avoid, minimize, or mitigate impacts to special status plants and sensitive natural communities.

Appendix E: Amphibian Survey Protocols

Various non-invasive sampling methods will be utilized, depending on the habitat being surveyed. Monitoring will begin in April 2018 and continue seasonally through spring-2019. Bi-weekly anuran call surveys and eye-shine surveys will be conducted at all sites during peak breeding season (February to June) and follow the USGS Amphibian Research and Monitoring Initiative protocol (Weir et al, 2005). Ponds and other stagnant wetlands will be sampled by dip-netting the shallow perimeter edges and noting total adult and larvae captures, total number of sweeps, as well as any visual observations of adults, larvae, and egg masses. In addition, water samples will be collected at sites for environmental DNA analysis, to use novel methods for detecting the presence of amphibians and other sensitive species in the Bear River watershed.

A four-tiered approach derived from Welsh & Hodgson (1997), will be applied for visual and physical sampling of adults and larvae in stream habitats: (1) visual encounter surveys, (2) stream environment-based area searches, (3) timed visual surveys of seep environments, and (4) timed visual surveys of adjacent upland environments. Sampling will be conducted on a bimonthly schedule, starting in April. Sample units will be 300 m reaches for each method. Stream environment-based area searches will follow the "rubble rousing" or area constrained search techniques (Bury & Corn, 1991). Rubble rousing will be season-limited, and not take place during breeding season when *R. boylii* egg masses and small larvae may potentially be present. Six randomly placed belt transects (10 m x 1 m) – three in slow pools and three in riffles – will be intensively surveyed at each site in a downstream-to-upstream fashion. One individual will overturn large objects and rake through gravel and cobble, making observation and catching all organisms by hand while another individual catches dislodged organisms downstream with a dip net. PVC pipes arrays (Boughton et al, 2000) will be placed in transects adjacent to sampling sites to target captures of Sierra Chorus Frogs (*Pseudacris sierra*), the only known tree frog in these watersheds.

Captured organisms will be identified to species and measured (snout-vent-length, SVL) in the field. Timed visual surveys of seep and adjacent upland environments will be supplemented with coverboards, which will be randomly placed on stream banks and locations adjacent to sampling sites and checked periodically for salamanders. All individuals will be released promptly into the field after capture, with the exception of R. catesbeianus which will be humanely euthanized.



Four-tiered stream sampling methodology (Welsh & Hodgson, 1997)

Appendix F: Anadromous Fish Survey Protocols

Methods from Thurow (1994) – Spawning and snorkel survey methods. The entire spawning reach in Dry Creek will be sampled as multiple habitat units. One or two observers will be on the stream bank(s) of Dry Creek during each survey, depending on water depth, creek width, water clarity (turbidity), and abundance of fish. Observers will begin at the confluence of Dry Creek and the Bear River and will move upstream on the stream bank. Fish will be counted as the observer(s) passes them so duplicate counts are avoided. Fish will be counted by species and size, when feasible. Sizes of fish will be estimated from the stream bank, when feasible. Adult salmon will be counted by direct enumeration. When counting by direct enumeration, either one observer or two observers will count all fish in a single walk through the reach on the stream bank(s).

Juvenile salmon will be counted by direct enumeration when feasible, and by expansion estimates when direct enumeration is not practical. When counting juvenile Chinook salmon by direct enumeration, multiple observers will count all fish in a single pass through the reach. To avoid recounting fish, observers will stay adjacent to each other, move at the same speed, and only count fish that pass them. When counting by the expansion method, multiple observers will count all fish in a single pass through the reach. The creek will be stratified into sections (such as right bank and mid-channel), and within each stratified area, counting lanes will be randomly selected, with widths less than or equal to the underwater visibility. One snorkeler counts the number of fish within each counting lane, with additional snorkelers counting adjacent lanes simultaneously. Snorkelers will be randomly assigned to their counting lanes. The observations within the unit will then be estimated by dividing the total number of fish counted in each section by the percent of the section that was surveyed.

Spawning surveys will be conducted by stream bank walks in Dry Creek. Surveys will be performed from the downstream end of the reach at the confluence with the Bear River, to the barrier at Beale Air Force Base. Spawning surveys will be performed by a team of one or two individuals. Each surveyor will scan Dry Creek from the shore to the middle of the creek, working slowly upstream on the stream bank, making sure to include side channels in the survey. Surveyors will avoid disturbing live fish on redds. Each observed redd will be consecutively numbered from the very first redd observed during the redd survey through the entire redd sampling season. Every redd observed throughout the sampling season will have the following data collected and recorded:

(1) GPS location taken at the center of the redd's pit with a unique identifying number;
(2) total dimensional area (using a GPS) for areas appearing to contain multiple redds with no clear boundaries (i.e., mass aggregate spawning; superimposed spawning);
(3) habitat type (i.e., pool, riffle, run, or glide);
(4) substrate composition of ambient habitat based on substrate size immediately upstream of the pit;
(5) redd species identification;

(6) number of fish observed on the redd;
(7) location information (i.e., side channel or main channel);
(8) comments regarding observable redd superimposition (i.e., redd overlap); and
(9) any additional comments.

In addition, measurements of pot length, pot width, tail-spill length, tail-spill widths, water depth and velocities will be recorded for each redd observed, when feasible and redds are well defined. The path undertaken by each surveyor on the stream bank will be recorded using GPS units to document specific locations of the creek surveyed. The GPS and a data dictionary will be used to ensure redds counted during the previous survey weeks are not double-counted. In addition, surveyors will mark each redd at the pit with a painted rock.

Appendix G: Bird Point Count Protocols

Point Reyes Bird Point Count Methodology
Grant Ballard, Thomas Gardali, and Diana Humple
Last update: 5/15/2003

We follow the guidelines established by Ralph et al. (1993:31 – http://www.psw.fs.fed.us/publications/Documents/gtr-144/06-censusing.html). This document summarizes those guidelines, and clarifies items where there is room for interpretation. When in doubt, consult project leaders or terrestrial program data manager (currently Grant Ballard, gballard@prbo.org).

Be sure you have the following:

- binoculars
- watch which indicates seconds
- at least 2 pens
- field notebook
- sufficient blank data forms
- clipboard
- rubber bands (for holding forms on clipboard)

Depending on the route, census type, and your experience level, you may also need:

- directions and maps
- GPS unit & extra batteries
- cell phone or radio
- range finder
- field guide
- water and snacks

Counts begin approximately 15 minutes after local sunrise and should be completed within 3-4 hours, generally by 10AM.

We recommend 2-3 visits per season (e.g., twice in May and once in June). Visits should be at least 10-15 days apart. Timing of the field season will vary by location, but should cover the local breeding season with as little overlap with migration or dispersal as possible.

When possible, the order in which points are surveyed should vary between visits. Ideally, observers should also vary among visits.

Do not conduct surveys during weather conditions that likely reduce detectability (e.g., high winds or rain). If conditions change for the worse while doing a count, remaining points can be completed <7 days from the first day, but this should be avoided as much as possible.

Approach the point with as little disturbance to the birds as possible, and begin your count as soon as you are oriented and are confident you can estimate distances accurately (less than 1 minute).

PRBO point counts are 5 minutes duration at each point. Record the time the survey begins at each point using the 24-hour clock. If something interferes with your ability to detect birds during the 5-minute count, stop the count until the disturbance has passed and start over. Cross out the interrupted data and note what happened on your form.

Every species detected at a point is recorded, regardless of how far from the observer. Use the standardized banding lab 4-letter abbreviation for species codes (http://www.pwrc.usgs.gov/bbl/manual/bandsize.htm) and follow the naming conventions maintained by the American Ornithologists Union (http://www.aou.org/aou/birdlist.html). For unknown species, record "XXXX." For unknown members of various families, use "XX" plus two letters to signify the family – "XXHU" for unidentified hummingbird, for example. You can follow birds after the completion of a point in order to verify identification. If no birds are detected at a point, write "No birds detected" on your form. We recommend keeping a list of all species detected between points (i.e., not during the 5 minute counts) on the back of your form.

For each individual detected we record the distance to the detection and the behavior that alerted us to the individuals' presence. Also, for each species we record any indications of breeding status. Make every effort to avoid double counting individuals detected at a single point. However, if an individual is known or thought to have been counted at a previous point, make a note of it, but record its presence at the current point anyway. No attracting devices, recordings, or "pishing" should be used.

Distance: All point counts involve recording distance to detections at some level of resolution. Depending on project, we use either 50m fixed-radius counts, or Variable Circular Plots (VCP), in which the distance to each detection is recorded to the nearest 10m (though this distance may vary by project and habitat type – consult project leader). Both methods also specify whether or not detections were beyond 100m.

Note: Fifty m radius counts may not provide sufficient data for calculating population density or trends for some species or habitats where the use of VCP's may improve estimates. We recommend the use of range finders and extensive training for either method, but especially for VCP. VCP data should always be taken in a way that is transferable to 50m format.

The distance recorded is the distance from the point to the first location an individual was observed, regardless of its behavior. If the bird subsequently moves, *do not change the original distance recorded*. If a bird is flying (but not "flying over" – see below), or perched high in a tree, the distance recorded is to the point at which a plumb line would hit the ground if hung from the point at which the bird was first observed. This distance should be measured as though a tape were laid across the ground that is, including any intervening topographic features.

A bird flushed from within 10m of the point when you arrive should be included in the count. Birds that are flushed from farther away should be noted on the back of the form if they are species that didn't occur during the count.

We record the behavioral cue that alerted us to the presence of the individual - generally "S" for song, "V" for visual, or "C" for call ("D" for drumming woodpecker, "H" for humming hummingbird). If a bird sings after it has been detected via a different cue, this is indicated in the data, but the initial detection cue is preserved. Circle the original detection cue ("V" or "C") to

note that a bird was singing subsequent to its initial detection, but otherwise, no changes in behavior are noted. Juvenile birds are recorded as "J"s regardless of their behavior, and are not included in most analyses.

Birds that are flying over but not using the habitat on the study area are recorded in the fly-over column. Birds flying below canopy level, flying from one perch to another, or actively foraging on or above the study area are recorded as described in the previous paragraphs.

Breeding status: Record any potential indications of breeding if noted for species at each point as follows:

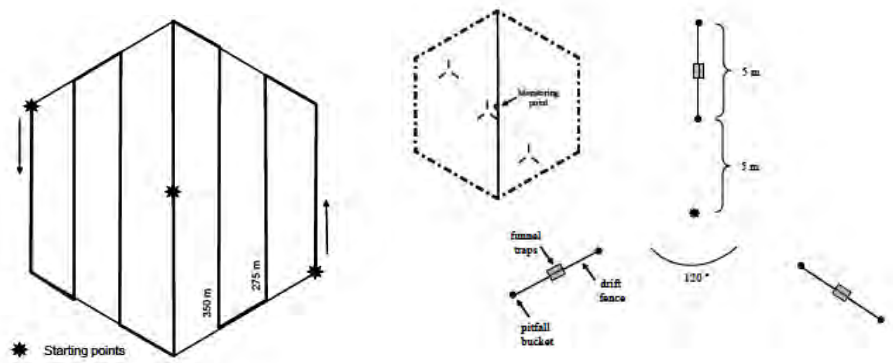
- CO – copulation
- DI – territorial display.
- DD – distraction display
- FC – food carry
- FL – fledglings
- FS – fecal sac carry
- MC – material carry
- NF – nest found
- PA – pair

Appendix H: Reptile Monitoring Protocol

A four-tiered approach, derived from Welsh & Hodgson (1997), will be applied for visual and physical sampling of individuals in riparian habitats: (1) visual encounter surveys, (2) stream environments based area searches, (3) timed visual surveys of seep environments, and (4) timed visual surveys of adjacent upland environments. This method, which is primarily used by SSI scientists for sampling stream amphibians, can also be useful for surveying reptile species such as the Western pond turtle. Sample units will be 150 m reaches for each method.

Timed visual surveys of seep and adjacent upland environments will be supplemented with cover boards will be randomly placed on stream banks and locations adjacent to sampling sites and checked periodically for salamanders, snakes, and lizards. All individuals will be released promptly into the field after capture.

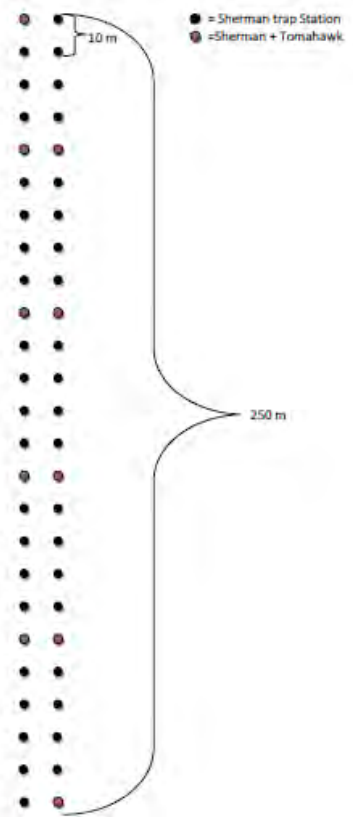
Upland habitats will be surveyed according to a modified Multiple Species Inventory & Monitoring (MSIM) protocol. Permanent sampling plots (1 acre) will be installed parallel to both sides of creek monitoring sites. Researchers will walk a looping transect line, carefully investigating all substrates for reptiles and recording species by visual identification. Sampling will occur during the spring and fall, between 1000 and 1800 hours.



Upland sampling unit and drift-fence/pitfall trap layout (Bury & Corn, 1987)

Appendix I: Small Mammal Monitoring Protocol

Trapping will be carried out at multiple sites throughout the Bear River watershed. Sites were chosen based on access and an attempt to follow the season up the western slope of the Sierra Nevada Mountains. Trapping grids will be established at one or two sites per trapping period, depending on available man hours and site location. 50 Sherman live traps will be placed in two paired transects (total 50 traps), to sample the greatest possible area while still accounting for micro-habitat differences (Pearson and Ruggiero 2003), with exceptions allowing for smaller numbers of traps if space is limited. Traps will be spaced at 10 meter intervals at the majority of sites, and 5 meters at sites with smaller available trap areas (Tew et al., 1994). Tomahawk live traps will be randomly paired (via generation of random number list that coincides with Sherman trap locations) with a Sherman at 5 trap stations per transect (10 total Tomahawk traps, with some exceptions made at certain sites), to more accurately sample different sized small mammals that may share the same micro-habitats (Barnett and Dutton, 1995). Traps will be pre-baited closed for 1 night before trapping to allow local small mammals to become accustomed to their presence. Traps will include a combination of Sherman live traps and Tomahawk/Havahart wire traps baited with mixtures of peanut butter and rolled oats and filled with an adequate amount of polyester batting to provide warmth and insulation materials for trapped mammals (Sikes et al., 2011).



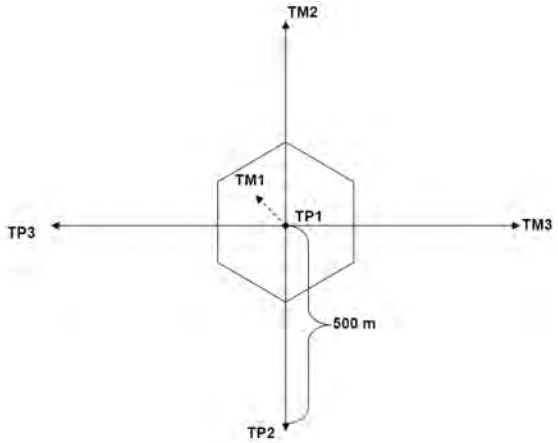
Small mammal trapping transect layout. 25 Sherman Live Traps will be spaced 10 meters apart along paired transects (total 50 Sherman traps). Transects will total 250 meters in length. Note that distance between transects is unknown, as they will be placed along streambanks to sample as much area as possible. Also note in this example, Tomahawk traps are placed systematically, but Tomahawk trap location will change based on randomization.

Mammal Track Plate Protocols:

Forest Service's Multiple Species Inventory and Monitoring protocol (MSIM) (Manley et al 2006). Small track tubes are composed of two pieces of plastic rain gutter connected on the sides by binder clips or duct tape. A small sheet of aluminum flashing is covered in a fine layer of soot on two sides, and a piece of clear contact paper is placed at the middle. Bait (same as used in trapping) will be placed on the underside of the roof of the track tube. Medium track tubes are similar, though will be constructed out of 4 pieces of ½" plywood, with a larger plate and contact area, with bait placed toward the rear of the enclosure, which is backed up to a tree or pile of logs. Detection arrays are arranged with 3 camera traps and 3 track plates per sampling array. Our array will mimic that used in the MSIM protocol. We will use medium track plates exclusively with camera traps in their own selected sites, and will occasionally use smaller track plates in conjunction with the trap lines. Camera traps will also be used to monitor large mammals, which will not be handled, trapped, or disturbed in any way outside of being photographed.

Small Mammal track plate

Medium Mammal track plate in the field.



MSIM medium and large mammal detection array design. TM = camera trap, TP = track plate. Design may be modified to fit our sites due to accessibility and microhabitat selection. Source: Manley et.al. (2006).

Appendix J: Heavy Metals Sampling Protocol

Pre-sampling preparations:

1.) Visit the sampling site to determine any special equipment that will be needed. Have the pre-cleaned sample jars used in clean sampling procedures double bagged in plastic and placed in appropriate containers for transport to the field site. Fill out as much information on the data sheet as possible to save time in the field, especially during wet conditions: Date, Samplers, Site ID, Sample IDs.

2.) Print labels for all water and TSS sample bottles with site identifier, unique sample number, date and type of sample. Write in sample ID and date if using pre-printed labels, and place on sample outer bag, and on TSS bottles.

3.) Check and assemble equipment, as needed:

- Field data sheets and/or write-in-rain notebooks
- Vinyl or polyethylene powderless gloves
- De-ionized water
- Sampling pole
- Sample jars
- Pre-rinsed, labeled TSS bottles
- Sample labels and chain of custody forms
- Coolers with ice
- Waste containers
- Water quality instrumentation
    - pH meter
    - conductivity meter
    - dissolved oxygen meter
    - turbidity meter
- Flashlight, first aid and safety equipment
- Boots or waders

General sampling procedures

Samples will be unfiltered, and can be collected by dipping the bottle into the stream or river by hand or on a sampling pole or bucket using the "Clean-Hands Dirty-Hands" technique:
Two people are required for sample collection; determine which person is designated as clean-hands and which person is designated as dirty-hands for the duration of the sample collection. Only the clean-hands person touches the sampling bottles, while the dirty-hands person assists with other tasks to help keep the clean-hands person's gloves clean.

Heavy Metals in Water and TSS sampling:

1. **Gloves:** Personnel involved in sample processing wear vinyl gloves. Gloves can be discarded and replaced during sampling if anything happens which may compromise the cleanliness of the gloves.

2. **Clean-hands handling:** Samples for heavy metals analysis are collected before TSS. The sample bags are labeled with the time. The dirty-hands person opens the first bag and squeezes the inner bag up like toothpaste without touching the inner bag. The clean-hands person opens the inner bag, removes the bottle from the inner bag, and stuffs the inner bag back inside of the

outer bag. The dirty-hands person places the outer bag on top of sampling pack or in a place where nothing could touch or contaminate the inner bag.

3. **High-flow:** Water samples should be collected from the fastest moving, well-mixed water. High-flow samples are taken from shore on the end of a pole or from the downstream side of a bridge, where possible.

Rinse pole: The dirty-hands person extends the sampling pole into the ambient water. The dirty-hands person holds the pole while the clean-hands person places the sample bottle in it. The dirty-hands person tightens the pole strap around the sample bottle, or the clean-hands person secures the tethers on the bottle in the bucket.

Triple rinse sample bottle and cap: The dirty-hands person extends the pole or lowers the sample bucket into the water and rinses the bottle 3 times with ambient water, pouring the rinse water through the cap as well.

Collect sample: Dirty-hands re-lowers or extends bucket/pole and collects sample. Sample bottle should be filled to the brim if possible, which may require several dips.

4. **Clean-hands handling:** The clean hands person caps the filled sample bottle and reseals it in the inner bag while the dirty-hands person holds the outer bag. The dirty-hand person reseals the outer bag. Samples are transported on ice, taking care that ice packs do not directly touch bottles and cause freezing.

5. **Collect TSS samples:** Clean-hands precautions are not required for collecting TSS. Mark the time on the pre-rinsed, labeled TSS bottles. At high flow the sample may be collected on the end of a pole or a bucket lowered from a bridge. TSS duplicates should be collected for QA.

6. **Field Forms/Ancillary measurements:** Field forms are filled out, including notes on location or conditions that might affect results. In heavy rain, write-in-rain notebooks are used, and data transposed to field data sheets in the car. Ancillary measurements (and GPS first time at site) including water quality are collected.

Labeling Bottles
Each sample bottle must have a label on the outer Ziploc with site identifier, date of collection, time of collection, unique sample number and sample type. Waterproof labels can be placed directly on the plastic TSS bottles before sampling.

Sample tracking
Sample tracking: Field samples are checked for proper labeling before shipping, including site, sample ID, analysis type, date, and time. Field forms are filled out with information on sample collectors and processing and other relevant information. A chain of custody form is prepared for each batch of samples shipped to another lab.

Preservation and Analysis
Samples for heavy metals analysis are stored and transported on ice to the laboratory for preservation and analysis within 48 hours of collection. Total Suspended Solids (TSS) analysis is performed at the SSI laboratory using Standard Methods 2540D.