

1741 - Critical Conservation Areas (CCAs) - California Bay Delta - 2018 - EWD Rouse Lake Project Partnership

Project Name: 1741 - EWD Rouse Lake Project Partnership**Funding Pool:** Critical Conservation Areas (CCAs)**Lead Partner:** Eastside Water District (080601811)**Lead State:** CA**Partner Address:** P.O. Box 280,, , Denair, CA 95316**CCA:** California Bay Delta**Partner Name:** Kevin Kauffman**Partner States:****Partner Contact:** kauffmankevin@comcast.net | 2094784940**Project Start and End Years:** 2018 - 2022**Primary Resource Concern:** Excess/Insufficient Water/Drought**Secondary Resource Concern:** Water Quality Degradation**Tertiary Resource Concern:****Additional Resource Concerns:****Adjustment of Terms Request:** No**Total Producers in Project Area:** 114**Alternative Funding Request:** No**% of Eligible Producers Who May Participate:** 50 %

Executive Summary

The Eastside Water District (EWD) Rouse Lake Project Partnership will be implemented under the PL-566 Small Watershed Program. The Project's objectives are to reduce damage from floodwater to agricultural fields and to accelerate groundwater recharge to store water in the depleted aquifer beneath Eastside Water District (EWD) for drought protection and sustainability. With the Partnership, producers in the Rouse Lake Watershed will avoid tree losses currently occurring in hundreds of acres of orchards, utilize thousands of acre-feet of surface water (under existing rights) in-lieu of groundwater and/or directly recharge groundwater through resource conservation practices such as vertical drains, pumps, and pipelines. Technical work and promotion of findings from this Project will be extended to the larger Project Focus Area, where similar, and potentially much larger opportunities are likely.

Partner Information

Partner Organization Name	Partner Type	TA Contributed	FA Contributed	Administrative Costs	Project Coordination	Producer TA	Lead O/E	Conduct Monitoring	Conservation Funding	Administrative Funding
East Stanislaus Resource Conservation District	CD-Conservation District	0.00	0.00	0.00	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Stanislaus County	CD-County Government	0.00	0.00	0.00	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Eastside Water District	WD-Water district with water delivery authority to agricultural producers	1600000.00	3300000.00	100000.00	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		1600000.00	3300000.00	100000.00						

1741 - Critical Conservation Areas (CCAs) - California Bay Delta - 2018 - EWD Rouse Lake Project Partnership

Financial Information

State	Program	Fiscal Year	Funds Requested			Funds Contributed (from Partner Information)			Acres
			Partner TA	NRCS TA	NRCS FA	TA	FA	Admin Costs	
CA	PL-566	2023	0.00	80000.00	2250000.00				6000
CA	PL-566	2022	0.00	80000.00	2250000.00				6000
CA	PL-566	2021	0.00	80000.00	0.00				0
CA	PL-566	2020	0.00	80000.00	0.00				0
CA	PL-566	2019	0.00	80000.00	0.00				0
			0.00	400000.00	4500000.00	1600000.00	3300000.00	100000.00	12000
TA Funds Requested		400000.00	TA Funds Contributed		1700000.00	% TA Contributed of Total TA	80.95	Total Project TA	2100000.00
FA Funds Requested		4500000.00	FA Funds Contributed		3300000.00	% FA Contributed of Total FA	42.31	Total Project FA	7800000.00
Total Funds Requested		4900000.00	Total Funds Contributed		5000000.00	% Contributed of TOTAL Project	50.51	TOTAL Project	9900000.00

Narratives

1 (Pre-Proposal) Has this project application (or an application with the same project scope, purpose, or target geographic project area) been submitted to RCPP in previous years?
NO

2 (Pre-Proposal) If this application has been previously submitted to RCPP, what was the previous project name(s), and who was/were the Lead Partner(s) who submitted the application(s)? Briefly describe the scope, purpose, and targeted geographic project area of the similar, previously-submitted application.
Not Applicable

3 (Pre-Proposal) If this application has been previously submitted to RCPP, was it withdrawn prior to project review and final selection?

4 (Pre-Proposal) If this application has been previously submitted to RCPP, was it selected for funding?

5 (Pre-Proposal) If this application was previously selected for funding, did it move forward and become an existing project (versus being selected, and subsequently cancelled prior to agreement finalization)?

6 (Pre-Proposal) If the application was selected for funding, why are you returning with a proposal? Provide reasons for resubmitted applications.

7 (Pre-Proposal) If this application covers an area that currently has or has had a funded RCPP project(s), explain how this project differs from the previous or current project(s). Relate the differences to the four pillars: Solutions, Innovation, Contribution, and Participation.

8 (Pre-Proposal) Use the space below to detail how the key partners are performing in moving the project forward. Address the following questions: Were partner contribution goals met? Were project deliverables in the agreement met? Was Financial Assistance (FA) fully expended? Was partner Technical Assistance (TA) fully utilized if applicable? What challenges have arisen since the beginning of the project, and how have partners addressed those challenges?

9 (Pre-Proposal) Is this project solely for research to address a natural resource concern?
NO

1741 - Critical Conservation Areas (CCAs) - California Bay Delta - 2018 - EWD Rouse Lake Project Partnership

10 (Pre-Proposal) Briefly describe your RCPP team. Include a description of each partner's expertise and experience implementing similar projects. If partners are providing cash and/or in-kind services, "Letters of Financial Contribution" will be required in the Full-proposal application phase.

Eastside Water District (EWD) is the Project's Lead Partner. EWD has existing and developing working relationships with Producers as well as all local entities in the Project Area that address the resource concerns of the California Bay Delta Critical Conservation Area: Excess/Insufficient Water/Drought, Water Quality Degradation, and Inadequate habitat for fish and wildlife. EWD's Board of Directors is composed of elected landowners (all Producers). Day to day management is done by the District's Secretary, Karen Whipp and Water Consultant, Kevin Kauffman. Projects are managed by Kevin Kauffman and conducted by consultants. The consulting team proposed to assist EWD with the RCPP Project includes Wood-Rodgers, Inc. (<http://www.woodrogers.com/about-us/>), E-PUR LLC (<http://e-purwater.com/about/>), and Provost & Pritchard Consulting Group (<http://www.ppeng.com/AboutUs.html>). These consultants previously assisted EWD to develop and fund its Diffused Surface Water Project, and would perform hydrogeologic and environmental resources site characterizations, planning, surveying, design, permitting, construction review and management, and assist in the project start up and assessment. EWD has completed a number of groundwater recharge projects over the past 25 years. EWD will work with Producers in the Rouse Lake area and newly annexed lands to develop and implement a demonstration project where Vertical Drains and other Conservation Practices are employed in a manner that can be replicated elsewhere in the Project Focus Area (see Question 3). EWD has worked cooperatively with local agencies and County governments for many years to plan and develop programs and projects for storm water management and assure water availability for local agriculture. These entities include: 1. Turlock Irrigation District (ID) 2. Modesto ID 3. Oakdale ID 4. South San Joaquin ID 5. Merced ID 6. Ballico-Cortez Water District 7. Merced County 8. Stanislaus County. EWD is currently in discussions with Stanislaus County as a Partner in the Project. Stanislaus County is willing to be a Partner, and is currently preparing a Stormwater Resource Plan that includes the Project. That Plan provides the opportunity for future State Proposition 1 grant funding of Stanislaus County's identified Stormwater Projects. Financial and Technical Assistance to be provided by Stanislaus County has not been defined yet but will be determined for the Full-proposal application. Other local agencies that have similar resource concerns in the project area may also participate as Partners including East Merced Resource Conservation District (RCD) and East Stanislaus RCD. EWD has an excellent relationship with the East Merced RCD on past cooperation and projects. EWD is developing a relationship with the East Stanislaus RCD. It is anticipated that RCD contributions will consist of local support of the project, not requiring other assistance. EWD's Financial and Technical Assistance for the Project will be funded from its Diffused Surface Water Project capital fund. This fund was established following a 2015 Proposition 218 process which established per-acre charges on all landowners within the EWD boundary. The balance of this capital fund is greater than a 50% matching cost share for the Project by itself. Other Partners' Financial and Technical Assistance and support would leverage NRCS and EWD Assistance to address the critical resource concerns within the project area. Financial and Technical Assistance from prospective Partners has not been defined yet. Their Assistance is not essential for Project completion. Letters of Financial Contribution will be provided in the Full-proposal application.

11 (Pre-Proposal) Specify the geographic focus of the project area. Provide background for why and how the project area was selected. (Note that the project area does not need to be contiguous, but all areas should have a common primary resource concern that the project addresses.) In the description, discuss any areas that will be specifically targeted within the project area and explain why those areas are to be prioritized. Is the proposed project an expansion of existing work and/or a funded RCPP project?

The Project focus area (PFA) is the Eastside Water District (EWD) and adjacent agricultural lands including uplands of the Dry Creek Watershed. The Dry Creek watershed is a priority area within the PFA for Vertical Drains and other Conservation Practices. Figure 1 depicts the EWD NRCS Partnership PFA. These lands are mostly irrigated agricultural lands in Stanislaus and Merced Counties east of Turlock, but not in Turlock or Merced Irrigation District (ID). Lands in the PFA rely primarily on groundwater to supplement rain to meet crop water needs. Some adjacent lands are in the process of being annexed into EWD. The PFA was selected because of concern that a downward trend in groundwater levels indicates continued pumping at current rates without increasing recharge may not be sustainable. California's Sustainable Groundwater Management Act (SGMA) requires local sustainable groundwater management for each groundwater subbasin that relies heavily on groundwater. The PFA includes land in the Turlock and Modesto Groundwater Subbasins. EWD is an active member in the Turlock Groundwater Basin Association (TGBA) (<http://www.turlockgba.org/home/>) which currently coordinates local Groundwater Sustainability Agency (GSA) efforts. EWD, along with four regional partners recently formed the East Turlock Basin GSA to manage the portion of the Turlock Groundwater Subbasin east of Turlock ID. In the PFA north of the Tuolumne River a GSA was recently formed for the Modesto Groundwater Subbasin via the Stanislaus Tuolumne Rivers Groundwater Basin Association (STRGBA) (<http://www.strgba.org/home/>). Each GSA is currently coordinating efforts to prepare the required Groundwater Sustainability Plans for the two groundwater basins that underlie the PFA. Project Partner Stanislaus County participates in each GSA. Meanwhile periodic flooding occurs within the PFA and on streams and rivers that pass through or near the area causing extensive property damage. Stormwater runoff from agricultural fields (diffused water) contributes to floodwater damages and provides source water for groundwater recharge without needing surface-water rights. Projects to reduce flooding and conserve water otherwise lost to beneficial use, are part of the 2016 California Water Action Plan (http://resources.ca.gov/docs/california_water_action_plan/Final_California_Water_Action_Plan.pdf). The desire to reduce downward groundwater trends and flooding has been a regional focus since the 1980's. Solutions to increase water storage and recharge have been the topic of multiple studies, plans, and projects. A bibliography of related documents is available upon request. EWD has begun discussions with the nearby IDs with stored water rights to rivers that flow through the PFA about use of their stored water that is currently spilled for flood control measures and lost to beneficial use. In 2014 and 2015, EWD commissioned engineering and hydro-geology studies to review and prioritize groundwater recharge sites. In 2016, EWD Landowners formally authorized land-based per-acre charges to fund capital improvement solutions previously identified, along with annual per-acre charges to maintain such facilities. EWD has prepared applications to the California State Water Resources Control Board for Temporary Permits for groundwater Recharge/Storage. One permit has been issued to date, one was withdrawn, and others will be pursued as projects are developed. A demonstration project is currently being planned and designed for installation in 2017 in the Rouse Lake watershed area. Due to the

1741 - Critical Conservation Areas (CCAs) - California Bay Delta - 2018 - EWD Rouse Lake Project Partnership

implementation schedule for this Project, it is no longer being proposed for NRCS assistance under the RCPP. However, results of the Rouse Lake Project will benefit the planning, design, and construction of the RCPP Project elsewhere in the PFA. The Rouse Lake Watershed is considered ideal for a demonstration project since it is in the PFA and shares common upland hydrogeologic characteristics.

12 (Pre-Proposal) Describe the natural resource concern(s) of the project area. Include how the resource concerns were identified through watershed plans, scientific literature, etc. See the listing of priority resource concerns in Section II.B. A complete list of NRCS approved natural resource concerns may be found on the RCPP Web site at:<http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/farmbill/rcpp/>

The primary natural resource concerns that will be addressed with this project include both the reduction of damages to cropland associated with excess storm water runoff and enhancement of groundwater recharge to restore depleted groundwater reserves in an effort to address the problem of insufficient water for agricultural production during periods of drought. Other California Bay Delta Critical Conservation Area resource concerns of water quality degradation and inadequate habitat for fish and wildlife may also be added during the preparation of the Final-application as the scope of the project is more fully developed and opportunities to improve water quality and habitat for fish and wildlife are identified. It is anticipated that the control of stormwater runoff from agricultural fields for discharge to vertical drains will reduce sediment delivered to streams but the water quality improvements to receiving waters may be difficult to document. Likewise, filter strips and sediment basins adjacent to vertical drains may provide some improvements for wildlife habitat but may be difficult to manage for both habitat and sediment storage. As discussed in previous responses, Eastside Water District (EWD) has responsibility to meet the goals of a Groundwater Sustainability Plan required by California Law (SGMA). EWD has been working to address this responsibility since 1985, 30-years prior to the enactment of SGMA (bibliography of documents available upon request). Results from water balance calculations of the agencies preparing that Plan, including EWD and Stanislaus County, show that without additional recharge unsustainable groundwater depletion and dropping well water levels within the Project Focus area would likely cause Producers to run short of well water in drought years and require land fallowing of approximately half of their irrigated acreage over the next 22 years of SGMA implementation.

13 (Pre-Proposal) Project Scope: Describe the role of each partner during the project preparation, implementation, monitoring and evaluation phases. Identify the NRCS conservation programs to be used (EQIP, CSTP, ACEP, etc) and conservation systems selected to address the resource concern(s) in the geographical focal area (conservation practices, activities, enhancements, restoration work, easement acquisition, and other partner approaches). Provide a brief description of the sequence of practice implementation or timeline.

Since the Project will require implementation using the authority of the PL-566 Program, under the RCPP Project as Lead Partner the Eastside Water District (EWD) will serve as the Local Sponsor for the Project and will carry out all the responsibilities of the Local Sponsor, including acquisition of all landrights and permits that may be needed and be responsible for operations and maintenance of the completed Project for the service life of the project that will be determined in consultation with the NRCS. The EWD and their consultants also propose to provide the bulk of the Technical Assistance for planning, environmental evaluation, design and construction, with the NRCS providing technical reviews. This broad description of the division of work can be refined in consultation with the NRCS during the preparation of the Final-proposal (should the pre-application be accepted by the NRCS). EWD is also in discussions with the East Stanislaus and East Merced RCDs to determine their interest in supporting the project and promoting complimentary Conservation Practices with producers within the watershed. Stanislaus County has indicated a desire to be another Partner in the Project, and their role is yet to be clarified. That role will be clarified during the current activities involved in their Stormwater Resources Plan development, which is occurring during the interim between this pre-application and any final-application. EWD proposes to utilize the services of the team of its current management and project consulting team (Kevin Kauffman, Wood Rodgers, E-Pur Water, and Provost & Pritchard Consulting Group for Technical Assistance including planning, surveys, design, construction staking, construction management and review, plus monitoring and verification of achieving Project objectives. Karen Whipp, District Secretary, and Kevin Kauffman, District Water Consultant, would provide Project administration at no cost to the Project. Conservation Practices that may be used for the Project may include the following practices: ¥Vertical Drain (630) ¥Structure of Water Control (587) ¥Sediment Basin (350) ¥Water and Sediment Control Basin (638) ¥Filter Strip (393) ¥Cover Crop (340) ¥Surface Drain, Field Ditch (607) ¥Diversion (362) ¥Water Spreading (640) ¥Pumping Plant (533) ¥Pipeline ¥Lined Waterway or Outlet (468) EWD will retain contractors for construction of Conservation Practices. Project work would commence upon execution of Partnership Agreement, which is presumed to be by September 30, 2017. Project planning, design, permitting, construction, monitoring and verification would be completed between October 1, 2017 and September 30, 2022. Additional planning, design, and permitting would be the initial phases of work. Project facility construction contract bidding and construction phase work would follow. Project monitoring and verification work would be done during initial project startup and operation. EWD would verify primary and other objectives of the Project are achieved and report results to NRCS, and other Partner(s).

14 (Pre-Proposal) Describe any activities that have already taken place that support the proposed project. Characterize the existing infrastructure and capacity of partner(s) that provide a solid foundation from management of the proposed project. Consider future partnership resource needs and describe any other steps that are needed to ensure project success, such as hiring, coordination, outreach, training, etc.

Eastside Water District's (EWD) 25 year history of working with local entities involved in developing sustainable water resources as well as flood protection, including two RCDs, and the development of its Diffused Surface Water Project Plan with supporting landowner assessments, have laid a foundation for the RCPP Project to build on. More details of this history can be found at <http://eastsidewaterdistrict.com/>. EWD lands were explored by direct drilling for near surface geologic characteristics for infiltrating groundwater in a variety of areas in 1996, 2003, and 2005. Favorable geologic conditions were found for intentional recharge using percolation basins in one or more areas and a pilot study of surface percolation was conducted in a lower lying area in 2014 and 2015 by EWD with a favorable outcome. A study was also conducted by EWD in 2014 using these field data,

1741 - Critical Conservation Areas (CCAs) - California Bay Delta - 2018 - EWD Rouse Lake Project Partnership

USDA SSURGO hydrogeologic data and other data to assess lands with diffused storm water available for intentional groundwater recharge. This EWD program and Demonstration Project is a continuation and extension of those efforts geographically and programmatically. The 2014 EWD study utilized geospatial methods on soil texture to develop estimates of vertical hydraulic conductivity from the surface to the groundwater table. EWD's consulting team was involved in those past efforts and planned the Rouse Lake Demonstration Project that the RCPP Project will expand upon. Technical details, scopes of work, and cost estimates for the RCPP Project were developed by the consulting team to support the information in this Pre-application. Further development of EWD's hydrogeologic data and geospatial soil texture models of the Project Focus Area was done to identify where vertical drains are most likely to be effective. Snap shots of the texture model are available upon request. The District's Water Consultant has been working with Stanislaus County and other local water agencies' staffs to craft the Stormwater and Groundwater Sustainability Plans that will incorporate the RCPP Project. The RCPP project is a step in developing EWD's infrastructure while Stanislaus County's infrastructure and capacity is well developed in facilities, staff, and equipment. Details on Stanislaus County government can be seen in the information provided at their web site: <http://www.stancounty.com/>. Future possible water agency partners could bring both financial, technical, operations and maintenance resources to bear on the RCPP project while RCDs bring expertise in outreach. Utilizing existing EWD consultants and local contractors for the project will minimize hiring and coordination work.

15 (Pre-Proposal) Detail how project outcomes will be evaluated. This may include monitoring, modeling, measurements, and/or photo points, etc. Specify how the partners will collect data and report progress that demonstrates project objectives have been met or exceeded. If requesting PL-566 watershed authority, describe who will complete the watershed plan-environmental assessment and provide the timeline for completing the planning-EA process.

Project success will be evaluated based on two broad objectives: the decreased area of inundation for developed lands, crop land and improved lands in Stanislaus and Merced Counties; and, the amount of water stored underground in the regulated groundwater subbasins beneath the Project focus area (PFA) within the Modesto and Turlock Groundwater Subbasins as defined under the SGMA. Thus it is necessary to quantify reduced flooding of developed lands within Stanislaus and Merced Counties, and the volumes of water moved to groundwater storage as a result of Project Operations. A successful project will reduce inundation of developed agricultural lands within Stanislaus and Merced Counties by improving the capacity to remove floodwater from developed land areas. Conservation Practices implemented as a result of the Project that capture and re-direct diffused water, floodwater, and any other water obtained from potential Partners to recharge the aquifer will include water flow meters to quantify recharge volumes. Flow meter instrumentation and monitoring will be further defined during the final application to aid in estimating reduction in flooded areas and monitor recharge performance. Stock aerial images that are routinely taken of the two counties and on the ground field photos may be generated at control locations for observing improvements in areas of crop damage. Crop damage has occurred in the 2017 Hydrologic Year (October 2016 to September 2017) from inundation by under-controlled and under-utilized stormwater. These can provide benchmark inundated developed area estimates. On the ground locations for monitoring improvement will be established by EWD. Producers can take these photos or provide access for EWD to take photos to record crop conditions with project vs. without project. Additionally, the groundwater monitoring component of the Groundwater Sustainability Plans that EWD and Stanislaus County are part of developing by 2022 will be designed to validate that water levels in wells and well flow rates improve during droughts, while less participating Producer's land is lost to land fallowing. More objectives may be developed as part of the Final-application for other Resource Conservation Practices targeting other local contributions to Resource Concerns such as Water Quality Degradation and Inadequate habitat for fish and wildlife. These will be evaluated for measurable outcomes and criteria for evaluating those as the project and program advances. The Eastside Water District (EWD), as the Local Sponsor for the project, proposes to prepare the Environmental Assessment (EA) in conformance with the California Environmental Quality Act (CEQA). EWD will provide the draft EA to the NRCS for revision as needed for compliance with the National Environmental Policy Act (NEPA), and additional requirements specific to the PL-566 Program. Revisions to the planned completion of the watershed plan based on the availability of NRCS staff can be made in consultation with the NRCS during the preparation of the full proposal. EWD with assistance from their consultants are prepared to complete the Watershed Plan (EIS/EIR) for NRCS review if desired by the NRCS. The proposed timeline to submit the draft EA to the NRCS is 240 calendar days following the approval of the RCPP Project by the NRCS. EWD agrees to plan and coordinate public meetings in consultation with the NRCS. The completion of the Watershed Plan (EIR/EIS) by the NRCS will be established as mutually agreed by EWD and the NRCS and no later than October 1, 2018 to permit the completion of the final design and construction of the project prior to October 1, 2019. This proposed timeline can be modified in consultation with the NRCS during the preparation of the full proposal. The desire by the District is to implement the project as soon as practical and before the required deadline. EWD is committed to applying the District's resources to accomplish this goal.

16 (Pre-Proposal) If applicable, indicate how the project will "assist producers in meeting or avoiding the need for natural resource regulatory requirements." Section 1271B (d) (4)(A) of the 1985 Act.

The RCPP Project will assist producers in meeting natural resource regulatory requirements by combining vertical drains and associated Resource Conservation Practices within the Project Focus Area rather than implement multiple projects separately. This will reduce the regulatory burden that would be required from the individual Producers. It is also anticipated that the results of this Project will assist individual Producers throughout the California Bay Delta who have similar resource concerns to efficiently plan, design and implement similar projects in the future, in compliance with natural resource regulatory requirements.

17 (Pre-Proposal) Use this space to provide additional information about the project that has not been requested. Only include information and/or examples that will provide a greater understanding of your proposal.

Participation Eastside Water District (EWD) and Stanislaus County's partnership with NRCS is likely to bring many of their Producers in as new customers to NRCS's other

1741 - Critical Conservation Areas (CCAs) - California Bay Delta - 2018 - EWD Rouse Lake Project Partnership

programs as they become more aware of what NRCS has to offer through this Project. Through this Project EWD and Stanislaus County's other potential Partners (listed in the answer to Question 2) are likely to learn more about NRCS conservation funding and develop new relationships with NRCS staff. Innovation The hydrogeologists and engineers on EWD's consulting team are employing advanced science with cutting edge tools that may help to advance NRCS staff's own use of scientific tools. An example is the advanced use of three dimensional geologic texture and hydraulic conductivity models for mapping complex geologic areas to locate and design Vertical Drains. The use of pressure transducers in monitoring wells that sense diurnal barometric pressure variations to determine if sands and gravels are hydraulically connected between boreholes is another example. NRCS staff may be able to provide suggested revision to Resource Conservation Practice Standards and Specifications as the Project unfolds. An example may be the Vertical Drains standards. EWD's consultants are reviewing whether water quality protection features should be employed on the Project's Vertical Drains (a.k.a. Dry Wells). Both Torrent Resources (<http://www.torrentresources.com/>) and Contech Engineered Solutions (<http://www.conteches.com/products/stormwater-management/treatment>) may have appropriate water quality protection features that may be worthy of such consideration. Contribution EWD's contributions to Financial and Technical Assistance alone (not counting administrative and other excluded costs EWD will absorb) double NRCS's contributions. Stanislaus County and other potential partners would increase that. EWD and its partners also bring their administrative capabilities and leverage NRCS's activities together with regional efforts for stormwater resource planning and sustainable groundwater management planning. EWD's Producers, board of directors, and staff are highly motivated to expedite on-the-ground Resource Conservation Practices to address its critical conservation issues. Solutions The Project proposes to employ a science based approach to solve chronic resource problems. Objectives of the Project are specific and measurable (through monitoring component discussed in answer to Question 7). Furthermore they are attainable, as the Resource Conservation Practices proposed have worked in other areas with similar problems. The Project targets a specific geographic area with common resource challenges.

18 (Pre-Proposal) Partners are strongly encouraged to work with NRCS to fully understand program purpose and limitations. If Adjustment of Terms are needed in order to achieve project objectives, please describe here. Refer to Appendix A in the APF for Definitions.

The Eastside Water District (EWD), serving as the Local Sponsor for the project, is aware of the general requirements associated with the implementation of projects under the PL-566 Watershed Protection and Flood Prevention Act including the requirement that the Sponsor provide for all land rights, permits, operation and maintenance of the completed project. It appears that no Adjustment of Terms may be needed to accomplish the project. The Sponsor understands that all structural and non-structural practices that are implemented through RCPP must follow NRCS standards and engineering design criteria. Section IV of the California NRCS Field Office Technical Guide currently includes design criteria, construction specifications, and recommendations for operation and maintenance for stormwater runoff control, sediment basins, water control structures and vertical drains that may be applicable to this project. It is also noted that the operation and maintenance requirements for vertical drains state that the estimated life span for vertical drains must be at least 10 years. The Adjustment of Terms, if needed, can be made in consultation with the NRCS in preparing the full proposal.

19 (Pre-Proposal) Does the applicant plan to request Alternative Funding Arrangements (AFA)? If the project requires AFA, please describe how it will meet the goals and objectives of RCPP. Refer to Section III, Part C. for AFA eligibility and requirements and Appendix A in the APF for Definitions.

The Eastside Water District as the applicant and Local Sponsor for the project will not be seeking additional assistance from multistate water resource agencies or authorities to implement the project and does not plan to request Alternative Funding Arrangements.

20 (Full Proposal) Will this project address any environmental justice or persistent poverty concerns that have long term economic consequences if not addressed?

EWD is not currently working with historically underserved producers (limited resource farmers, which in Stanislaus and Merced counties are often small dairy operators) or impoverished landowners or tenants in the Rouse Lake Watershed and annex area. But, maps of disadvantaged communities prepared by the State of California (based on U.S. Census data) show there are disadvantaged communities within the Project Focus Area, the adjacent areas and the CalFed Solution area. Thus, during Project planning and promotion, it is anticipated that resource conservation practices demonstrated by the Project to reduce flooding and recharge groundwater will be useful for historically underserved producers and provide benefits to impoverished landowners or tenants who often work in the agricultural industry and/or live in areas with flooding and groundwater overdraft problems.

21 (Full Proposal) Describe the cost effectiveness of the approach. Were other alternatives considered, including a no action alternative? Are project costs in line with current regional averages? When measuring outcomes, is there a reasonable cost per unit of progress?

The Rouse Lake Project Partnership (Project) is believed to be extremely cost effective versus other approaches to accomplish the same objectives of solving excess water/insufficient water/drought problems. Other alternatives considered, including no action alternative: The district has considered other project alternatives, including recharge in basins and aquifer storage and recovery wells (ASR wells). Recharge basins were not found to be viable due to geologic impediments (durapan and clay layers) in most of the Project Focus Area. ASR wells require extremely expensive surface water treatment and chemical treatments to keep wells from clogging, so they were ruled out. The no action alternative is "the default" for what would happen without the project, including: flood damage to over 100 acres of almond orchards in the Rouse Lake area and other developed lands along stream and rivers; and long-term loss of about 1,610 acres of orchards and vineyards and associated loss of producers' livelihoods, their employees' jobs, and related business losses in the region, state, and nation. Producers in the Project focus area have ruled the 'no action' alternative out due to the obvious devastation that would result. Project costs are better than current regional averages: The \$9.8 million cost of the Project compares very favorably to other projects that are proposed with similar purposes in the region. For example, five other project proponents that recently applied to the California Water Commission for grants under its Water Storage Investment

1741 - Critical Conservation Areas (CCAs) - California Bay Delta - 2018 - EWD Rouse Lake Project Partnership

Program. Public information provided from this program shows a comparison of the costs to construct these projects on a per acre-foot of average annual project yield basis. Those water storage projects propose to provide very similar benefits to the Project. The Project's \$1,893 maximum per acre-foot cost to construct per unit of average annual project yield is much lower than four of the projects (Sites Reservoir, Los Vaqueros Expansion Project, Temperance Flat Reservoir Project, and Tulare Lake Storage and Floodwater Protection Project). Only the Kern Fan Groundwater Storage Project is lower at \$1,713 per acre-foot; and it is a recharge basin project in an area with very suitable geology. When measuring outcomes, there is a reasonable cost per unit of progress. The avoided cost of losing 100 acres of almond orchards to flood damage is estimated to be over \$3.1 Million dollars by itself, including over \$500,000 per 100-acre per year for the four years it takes to re-establish the trees to maturity plus \$10,000 per acre re-establishment costs. Other developed lands can have higher losses per acre. Furthermore, the long-term avoided cost of losing 1,610 acres of permanent crops when groundwater supplies are no longer sufficient to support them is over \$8.6 Million per year in crop losses. Thus, the Project benefits far exceed its costs.

22 (Full Proposal) Indicate how the project will assist "producers in meeting or avoiding the need for natural resource regulatory requirements". Briefly describe the regulation or potential regulation (e.g., TMDL, Endangered Species Act, etc.); the impact or potential impact of the regulation on producers, including any economic impact or impact on production; what mechanism (e.g., State-level or "safe harbor" agreement or Candidate Conservation Agreement with Assurances) will allow project activities to be considered under the regulation?

The Project will assist producers in meeting or avoiding the need for natural resource regulatory requirements as follows: California's Sustainable Groundwater Management Act (SGMA) is the primary regulatory requirement. The Project will be a key part of providing producers in the Project Focus Area a means to balance current groundwater overdraft conditions that are mandated to be corrected by local landowners working in coordination with local agencies having authority to form Groundwater Sustainability Agencies (GSA), prepare Groundwater Sustainability Plans (GSP), and implement them. Without projects to correct groundwater overdraft by 2022, producers would be left to fend for themselves to find other much more expensive measures or be subject to State Water Resources Control Board measures that could be draconian, such as mandatory land retirement to curtail groundwater pumping. The answer to question 11 includes a description of such "no Project" consequences and estimates the trillion of dollars at stake. Regulatory requirements regarding the protection of the environment and minimization of environmental impacts associated with the project, including County permits for the installation of vertical drains, will be carried out by the District during the planning, design and construction of the project in a more comprehensive and efficient manner rather than be implemented by individual producers who might install similar practices on their respective farms if the proposed project is not approved. As the Project goes through planning stages, other regulations may be identified that the Project could assist Producers to meet. This could include California's Irrigated Lands Regulatory Program administered by the Central Valley Regional Water Quality Control Board with its requirements for the preparation and implementation of Sediment and Erosion Control Plans and Nutrient Management Plans. The mechanism that will allow Project activities to be considered under SGMA is that the Project would be incorporated by Eastside Water District into the local GSAs' GSPs. As the Rouse Lake Area is currently not mapped by the Federal Emergency Management Area with designated floodway boundaries or floodplain elevations, flood insurance rates are not likely to be affected there. Affected developed lands along streams and rivers currently are within designated floodways and flood plains with designated elevations. To the extent the Project reduces flooding in those areas, there may be an opportunity later to have flood protection agencies revise their maps accordingly for flood insurance rate reduction.

23 (Full Proposal) Does the proposal include any activities that are not included in an NRCS conservation practice standard or enhancement? If so, briefly identify the beneficial and adverse effects of those activities on affected natural resources (soil, water, air, plants, and animals) and specifically statutorily protected resources (e.g., cultural and historic resources, wetlands, threatened and endangered species, etc.).

The proposal does not include any activities that are not included in an NRCS conservation practice standard or enhancement. As mentioned in the Pre-Application, conservation practices the Project proposes to implement may include the following: Vertical Drain (630), Structure of Water Control (587), Sediment Basin (350), Water and Sediment Control Basin (638), Filter Strip (393), Cover Crop (340), Surface Drain-Field Ditch (607), Diversion (362), Water Spreading (640), Pumping Plant (533), Pipeline (430), Lined Waterway or Outlet (468). Any enhancements to conservation practices (to be identified during planning) would also be consistent with NRCS standards.

24 (Full Proposal) This question is mandatory for projects requesting PL-566 watershed authority funding (only available in the CCA funding pool): Explain how the required watershed plan-Environmental Assessment (EA)/Environmental Impact Statement (EIS) will be completed for the PL-566 portion of the project. Provide details on who will complete the watershed plan-EA/EIS and funding and time needed to complete the watershed plan-EA/EIS. If your project already has an approved PL-566 watershed plan-EA/EIS, provide the name of the plan and date approved. Previously approved plans over 5 years old may need to be supplemented to update natural resource and economic conditions. If a supplemental plan-EA/EIS is needed, provide details on who will complete the plan, how much funding is needed, and timeline for completing the plan. A current, up to date and approved watershed plan-EA/EIS is required prior to starting PL-566 implementation.

The EWD proposes to prepare the watershed plan and associated alternative development, cost and benefit analysis as well as the NEPA process compliance work with the NRCS providing consultation, review and approval of the watershed plan (assumes review by the NRCS National Water Management Center). Estimated costs to prepare, review and approve the watershed plan (EA/EIS) expended by the EWD and NRCS are included in the Project budget's total cost. Approximately 90 percent of those costs are assumed to be contributed by EWD and ten percent by NRCS. Costs to prepare the watershed plan can be refined during the preparation of the Partnership Agreement and identify the maximum cost contributed by the NRCS. The proposed timeline to submit the draft EA to the NRCS is 240 calendar days following the approval of the RCPP Project by the NRCS. EWD agrees to plan and coordinate public meetings in consultation with the NRCS. The completion of the Watershed Plan will be established as mutually agreed by EWD

1741 - Critical Conservation Areas (CCAs) - California Bay Delta - 2018 - EWD Rouse Lake Project Partnership

and the NRCS and no later than October 1, 2019 to permit the completion of the final design and construction of the project prior to October 1, 2023. This proposed timeline can be modified in consultation with the NRCS during the preparation of the RCPP agreement. The desire by the District is to implement the project as soon as practical and before the required deadline. EWD is committed to applying its resources to accomplish this goal. It may be possible that this process may be accelerated given the scope of the project, capabilities of the EWD, and existence of the Watershed Project managed by the East Stanislaus RCD (please see their website <http://eaststanrhd.org/watershed-project/>).

25 (Full Proposal) Does this project require Alternative Funding Arrangements (AFA)? Please describe how it will meet the goals and objectives of RCPP. Refer to Section III, Part C for AFA eligibility and requirements and Appendix A in the APF for Definitions.

The Eastside Water District intends to implement the project under the PL-566 Program and serve as the Local Sponsor. An Alternative Funding Arrangement to implement the project will not be needed.

26 (Full Proposal) Describe the partnership team. What makes this partnership adept at addressing the resource concern(s) and capable of accomplishing the proposed project? List past successes of lead partner with respect to experience executing projects of similar size, scope, and duration.

Eastside Water District (EWD) is the Project Lead Partner. EWD has existing and developing working relationships with Producers as well as all local entities in the Project Area that address the resource concerns of the California Bay Delta Critical Conservation Area: Excess/Insufficient Water/Drought, Water Quality Degradation, and Inadequate habitat for fish and wildlife. EWD's Board of Directors is composed of elected landowners (all Producers). Day to day management is done by the District's Secretary, Karen Whipp and Water Consultant, Kevin Kauffman. The consulting team to assist EWD and NRCS with the RCPP Project will be managed by Kevin Kauffman and includes Wood-Rodgers, Inc., E-PUR LLC, and Provost & Pritchard Consulting Group for the following: hydrogeologic and environmental resources site characterizations, planning, surveying, design, permitting, construction review and management, and assist in project start up and assessment. EWD has completed in-lieu and pilot direct groundwater recharge projects over the past 25 years, and will work with Producers in the Rouse Lake watershed to develop and implement the demonstration project where Vertical Drains and other Conservation Practices are employed in a manner that builds flood protection and recharge capabilities and can be replicated elsewhere in the Project Focus Area. EWD has worked cooperatively with the following list of local agencies for many years to plan and develop programs and projects for storm water management, while attempting to assure sustainable water supplies for local agriculture: Turlock ID, Merced ID, Modesto ID, Oakdale ID, South San Joaquin ID, Ballico-Cortez WD, Merced County, Stanislaus County, City of Modesto, City of Turlock. EWD is currently in discussions with Stanislaus County, who is willing to Partner in the Project. Their level of Financial and Technical Assistance will be determined based on Project benefits to each party. The draft cost sharing agreement (available on request) demonstrates the relationship between the parties and the likely relationship with the proposed Project. EWD's Financial and Technical Assistance for the Project will primarily be funded from its Diffused Surface Water Project capital fund, established following a 2015 Proposition 218 process which established per-acre charges on all landowners within the EWD boundary. The balance of this capital fund is greater than a 50% matching cost share for the Project by itself. Other Partners' Financial and Technical Assistance and support would leverage but not reduce NRCS and EWD Assistance to address the critical resource concerns within the project area. Financial and Technical Assistance from prospective Partners is not essential for Project completion. "Letters of Financial Contribution" from EWD is included in this Full-proposal. Such letters from other agencies could not be obtained in the available time. However, other overlapping and adjacent local agencies with similar resource concerns may also participate as Partners including Merced County, East Merced Resource Conservation District (RCD), and East Stanislaus RCD. RCD contributions will likely be to promote the project and participate in public meetings during the planning process. Per MOU, EWD is a public advisory committee member of the East Stanislaus Integrated Regional Water Management Group led by Modesto and including listed agencies. The Project will be included in its 2017 IRWM Plan Update, that makes the Project eligible for a later State Prop 1 IRWM grant application in 2018. Past EWD successful projects of similar size, scope, and duration include the following: Monte Vista Groundwater Recharge Pilot Project, In-Lieu Groundwater Recharge Program Using Purchased Water from Turlock and Merced ID, East Avenue Groundwater Recharge Pilot Project, Mustang Creek Flood Control Facility Groundwater Recharge Enhancement Project, Olam Farms Vertical Drain Pilot Project.

27 (Full Proposal) Describe how this project may build on activities that have already taken place. Does your project supplement or complete an existing project, initiative, or local/regional plan? Have there been any previous barriers to success? If so, describe how your project approach will overcome them.

How this project builds on activities that have already taken place: The Rouse Lake Project Partnership builds on Eastside Water District's (EWD) 25 years of working with local entities to develop sustainable water resources and protection from floods. The Project is the next step in the development of EWD's Diffused Surface Water Project Plan (supported by landowner assessments). The Project supplements or completes an existing project, initiative, or local/regional plan: EWD lands were explored by drilling for near surface geologic characteristics in a variety of areas in 1996, 2003, and 2005. EWD conducted a study in 2014 using these field data, USDA SSURGO data, and other data to assess lands with diffused storm water available for groundwater recharge. Favorable geologic conditions were found for recharge using percolation basins in only a few areas. A favorable pilot surface percolation test was conducted in a lower lying area in 2014 and 2015. This Project continues and extends those efforts. The 2014 EWD study utilized geospatial methods on soil texture to develop estimates of vertical hydraulic conductivity from the surface to the groundwater table and identified a prevalence of durapan and clay layers in the subsurface of much of the Project Focus Area above the Mehrten Formation (characterized by black sands) that producer's wells tap. EWD's consulting team was involved in those past efforts and planned the Rouse Lake Project Partnership. Technical details, scopes of work, and cost estimates for the Project were developed by the consulting team to support the information in the Pre-application and Full application. Further development of EWD's hydro-geologic data and geospatial soil texture models of the Project Focus Area were done to identify where vertical drains are most likely to be effective. Snap shots of the texture model are available upon request. Since the Pre-application EWD's consulting team conducted further geologic investigations and field testing of vertical drain technology near Turlock Lake; and has met with Producers in

1741 - Critical Conservation Areas (CCAs) - California Bay Delta - 2018 - EWD Rouse Lake Project Partnership

the Rouse Lake Watershed, initiated in-lieu project planning, applied for road crossing permits, and initiated biological studies and California Environmental Quality Act compliance. The District's Water Consultant has continued work with Stanislaus County and other local water agencies' staffs to craft the Stormwater and Groundwater Sustainability Plans that will incorporate the RCPP Project. The Project is a step in developing EWD's infrastructure while Stanislaus County's infrastructure and capacity is well developed in facilities, staff, and equipment (see their web site for more information <http://www.stancounty.com/>). Future possible water agency partners could bring both financial, technical, operations, and maintenance resources to bear on the Project while RCDs bring expertise in outreach. Using existing EWD consultants and local contractors will minimize hiring and coordination work. Previous barriers to success and how project approach will overcome them: Two previous barriers to success for flood protection and groundwater recharge projects have been: 1. The prevalence of durapan and clay layers in many parts of the Project Focus Area that increase runoff and flooding and often make recharge basins too expensive (excavations to remove durapan and clays are very deep and costly); 2. EWD producers have not had access to sufficient funding and water for groundwater recharge. Neighboring agencies had previously sold only limited water to EWD producers, and EWD had difficulty obtaining funding to build facilities to accept this water. The Project approach of using in-lieu recharge (use of water in-lieu of groundwater) and vertical drains overcomes Barrier 1, while a recent local funding program and the use of diffuse water, riparian water, and neighboring water agencies now willing to sell EWD greater amounts of water overcomes Barrier 2.

28 (Full Proposal) Describe the natural resource concern(s) that your project proposes to address. (See APF page 10 & 11). Your description should include relevant scientific data such as resource assessments, models, physical data, and trends that support your selection.

The Project will principally address three of the natural resource concerns identified for the California Bay Delta CCA: 1) insufficient water for agriculture, 2) drought reliable water supplies for agriculture, and 3) excess water from high precipitation events. Eastside Water District (EWD) is currently reliant on groundwater availability to supply irrigation water. Depths to groundwater have been increasing steadily over the past 50 years as documented by the USGS in its water supply assessment and its groundwater model for the region between the Merced River and the Stanislaus Rivers. Looking at water available from high precipitation events for intentional recharge projects in 2014, EWD found that depth to groundwater was increasing from 1965 to 2014 at rates of 1.1 to 1.7 feet/year representing a total increase in the depth to water of 55 to 85 feet. Under California's 2014 Sustainable Groundwater Management Act (the SGMA) EWD has the responsibility to meet the goals of a Groundwater Sustainability Plan. Water balance calculations by the agencies preparing that Plan, including EWD and Stanislaus County, show that without additional recharge, current irrigation water needs would result in unsustainable groundwater depletion. Without the Project, Producers in the Focus Area will have insufficient water available to meet current irrigation demands regardless of the California Dept. of Water Resources determination of climatic water-year type (e.g., Very Wet). Using Consumptive Irrigation Requirement models developed at the University of Arizona, the estimated orchard crop irrigation need in EWD is approximately 100,000 acre-feet per year (AFY). Water budget models of the area indicate that approximately 50,000 AFY of groundwater is available (Phillips, 2015). The difference between consumptive water needs and ambient groundwater available would require land fallowing of approximately half of the Producers irrigated acreage over the next 22 years of the SGMA implementation without the Project. Also in a drought period, there would not be a sufficient quantity of groundwater available in reserve due to these same water-budget long-term balance requirements under the SGMA. Conversely, in periods of high precipitation, there are large areas of crop inundation for Producers in the Project Focus Area due to excess water in the watershed drainage area. Rouse Lake is estimated to contain between 3,000 and 10,000 acre-feet of water in its approximately 650-acre footprint, depending on the intensity and frequency of rainfall. The orchards surrounding Rouse Lake flood when lake levels rise to levee heights as occurred in the 2017 Water Year. This kills permanent orchard crops around Rouse Lake such as almonds. Using PRISM rainfall data at EWD for the past 50-years determines that a typical (50% Exceedance) water year provides 11.2 inches of rainfall and a surplus of 1.6 inches Surplus rainfall, beyond consumptive demand for crops and native vegetation, is available in 7 out of 10 years to use for intentional groundwater recharge; this provides clear opportunity for Project success beyond current status quo conditions of a water deficit.

29 (Full Proposal) Estimate how many eligible producers, in the planned project area, are likely to participate. How was this estimation calculated? (This can include existing application demand, participant surveys, etc). Describe any comprehensive strategies for encouraging participation of historically underserved producers (see definition in APF).

Eligible Producers Likely to Participate: Since the project is proposed to be implemented under the PL-566 Program, the EWD will implement the project as the Local Sponsor and provide planning, design and construction of the project as described in previous responses. However, EWD anticipates the cooperation of individual producers within the project area as follows: In the in the Rouse Lake Watershed (RLW), land rights or easements from ten producers are likely to be required to construct and maintain the Project. This was determined by reviewing land ownership maps and lists of landowners, and by meeting with their representatives at Eastside Water District (EWD) board meetings and one on one meetings to discuss the Project. EWD's initial work on the Project has involved four of those landowners. All have shared available drillers logs and participated in allowing initial biological review, planning and gaining County permits for in-lieu recharge and vertical drain components of the Project. The other six have been active in past EWD project planning, and are known to be receptive to the Project. In the annex area, one producer has initiated geologic investigations, planning, permitting, and field testing of vertical drains; and two others have expressed interest in future projects as well. In the remainder of EWD, the Project team met with one large producer southwest of the (Rouse Lake Watershed) RLW to discuss possible use of the Rouse Lake Project's water distribution facilities as a backbone for a future project to serve their land and other producers south of Keyes Road. From Stanislaus County Assessor's data, the entire Project Focus Area, including the Dry Creek Watershed has a total of about 114 producers. Many of these have participated in public outreach meetings conducted by EWD and the Turlock and Modesto Groundwater Sustainability Agencies (GSAs) concerning Sustainable Groundwater Management Act compliance efforts, and are showing much interest in flood protection and recharge projects, especially after local water agencies offered to sell water to growers outside of their historical service areas in wetter hydrologic years. Based on past levels of participation in EWD projects, it is expected that a total of about half of all producers in the Project Focus area will participate in some manner, either by participating in informational meetings, sharing information for technical studies, and/or in the

1741 - Critical Conservation Areas (CCAs) - California Bay Delta - 2018 - EWD Rouse Lake Project Partnership

RLW Project itself. Comprehensive Strategies for Encouraging Participation of Historically Underserved Producers: As part of the Rouse Lake Project Partnership, EWD will work with NRCS and RCD staff to identify producers in the Project Focus Area that have historically been underserved by current NRCS programs. EWD's web site, monthly board meetings, and public information meetings that EWD, the GSAs, and Stanislaus County already plan to conduct for Groundwater Sustainability Planning and Stormwater Resource Planning will incorporate strategies and materials to be mutually developed with NRCS and RCD staff to better reach historically underserved producers. The State of California has identified potential underserved producers on their website (http://www.water.ca.gov/irwm/grants/resources_dac.cfm). It is also anticipated that the successful implementation of the proposed project can be used as a basis for the NRCS to more easily implement similar conservation practices addressing these same resource concerns under other programs offered by the NRCS that are more widely accessible to historically underserved producers throughout the California Bay Delta Critical Conservation Area. Benefits associated from similar projects throughout the California Bay Delta can also increase the resiliency to irrigated agriculture during periods of drought that provide jobs for disadvantaged communities and more reliable domestic water supplies in rural areas affected by depleted groundwater supplies.

30 (Full Proposal) Describe the planned project area. Provide sufficient background to explain why this area was selected by your partnership team. How will the project target area lead to successful, measurable outcomes in addressing the selected resource concern(s)?

The planned Project area is shown in the Eastside Water District NRCS Partnership Project Focus Area map. Project Focus Area (PFA) lands are shaded. Resource conservation practices are proposed to be implemented in the Rouse Lake Watershed (RLW) (red boundary) which has no natural drainage outlet. Eastside Water District (EWD) boundary is orange. These lands have very similar resource concerns and common target Producers. Upland contributing watersheds are also in the PFA. All PFA areas outside of the RLW are likely future priority areas; so, study and promotion work includes those areas. The PFA is of a size deemed manageable and measurable for the proposed partnership. Irrigated agricultural lands in the PFA rely primarily on groundwater to supplement rain to meet crop water needs. In addition to flooding, declining groundwater level trends indicate continued pumping at current rates, without increased recharge, may not be sustainable. California's 2013 Sustainable Groundwater Management Act (SGMA) requires local sustainable groundwater management for each non-adjudicated groundwater subbasin. The PFA overlies the Turlock and Modesto Groundwater Subbasins. EWD is an active member in the Turlock Groundwater Basin Association (TGBA), which coordinates local Groundwater Sustainability Agency (GSA) efforts. EWD, with four regional partners, formed the East Turlock Basin GSA to manage their portion of the Turlock Groundwater Subbasin. Periodic flooding occurs in orchards surrounding Rouse Lake and in rural and urban areas on streams and rivers that pass through or near the PFA, causing extensive property damage. Confined stormwater runoff (diffused water) contributes to those damages and provides recharge source water under existing rights. Solving flooding and groundwater overdraft problems have been a regional and California Bay Delta CCA focus since the 1980's, and are the subject of multiple studies, plans, and projects. A bibliography of related documents is available upon request. The elevation of the PFA's and location along the lower foothills of California's Sierra Nevada are key characteristics that give opportunity to store water in and replenish its depleted aquifer. The Stanislaus, Tuolumne, and Merced Rivers along with their subordinate tributaries, including Dry Creek on the Tuolumne River, are all tributary to the San Joaquin River (SJR). Future projects in other PFAs would increase flood protection for downslope agricultural and urban lands. The City of Modesto suffers chronic flooding from Dry Creek to its confluence with the Tuolumne River. And the SJR floods further downstream. Some of Dry Creek's water currently flooding developed lands could be captured for groundwater recharge. Resource conservation practices that facilitate flood protection plus recharge are needed in the PFA and many similar California Bay Delta CCA regions to penetrate durapan and clay layers between the ground surface and the target aquifer. As climate change modifies the hydrology of Sierra rivers, the importance of such solutions will grow. In 2017 hydro-geologic, engineering, and California Environmental Quality Act studies were started along with Producer meetings in the RLW and annex area. These will continue before a NRCS Partnership agreement, demonstrating a high level of commitment and advance progress from EWD and its partners. The size and nature of the RLW and absence of barriers to use water rights makes successful results reasonable to expect. Having common Producers, resource concerns, agency involvement, and both wet period flooding and water supplies makes study and promotion extension in the PFA very applicable. Per Question 2 and 10 answers, the Project has quantified improvement objectives for natural resource concerns and a monitoring program to measure them and confirm the Project's success.

31 (Full Proposal) Describe the project timeline/plan of work. Specifically describe the roles and responsibilities of each partner, including NRCS. Consider NRCS program policies and timelines and how your project scope will integrate or align. Consider application recruitment, ranking, and practice/program implementation.

Project timeline/plan of work description: Regarding activities planned before the Partnership Agreement is approved and not subject to NRCS reimbursement: Biological studies of the Rouse Lake area were initiated in 2017; Initial geologic studies and testing of vertical drains just east of Turlock Lake are underway and will continue in 2018 to demonstrate their feasibility; Planning for in-lieu facilities in the northern portion of the Rouse Lake Watershed with associated road and canal encroachment permit applications and California Environmental Quality Act compliance was initiated in 2017 and will continue in 2018; March or April 2018 expected approval of full proposal application; April to September 2018 is expected preparation of Partnership Agreement. The following activities are planned after execution of the Partnership Agreement: October 2018 through September 2019, completion of geologic investigations, preliminary alternative plans, environmental analysis, economic analysis, Watershed Plan, Stormwater Resource Plan, and Groundwater Sustainability Plan. Any opportunities for habitat enhancement within available funding would be identified and incorporated into Project planning during this time period; October 2019 through September 2020, easements and permits for the Project will be obtained; October 2020 through September 2021, final design (with approval by NRCS) and bidding, culminating in construction contracts for resource conservation practices; October 2021 through September 2022, construction of resource conservation practices. NRCS and EWD accept completed project; October 2022 through September 2032, O&M with measurement and monitoring of completed project for 10 years or as specified in O&M Agreement. If the Partnership Agreement is executed sooner, these activities would start sooner. EWD's producers and its board of directors will want to move the Project to construction faster than this timeline. Ways to have work proceed on parallel tracks where possible will be sought. Items that require fewer and/or easier easements and permits would be prioritized. Description of roles and responsibilities of each partner, including NRCS. The following roles and responsibilities are proposed: 1. Cost share

1741 - Critical Conservation Areas (CCAs) - California Bay Delta - 2018 - EWD Rouse Lake Project Partnership

from NRCS and Local Partners as shown in Partnership Agreement, 2. RCD participation in public meetings and promotion activities, 3. EWD consulting team (with a planning consultant) complete the Watershed Plan in consultation with NRCS and NRCS National Water Management Center. Stanislaus County prepares Stormwater Resources Plan including the Project, and may apply for State Prop. 1 implementation grant in consultation with EWD. Groundwater Sustainability Agencies prepare Groundwater Sustainability Plans including the Project, and may apply for State implementation grant money, 4. EWD consulting team completes preliminary design, plans, and specifications with review and approval by NRCS, 5. Construction staking, administration, and review by EWD's consulting team. Periodic inspection by NRCS, and 6. EWD and local partners operate, maintain, measure, and monitor the Project.

32 (Full Proposal) Describe your project approach. What NRCS programs and practices will you use to combine with your teams' ongoing efforts? Use relevant scientific data to support your approach, and justify the expected measurable changes in resource concerns.

Project implementation will use PL-566 Program authority. EWD as the Local Sponsor will take responsibility to acquire all needed land rights and permits and do O&M of the Project for its service life. EWD and its consultants will provide TA for planning, environmental evaluation, design and construction, with the NRCS providing technical reviews. This broad description of the approach to the division of work can be refined in consultation with the NRCS during the preparation of the Partnership Agreement. The technical approach is anchored in conjunctive use of surplus surface water to reduce risk of cropland flooding and to accelerate recharge of the depleted aquifer beneath EWD. Two mechanisms to reduce flood risk are embedded in the project approach: pumping excess water out of Rouse Lake to neighboring crop lands and water storage facilities, and vertically draining water to the aquifer or spreading water for percolation to create intentional recharge. Pumping excess water out of Rouse Lake can be done using tethered floating pumping plants connected to pipelines to nearby growers; this method can fit into their existing piped groundwater delivery systems and be enhanced by their use of the EQIP program and NRCS practices for efficient on-farm delivery of water. This in-lieu mechanism in the approach reduces total dependence by growers on groundwater use in most years, roughly 7 of 10 years. It also enables recharge of the depleted aquifer to support sustainable groundwater use for drier years and drought periods. This "in-lieu" recharge has been found to be the most efficient mechanism of accelerated groundwater recharge in depleted aquifers. The intentional recharge mechanism of the Project may utilize existing NRCS practices for vertical drains to move water beneath regional layers that currently impede drainage resulting in crop damage. Intentional recharge may also utilize spreading basins for surface water that may need to be excavated to some depth to remove hardpan at and near the land surface. In addition to local real time use of excess water for crop lands and intentional recharge, if the amount of water exceeds both the local need and the rate capacity of intentional recharge facilities then the Project may evaluate pumping plants and piped conveyance from Rouse Lake to water storage facilities that deliver water via gravity. Conservation Practices to be used include the following: Vertical Drain (630), Structure of Water Control (587), Sediment Basin (350), Water and Sediment Control Basin (638), Filter Strip (393), Cover Crop (340), Surface Drain-Field Ditch (607), Diversion (362), Water Spreading (640), Pumping Plant (533), Pipeline (430), Lined Waterway or Outlet (468). The expectation of meaningful reduction of crop inundation and of accelerated aquifer recharge is based on the volume and timing of excess water, primarily from December to February. During the Project planning phase EWD will determine the rate and volume that excess water will be taken for conjunctive use. The expectation of meaningful improvements to groundwater storage from direct and indirect recharge is supported by hydrologic data. Preliminary analysis of the hydrologic and climatologic data in the RLW from the PRISM data system suggests that a "Normal Water Year" has produced more than 1,400 Acre-feet per year (AFY) of excess water over the past 50 years while the runoff/run-in to Rouse Lake has averaged 10,500 AFY, with "Wet Year" runoff over 23,500 AFY. Preliminary assessment suggests that designing intentional recharge facilities to a "Wet Year" hydrology sets a realistic bracket at 1,000 AFY; consequently designing surface water pumping and piping for in-lieu farm use or nearby water storage at between 3,700 to 22,500 AFY would enable use of most of the water in excess of habitat conservation needs.

33 (Full Proposal) Is your project approach innovative? Explain how innovation will contribute to solving the targeted resource concern(s).

The Project approach includes innovative technical methods for the disposal of storm water using intentional recharge facilities. The intentional recharge aspect of the Project will utilize existing NRCS practices for vertical drains but extend those to considerable depth to move water beneath regional near-surface hardpan layers and intercept high permeability sand and gravel layers in the subsurface to increase the amount of water that can be disposed of. These sand and gravel layers follow regional geologic structure but are irregular in their occurrence. The project will utilize geospatial statistics to establish a local and regional understanding of geologic structure to increase the likelihood of intercepting more continuous layers of high permeability strata. In 2014 EWD used SSURGO data and data from existing high-quality driller's logs to look at lands with available diffused storm water for intentional groundwater recharge. This Project will leverage off and extend innovative approaches used on those data. That study used geospatial analysis of soil and sediment textures to estimate permeability from land surface to the groundwater table. A technical innovation in the approach used was dual-domain oversampling of the texture data. The primary domain was sediment texture-data averaged over 15-foot intervals and the second domain was the raw texture data in 1-foot increments. The geospatial trends were developed from the primary domain but they were improved by simultaneously oversampling the primary domain data using the second domain. This innovation tightened the precision of the geospatial model to enable small-scale predictions below a 40-acre parcel size and a vertical scale of 3 to 8 feet, but across a very large area of 66,000 acres or more. In Project execution EWD will update this geospatial model across the Project Focus Area and extend its predictive capabilities to lateral interconnection of coarser sediment intervals. Once the mathematical modeling is completed the outcome of permeable pathway interconnection is easily assessed visually by color coding the permeability values and slicing vertically thru the geospatial model at select locations with good topography, hydrology, and water availability. New data generated from this project will be correlated or compared to the geospatial model for secondary pre-design verification. Project innovations include the use of GIS-based analyses to evaluate the quantity and frequency of excess water availability. Rouse Lake has an undulating topography which is common to the land surface throughout the Project Focus Area. This uneven topography influences where excess water may be available, how often and how much. This is true for projecting excess water from the return frequency of the size of a projected storm, a monthly rainfall total, and a wet-season rainfall total. Use of 3D spatial analysis to quantify where and how much surface water will

1741 - Critical Conservation Areas (CCAs) - California Bay Delta - 2018 - EWD Rouse Lake Project Partnership

“typically” be available is an innovation to enhance engineering of recharge facilities and Project cost-benefit ratios. One innovation is to assess near-surface and deeper interconnection by measuring and analyzing daily pressure differentials from atmospheric warming. Barometric pressure data will be collected from two or more vertically discrete piezometers. The presence or absence of differential pressure over depth indicates the presence or absence of laterally extensive low permeability intervals. Another EWD program innovation is to develop opportunity for multiple benefits from elevation. Recharge in upland regions will increase groundwater availability in the broader alluvial groundwater basins in the lowlands and the capture of high flows increasing the project flood protection potential.

34 (Full Proposal) Describe how partner cash and in-kind contributions will integrate with NRCS program funds. Letters of Financial Contribution committing to specific cash or in-kind contributions and associated specific tasks are required in the full proposal submission package. Please upload them to the Data Tool, "Upload Letters" tab.

As stated in other responses, EWD landowners and Producers have approved a funding program that will provide 100% of its Project partner cash contribution commitments. EWD as the Lead Project partner will plan and prepare the Rouse Lake watershed plan, and survey, investigate, design, construct, operate, monitor, and report on the preferred Project. EWD proposes to provide 50% in cash contributions, with the NRCS providing the remaining 50%. Since some costs to implement the Project will be borne by the NRCS and EWD, the exact division of cost between EWD and NRCS and reimbursement by NRCS to EWD up to the 50% NRCS contribution can be defined during the preparation of the Partnership Agreement. Letters of contribution from other partners are expected but not needed. A draft copy is attached to this response, indicating the potential partners and the format of expected letters. As an example, the East Stanislaus RCD has been invited to participate and provide outreach and other in-kind services under its existing Watershed Project Program. Stanislaus County is also expected to provide in-kind technical assistance, at a minimum through its preparation of a Stormwater Resources Plan that includes the Rouse Lake Project. A copy of the in-progress draft cost sharing agreement related to EWD's participation in the Stormwater Resources Plan is included. This agreement was approved by EWD's board on August 24th, and is scheduled to be approved by the County Board of Supervisors after the deadline for submitting this Full Proposal. Any cash contributions from other non-federal partners, if provided later would leverage but not reduce NRCS and EWD's contributions under RCPP.

35 (Full Proposal) How will you measure and document project success? What measurable natural resource concern changes will occur from this project?

Project success will be measured against two broad objectives, decreased area of inundation for developed lands, and sufficient supply of water for agriculture. The changes for natural resource concerns will be three measurements, reduced acreage of flooding, additional quantity of water stored to groundwater, and reduced depth to groundwater. To quantify reduced flooding and risk of flooding the Project will use aerial photography with analysis of crop areas that are recovering from current inundation damage, and hydraulic modeling of the reduced risks of inundation to lands currently at risk. The measurement will be quantified as acres of land improved for flood damage and risk. Stock aerial images that are routinely taken of the two counties will be analyzed along with ground field photos at control locations for observing improvements in areas of crop damage. Crop damage has occurred in the 2017 Hydrologic Year in the Rouse Lake watershed. The Project will decrease the potential and actual stage height of excess water in Rouse Lake. Removing excess water from brief storm events within 20 to 30 days mitigates harm from root zone anoxia. The actual improvements to the farm fields adjoining Rouse Lake during the 5-year implementation period will be documented by photos and written analyses of the locations and areas. Project implementation will use hydraulic modeling (conventional flood modeling and GIS methods) of return frequency flow events and periods to describe the areas improved for flood risks in graphics and written documentation at Project conclusion. The estimates of reduced flood risk will incorporate both actual measurements of excess water delivered for in-lieu groundwater storage and projections of excess water available over time to be stored in-lieu for both sufficient and drought available groundwater. All three aspects of the resource concern for water quantity are addressed by controlling excess water at Rouse Lake and across the Project Focus Area. Measuring and documenting groundwater storage via in-lieu mechanisms will be done by measuring the quantity of water delivered by Project pumps, pipes, and conveyances to existing on-farm infrastructure that currently distributes groundwater. Flow meter instrumentation and monitoring will be further defined during Project Implementation Plan development in partnership with NRCS. When Project facility implementation to recharge is done by pumping or gravity drainage of water to vertical drains or other conservation practices such as spreading water in basins, measurement would also involve meters to record and document quantities. These quantification measures will be designed during Project planning and design. To provide additional field data on the amount of groundwater in storage for sufficient and drought available water, the Project will define and use a network of groundwater monitoring wells. The depth to water will be measured on an agreed upon frequency during Project implementation. The natural resource change in groundwater in storage can be documented by groundwater levels multiplied by an aquifer storage coefficient. Shallow aquifer storage coefficient data will be developed during Project implementation using conventional hydraulic testing and analysis for groundwater injection and withdrawal (e.g., Theis method aquifer-tests). The changes in measured groundwater levels and the resulting changed quantity in storage may be a comparison of a projected groundwater level based on historical trends vs. the measured groundwater level at a point in time. The difference in those two values would represent the tangible natural resource change.