

**Appendix 4-B Draft Final Project Plan Scott
Groundwater Recharge Project**

**US Fish and Wildlife Service
Coalition of the Willing Final Proposal
June 2020**

Project Title: Coalition of the Willing Project: Groundwater Recharge Pilot Study to Determine Instream Benefits for the Scott River, Siskiyou County, California

Principal Investigator: Shasta-Scott Basin sub-group (County of Siskiyou, County of Modoc, Cal Trout, Karuk Tribe, Yurok Tribe, Quartz Valley Indian Reservation, Scott Valley Irrigation District)

Background: The Shasta-Scott Basins subgroup was tasked with developing a project that would garner broad support amongst the Coalition of the Willing and would serve to address critical questions and needs related to water quantity and quality within the sub-basin. The subgroup worked together and identified groundwater recharge as the best option for their initial work as the project is relatively simple to complete, has direct ties to the Sustainable Groundwater Management Act (SGMA), and has the possibility to address water quantity, and potentially quality, needs during critical fish migration times in the Scott Valley. It was also recognized that this pilot study could serve to build trust and relationships amongst the represented entities and agencies in the sub-group which is critical to the Coalitions goals.

Justification: There is a need to address water quantity and quality needs within the Scott River system, and the use of groundwater recharge may be one of the many actions that can assist in meeting these needs. Given that groundwater recharge is relatively easy to plan and implement, and that one year of a study has already been performed in the in the Scott Valley, the Shasta-Scott sub-group of the Coalition of the Willing has chosen this activity as their spearhead project. The pilot study will conclude with a report that outlines the actions and outcomes, which will serve to educate the Coalition, and the Groundwater Sustainability Plan being developed in the Scott Valley as part of the SGMA. This report will help guide future groundwater recharge efforts to ensure that such actions are done at the correct timing, in the correct amounts and at the correct locations.

Objectives: The Project aims to answer the following three questions:

1. Where and when does water that is recharged enter the Scott River?
2. How much water can we put back in the Scott River via groundwater recharge?
3. Are there specific water quality benefits to using groundwater derived inflow (e.g. temperature)?

It is also anticipated that the Project could help answer the other following questions, understating that more work/ considerations may be needed outside of this pilot study to fully answer them:

4. Where in the basin is water most beneficial for fish during different water year types?

5. Do we have a sufficient monitoring system in place to evaluate a recharge study?
How will we monitor?

Procedures: This project will entail up to a five-year continuation of a groundwater recharge pilot study in the Scott River Basin to further inform the potential instream benefits of applying small portions of high winter Scott river flows on private farming land. Information to be gleaned will include the timing and location of applied water re-entering the Scott River, and the potential to address in-stream water quantity and quality needs during critical fish migration.

The groundwater recharge pilot study will provide needed information on the ability to augment groundwater conditions to enhance flow and improve water quality at critical habitat and during critical migration times on the mainstem Scott River. Utilizing the Scott Valley Irrigation District (SVID) canal system, up to 20 to 30 cfs would be diverted from the Scott River and applied to identified agricultural fields during the non-irrigation season (approximately Dec 1 – February 28th). The technical team, agencies and consultants will be tasked with assessing precipitation and river flows prior to December of each year to determine the timing and amount of diversions. It is anticipated that no more than 5% of river flows will be required on a yearly basis for the pilot study. State and federal agencies will be involved in this process regarding their responsibilities surrounding the Endangered Species Act and issuance of water rights in order to divert flows.

In 2011, the University of California, Davis (UC Davis) partnered with the local Scott Valley Groundwater Advisory Committee to identify best management practices and groundwater recharge scenarios for the Scott Valley watershed. Groundwater Recharge (Managed Aquifer Recharge) was developed as a potential scenario, and modelling results indicated that 42 cfs of water diverted and applied to 1,400 acres over a three-month period could provide a 7.5 cfs increase in mainstem flows during the summer/early fall months. In 2016, Scott Valley Irrigation District received a temporary water right and diverted approximately 680 acre-feet to be applied on farmland from February 4 – March 31 of that year. Results showed a significant holding capacity for groundwater recharge with no negative impacts to crop yield. Above average rainfall during the implementation period limited the amount of water that could be applied, and it was determined that 680 AF of water was too small to provide measurable benefits. However, this recharge effort was considered a successful implementation, and the participants felt it would enhance instream conditions within the basin if applied on a larger scale.

The effort outlined in this proposal would continue, over a three-year period, the research necessary to identify the overall benefit of groundwater recharge on the mainstem Scott River. The Shasta-Scott subbasin group is made up of representatives from the County of Siskiyou, County of Modoc, Scott Valley irrigators, Cal Trout, the Karuk Tribe, Yurok Tribe and the Quartz Valley Indian Reservation. The group, with the assistance of NFWF, who will be responsible for grant administration, will consult with Larry Walker Associates and UC Davis to perform the technical work under this project, including final project development, data collection, analysis

and report writing. The subgroup will also work with the SVID to utilize their irrigation system to divert water and apply it on landowner property, and to obtain the necessary permits and water rights needed to perform the work. The Scott Valley Advisory Committee (advisory committee for SGMA and Groundwater Sustainability Plan development) will assist in obtaining landowner cooperation and support and to ensure that this work is done in conjunction with efforts as part of SGMA as it relates to groundwater recharge.

The sub-group, advisory committee and consultants will identify two properties at the outset of the project, where recharge will occur during the first year. Future planning efforts will include identifying the need for, and location of, additional properties where recharge will occur, and other opportunities to upscale this project. Data from recharge activities will be collected through the use of shallow piezometers and isotopes, which will be purchased with grant funding. Further detail will be provided as the consultants and technical team plan out the project on a month-to-month timeline.

The advisory committee, Siskiyou County and its consultants, have been performing needed and critical work as part of SGMA efforts and it will be important that the actions outlined under this pilot study build upon that work. The subgroup, through its technical team, is also coordinating with the California Department of Fish and Wildlife and the North coast Regional Water Quality Control Board; the agencies role will include advising the technical group of actions that need to be taken to meet agency regulations and requirements and to assist in obtaining required permits and water rights.

Siskiyou County, through its efforts related to the SGMA, has obtained a grant through Proposition 68 that would allow UC Davis staff to use isotopes during groundwater recharge activities. This will help answer critical questions as to the timing and location of applied water augmenting Scott River base flows. It is the group's goal to use all this information to determine the feasibility and applicability of taking these efforts from a pilot study to a full-scale project that provides in-stream benefits to the Scott River on a yearly, as needed or as available basis.

Deliverables will include a report outlining the work completed, the information obtained, lessons learned, and the opportunities/potential of taking efforts full scale.

Lastly, it should be considered a significant achievement that the members of this group were able to work together and overcome conflict and differences to develop this pre-proposal, which we hope can be used as a tool for addressing some of the in-stream needs for the Scott River. These members include Siskiyou County, Modoc County, the City of Yreka, Shasta and Scott irrigators, the Karuk Tribe and Cal Trout; with support from the Yurok Tribe and Quartz Valley Indian Reservation.

Schedule: Outreach, coordination, permitting, and final planning has started and will continue through the duration of the project. On-the-ground work will commence December 2020 and will conclude February 2025, with data analysis and report writing occurring through September 2025. The proposal will cover three years of the pilot study, if needed. It is

anticipated that diversions from the Scott River and water application of landowner property will occur during the time periods of December through February, however, the technical team and consultants will be tasked with assessing precipitation and river flows prior to December of each year to determine the timing and amount of diversions.

Cooperators/Consultants: Aside from the Shasta-Scott sub-basin group members, cooperators will include the US Fish and Wildlife Service, California Department of Fish and Wildlife and the North coast Regional Water Quality Control Board. The group will utilize National Fish and Wildlife Foundation (NFWF) for grant administration purposes, and Larry Walker Associates subcontracting with UC Davis as the consultants to perform the majority of the technical work, including data collection, analysis and report writing. UC Davis has been intricately involved in Scott Valley groundwater related work for over 10 years, including the initial pilot study in 2016. Larry Walker Associates, subcontracting with UC Davis, is contracted with Siskiyou County to perform technical work related to the SGMA, including developing the Groundwater Sustainability Plan for the Scott Valley.

Responsibility: The Shasta Scott sub-group, and the subgroup's technical team will be responsible for developing and guiding this effort, and will coordinate with the Scott Valley Advisory Committee as it relates to the SGMA and actions related to groundwater recharge. The subgroup and the advisory committee will also work together to obtain landowner participation and support to perform the pilot study. The advisory committee well understands the landowner community and the needs of landowners in order to participate in this effort. The technical team in coordination with the Scott Valley Irrigation District will be responsible for obtaining needed permits and water rights to divert from the Scott River. UC Davis and Larry Walker Associates will perform the majority of work related to data collection, analysis and report writing. NFEF will be responsible for grant administration, in coordination with the subgroup.

Budget: The subgroup has budgeted for a total of \$200,000 for the pilot study. We anticipate this funding will cover the work needed to obtain temporary water permits, CEQA compliance, outreach and coordination with stakeholders and local tribes, on-the ground activities, monitoring, grant administration and report writing. Other funding sources would include the Proposition 68 grant awarded to Siskiyou County, which would provide for using isotopes as part of the pilot study.

- Grant Administration - **\$3,500** – Grant Administration will be performed by NFWF, who will coordinate as needed with the sub-group and consultants. NFWF will be responsible for providing annual reports to USFWS as required for mandatory reporting requirements.
- Infrastructure/Equipment - **\$90,000** – This will include the purchase, instrumentation, and installation of shallow piezometers, estimated at \$10,000 for each piezometer. If additional piezometers are needed this will be utilized from the budget for future planning and implementation. \$30,000 is estimated for the use of isotopes and other

water quality equipment, specific water quality equipment will be further detailed as the project is fully developed. All of this equipment is necessary in meeting the objectives of this project by answering the following questions:

1. Where and when does water that is recharged enter the Scott River?
 2. How much water can we put back in the Scott River via groundwater recharge?
 3. Are there specific water quality benefits to using groundwater derived inflow (e.g. temperature)?
- Data Analysis/Report Writing - **\$30,000** – This will include the work necessary to collect data, analyze it and synthesis it into a report for the sub-group. The contractor will coordinate with the sub-group and the Scott Valley Advisory Committee throughout this process to ensure transparency and include data and analysis that will be useful to the sub-group and the Scott Valley Advisory Committee in their efforts towards developing a Groundwater Sustainability Plan. The report will center around addressing the three questions as outlined above, and will address opportunities for future efforts and work needed.
 - State Permitting - **\$16,000**:
 - o \$7,000 - State Water Resources Control Board Application for Temporary Permit filed pursuant to Water Code 1425 to Diver to Underground Storage During High Flow Events.
 - o \$5,000 – California Department of Fish and Wildlife Lake and Streambed Alteration Agreement
 - o \$4,000 – Work necessary to be performed by consultants, and the Scott Valley Irrigation District in obtaining permits and temporary water rights.
 - Facilitation - **\$8,000** – This includes funding to continue facilitation with Rich Wilson, as needed, throughout the life of this project.
 - Future Planning and Implementation - **\$52,500** - This includes funding to further develop and implement the project, including installing equipment (i.e. piezometers) at future locations where groundwater recharge will occur. It is anticipated that additional property will be secured in the future at strategic locations throughout the valley to broaden the study and collect more needed data. In addition, should additional infrastructure be needed to divert, or apply, water, funding will be covered under this category.

