PROPOSAL TITLE PAGE:

Proposal Title: Montague Water Conservation District - Upper Shasta River Flow Enhancement Through Water Conservation

Grant Application for: Bureau of Reclamation - Agricultural Water Conservation and Efficiency Grant (#R15AS00002)

Proposal Applicant:

Montague Water Conservation District

PO BOX 247

Montague, CA 96064

MWCD@att.net

530 459-3371- Phone

530 459-3371- Fax

Project Manager:

Gary Black

5916 Eastside Rd.

Etna, CA 96027

gblack@sisqtel.net

530 598-5800 - Phone

530 467-3625 -Fax

Table of Contents

Technical Proposal

Technical Proposal

Executive Summary

Date: **January 10, 2015**

Applicant : **Montague Water Conservation District**

Title: **Montague Water Conservation District - Upper Shasta River Flow Enhancement Through Water Conservation**

City : **Montague**

County: **Siskiyou**

State: **California**

Executive Summary - The Montague Water Conservation District (MWCD) is seeking cost share to line 2.0 miles of MWCD main canal where significant transmission or delivery loss occurs to deep seepage. In exchange for lining reaches of MWCD's Main Canal, MWCD will permanently allocate the volume of water conserved, estimated at 1,100 acre-feet per year, for instream benefit. While increasing delivery dependability to MWCD's irrigators and municipal water to the City of Montague, this proposal presents numerous opportunities to enhance instream conditions in the most important spawning and rearing reaches of the Shasta River, specifically for the listed SONNC coho salmon.

Assuming a contract can be active with Reclamation by 10/15, implementation is expected to occur over two years ending in March, 2017. Work will occur during the fall and winter months when MWCDs Main Canal is not in operation. The project is not located on or in a federal facility.

Background Data

The Klamath River is a 16,000 square mile watershed located in the remote region of Northern California and Southern Oregon. The Klamath River flows 263 miles southwest through Oregon and northern California, cutting through the Cascade Range to empty into the Pacific Ocean.The communities along the Klamath River and its tributaries are all economically dependent on varied resource use economies ranging from fishery and timber harvest on the coast to timber harvest and agricultural production inland. Due to the variety of cultures and economies that are established along the pathway of the Klamath, competing uses for limited water resources have resulted in many emotional and economic struggles based on water rights and water use objectives. Water use/availability conflicts are based on water quality and quantity for instream uses (fishery production) versus agricultural needs for irrigation. Over the past twenty years, many State and federal agencies, including the BOR have worked with academia, communities and interest groups to find resolve to these difficult issues that have plagued the Klamath River and its tributaries.

The Shasta River, a major tributary to the Klamath River, has experienced competitive use issues similar to the Klamath River. The Shasta River has been recognized as the most important tributary to restore the anadromous runs of salmon in the Klamath River (NRC, 2004). The Shasta River supports runs of Chinook salmon, Coho salmon, steelhead and lamprey. The Southern Oregon Northern California Coho (SONCC) population was listed as 'Threatened' by the Federal Endangered Species Act (ESA) and the California ESA (CESA) in 1997 and 2002, respectively. Both NOAA (SONCC Recovery Plan, 2014) and CDFG (California Coho Recovery Plan, 2004) have presented recovery objectives and strategies that identify measures needed to restore the Shasta River Coho population.

The North Coast Regional Water Quality Control Board listed the Shasta River as impaired (TMDL) due excessive water temperature and nutrient levels (leading to reduced dissolved oxygen). A TMDL Action Plan was ratified by the SWRCB for the Shasta River in 2006. Both the Federal and State Coho recovery plans and the Shasta River TMDL Action Plan have identified enhanced stream flow and water quality improvement as a restoration measure for the upper Shasta River. The Montague Water Conservation District (MWCD) is the largest irrigation district (service area is 19,400 acres) in Shasta River Watershed and the only entity with a significant storage facility (Dwinnell Reservoir) and storage rights (49,000 acre-feet) in the Shasta River. MWCD owns and operates Dwinnell Reservoir on the Shasta River as well as a significant diversion on Parks Creek, a major tributary to the Shasta River. MWCD also provides municipal water to the City of Montague located within the District boundaries.

Water rights in Shasta River and tributaries have been appropriated and adjudicated under the Shasta River Adjudication and Decree, Siskiyou County Superior Court No. 7035, since 1932 (Shasta River Decree). Water rights in the Shasta River Decree are implemented and overseen by the Scott-Shasta Watermaster District through court order from the Siskiyou County Superior Court. The Shasta River Decree did not contemplate fishery needs related to flow and did not stipulate minimum instream flow

provisions. Water users, interest groups and agencies have been working to find resolve where irrigation needs, water quality objectives and instream flow values can be attained.

The MWCD holds two water right permits from the SWRCB for diversion to storage at Dwinnell Reservoir. Permit No. 2452, issued on Application No. 3544, authorizes diversion from the Shasta River, and Permit No. 2453, issued on Application No. 3555, authorizes diversion from Parks Creek. Season of diversion for MWCDs storage rights are during the winter and spring periods (10/1-6/15) to be stored in Dwinnell Reservoir for irrigation use during the spring and summer months. During irrigation season (4/1-10/1), water stored in Dwinnell Reservoir is released to MWCD's 19.4 miles long main canal that connects Dwinnell Reservoir to the MWCD Irrigation District, located in northeastern part of Shasta Valley.

SWRCB Permit No. 2452; Decree No. 287 (Shasta River at Dwinnell Dam)

Point of Diversion:	N. 52°, 43' E., approximately 2601 feet from SW corner of Section 25, T43N, R5W, MDB&M, being within the NE¼ of SW¼ of said Section 25
Place of Use:	19,500 acres within District, as shown on map on file with SWRCB
Purpose of Use:	Irrigation
Season of Diversion:	October 1 to June 15, collected to storage in Dwinnell Reservoir
Season of Use:	April 1 to October 1
Quantity:	35,000 acre-feet per annum
Priority date:	July 23, 1923

SWRCB Permit No. 2453; Decree No. 288 (Parks Creek diversion to Dwinnell Reservoir)

Point of Diversion:	N. 70°, 30' E., approximately 2511.8 feet from SE corner of Section 29, T42N, R5W, MDB&M, being within the SW¼ of SE¼ of said Section 29
Place of Use:	19,500 acres within District, as shown on map on file with SWRCB
Purpose of Use:	Irrigation
Season of Diversion:	October 1 to June 15, collected to storage in Dwinnell Reservoir

Season of Use: April 1 to October 1

Quantity: 14,000 acre-feet per annum

Priority date: July 30, 1923

In 2009, MWCD, completed a feasibility study with the California Department of Fish and Wildlife which explored methods to improve conditions for anadromous salmonids in the Shasta River watershed by investigating and evaluating operations and planning improvements in conjunction with participation in CDFW's permitting efforts. An investigation of MWCD's main canal efficiency was also conducted in 2009 and 2010 (Watercourse Engineering, 2010). The two years of investigation revealed that 26% of the water released from Dwinnell Reservoir to the Main Canal was lost in transmission through MWCDs 19.4 miles long main canal. During irrigation season, MWCDs Main Canal releases up to 105 cfs from Dwinnell for district use. While the Main Canal is 19.4 miles long, 90% of the loss was identified to occur in distinct reaches totaling 7.8 miles in cumulative length. An estimated 4,400 acre-feet of water is lost through transmission during an average water year through the high transmission loss reaches of MWCD's Main Canal.

Over time, MWCD has lined nearly four miles of the Main Canal using gunite or shot-crete treatments. The treatments have been successful (some for over 30 years), except for one reach where the lining thickness was applied excessively thin and has since cracked. The water conserved historically has benefitted the District and its users through increased available water for irrigation purposes. Early efficiency investigations showed the District historically lost over 50% of the water released from Dwinnell Reservoir to Main Canal transmission loss (although measuring methods were not refined). MWCD's usage of canal lining treatments has allowed confidence in the lining treatment proposed and the estimated budget.

Through this grant application, the Montague Water Conservation District (MWCD) is seeking cost share to line a 2.0 mile reach of the identified 7.8 mile segment of MWCDs Main Canal where a majority of the main canal loss occurs. In exchange for lining reaches of MWCD's Main Canal, MWCD will allocate the volume of water conserved, estimated at 1,100 acre-feet in an average year, for instream benefit. While increasing delivery dependability to MWCD's irrigators and municipal water to the City of Montague, this proposal presents numerous opportunities to enhance instream conditions in the most important spawning and rearing reaches of the Shasta River, specifically for the listed SONNC coho salmon.

MWCD Statistics: MWCD owns and operates Dwinnell Reservoir on the Shasta River and holds water rights to deliver and store 49,000 acre-feet in Dwinnell Reservoir.

The following are average annual statistics:

- Number of users within MWCD District 220 users

- Acreage within District 19,400
- Number of municipal users in City of Montague 1,280
- MWCD typically releases 22,000 acre feet per year from Dwinnell Reservoir for use by the City of Montague and irrigation.
- Average amount of water provided to MWCD irrigators: 16,200 acre-feet
- Average amount provided to municipal 1,200 acre feet
- Average volume of water lost to seepage from MWCD's main canal 4,400 acre feet
- Full project implementation will conserve an annual average of 4,400 acre-feet to be provided for instream benefit as best determined with NOAA and California Department of Fish and Wildlife (CDFW).
- The estimated amounted of water better-managed by project includes:
    - ✓ 4,400 acre-feet conserved through canal lining to be released for instream benefit through California Water Code 1707 as best determined by NOAA and CDFW for Threatened Coho Salmon.
    - ✓ 2,000 acre-feet of improved water quality to be released to Shasta River for delivery to senior water right holders. Exchanging 72 degree water (from Dwinnell Reservoir in summer) for 54 degree water to be released by Flying L Pumps to Shasta River during summer.

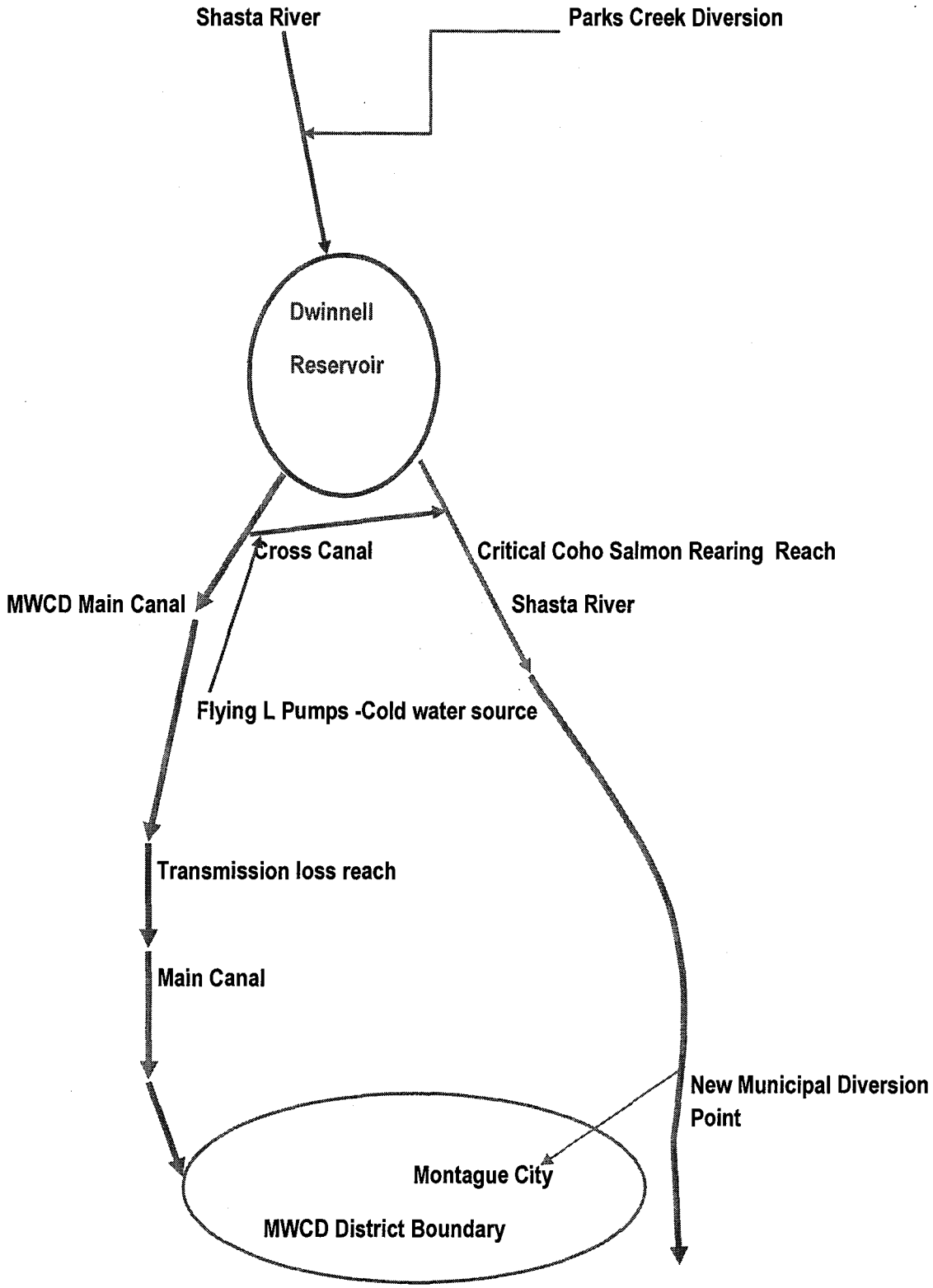
Project Timeline: While the applicant is committed to providing in-kind services and cost share, full implementation will require additional funding partners and, therefore, the timeline is dependent upon secured funding. This proposal is a standalone project that intends to line 2.0 miles of MWCD's Main Canal. MWCD proposes the following timeline:

- Permitting, review and approvals (funded) 6/2014-10/2015
- Cross Canal, habitat enhancement 06/2014-12/2016

  and Flying L Pump improvements

  (partially funded with full funding applied for)
- Main Canal lining 10/2015-03/2017
- Main Canal lining 09/2016-04/2017
- Implementation of operational changes 04/2017-03/2019
- Monitoring and verification 07/2018-10/2019

Montague Water Conservation District Infrastructure



Project Objectives and Justification: An objective of this funding source is to address competing uses for limited water resources in the Shasta River watershed and ultimately the Klamath River. The Shasta River watershed, a major salmon bearing tributary to the Klamath River, is experiencing competing use issues between agriculture and environmental use. In the Shasta River, competing uses mainly are instream needs for the Threatened Coho salmon (and other salmonids) and irrigation needs for hay and pasture production, which is the remaining economy in the Shasta Valley.

The Shasta River is a key inland tributary to the Klamath River that supports Chinook, coho, steelhead and lamprey. The Shasta River population of coho salmon is identified as a core population in the Draft NOAA Recovery Plan, where SONCC coho are listed as Threatened under the ESA and CESA. The National Research Council investigation of recovery options for the Klamath Basin highlighted the Shasta River as the primary stream to provide recovery to salmonid species (NRC, 2004).

The CDFW estimates that less than 150 adult Coho salmon have annually returned to the Shasta River over the past six years (Knechtle, 2013). These numbers are well below the high risk abundance threshold identified in NOAAs Recovery Plan. At these low population levels, depensation or allee effects (e.g., failure to find mates), inbreeding and genetic drift, which accelerate the extinction process, become a concern. Therefore, the Shasta River Coho population has a high risk of extinction, and has substantial genetic and other depensation risks associated with low numbers of adult spawners. Numerous investigations in the Shasta River watershed identify reduced flows as the limiting factor for salmonids populations in the Shasta River.

Recovery of Big Springs Creek (located 6.5 river miles downstream of proposed project) has recently provided significant over-summering habitat, thought to be a major limiting factor for coho salmon in the Shasta River. Big Springs Creek is a large spring fed tributary to the Shasta River that produces up to 85 cfs of cold water during the summer months and is often thought of as the pivotal site for restoration to expand from. MWCD and other neighboring entities are also actively cooperating to develop an implementation plan including a comprehensive flow plan for the upper Shasta River and Parks Creek that functionally connect with Big Spring Creek for salmonid restoration and water quality objectives. The results of CDFW investigations on habitat utilization in the upper Shasta River has informed managers, highlighting new strategies and approaches to enhance coho salmon habitat and distribution including utilizing stored water as a benefit for instream needs.

MWCD's conservation strategy : While providing dependable irrigation water to district users, MWCD has been working with agencies, interest groups and neighbors to develop and implement meaningful conservation and enhancement measures for coho salmon and other salmonids in the Shasta River watershed. The objective of MWCD has been to develop, permit and implement a comprehensive long term conservation strategy. MWCD's long term conservation strategy is titled MWCD's CHERP (Conservation and Habitat Enhancement and Restoration Program). MWCD has worked with CDFW, NOAA and other conservation entities to develop the project components of CHERP to address limiting factors for Coho salmon and provide significant enhancement measures.

This proposal does not seek full the implementation costs of MWCD's CHERP as the total implementation cost is estimated to exceed $6 million dollars. MWCD has been conducting investigations, surveys and meeting with agencies over the past 4 years to refine the scope and attainable objectives of MWCD's long term conservation and operations plans. MWCD is actively refining engineered designs while simultaneously advancing project permitting and review. MWCD has also recently implemented some

components of CHERP primarily connects the Flying L Pumps (source of cold water) to the Shasta River. MWCD is also implementing monitoring and gauging infrastructure to verify conservation and commitment to instream benefit.

This proposal seeks partial implementation costs for lining 2.0 miles of MWCD's Main Canal where significant delivery or transmission loss occurs. Lining the selected reaches of MWCD's Main Canal can be successfully implemented in segments as funding partners are found. The project also advances MWCD's long term strategy with a sound chronological implementation approach led by first achieving water conservation through reducing delivery or transmission losses in MWCD' s19.4 miles long canal.

Considering increased concern about climate change, MWCD and participating partners feel that storage provided by Dwinnell Reservoir and the infrastructure provided by MWCD's CHERP components would allow for improved management, increased assurance of instream flow needs, irrigation dependability, water quality improvement and protection from drought and flood conditions. MWCD believes its proposed infrastructure and operational proposals (including storage for instream benefit) can be managed to meet irrigation demands and optimize habitat conditions for coho salmon.

MWCD's CHERP Summary: As described above, this proposal is seeking cost share for a component of MWCD's Conservation and Habitat Enhancement and Restoration Program (CHERP). However, It is important to understand the components, and objectives of MWCD's CHERP when considering this application.

MWCD's CHERP is a multi-discipline project that proposes significant changes to MWCD's operation and infrastructure with the intent of conserving water and providing increased instream releases to benefit Threatened SONCC coho salmon and other anadromous salmonids species in the Shasta River. MWCD's CHERP proposes implementation projects and operational changes to the MWCD Parks Creek Diversion, Dwinnell Reservoir, the Shasta River and portions of MWCD's Main Canal. Within this project description it is important to provide a brief description of MWCD's CHERP to understand the role of this proposal as a critical component of CHERP.

Project component of MWCD CHERP:

1.) Infrastructure improvements below Dwinnell Dam: The project components proposed below Dwinnell Dam will enhance water quality and quantity to be provided to the Shasta River for instream benefit under the full implementation of the CHERP. **Funding for these components was requested through CDFW's Fisheries Grant Restoration Program on 3/17/2014, including in-kind match by the applicant. This component in not part of this proposal and only described to outline the full scope of CHERP.** The three parts of this project component include:

A.) Increase capacity of the Cross Canal: The proposed project will increase the flow capacity of the cross channel from its current maximum to 110 cfs. This will allow release of significant pulse flows and/or flushing flows, and aid in preventing uncontrolled spills. The increased capacity will also aid with juvenile out-migration and adult migration.

B.) Implementation of the Flying L Pipeline. The proposal will install 7,000' of buried 18" PVC to deliver 6.5 cfs of cold groundwater from MWCD's Flying L well to the Shasta River. This component will allow cold water to be delivered to the Shasta River when water temperatures in Dwinnell Reservoir are not suitable for coho salmon. Under current operation and infrastructure,

MWCD is required to release water (per Shasta River Decree) to the Shasta River regardless of water quality. It is common for the temperature of water released from Dwinnell Reservoir to the Shasta River to exceed temperatures suitable for coho salmon in the latter summer months. This component of the proposal and CHERP will allow MWCD to release up to 6.5 cfs of cold water to the Shasta River when releases from Dwinnell are not suitable for coho salmon, enhancing and expanding summer rearing habitat, a documented limiting factor for the Shasta River coho salmon population. **Partial installation of this component was conducted in 2014 to develop an alternative municipal delivery system for the City of Montague, which MWCD provides municipal water for.**

C.) Development of an adjacent cold water wetland habitat. The Flying L Pipeline and a controlled cold water source at the base of the dam ("seeps") will be delivered to a designed alcove that will mimic a spring source habitat located slightly off the Shasta River near the outlet of the cross channel. The habitat will be used to potentially deliver all or part of the cold water from the Flying L Pipeline as well as the "seeps."

2.) Construction of Parks Creek fish screen and fish passage facility: MWCD has an unscreened diversion point on Parks Creek. The intent of the project is to protect fish from potential entrainment and ensure year round fish passage at the diversion facility. This project component has been fully designed, and permitting is in process, but implementation funds have not been attained. This component is not part of this proposal and only described to outline the full scope of CHERP.

3.) Lining/piping 7.8 miles of MWCD's Main Canal: Water is delivered to the MWCD users for irrigation via a 19.4 mile long canal (Main Canal). While MWCD has lined over four miles of canal on its own, much of the Main Canal remains earthen with porous volcanic soils and crosses lava fields. Two years of investigation revealed that 90% of the transmission losses were occurring over two reaches of canal totaling 7.8 miles. In 2010, 26% of the water released from Dwinnell Reservoir to the Main Canal was lost in transmission through the two reaches (Watercourse Engineering, 2010). An estimated 4,400 acre-feet of water lost in delivery during an average water year through the two identified reaches of MWCD's Main Canal can be conserved and provided for instream benefit.

This proposal is seeking cost share for lining a 2.0 mile portion of MWCD's Main Canal that has significant loss. Through lining sections of the Main Canal, conserved water would be used to provide instream benefit for the Threatened listed Coho salmon that use critical habitat in the Shasta River below Dwinnell Dam and Parks Creek at multiple life stages. Through water conservation measures, MWCD's long term plan proposes to provide an average of 4,400 acre-feet for instream benefit as best determined by CDFW and NOAA. MWCD is adding instream beneficial uses to the list of beneficial uses in its water right permits through a petition to the State Water Resources Control Board (SWRCB) during 2014. **MWCD intends to use California Water Code Section 1707 to dedicate the conserved volume of water for instream benefit as specifically determined in cooperation with NOAA and CDFW. MWCD is currently developing the instream dedication application for submission in March 2015.**

Water conserved through lining or piping of the Main Canal will be used to support a number of environmental and beneficial uses, in addition to improving reliability of irrigation supplies and regulatory certainty for MWCD. Conserved water could be used for increased flow releases from Dwinnell Dam to aid

critical life stages, habitat connectivity, or improved habitat for salmonids or water quality objectives. Full implementation of CHERP will provide MWCD and fisheries managers significant flexibility in the development of flow management strategies that would result in significant improvements to instream habitat conditions. Potential strategies include:

- forebear diversion and increase flows bypassed at MWCD's Parks Creek diversion;
- increase releases to the Shasta River from Dwinnell Reservoir during periods when additional flows would be beneficial to critical life stages of salmonids and when water quality parameters of the released water are satisfactory;
- increase storage to retain a minimum pool in Lake Shastina to improve water quality in the reservoir;
- Provide exchange water for right holders that divert cold water, including prior rights holders in the Shasta River, Parks Creek and/or the Little Shasta River, by replacing the water sources with stored reservoir water; or
- a combination of some or all of these actions.

Operational Changes to be implemented by the CHERP:

Operational changes to be implemented by the CHERP include continued development of a reservoir management plan, including a schedule of instream releases, temperature thresholds and triggers with the objective of maximizing the release of water conserved through the lining of MWCD's Main Canal. Other operational objectives of the CHERP include change petitions to the SWRCB to provide for permanent instream benefit of conserved water under Water Code section 1707. Section 1707 dedications ensure that flow increases for instream benefits cannot be diverted by downstream user, thus ensuring that all released/bypassed flows will remain in the channel.

3. Technical Project Description

Project Implementation Description:

Work products of proposal: MWCD proposes the following work products in order to complete the project as identified in chronological order. MWCD staff and selected consulting team will conduct the work proposed as described below:

Permitting, Engineering and Design:

The engineering and design for the lining of main canal is largely funded and design is currently active. The scope of the proposal is to first re-profile, grade and shape the existing Main Canal alignment The design of main canal is scheduled to be completed in September, 2015. However, progress is sufficient to develop an accurate implementation budget. These will be construction ready plans. This proposal is seeking funds

for on-site engineering during implementation and as-built or post construction drawings. Design and engineering is not a component of this proposal.

MWCD is acting as the lead agency to acquire permits and approvals for this project and the full component of CHERP. MWCD is currently obtaining all necessary environmental review and permits in the most efficient manner possible in order to implement the project as soon as possible. MWCD has submitted a 404 application for all the components of MWCD's CHERP project, including a wetland delineation report for lining the identified portions of the Main Canal. As a result, MWCD anticipates consultation between the U.S. Army Corps of Engineers will determine if the proposed lined sections of the main canal are jurisdictional. MWCD expects that a Finding of No Significant Impact (FONSI) and Mitigated Negative Declaration (MND) will be the appropriate environmental review documents under NEPA and CEQA, respectively. MWCD also expects that the components of CHERP may require other state permits, including Section 401 water quality certification, a Fish and Game Code section 1603 Streambed Alteration Agreement, and California Endangered Species Act permit. MWCD has been working with the consulting firm Environmental Science Associates to coordinate permitting documents and environmental review.

Permitting and Agency Approval Timeline: 8/2013-10/2015

Formal process to dedicate conserved flows for instream benefit : As previously mentioned, MWCD will permanently dedicate the volume of water conserved by lining the main canal to instream benefit as best determined by the CDFW and NOAA to enhance water quality and critical Coho habitats on the Shasta River below Dwinnell Dam. MWCD holds appropriative rights adjudicated in the Shasta River Decree (Siskiyou Superior Court Decree No. 7035) to divert up to 35,000 acre-feet per annum from the Shasta River and 14,000 acre-feet from Parks Creek for storage at Lake Shastina, recognized in two permits issued by the SWRCB.

MWCD proposes to conserve water by lining the Main Canal and manage the conserved water to contribute to improved flows and fishery habitat in the Shasta River, Parks Creek, and the Little Shasta River. MWCD proposes to protect this increased instream flow pursuant to the California Water Code's instream dedication procedure. The details of the management of the conserved water are actively being developed with NOAA and CDFW. Preferred methods will inform the specific proposal for the petition to change MWCD's water rights to add instream use as a beneficial use under Water Code section 1707. California Water Code 1707 allows the conserved water to be provided and for and permanently protected for instream beneficial use. MWCD may also be required to obtain the approval of the court under the Shasta River Decree. MWCD is working with the law firm Ellison, Schneider and Harris (ESH) to file applications with the SWRCB and assist in their review and approval.

Instream Dedication Timeline: 6/2014-10/2015

Installation of Canal lining: Prior to construction, the site will be staked and surveyed per approved design. The identified reaches of the canal will be grubbed and excavated to grade. The canal banks will be aligned, graded and shaped for compaction. The banks and channel bottom will be compacted using a vibro-plate compactor. Backing material will then be provided as well as a geotechnical membrane. The

shot-crete application will be applied and average of 4" thick to attain 40 year longevity, the expected life of the lining treatment. Under conditions typical for this region, a shot-crete treatment is expected to have a treatment life of 40+ years. MWCD has effective gunite treatments on the Main Canal that have exceeded 30 years of effective life.

MWCD will work with Environmental Science Associates and RH2 Engineering to provide engineering over-sight during the preparation and construction of the Main Canal lining/piping phase. Gary Black of GS Black, Inc. (restoration and water conservation contractor) and will provide construction oversight and conduct materials sourcing for MWCD. GS Black, Inc. will oversee excavation sub-contractors, lining sub-contractor, supplier schedules and materials purchase.

Construction Timeline: 11/2015-4/2017

Project Monitoring: Development and pre and post-monitoring program is somewhat dependent on selected instream flow treatments to be developed with NOAA and CDFW. The determination of most effective flow enhancement practices developed by the transaction must be determined prior to developing a specific monitoring program. However, the following parameters will be important to monitor and evaluate under any treatment and will be provided by MWCD under this proposal.

Verification of water released for instream benefit: Water released for instream benefit will be accounted for with existing flow gages or gages to be installed. The gage data will be provided real-time. Water released to the Main Canal for irrigation and municipal purposes is also gauged at Dwinnell Dam as well as three established locations along the Main Canal. MWCD commits to keep the gages in good condition and currently contracts with the California Department of Water Resources (DWR) to provide gage operation and data collection. This allows for verification that conservation is occurring and being provided to instream benefit as committed to in this proposal. MWCD is working with NMFS and CDFW in this process.

Canal Treatment Evaluation: Working with engineers, MWCD will develop a schedule and reporting system to analyze the condition and efficiency of the canal lining/piping treatment. MWCD has gages currently installed along the canal to determine delivery efficiency but proposes to add a continuously recording gage at the top and bottom of the treated reaches. Repetitive inspection of the Main Canal treatment will occur, including inspection for existing and potential damage. Recommended repairs will be provided in the maintenance document produced by the designing engineers. **MWCD recognizes that the responsibility to maintain the treated section of the Main Canal is the responsibility of the District. Given MWCD is submitting an application to permanently dedicate the conserved water for instream benefit,** MWCD is committed to ensuring the investment is maintained.

4.) Evaluation Criteria

Evaluation Criterion A: Water Conservation

Water Conservation and Efficiency: Full implementation of lining MWCDs Main Canal will provide an estimated 4,400 acre-feet of water per year to provide instream benefit to the upper Shasta River or other designated reaches to enhance flows as needed by coho salmon and other salmonid species, as determined by CDFW and NOAA fisheries managers. A flow release schedule for the conserved water was developed by MWCD, CDFW and NOAA. This application treats about 25% of the targeted main canal reach where the highest transmission loss occurs. The volume of water conserved for treating 2.0 miles of main canal is estimated to be 1,100 acre feet per the transmission loss analysis conducted by Watercourse Engineering. At the completion of the project, MWCD is willing to either increase releases to Shasta River from Dwinnell Reservoir per the developed schedule, exchange water with neighboring users to allow releases of critical cold spring water or some combination of these actions as deemed most effective to protect and enhance the Threatened population of Shasta River Coho salmon. **Therefore, as a result of this project, through California Water Code 1707, MWCD will dedicate the volume of conserved water (1,100 acre feet annually) for instream benefit as best determined by CDFW and NOAA.** This approach is consistent with MWCD's long term conservation strategy (CHERP) and all subsequent permitting and approval processes.

Sub-Criterion A.1 Quantifiable Water Savings: MWCD has committed to providing the conserved water for instream benefit. Through investigations provided by an engineering firm who evaluated the reaches of the main canal for transmission loss (Watercourse Engineering, 2011), it was determined that 4,400 acre feet was lost to transmission during an average water year. This proposal seeks funds to line approximately 25% of the main canal where significant transmission loss was identified. **Therefore, in exchange for funding this proposal, MWCD agrees that 1,100 acre feet annually are annually conserved by this project, as supported by the transmission loss investigations. Further, MWCD will agree to dedicate all of the conserved 1,100 acre feet for instream benefit as best determined by CDFW and NOAA for instream benefit to enhance existing critical habitat for the Threatened Coho salmon.**

Dependent upon CDFW's and NOAA's instream objectives, MWCD will release or by-pass flows for instream benefit. The released flows will be protected to remain instream through California Water Code 1707. The released flows will be measured through a currently installed flow gage located at the base of MWCD's Dwinnell Dam.

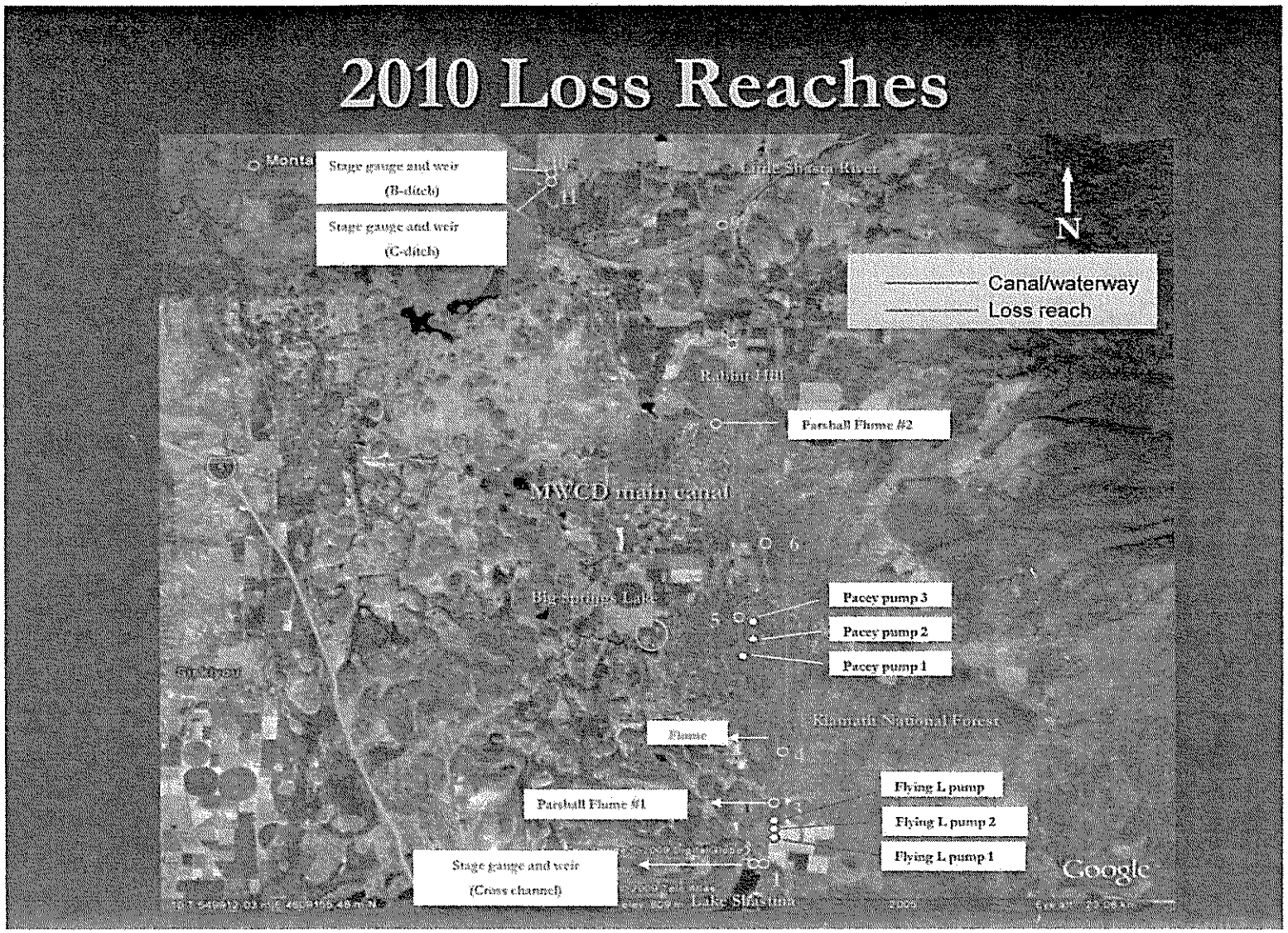
Canal Lining/Piping:

Engineering firm Watercourse Engineering conducted a reach based transmission loss investigation to determine rate and locations(s) of transmission loss (Watercourse,2011). Based on two years of evaluation, it was determined that MWCD looses 4,400 a/f of water a year through transmission loss in the main canal. These losses are confined to 7.8 miles of MWCD's19.4 mile long canal. Applied as an average within the 7.8 miles of main canal identified with highest transmission loss, roughly 550 acre feet of water is lost annually per

mile. This proposal seeks to line 2.0 miles of main canal within the reaches with highest transmission loss. 1,100 acre feet will be conserved in an average year. In exchange for funding the proposed project MWCD, will provide the volume of conserved water (1,100 acre feet) of water for instream benefit per year as best determined by CDFW and NOAA. CDFW and NOAA are lead agencies MWCD is working with to recover Threatened Coho salmon.

Materials proposed to line the main canal vary with site conditions. MWCD expects to use a geo-membrane material covered with shot-crete. Some reaches will require backing material. Current engineering investigation combined with historical lining treatments used by MWCD on the Main Canal demonstrate that lining combined with a geo-membrane material provide both efficient conservation with long term durability. MWCD has teamed with Superior Western Gunite on successful recent canal lining projects (2011) as well as engineering firm RH2 to create an effective and economical treatment for the proposed project reach. Expected duration or product life of the proposed shot-crete treatment is 40 years. Design is currently funded and scheduled for completion in fall, 2015.

2010 Loss Reaches



2010 Results

- Local loss reaches in 2010
  - Between the rubber-lined flume (site 4) and Pacey pump #3 (site 5) (12% loss, 10.8 cfs)
  - Between Parshall flume #2 (site 7) and the north side of Rabbit Hill (site 8) (9% loss, 7.2 cfs)
  - Between the north side of Rabbit Hill (site 8) and the Little Shasta River (site 9) (11% loss, 9.7 cfs)

While the proposed lining is effective for transmission loss to deep percolation, evaporation losses are still expected and accounted for in our estimate that the project will conserve 1,100 acre feet annually. We assume the proposed canal would conserve 85% of the loss occurring per mile of main canal treated or 550 acre feet per mile within the 7.8 miles of treatment reaches.

MWCD has numerous flow gauging sites along the main canal including two Parshall flumes, a Doppler gage site and two broad crested weirs. While post project looses within the treatment area are expected to vary, MWCD is not proposing to bracket the treatment sites and will maintain operation of the existing sites due to the value of the historical data set. However, MWCD is proposing that the two existing gauging sites that best bracket the proposed treatment reach become real time so continuous stage and a relative curves can be maintained to determine instantaneous and long term change.

MWCD is dedicating all of the conserved water to instream benefit as best determined by CDFW and NOAA for Coho salmon. MWCD is confident that the actual conserved volume is an average of 1,100 acre feet annually. Therefore, MWCD will make 1,100 acre feet available for instream benefit based upon the rate and timeline (date) developed with CDFW and NOAA. The 1,100 acre feet of conserved water will be stored in MWCDs Dwinnell Reservoir and released per the agreed upon scheduled flow targets for instream benefit. In many occasions the volume of water conserved will not be released on the day or even season it was conserved, so attempts to make sure the volume of water assumed conserved is exactly equal to the volume of water actually measured as conserved, it not critical for MWCDs long term conservation strategy.

However, the volume of water (1,100 acre feet/year) released for instream benefit as a result of lining 2.0 miles of MWCD's main canal is important to measure and affirm. This water will be verified as released solely for instream benefit through MWCDs existing gauging infrastructure. MWCD has multiple real time gauge sites that measure water released for various purposes, including instream benefit. In contract with California Department of Water Resources (DWR), MWCD has a site maintained specifically for instream flow enhancement flows located on DWR public Web site, CDEC (http://cdec.water.ca.gov/cgi-progs/staMeta?station_id=DFB), where the values of conserved water is accurately measured as it is released for instream benefit. MWCD commits to keep the gages in good condition and currently contracts with DWR to provide gage operation and data collection and compilation for SWRCB submitted reports. Related to this proposal, MWCD commits to maintaining and providing real time flow data for water provided for instream benefit to the Shasta River as well as water provided to prior rights via the Cross Canal. This project component will be especially important for ensuring full protection of instream flows for fisheries benefits under the envisioned Water Code section 1707 dedication.

Sub-Criterion A.2 Percentage of Total Water Supply:

MWCD has been monitoring Dwinnell Reservoir volume releases versus volume of water delivered to the District for decades. MWCD has a water right to store up to 49,000 acre feet of water in Dwinnell Reservoir. Dwinnell Reservoir rarely fills. The following recent average use values are important when considering MWCD's proposal:

- MWCD typically releases 22,000 acre feet per year from Dwinnell Reservoir for use by the City of Montague and District irrigation.

- Average amount of water provided to MWCD irrigators: 16,200 acre-feet
- Average amount provided to municipal 1,200 acre feet
- Average volume of water lost to seepage from MWCD's main canal 4,400 acre feet

As described and verified above, lining a 2.0 mile portion of the Main Canal within the 7.8 mile reaches where the transmission loss is highest would conserve an average of 1,100 acre feet annually. 1,100 acre feet of water per year is 5% of the water released from Dwinnell Reservoir to the Main Canal for District irrigation and municipal water for the City of Montague.

Evaluation Criterion B: Energy-Water Nexus

B.1: Not applicable as this proposal does not incorporate new energy sources.

B.2: Water is currently delivered to MWCD's main canal via gravity from Dwinnell Reservoir. For the purposes of consuming energy, this project is and remains very efficient as no energy is required to deliver an average of 22,000 acre feet of water to is source located 22-35 miles away depending upon where water is delivered within the irrigation District. MWCD is the only Irrigation District in Shasta Valley that delivers water via gravity delivery, while the other sites use pumping facilities and are significant consumers of energy. MWCD does not foresee significant changes in energy consumption or conservation as a result of this project. However, all of MWCD's monitoring and gauging devices are operated using solar panels.

Evaluation Criterion C: Benefits to Endangered Species

C.1: This proposal does not address a federally recognized candidate specie but does address Coho Salomon and State and Federally Threatened listed specie.

C.2: In the Shasta River Southern Oregon Northern California (SONCC) Coho salmon are listed as Threatened. Coho are also listed as threatened under California Endangered Species Act (CESA). The main objective of this project and MWCDs CHERP is to enhance instream conditions for Coho salmon and other anadromous fish that utilize the Shasta River.

A.) BOR adverse affects: The Shasta River is a salmon bearing tributary to the Klamath River. Access to the historical anadromous reaches of the upper Klamath River are prevented due to 4 dams located on the Klamath River. Bureau of Reclamation is an important manager of the Klamath Dams and the federal water projects. The effects adverse effects of the Bureau of Reclamations role of the Klamath dams on SONCC Coho Salmon is difficult to quantify and options vary. Access to historical Coho habitats is limited by the lack of fish passage at the Klamath dams and water quality is impacted as a result of the stored water. The effects of BOR Klamath Dam operation on Shasta River Coho populations is minimal, if any.

B.) SONCC Coho Recovery Plans: Both State (lead agency -CDFW) and Federal (lead agency-NOAA) Threatened Coho listings possess Recovery Plans. The Federal Recovery

Plan(http://www.westcoast.fisheries.noaa.gov/publications/recovery_planning/salmon_steelhead/domains/southern_oregon_northern_california/SONCC%20Final%20Sept%202014/sonccfinal_ch37_shastariver.pdf) identifies the Shasta River as an independent and core population for recovery.

The reach of the Shasta River below Dwinnell Dam is a critical reach where Coho salmon exist throughout the year. The reach provides spawning as well and summer and winter rearing. Flow investigations conducted by McBain and Trush, Inc. (2013), identify flow objectives for the Shasta River approximately 6 miles below Dwinnell Reservoir. The study recommends significantly higher flows rates primarily during the spring period when Coho salmon juveniles (0+) are emigrating into the critical reach to over summer while smolts (1+) are out-migrating to the Ocean. MWCD has worked with CDFW and NOAA on trial spring releases including fish response to the releases. The results are very positive and align with flow investigation recommendations as well as recovery plan recommendations. The 1,100 acre feet of water conserved by this project would be used towards attaining those identified instream targets.

MWCD proposes to provide all of the water conserved by lining the main canal to the best instream conservation use as determined by CDFW and NOAA who oversee the respective State and Federal Recovery plans. MWCD has worked with NOAA and CDFW to develop a flow release schedule based upon CDFW observations as well as flow enhancement objectives. Water conserved through lining or piping the Main Canal could be used to support a number of environmental and beneficial uses, in addition to improving reliability of irrigation supplies. Conserved water could be used for increased flow releases from Dwinnell Dam to aid critical life stages, provide habitat connectivity, or improve water quality objectives. Conservation objectives could also be implemented through forbearance agreements at MWCD'S Parks Creek Diversion. The conserved water could be managed and made available in a variety of ways. Some additional strategies or combinations that result in improved instream conditions are identified below:

- forebear diversion and increase flows by-passed at MWCD's Parks Creek diversion.
- increase releases to the Shasta River from Dwinnell Reservoir during periods when additional flows would be beneficial to critical life stages of salmonids and when water quality parameters of the released water are satisfactory.
- increase storage to retain a minimum pool in Lake Shastina to improve water quality in the Reservoir.

All of the potential uses of water considered above are specifically identified as recommended recovery items in ESA and CESA Recovery Plans.

Evaluation Criterion D: Water Marketing

As described in Criterion D the entire volume of water conserved by the project (1,100 acre feet annually) will be available for water marketing to specifically address the major water use conflict in the Shasta River, instream flow needs versus agricultural use. Under MWCDs proposal all 1,100 acre feet would be contributed to instream use to help resolve the conflict in collaboration with CDFW and NOAA. Increased flows is identified in both the State and Federal Recovery Plan for the Shasta River. Released flows will provide immediate benefit to one of the most critical reaches in the watershed for Coho salmon. A summary of water market conditions is provided below:

- Volume of water to be marketed: 1,100 acre feet per year
- How water will be marketed: 100% of the conserved water will be voluntarily contributed by MWCD to address instream flows specifically for State and Federally listed SONCC Threatened Coho salmon. Conserved water will be used to benefit Coho salmon as best determined by CDFW and NOAA who MWCD collaborates with on a continuous basis. The volume of water released for instream benefit will be gauged and presented on a public real-time site that already exists (CDEC- site DFB) to affirm the released volume equals the full volume of conserved water(1,100 acre feet) and it is released per the scheduled developed with CDFW and NOAA. MWCD contracts with California Department of Water Resources (DWR) for gauging flows so the data will be public and certified.
- The sole use of the water will be for instream benefit specifically for Coho salmon. Several entities have a role in assuring the water is available and protected for the intended use:

  -State Water Resources Control Board (SWRCB): Approves the addition of the beneficial use to include instream or environmental benefit through a change petition. MWCD is actively working on this approval process. Attaining SWRCB approval of the change process assures the water provided for instream benefit is protected throughout the intended reach.

  -Scott and Shasta Watermaster District: Shasta River is fully appropriated and adjudicated through the Shasta River Decree. The decree identifies all water rights and priorities in the watershed. Per Siskiyou County Superior Court direction, the Watermaster District enforces the decree, including protecting and overseeing instream dedications, like MWCD's proposal.

  -CDFW/NOAA: CDFW and NOAA are the State and Federal lead agencies related to recovery of Coho Salmon. MWCD, NOAA and CDFW work with neighbors and other interest groups (Cal-Trout) to monitor and develop restoration projects and strategies. CDFW and NOAA will be conducting water quality, habitat and fish response data as a result of the

conserved water being provided for instream flows. Depending on the results, flow rates and timing can be changed to maximize the instream benefit of conserved water.

-The duration of the instream contribution is expected to be permanent. The approval to add instream benefit as a beneficial use will be a permanent change. MWCD cannot imagine a condition where this projects would not result in permanent water market.

Evaluation Criterion E: Other Contributions to Water Supply Sustainability

Sub-criterion E.1: Addressing Adaption Strategies in a WaterSMART Basin Study

In collaboration with the States of Oregon and California (DWR), BOR funded a WaterSMART Basin Study in 2011 for the Klamath River. The Klamath Basin Study will not be complete until the fall of 2015 but MWCD has had discussions with BOR staff working on the study that are relevant to this section.

The Shasta River is located downstream of the Klamath Dams (where BOR management is focused) so the Shasta River adaption strategies will focus on salmon habitat enhancement, sustainable flows and water use conflicts based on agricultural use and instream needs. BOR project effect or involvement on Shasta River is not direct so the Basin Plan objectives for the Shasta River will be general. While MWCD has not been involved in the development of the WaterSMART Basin Plan, MWCD has been involved in NOAA's SONCC Coho Recovery Plan that addresses the Klamath River and tributaries downstream. Per BOR staff working on the WaterSMART Klamath Basin Study Plan, NOAA's Coho Recovery Plan for SONCC Coho is coordinated with BOR activities, including Klamath Dams operation. Adaptation strategy objectives for the Klamath Basin Study Plan below the Klamath Dams include water conservation, instream flow enhancement and water quality. NOAA's SONCC Coho Recovery Plan supports the WaterSMART Basin Study and more specifically addresses water conservation and flow enhancement objectives specific for the Shasta River, including increased flows for the Shasta River below Dwinnell Dam.

As described earlier, this project will conserve 1,000 acre feet annually. In turn, MWCD will provide all of the conserved water for instream benefit as determined by CDFW and NOAA. Therefore, this project meets expected Basin Plan adaptation strategies including increased instream flows for environmental and water quality objectives, improved water management and marketing, increased efficiency and sustainable water use.

Sub-criterion E.2: Expediting Future on-Farm Irrigation Improvements

Agricultural production within MWCD boundaries includes pasture production for livestock, hay forage, alfalfa and small grains crops, including wheat and barley. The topography within the

district ranges from rolling hills to generally flat or sloped fields. Dominant soil types are clay loams, which have great moisture retention capabilities, allowing for broad opportunities for water conservation. Irrigation practices vary throughout the district from efficient pressurized pivot applications to very inefficient wild-land flooding applications. Financial limitations combined with significant capital costs associated with water use efficiency have prevented on-farm water conservation practices on a broader scale by the district irrigators. Opportunities for on-farm projects within MWCD are significant and widespread.

NRCS has been an excellent federal partner with MWCD and the individual irrigators within the district. NRCS has worked with landowners within the district to develop effective and lasting water conservation practices. Some typical effective on-farm water conservation projects currently being implemented are identified below. The average conservation percentage, provided by NRCS, is also included below.

1.) Convert surface irrigation (flood) to pressurized sprinkler/wheel-line - 15% conservation estimate per NRCS

2.) Install tail-water recovery in surface irrigation system - 22% and NRCS conservation calculations

3.) Replace unlined on-farm ditches with pipe or lining - 16% and NRCS conservation calculations

MWCD and its irrigators recognize that single on-farm conservation projects are helpful, but comprehensive collaborative projects including efficiency of neighborhood lateral ditches as well collection and reuse projects have greater conservation value. MWCD is working with engineering consultant RH2 to develop a comprehensive in-district/on-farm water conservation plan that includes converting secondary lateral ditches into buried pipelines and siphons to combine and connect ditches to increase delivery efficiency, rotation timing and investigating gravity pressurized irrigation lines to promote conversion to efficient irrigation types. The focus also includes building a logical chronological strategy prioritizing and identifying irrigation "communities or neighborhoods" within the district so that sound efficient Agricultural Water Enhancement Program (AWEP) proposals can be developed that complement MWCD's operations.

Sub-criterion E.3: Building Drought Resiliency

The project site is located in extreme Northern California, where the region is facing a fourth consecutive drought year, including 2014 which was the worst drought year on record. In 2015, drought conditions are still severe with the snow pack being less than 15% annual average in January, 2015 for the Shasta River watershed and neighboring areas. 2015 water year is wetter than 2014 thus far, but MWCD's Dwinnell Reservoir is 40% lower than the average storage volumes for this time of year.

While 2014 was a very difficult year for MWCD and the City of Montague, an valuable project was installed using California drought emergency funds to provide an efficient alternative municipal

water delivery route. The project bolstered drought resiliency for the MWCD and the City of Montague who depend on Dwinnell Reservoir. Faced severe conditions last year, Dwinnell Reservoir storage was the lowest on record for April 1st, 2014 with only 18% of storage capacity.

The 2014 emergency drought project advanced the objectives of MWCDs CHERP and water efficiency in general. In addition, the components of the project complement this proposal. Rather than using the inefficient main canal for municipal purposes when MWCD is not also delivering irrigation water (a condition where 200 acre feet was released to deliver 15 acre feet to the City storage reservoir), water is now released to the Shasta River where it provide enhanced flows for 22 miles to a newly developed point of diversion. Municipal water released from Dwinnell Reservoir is then diverted from the Shasta River and pumped directly to the City of Montague with no delivery loss. Instream values are benefitted along the Shasta River from where the water is released from Dwinnell Reservoir to the new municipal diversion point near the City of Montague.

In summary, the municipal emergency project of 2014 combined with this proposal provide a much more efficient and drought resilient infrastructure. MWCD recognizes that all competitive beneficial uses must be addressed in long term planning and inefficiencies are most noticed in drought years. The proposed project in concert with the 2104 drought emergency project provides a more dependable irrigation source for the 220+ agricultural users within the MWCD District, confidence in municipal deliveries even in severe drought conditions and assured improvements to instream benefit by dedicating all conserved water for instream benefit, specifically the Threatened Coho salmon.

Sub-criterion E.4: Other Water Supply Benefits

MWCD provides water for to the largest irrigation district that encompasses 19,400 acres. MWCD also provides municipal water to the City of Montague located within district boundaries. Through MWCD's long term conservation plan, MWCD will also add instream beneficial uses as an additional beneficial use to its water rights permits through a petition to the SWRCB. MWCD will utilize California Water Code section 1707 to dedicate the conserved volume of water from this project and other canal lining projects for instream benefit as specifically determined in cooperation with NOAA and CDFW.

Regardless of water year, competition for limited water occurs in the Shasta River. Competition between instream needs and agricultural needs for irrigation is a heightened issue. Because the intent of the conserved water is for instream benefit, primarily Threatened Coho salmon, this project directly benefits Tribal Trust resources for Tribes along the Klamath River. This project also directly addresses contentious issues that have resulted in lawsuits and legal challenges stemming from the conflicts between agricultural use and instream needs, especially in the Klamath River Watershed.

Siskiyou County is identified as an economically disadvantaged community. The City of Montague is very disadvantaged and is the home of 68 Karuk Tribal members. The MWCD is collaborating with Cal-Trout, California Farm Bureau and belongs to the Shasta Watershed Conservation Group (SWCG). MWCD participates with Shasta RCD and other resources conservation groups. MWCD also coordinates and cooperates with CDFW and NOAA in development of CHERP and to take

measures to protect and enhance salmon and other cold water dependent species. MWCD also cooperates in water quality measures to protect and enhance water quality.

Water conserved through lining or piping the Main Canal could be used to support a number of environmental and beneficial uses, in addition to improving reliability of irrigation supplies and municipal water. Conserved water could be used for increased flow releases from Dwinnell Dam to aid critical life stages, habitat connectivity, or improved habitat for salmonids or water quality objectives. Conservation objectives could also be implemented through forbearance agreements at MWCD'S Parks Creek Diversion. The conserved water could be managed and made available in a variety of ways. Some additional strategies or combinations that result in improved instream conditions are identified below:

- forebear diversion and increase flows by-passed at MWCD's Parks Creek diversion.
- increase releases to the Shasta River from Dwinnell Reservoir during periods when additional flows would be beneficial to critical life stages of salmonids and when water quality parameters of the released water are satisfactory.
- increase storage to retain a minimum pool in Lake Shastina to improve water quality in the Reservoir
- replace diversions that divert cold water, including prior rights holders in the Shasta River and the Little Shasta River.
- a combination of some or all of these actions.

Evaluation F: Implementation and Results

Sub-Criterion F.1: Project Planning

MWCD's CHERP is its long term conservation plan as described in the Background section of the Technical Proposal Section of this proposal. MWCDs CHERP is not fully implemented and it is currently going through permitting and approvals. An Operations Plan for MWCD is being developed in coordination with CDFW and NOAA through ESA Section 7 process. However, some sections of the CHERP have been implemented including much of the Flying L Pipeline that can now provide cold water to the Shasta River to benefit water quality and Coho salmon rearing in the reach of the Shasta River below Dwinnell Dam. Additional requests for funding have been made are awaiting funder response including an implementation grant to the California Department of Fish and Wildlife (CDFW).

While this proposal can be evaluated as a standalone project it is a component of the larger comprehensive project (CHERP). Through lining a section of the main canal, this project will provide the conserved volume of water (1,100 acre feet) for instream benefit. The 1,100 acre feet will provide for instream benefit as best determined by CDFW and NOAA.

MWCD's CHERP and Operations Plan were developed to support Recovery Plans for Coho Salmon in the Shasta Valley. MWCD is also cooperating with its neighbors who are developing a Safe Harbor Agreement (SHA) for Coho Salmon titled the Shasta Watershed Conservation Group (SWCG) with NOAA and CDFW. MWCD's CHERP and the SWCG objectives are based on Federal Coho Recovery Plan objectives including expanding cold water habitats to improve over-summering conditions, connecting habitats through increased flow conditions and increasing dependability of existing habitats. WaterSMART Klamath Basin Study adaptation objectives focusing on water conservation and sustainable demand, endangered species habitat, and resolving heightened water conflicts are similar to the Federal Coho Recovery Plan and addressed by this proposal.

Sub-Criterion F.2:Readiness to Proceed

The project is ready to proceed based upon the timeline provided below. There is an timeline provided for CHERP as well as this proposal. MWCD has started the process of obtaining permitting beginning in the summer of 2014 with surveys and permitting for CHERP. MWCD projects including lining the main canal and other components of CHERP has been undergone rare plant and archeological surveys and conducted wetlands delineation investigation. MWCD intends to obtain permitting for all CHERP project components by fall of 2015. MWCD does not foresee any difficult issues in obtaining necessary permits for lining the main canal. MWCD proposes the following timelines for this proposal and CHERP:

Reclamation WaterSMART Proposal timeline:

Project Implementation:

- Permitting, review and approvals 06/2014-10/2015
- Completed Engineering 08/2015-04/2016
- Contracting/implementation year one 11/2015 - 03/2016
- Contracting/implementation year two 10/2016-03/2017
- Implementation of operational changes 04/2016-11/2017
  (instream dedication schedule)
- Project verification/monitoring 04/2016-11/2017

CHERP Timeline

- Permitting, review and approvals (funded and in progress) 6/2014-10/2015
- Cross Canal, habitat enhancement (funded and in progress) 06/2014-12/2016
  and Flying L Pump improvements (partially funded with

full funding applied for)

- Main Canal lining, Phase 1 10/2015-03/2017
- Main Canal lining, Phase 2 09/2016-04/2017
- Implementation of operational changes 04/2017-03/2019
- Parks Creek fish screen 07/2018-10/2019
- Monitoring and verification 04/2017-11/2019

Sub-Criterion F.3:Perfomance Measures

The most appropriate performance measure for this project is the volume of water conserved by lining the main canal. Based on investigations provided by Watercourse Engineering 1,100 acre feet is expected to be conserved annually as a result of lining two miles of main canal. In exchange for lining two miles of the main canal, MWCD will commit to annually providing 1,100 acre feet of water for instream benefit as best determined by CDFW and NOAA. The water provided for instream benefit will be measured via a flow gage maintained by DWR and publically displayed real time via DWRs CDEC website.

Quantification of project benefits is an important means of determining the relative effectiveness of various water management efforts, as well as the overall effectiveness of Reclamation Grant programs. By lining 2 miles of the MWCD Main Canal the efficiency project would conserve water that will be available for release or through by-passing flows for instream benefit that was previously lost to inefficiency. The objective of the project is to improve instream habitats within the upper Shasta River and Parks Creek by providing enhanced flows to the confluence with Big Springs Creek. There are approximately 11 miles of Parks Creek as well as 8 miles of the upper Shasta River that would benefit from the project. The volume of water committed to instream benefit will be affirmed through California Water Code section 1707 (SWRCB) and verified through real-time stream flow and diversion gauging. A majority of the gauging infrastructure required to verify increased releases has is currently installed and operating with California DWR overseeing the operation of the gages.

A complex, and adaptive, part of MWCD's CHERP is an operational flow plan aimed at maximizing instream releases and by-passes. The operational flow plan is based on effects of previous flow release trials, downstream monitoring and fish response and in collaboration with NOAA and CDFW. Water temperature is equally important when considering a monitoring plan for the release of the conserved flows for instream benefit. MWCD will commit to maintaining a real-time temperature gage at the outlet of Dwinnell Reservoir to operate in accordance with an agreed upon temperature threshold when determining whether to use releases from Dwinnell Reservoir or the Flying L Pumps, or a mixture the two. MWCD will

also provide temperature monitoring of Flying L pumps as well and the seeps discharge. MWCD and the project will depend on agency and community biological monitoring to determine the fishery response of enhanced flows. Methods to determine effectiveness will vary based upon intent of flow release(s), targeted Coho life stage and funding. MWCD commits to provide real-time monitoring of flow and temperature of water released to the Shasta River from either the Flying L Pumps, the seeps, or from Dwinnell Reservoir.

Sub-criterion F.4: Reasonableness of cost

Reasonableness of Cost: MWCD has been lining sections of the 19.4 miles long Main Canal for over 30 years with impressive success. By locating and targeting Main canal reaches with high transmission loss, delivery loss in the Main Canal has been reduced from 55% in the late 1960's to 26% today. MWCD has lined over four miles of canal and has found shot-crete and gunite to be a successful long term treatment when correctly installed. MWCD has some lined reaches of the main canal that have been effective for over thirty years. The budget for this proposal was developed assuming a covered membrane liner covered by moderately reinforced shot-crete constructed into the existing ditch. The lining treatment would include average shot-crete thickness of 3"- 4" in a trapezoidal canal shape (existing). Engineering of the Main Canal lining will be completed in September of 2015.

When considering reasonableness of cost, the following values were used:

Annual Volume of water conserved by BOR Request Project:	1,100 acre feet
Annual Volume of water conserved by MWCD CHERP	4,400 acre feet
Duration of lining treatment:	40 years
Volume of water conserved in project life	44,000 acre feet
Volume of water conserved on CHERP project life	176,000 acre feet
Cost of project - BOR Request	$ 975,000
Cost of Project - CHERP total Cost	$6,267,000

Reasonable Cost Calculation:

CHERP (includes7.8 miles lined): 4,400 a/f X40 years(176,000 a/f)/ $6,267,600 or **$35.61 per acre foot**

BOR Request (2.0 miles lined): 1,100 a/f X40 years (44,000 a/f)/ $1,607,000 or **$36.53 per acre foot**

Evaluation Criterion G: Additional Non-Federal funding

Reclamation Proposal Request (Federal)	$	975,000

Non-federal match funds for CHERP are identified below:

• Wildlife Conservation Board: Permitting and Design	$	275,000
• National Fish and Wildlife Foundation: Design and Engineering	$	75,075
• 2014 Drought Related Drinking Emergency: Implementation	$	629,448
• CDFW - Fisheries Grant Restoration Program (not secured)	$	975,000
• Shasta Valley Resource Conservation District: Design and Engineering	$	93,000
Sub-total	**$**	**2,047,523**
Committed in-kind from applicant	**$**	**443,075**
Total Non-Federal Match	**$**	**2,490,598**

Evaluation Criterion H: Connection to Reclamation Project Activities

Reclamation operates the federal project in the Klamath River basin. The Shasta River is a major tributary to the Klamath River located downstream of the federal Klamath water project. Water in the Shasta River is adjudicated by the Shasta River Decree and the State Water Resources control board. The coordination between state and federal operations is not well understood by the Applicant but consistent objectives exist for both the developing Klamath WaterSMART Basin Study, the California Governors Drought Proclamation and the NOAA Coho Recovery Plan. Objectives of sustainable multiple use strategies, irrigation conservation strategies, efficient distribution and reclamation projects are consistent among water management plans.

The applicant, MWCD, does not receive reclamation water and the project is not on Reclamation property or involve Reclamation infrastructure. However, the water conserved by the proposal aids in meeting basin wide flow objectives and addresses instream flow targets identified in the Klamath Basin for Threatened Coho salmon and Tribal Trust responsibilities associated with salmon and necessary habitat flows.

Environmental and Cultural Resource Compliance:

Permits/Approvals: Potential permits/approval concurrences include: U.S. Army Corps of Engineers 404 permit, ESA consultation, Section 401 water quality certification, Fish and Game Code Section 1600 Lake and Streambed Alteration Agreement, CESA permit, and any associated environmental review.

MWCD will be the lead agency to acquire permits and approvals for the proposed project, which is part of MWCD's larger comprehensive conservation and habitat enhancement and restoration project. **MWCD is currently pursuing aspects of this larger project (CHERP) and plans to obtain all necessary environmental reviews and permits for it in the most efficient manner possible in order to construct and implement the project as soon as possible**. MWCD expects that this project will require a section 404 permit from the U.S. Army Corps of Engineers for any discharge of dredged or fill material in federal jurisdictional waters, including the construction and operation of the Lateral cold water wetland and cross canal. As a result, MWCD anticipates consultation between the U.S. Army Corps of Engineers will result in authorization pursuant to the Endangered Species Act and that the section 404 permit will require a section 401 water quality certification and environmental review pursuant to NEPA. MWCD expects a FONSI for NEPA documentation and Mitigated Negative Declaration for CEQA. MWCD also expects that state permits may be required for the project, potentially including the section 401 water quality certification mentioned above, a Fish and Game Code section 1603 Streambed Alteration Agreement, California Endangered Species Act permit, and any associated CEQA review. MWCD will continue work with the law firm Ellison, Schneider and Harris (ESH) and the consulting firm Environmental Science Associates to coordinate permitting documents and environmental review.

Required Permits or Approvals: Potential permits/approval concurrences include: U.S. Army Corps of Engineers 404 permit, ESA consultation, Section 401 water quality certification, Fish and Game Code Section 1600 Lake and Streambed Alteration Agreement, CESA permit, and any associated environmental review. As previously discussed, MWCD has conducted numerous surveys in its current effort to attain necessary permitting and review to implement the CHERP. These investigations include Rare Plant, Wetland Delineation and archeological surveys/reports of the entire project boundary of the CHERP. These draft product are available upon request.

Performance Measures:

Evaluation sub-criterion F.3 covers performance measures further. A list of justified performance measures for this project includes:

- Conserving 1,100 acre feet annually by lining 2 miles of canal

-Releasing 1,100 acre feet annually for instream benefit as a result of lining the MWCDs Main Canal

-Increasing critical flows in over 20 miles of stream

Official Resolution:

MONTAGUE WATER CONSERVATION DISTRICT
RESOLUTION NO. 2015-01
ACTIONS TO SUPPORT MAIN CANAL WATER CONSERVATION PROJECT

WaterSMART Grant

WHEREAS, Montague Water Conservation District ("MCWD") owns several water rights and operates the Dwinnell Dam and Reservoir (Lake Shastina), the only significant water storage facility in the Shasta River Watershed;

WHEREAS, the Shasta River is one of the most important tributaries of the Klamath River related to salmonid production;

WHEREAS, MWCD's current infrastructure and operations have a significant economic impact on Siskiyou County as MWCD provides irrigation to a major section of the Shasta Valley and Lake Shastina is the center of one of the largest communities in the County, Lake Shastina Service District, and is an important recreational center;

WHEREAS, MWCD seeks opportunities to improve fisheries and water quality fisheries habitat in the Shasta River watershed while assuring continued and improved delivery and use of water for irrigation;

WHEREAS, MWCD has conducted initial investigations regarding delivery efficiency on its 19-mile main canal and has determined that there may be opportunities to construct and implement conservation and water saving measures by lining or piping reaches of the main canal;

WHEREAS, a conservation and water saving project could result in development of significant quantities of water that could be used to enhance flow conditions the Shasta River and Parks Creek through water conservation, benefiting fisheries and water quality;

WHEREAS, MWCD has limited resources and must seek third party funding for these projects and programs;

THEREFORE, LET IT BE RESOLVED THAT:

1. MWCD is committed to actions in support of the Main Canal Water Conservation Project, including pursuit of public funding with receipt of WaterSMART Grant financial assistance, and to the use of conserved water for the benefit of fisheries and fish habitat in the Shasta River and Parks Creek; and

2. MCWD Board supports the application being submitted seeking mutual benefits for the District and natural resources in the Shasta River and Parks Creek in cooperation with appropriate public and private entities, including but not limited to, Bureau of

Reclamation, the California Department of Fish and Wildlife, the State Water Resources Control Board and/or in-kind contributions specified in the funding plan; and

3. MWCD will work with Reclamation to meet established deadlines for entering into a cooperative agreement; and

4. The MWCD Board names the President of the Board and/or Administrative Clerk the legal authority to enter into the agreement and Gary Black as project manager.

PASSED AND ADOPTED by the Governing Body on January 13, 2015

AYES: Smith, Hockaday, Allen, Peters, Sears

NOES: ~~-0-~~

ABSENT: ~~-0-~~

ATTEST: Lisa A. Farris

Administrative Clerk

President of the Board

Support Letters:

STATE CAPITOL
ROOM 3070
SACRAMENTO, CA 95814
TEL (916) 651-4001
FAX (916) 324-3680

CONSTITUENT SERVICE CENTERS

EL DORADO HILLS
4359 TOWN CENTER BLVD.
SUITE 112
EL DORADO HILLS, CA 95762
TEL (916) 933-7213
FAX (916) 933-7234

REDDING
1670 MARKET STREET
SUITE 244
REDDING, CA 96001
TEL (530) 225-3142
FAX (530) 225-3143

California State Senate

SENATOR TED GAINES
FIRST SENATE DISTRICT

REPUBLICAN CAUCUS CHAIR

COMMITTEES
ENVIRONMENTAL QUALITY
VICE CHAIR
INSURANCE
VICE CHAIR
TRANSPORTATION & HOUSING
VICE CHAIR
APPROPRIATIONS
PUBLIC EMPLOYMENT & RETIREMENT

January 13, 2015

Dear Sir or Madam:

I am writing in support the Montague Water Conservation District (MWCD) as it seeks funding to implement a water conservation strategy that will result in direct instream benefits while also addressing significant competitive use issues in the Shasta River watershed, a major tributary the Klamath River.

Instream flow and water quality needs often conflict with water rights and irrigation demands in the Shasta River and its tributaries. With a service area of nearly 20,000 acres, the MWCD is the largest irrigation district in the Shasta River Watershed and the only entity with a significant storage facility (Dwinnell Reservoir) and storage rights (49,000 acre-feet) in the Shasta River. MWCD owns and operates Dwinnell Reservoir on the Shasta River as well as a significant diversion on Parks Creek, a major tributary to the Shasta River. MWCD also provides municipal water to the City of Montague located within the District boundaries.

MWCD has worked with the California Department of Fish & Wildlife (CDFW), the National Oceanic and Atmospheric Administration (NOAA) and other conservation partners to develop a comprehensive water conservation strategy that addresses competitive use issues in the Shasta River by dedicating *all* of the conserved water for instream benefit, as best determined by fisheries agencies. Through this grant application, the Montague Water Conservation District (MWCD) is seeking cost share to line a 2.2 mile reach of the identified 7.8 miles of MWCDs Main Canal where 90% of the main canal water loss occurs. In exchange for lining reaches of MWCD's Main Canal, MWCD will permanently allocate the volume of water conserved, estimated at 1,100 acre feet, for instream benefit. This proposal presents numerous opportunities to enhance instream conditions in the most important spawning and rearing reaches of the Shasta River, specifically for the listed SONNC coho salmon.

I appreciate your consideration of this win-win proposal.

Sincerely,

TED GAINES
Senator, First District

STATE CAPITOL
P.O. BOX 942849
SACRAMENTO, CA 94249-0001
(916) 319-2001
FAX (916) 319-2101

DISTRICT OFFICE
280 HEMSTED DRIVE, SUITE 110
REDDING, CA 96002
(530) 223-6300
FAX (530) 223-6737

E-MAIL
Assemblymember.Dahle@assembly.ca.gov

Assembly
California Legislature

BRIAN DAHLE
ASSEMBLYMAN, FIRST DISTRICT

COMMITTEES
VICE CHAIR: ENVIRONMENTAL SAFETY AND TOXIC MATERIALS
VICE CHAIR: REVENUE AND TAXATION
WATER, PARKS, AND WILDLIFE
AGRICULTURE

Jan. 14, 2015

Re: Montague Water Conservation District grant application

To whom it may concern,

I write to share my strong support for the Montague Water Conservation District's proposal, which promises a resolution of significant conflicting uses in the Shasta River watershed, a key Klamath River tributary.

In-stream flow and water quality needs often conflict with irrigation demands in the Shasta River. The Montague Water Conservation District (MWCD) is the largest irrigation district in the watershed and the only entity with significant storage on the Shasta River. MCWD owns and operates Dwinnell Reservoir, with a capacity of 49,000 acre-feet, as well as a significant diversion on Parks Creek, a major Shasta River tributary. In addition to irrigation water, MCWD supplies municipal water to the City of Montague.

MCWD has long worked with the California Department of Fish and Wildlife, NOAA Fisheries and other partners to develop a comprehensive water-conservation strategy to enhance in-stream flows and protect Shasta River fisheries.

Through this grant application, the District is seeking cost share to line a 2-mile reach of the identified 7.8 miles of the Main Canal where severe seepage loss occurs. In exchange for lining the 2-mile reach, MWCD will allocate all of the conserved water, estimated at 1,100 acre-feet annually, for in-stream benefit. While increasing the reliability of deliveries for irrigation and municipal purposes, this proposal will enhance in-stream conditions in the most important spawning and rearing reaches of the Shasta River, notably for the Southern Oregon-Northern California Coast coho salmon, which is listed as threatened under the U.S. and California Endangered Species Acts.

Updating the District's infrastructure will conserve water, enhance imperiled salmon runs and resolve long-running local conflicts. It's a wise long-term investment that enjoys broad support. If I can be of any assistance, please contact my District Director, Bruce Ross, at (530) 223-6300.

Sincerely,

Brian Dahle

BRIAN DAHLE
Assemblyman, 1st District

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
1655 Heindon Road
Arcata, California 95521-4573

MAR 1 8 2014

TO: Project Reviewers

FROM: Jim Simondet
Klamath Branch Chief

SUBJECT: Montague Water Conservation District's proposed project "Upper Shasta River Flow Enhancement Through Water Conservation."

I am writing to express NOAA's National Marine Fisheries Service (NMFS) support of Montague Water District's (District's) proposal submitted to the Bureau of Reclamation for funding. The proposed project entitled "Upper Shasta River Flow Enhancement Through Water Conservation" (proposed Project) would result in a significant increase in water availability that would be used for fisheries conservation in the Shasta River. The District's commitment to pursue dedicating 4,400 acre feet of water through California's Water Code 1707 ensures the proposed Project will have measurable benefits to coho salmon and other salmonids through increased habitat availability, improvements to water quality, and enhanced migration.

As you are aware, Southern Oregon Northern California (SONCC) coho salmon are listed under the federal Endangered Species Act (ESA), and the Shasta River population of coho salmon is defined as a core population in NMFS' draft SONCC Coho Recovery Plan (Recovery Plan). NMFS is preparing to release the Final Recovery Plan in the spring of 2014, and we have identified water conservation projects in the Shasta River as high priority projects.

The District has expressed willingness to work with California Dept. of fish and Wildlife and NMFS to utilize the water savings in a manner that best meets the needs of species, indicating the proposed Project is likely to be successful in furthering the recovery of coho salmon and benefitting other anadromous salmonids. If you have any questions, or would like to discuss, please contact me at (707) 825-5171.

RCD
SHASTA VALLEY
RESOURCE CONSERVATION DISTRICT
215 Executive Court, Suite A
Yreka, CA 96097
(530) 842-6121 ext 106
www.svrcd.org

March 21, 2014

Bureau of Reclamation
Mid-Pacific Region - California

Re: Ag Water Conservation and Efficiency Grant

To Whom It May Concern:

The Shasta Valley Resource Conservation District would like to send support for the application being submitted by the Montague Water Conservation District. The project would result in meeting water conservation objectives, as well as providing improved infrastructure for water delivery.

The MWCD proposes to line portions of its Main Canal in a reach where a majority of the delivery loss from the main canal occurs. In exchange for lining the identified canal reach, MWCD will annually provide an estimated volume of conserved water for instream benefit. This proposal presents numerous opportunities to enhance stream flows to the most important spawning and rearing reaches in the Shsta River watershed, specifically for the listed SONC Coho salmon.

MWCD will add instream beneficial use as an additional beneficial use to their water rights pursuant to the California Water Code, including section 1707 to dedicate the conserved water for instream benefit. Through this application, MWCD also proposes to improve its infrastructure where released flow from Dwinnell Reservoir enters the Shasta River in anticipation of enhanced flow releases.

Successful implementation of this project will benefit listed Coho salmon, and add to the cumulative benefits resulting from past, on-going and future projects in the Shasta River watershed.

Sincerely,

Adriane Garayalde
Executive Director

City of Montague, Office of the Mayor
230 South 13th Street, Montague, CA 96064
Mailing Address: P.O. Box 428, Montague, CA 96064
Phone: 530-459-3030
Fax: 530-459-3523
Email: cityofmontague@sbcglobal.net

March 21st, 2014

United States Bureau of Reclamation

Re: Agricultural Water Conservation and Efficiency Grant

To whom it may concern:

The City of Montague would like to urge the Bureau of Reclamation to fully fund the Montague Water Conservation District's project entitled Upper Shasta River Flow Enhancement Through Water Conservation.

The City of Montague has relied on the Montague Water Conservation District to provide a drinking water supply to the community for over 80 years. MWCD has managed to successfully deliver, though many years it requires the local farms and ranches to forgo irrigation in the late summer. This year, due to the record drought, the farms and ranches may not receive any irrigation, with MWCD delivering only to the City of Montague and releasing water for environmental reasons.

When MWCD delivers only to the City there is a huge water loss. It requires a release at Dwinnell Dam of approximately 250 ac-ft to deliver 10 – 20 ac-ft to the City's storage ponds. This drought year there will be an estimated 15 deliveries to Montague. In other words about 3,750 ac-ft to deliver about 250 ac-ft, a loss of 3,500 ac-ft. The losses are primarily due to the fact that the canal is unlined.

The City would like to offer its full support behind the Montague Water Conservation District's efforts to see the canal system is lined. The project would provide significant water savings which could then be used for irrigation or environmental purposes as well as provide an improved quality of water for the City.

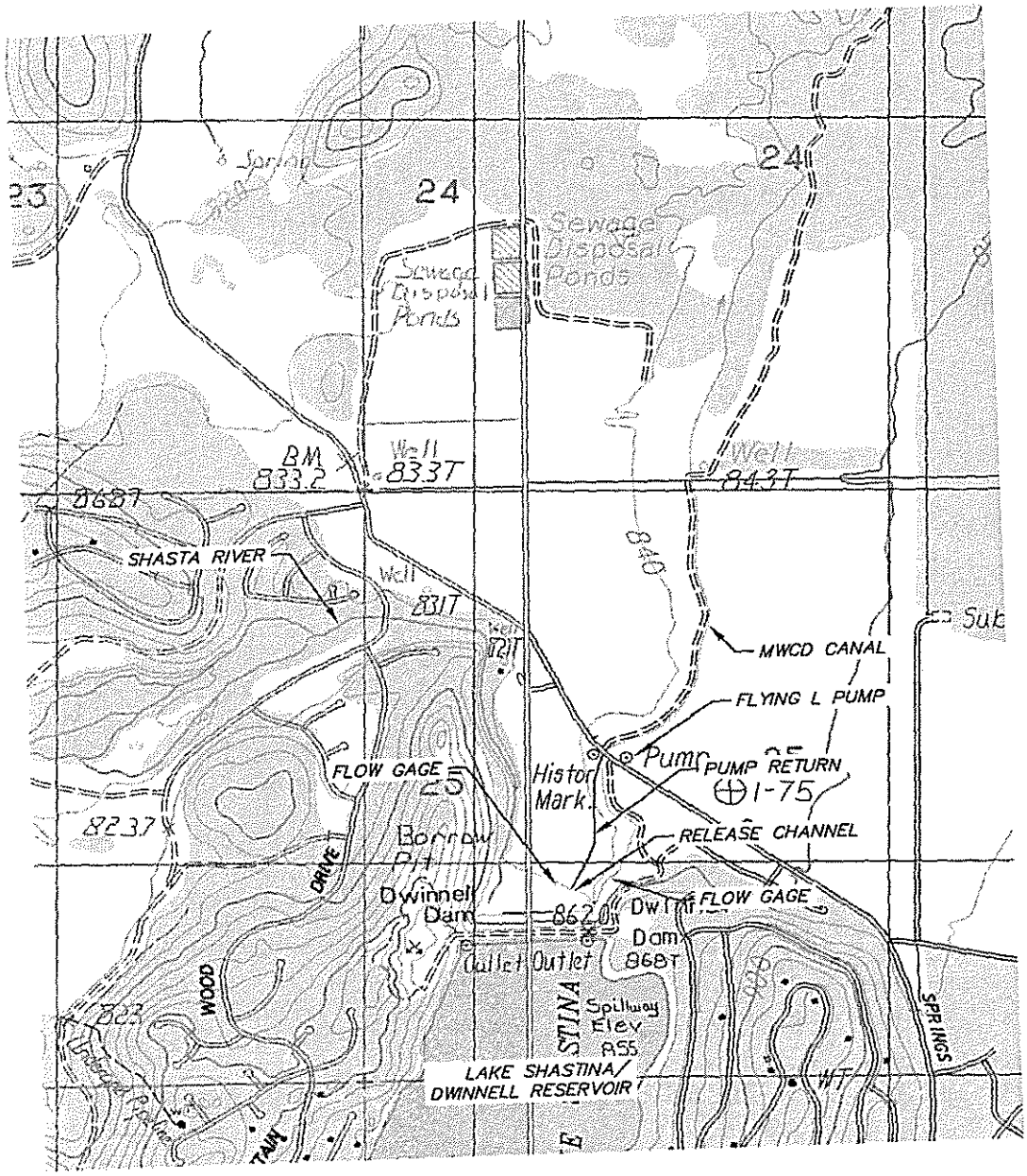
Should there be further questions, please do not hesitate to contact our Public Works Department at 530-459-5204.

Respectfully,

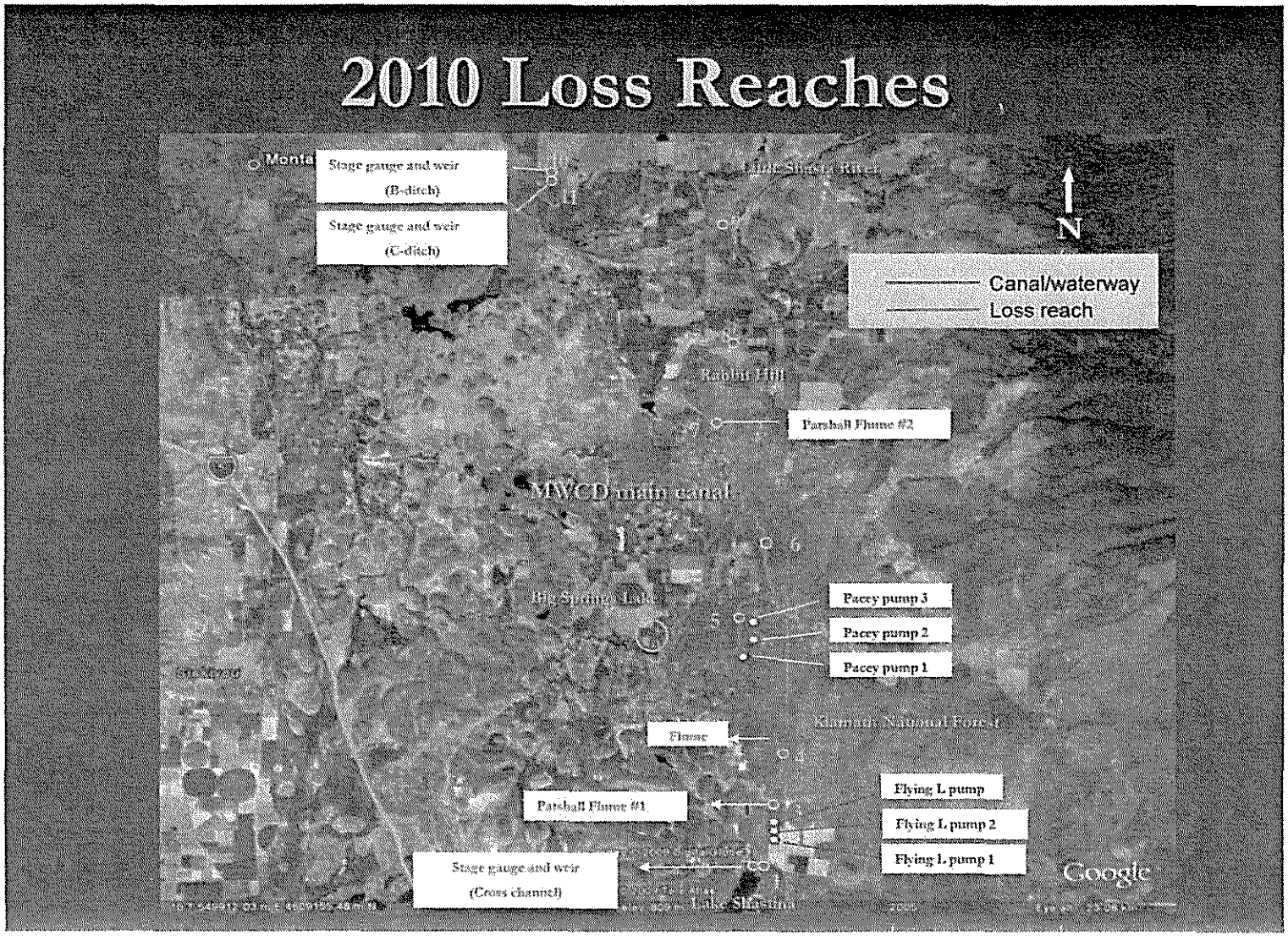
Jayne Keller
Mayor

Visual Aides: **MWCD Project Overview**

Overview: Infrastructure Improvements for Releases to Shasta River at Dwinnell Reservoir



Site Location: Shasta River Watershed, Lake Shastina, Siskiyou County, California -Lat Long (Decimal: 41. 32'30.66" N, 122.22'27.39" W)


2010 Loss Reaches
Monta
Stage gauge and weir
(B-ditch)
Stage gauge and weir
(C-ditch)
Lost Slough Ditch
N
Canal/waterway
Loss reach
Rabbit Hill
Parshall Flume #2
MWCD main canal
Big Spring Lake
Pacey pump 3
Pacey pump 2
Pacey pump 1
Klamath National Forest
Flume
Flying L pump
Flying L pump 2
Flying L pump 1
Parshall Flume #1
Stage gauge and weir
(Cross channel)
Google

Project Budget:

CHERP Funding Plan:

Applicant:

MWCD will provide in-kind labor and equipment to the project. MWCD staff will assist with the canal lining process throughout the winter months, including use of trucks for hauling, access road maintenance and an excavator for site preparation and canal shaping . Total in-kind commitment is $435,700.00.

Secured or applied for cost share funds exist either for permitting, design, in-kind contribution or implementation components totaling $ **2,047,523**

State Funds:

-MWCD is also waiting for a response from CDFW regarding an implementation proposal submitted in 2014 for $975,000

-MWCD will apply for additional canal lining funds from the Wildlife Conservation Board in the Spring of 2015

-MWCD will apply for canal lining funds (water bond funds) with the SWRCB in April 2015

-MWCD will apply for CDFW Fisheries Grant Restoration Funds in April 2015

Federal Funds:

-MWCD has applied to USFWS for canal lining in 2014 (proposal is being reviewed)

-MWCD is meeting with NRCS to advance on-farm conservation strategies

Letter of Commitment/Matching Contracts:

The following demonstrate funding commitment funding cooperators in addition to the Applicant:

NFWF

NATIONAL FISH and WILDLIFE FOUNDATION

SOUTHWESTERN PARTNERSHIP OFFICE
90 New Montgomery Street, Suite 1010
San Francisco, CA 94105
P 415-778-0999 | F 415-778-0998 | nfwf.org

NFWF Page 1 of 1

October 4, 2013

Montague Water Conservation District
Attn: Ms. Lisa Faris
P.O. Box 247
Montague, CA 96064

Re: Klamath River Coho Salmon Enhancement Fund 2013

Dear Ms. Faris:

We are pleased to advise you that PacifiCorp Energy has approved a grant of $75,075.00 from the Klamath River Coho Salmon Enhancement Fund to the Montague Water Conservation District to support the project proposal titled "MWCD-Shasta River Flow Enhancement Project (40747)".

As you may know, the National Fish and Wildlife Foundation serves as administrator of PacifiCorp's Klamath River Coho Salmon Enhancement Fund. I will generate a contract soon and will contact you with any questions.

The National Fish and Wildlife Foundation wishes you the best of luck with your project. Please feel free to contact me by email at shawn.marchand@nfwf.org with any questions.

Sincerely,

Shawn Marchand
Manager, Impact-Directed Environmental Accounts

GRANTEE: Montague Water Conservation District
P.O. Box 247
Montague, CA 96064
Attn.: Stan Sears, Chairman
(530) 459-3371
E-mail:mwcd@att.net

LANDOWNER: Name: Same as above

GRANTOR: Wildlife Conservation Board
1807 13th Street, Suite 103
Sacramento, California 95811
Attn.: Terry Roscoe, State Representative
Phone: (916) 445-8334
E-mail: troscoe@wildlife.ca.gov

Grant Agreement No.: WC-1262TR

Board Approval Date: June 4, 2013
Projected Completion Date: December 31, 2014
Terms of Agreement:
Capital Improvements: Notice to Proceed Date (JUL 2 5 2013) through December 31, 2014
Project ID: 2013039

FUNDING CERTIFICATION

I hereby certify that (a) the following funds will be encumbered on behalf of Grantor; and (b) Grant Funds shall not be disbursed unless and until sufficient proceeds from the source identified below become available to Grantor to disburse.

Cynthia A Almeida
Fiscal Officer

4/22/13
Date:

Grant Amount: $275,000
Fund Source: Habitat Conservation Fund, Section 2786ef(1E)
Appropriation Item: Chapter 33, Statutes of 2011
Line Item: 3640-301-0262
Expenditure Code: 12-1000-841-51000

2014 CA Drought Funding
Page 1 of 2

AGREEMENT BETWEEN CITY OF MONTAGUE A GENERAL LAW CITY ESTABLISHED PURSUANT TO THE LAWS OF THE STATE OF CALIFORNIA ("CITY") AND MONTAGUE WATER CONSERVATION DISTRICT, A PUBLIC ENTITY ORGANIZED AND EXISTING PURSUANT TO CALIFORNIA WATER CODE SECTION §74000, ET SEQ. ("DISTRICT")

RECITALS

1. The City of Montague ("the City") receives its water through a canal owned and operated by the Montague Water Conservation District ("the District").

2. The District also services its customers through the same canal.

3. Because of water shortages resulting from the present drought, the canal servicing the City may be unable to deliver water to the City during the upcoming summer.

4. The City and the District wish to improve the water delivery system and to provide more reliable services to the City.

5. The City and the District have identified a method of conserving water and increasing efficiency by conveying water via the Shasta River and pumping the water through a new pipeline to be constructed in a fashion to deliver the water to a portion of the District's canal servicing the City's water treatment facility.

WITNESS

In light of the Recitals set forth above, the parties agree as follows:

1. Easements.

The District will seek necessary easements from landowners for the City, the City's contractor, the District and/or the District's contractor to construct, install, operate, inspect, maintain, repair and replace a pumping and piping system as shown on the diagram attached and incorporated herein by reference. ("Exhibit A").

2. Improvements.

The parties will drill a well and construct the infrastructure necessary to discharge the well water into the Shasta River; construct a pumping station sufficient to pump water from the Shasta River through a pipeline to deliver water to the City's water treatment facility; and install all piping necessary to convey the water from the pumping station to the City's water treatment facility as shown on Exhibit "A" attached hereto and incorporated herein (collectively "the

2014 Drought Funding
Page 2 of 2

PROJECT PART 1

MWCD will provide all construction, including avoidance and mitigation measures, for installation of a new point of diversion from Shasta River, including fish screen, pumping facilities, and pipeline across wetlands and other riparian area, to contiguous uplands. Constructed improvements shall be complete with provision for installing pump motor and electrical controls above flood level. City will contract with others for furnishing and installing pump and controls.

PROJECT PART 2:

CITY will contract for the installation of a pipeline, approximately 2.67 miles in length, to convey the water from the new point of diversion to the canal North of Ball Mountain Road.

PROJECT PART 3:

MWCD will provide all construction, including avoidance and mitigation measures, to provide the addition of well water instream.

PERMITTING, DESIGN and APPROVALS:

MWCD shall provide all application and processing tasks, including environmental reviews, for securing necessary permits to accomplish Project in all its Parts, except that City shall secure County Road Permits, and USA clearance for excavation associated with Project Part 2 construction. MWCD and City will work to secure easements

MWCD shall provide all necessary Design for Project Parts 1 and 3, except that CITY shall provide specifications for Pump and associated electrical components.

MWCD shall make all arrangements with Pacific Power Company for provision of electrical power to Project Parts 1 and 3.

REMOTE CONTROLS AND DATA ACQUISITION,

MWCD shall provide all provisions for SCADA (System Control and Data Acquisition) as necessary to satisfy the conditions of approval of project permits. MWCD shall make all arrangements with a communications company to facilitate SCADA from remote locations.

REIMBURSEMENT

CITY shall reimburse MWCD for costs of consultant services, expenses, and construction work under this Agreement, from the proceeds of funds to be obtained through the State of California. The maximum amount of such reimbursement under this Agreement shall be $629,448. No costs incurred subsequent to the successful start-up and running of system operation shall be eligible for reimbursement. Request for payment of reimbursement shall be accompanied by detailed invoices showing the items of costs directly and specifically attributable to this Drought Relief Project, only.

EXHIBIT B

Shasta Valley RCD
Page 1 of 1

CONTRACT FOR SPECIAL SERVICES
BY INDEPENDENT CONTRACTOR

THIS CONTRACT is entered into this 10th day of July, 2013, by and between the **SHASTA VALLEY RESOURCE CONSERVATION DISTRICT**, hereinafter referred to as "District," and **Montague Water Conservation District, hereinafter referred to as "MWCD"** as an independent contractor, hereinafter referred to as "Contractor."

WITNESSETH:

WHEREAS, District has need for special services to obtain engineering services for four projects within the MWCD boundary. The four projects are identified on the attached Scope of Work. The engineering services will be contracted by MWCD, with oversight by AquaTerra. The MWCD will also provide matching dollars for this effort, which will also be reported to the District to document needed cost share for the tailwater 2 grant.

WHEREAS, Contractor is specially trained, experienced, and competent to perform such services; and

NOW, THEREFORE, THE PARTIES MUTUALLY AGREE AS FOLLOWS:

1. **Services:** Pursuant to this Contract, Contractor shall provide to District special services as set forth in the **Scope of Services** attached hereto and incorporated herein by reference.

2. **Ownership of Work Product or Deliverables:** Contractor acknowledges that all final work products and deliverable documents (including writing and data bases produced or stored in computers) produced by Contractor pursuant to this Agreement prior to the termination of this Agreement by District or upon completion of the work pursuant to this Agreement are instruments of professional service and are the property of the District, and the District shall be entitled to immediate possession of these upon termination of this Agreement or upon completion of this Agreement.

3. **Compensation:** District shall pay to Contractor as compensation in full for all services performed by Contractor pursuant to this Contract, the sum of not more than **$93,000**. Said sum may be exceeded only by obtaining the express written consent of the District Board of Directors.

4. **Billings:** Contractor shall submit to District, on a monthly basis, a detailed statement of services performed and reimbursable expenses incurred during that preceding period, including the number of hours of work performed. Contractor shall be paid within 30 days of District's receipt of funds from the funding source.

5. **Term of Contract:** This Contract shall commence on **July 10, 2013, and shall terminate on December 31, 2013,** unless said work is completed on a date prior thereto or unless terminated earlier as provided herein. Prior to the termination of this contract, the term of said contract may be extended by the mutual, written agreement of the parties. Termination of the Contract may be effectuated by the District Administrator without the need for action, approval, or ratification of the Board of Directors.

Montague Water Conservation District Budget:

***The budget provided below is MWCDs Standard Budget for CHERP. To fit within the page margins, we removed the Unit Cost line item. The full Budget is attached within the Budget Narrative.**

	BOR Request	Non-Federal	Applicant	Leverage	Total
Personnel Services					
MWCD Project Coordinator	$12,000.00	$0.00	$12,000.00	$0.00	$24,000.00
Sub Total Personnel	$12,000.00	$0.00	$12,000.00	$0.00	$24,000.00
Equipment					
Flying L Pumps and components	$0.00	$29,000.00	$0.00	$0.00	$29,000.00
Sub-Total Equipment Costs	$0.00	$29,000.00	$0.00	$0.00	$29,000.00
Materials and Supplies					
Canal Lining/Piping Material	$300,000.00	$833,700.00	$0.00	$1,200,000.00	$2,333,700.00
Precast Concrete Materials	$36,000.00	$0.00	$0.00	$0.00	$36,000.00
Delivered Quarry Rock	$0.00	$18,000.00	$30,000.00	$0.00	$48,000.00
Delivered Base/ESM	$100,000.00	$200,000.00	$32,000.00	$100,000.00	$432,000.00
18" PVC Pipe	$0.00	$133,000.00	$0.00	$0.00	$133,000.00
Office/Office Equipment Lease	$0.00	$2,800.00	$7,200.00	$0.00	$10,000.00
Subtotal Materials & Supplies	$436,000.00	$1,187,500.00	$69,200.00	$1,300,000.00	$2,992,700.00
Contractual					
Mobilization/ Set up	$33,000.00	$40,000.00	$8,000.00	$0.00	$81,000.00
Main-Canal Excavation	$70,000.00	$140,000.00	$0.00	$70,000.00	$280,000.00
Cross Channel Excavation	$0.00	$112,000.00		$0.00	$112,000.00
Canal Lining Installation	$200,000.00	$260,000.00	$180,000.00	$1,000,000.00	$1,640,000.00
Electrical	$0.00	$0.00	$0.00	$37,000.00	$37,000.00
Engineering	$21,000.00	$60,000.00	$20,000.00	$30,000.00	$131,000.00
Environmental Compliance	$60,000.00	$293,000.00	$15,000.00	$0.00	$368,000.00
Project Coordination	$36,000.00	$20,000.00	$30,000.00	$24,000.00	$110,000.00
Laborer	$10,000.00	$10,000.00	$9,500.00	$20,000.00	$49,500.00
Materials Delivery	$0.00	$20,000.00	$12,000.00	$6,400.00	$38,400.00
Dewatering	$0.00	$14,000.00	$4,000.00	$0.00	$18,000.00
Project Monitoring	$12,000.00	$10,000.00	$12,000.00	$12,000.00	$46,000.00
Access and Maintenance	$20,000.00	$10,000.00	$10,000.00	$10,000.00	$50,000.00
Sub-total Contractual	$462,000.00	$989,000.00	$300,500.00	$1,209,400.00	$2,960,900.00
Other					
Permitting and approvals	$0.00	$10,000.00	$10,000.00	$0.00	$20,000.00
Insurance and Bonds	$0.00	$0.00	$9,000.00	$12,000.00	$21,000.00
Admin. Overhead	$65,000.00	$50,000.00	$35,000.00	$70,000.00	$220,000.00
Sub-total Other	$65,000.00	$60,000.00	$54,000.00	$82,000.00	$261,000.00
Project Total	**$975,000.00**	**$2,265,500.00**	**$435,700.00**	**$2,591,400.00**	**$6,267,600.00**

Budget Narrative:

Budget Narrative is attached as supplementary information

MWCD-CHERP Budget

Montague Water Conservation District (MWCD)

			BOR Request	Non-Federal	Applicant	Leverage	Total
Personnel Services	**Hours**	**Rate**					
MWCD Project Coordinator	800	$30.00	$12,000.00	$0.00	$12,000.00	$0.00	$24,000.00
Sub Total Personnel			$12,000.00	$0.00	$12,000.00	$0.00	$24,000.00
Equipment	**Unit**	**Cost per Unit**					
Flying L Pumps and components	1	$29,000.00	$0.00	$29,000.00	$0.00	$0.00	$29,000.00
Sub-Total Equipment Costs			$0.00	$29,000.00	$0.00	$0.00	$29,000.00
Materials and Supplies	**Unit**	**Rate**					
Canal Lining/Piping Material	41000	$57.00	$300,000.00	$833,700.00	$0.00	$1,200,000.00	$2,333,700.00
Precast Concrete Materials	4	$9,000.00	$36,000.00	$0.00	$0.00	$0.00	$36,000.00
Delivered Quarry Rock	1200	$40.00	$0.00	$18,000.00	$30,000.00	$0.00	$48,000.00
Delivered Base/ESM	36000	$12.00	$100,000.00	$200,000.00	$32,000.00	$100,000.00	$432,000.00
18" PVC Pipe	7000	$19.00	$0.00	$133,000.00	$0.00	$0.00	$133,000.00
Office/Office Equipment Lease	50	$200.00	$0.00	$2,800.00	$7,200.00	$0.00	$10,000.00
Subtotal Materials & Supplies			$436,000.00	$1,187,500.00	$69,200.00	$1,300,000.00	$2,992,700.00
Contractual	**Unit**	**Rate**					
Mobilization/ Set up	1	$81,000.00	$33,000.00	$40,000.00	$8,000.00	$0.00	$81,000.00
Main-Canal Excavation	200	$1,400.00	$70,000.00	$140,000.00	$0.00	$70,000.00	$280,000.00
Dwinnell Release Channel Excavation	80	$1,400.00	$0.00	$112,000.00		$0.00	$112,000.00
Canal Lining Installation	41000	$40.00	$200,000.00	$260,000.00	$180,000.00	$1,000,000.00	$1,640,000.00
Electrical	1	$37,000.00	$0.00	$0.00	$0.00	$37,000.00	$37,000.00
Engineering	1	$131,000.00	$21,000.00	$60,000.00	$20,000.00	$30,000.00	$131,000.00
Environmental Compliance	1	$368,000.00	$60,000.00	$293,000.00	$15,000.00	$0.00	$368,000.00
Project Coordination	1	$110,000.00	$36,000.00	$20,000.00	$30,000.00	$24,000.00	$110,000.00
Laborer	150	$330.00	$10,000.00	$10,000.00	$9,500.00	$20,000.00	$49,500.00
Materials Delivery	60	$640.00	$0.00	$20,000.00	$12,000.00	$6,400.00	$38,400.00
Dewatering	1	$18,000.00	$0.00	$14,000.00	$4,000.00	$0.00	$18,000.00
Project Monitoring	1	$46,000.00	$12,000.00	$10,000.00	$12,000.00	$12,000.00	$46,000.00
Access and Maintenance	1	$50,000.00	$20,000.00	$10,000.00	$10,000.00	$10,000.00	$50,000.00
Sub-total Contractual			$462,000.00	$989,000.00	$300,500.00	$1,209,400.00	$2,960,900.00

Other		**Rate**					
Permitting and approvals		$20,000.00	$0.00	$10,000.00	$10,000.00	$0.00	$20,000.00
Insurance and Bonds		$21,000.00	$0.00	$0.00	$9,000.00	$12,000.00	$21,000.00
Admin. Overhead		$220,000.00	$65,000.00	$50,000.00	$35,000.00	$70,000.00	$220,000.00
Sub-total Other			$65,000.00	$60,000.00	$54,000.00	$82,000.00	$261,000.00
Project Total	0	$0.00	$975,000.00	$2,265,500.00	$435,700.00	$2,591,400.00	$6,267,600.00

Montague Water Conservation District
Upper Shasta River Flow Enhancement Through Water Conservation

Budget Narrative: The following budget narrative is for the Montague Water Conservation District CHERP. The Applicant, Montague Water Conservation District, has worked with staff and long standing consultants to develop the proposal and budget. This application is a result of several years of investigation. The Applicant is requesting that BOR support this project by providing **$975,000.** The Applicant will provide **$435,700 identified as Applicant match**. Budget Narrative specific to this proposal is described below:

Personnel: The following items are considered personnel expenditures expected by the Applicant:

Personnel (federal): $12,000

MWCD Project Coordinator (federal): $12,000. MWCD Project Coordinator will provide program organization, start-up, labor, resource technician level aid and clerical duties. For overall project, MWCD Project Coordinator will provide 800 hours of work @ $30.00/hr totaling $24,000. Federal cost share is being asked to fund 400 of the 800 hours totaling $12,000.

Personnel (non-federal): $0

Personnel – (applicant): $12,000

MWCD Project Coordinator (applicant): $12,000. MWCD Project Coordinator will provide program organization, start-up, resource technician level aid and clerical duties. For overall project, MWCD Project Coordinator will provide 800 hours of work @ $30.00/hr. totaling $24,000. Federal cost share is being asked to fund $12,000.

Personnel - (leverage): $0

Equipment: The following items are considered Equipment as they are a single piece of non-expendable, tangible personal property:

Equipment (federal): $0

Flying L Pumps and Components (federal): $0. Total cost is estimated at $29,000. This value was determined through engineer cost estimate and initial quotes from prospective suppliers. Federal cost share is being asked to provide $0.

Equipment (non-federal): $29,000

Flying L Pumps and Components (non-federal): $29,000. Total cost is estimated at $29,000. This value was determined through engineer cost estimate and initial quotes from prospective suppliers. Federal cost share is being asked to provide $0.

Equipment (applicant): $0

Equipment (leverage): $0

Materials and Supplies: Materials and supplies line items include all necessary parts and materials required to implement the project. The applicant has included necessary office and office equipment rental in this section as well. Further description of materials per line item is described below:

Materials and Supplies (Federal): $436,000

Canal lining material (federal): $300,000. Cost for selected material to line and/or pipe identified sections where significant loss occurs. Total estimated cost is $2,333,700 for 41000 ft. at $57/ft. This value was determined through engineer cost estimate and initial quotes from prospective contractors/suppliers. Federal cost share is being asked to provide $300,000

Precast Concrete Materials (federal): $36,000. A precast concrete head gate will be used at the beginning of the 24" pipe run section. Total estimated cost is $36,000. This value was determined through engineer cost estimate and initial quotes from prospective suppliers. Federal cost share is being asked to provide $36,000.

Delivered Quarry Rock (federal): $0. Quarry Rock 6"-24" dia. for release channel enlargement and crossings along treated reaches of main canal. This value was determined through engineer cost estimate and initial quotes from prospective contractors/suppliers for 1200 cubic yards @ $40.00 yard. Total estimated cost is $48,000. Federal cost share is being asked to provide $0.

Delivered base/Engineered Streambed Material (ESM) (federal): $100,000. Engineered Streambed Material (ESM) – 6" dia. to fine sand. This value was determined through engineer cost estimate and initial quotes from prospective contractors/suppliers for 36000 cubic yards @ $12.00 yard. Total estimated cost is $432,000. Federal cost share is being asked to provide $100,000.

18" PVC pipe (federal): $0. This pipeline is to connect the Flying L Pumps to the Shasta River below Dwinnell Reservoir for cold water releases. Total estimated cost is $133,000 for 7000 ft. at $19/ft. This value was determined through engineer cost estimate and initial quotes from prospective contractors/suppliers. Federal cost share is being asked to provide $0.

Office/Office Equipment Lease (federal): $0. Includes lease of office space and office equipment including phone, fax, computer, and copier for an estimated 50 months with a combined monthly rate of $200 per month. Total estimated cost is $10,000. Federal cost share is being asked to provide $0.

Materials and Supplies (Non-Federal): $1,187,500

Canal lining material (non-federal): $833,700. Cost for selected material to line and/or pipe identified sections where significant loss occurs. Total estimated cost is $2,333,700 for 41000 ft. at $57/ft. This value was determined through engineer cost estimate and initial quotes from prospective contractors/suppliers. Federal cost share is being asked to provide $300,000

Delivered Quarry Rock (non-federal): $18,000. Quarry Rock 6"-24" dia. for release channel enlargement and crossings along treated reaches of main canal. This value was determined through engineer cost estimate and initial quotes from prospective contractors/suppliers for 1200 cubic yards @ $40.00 yard. Total estimated cost is $48,000. Federal cost share is being asked to provide $0.

Delivered base/Engineered Streambed Material (ESM) (non-federal): $200,000. Engineered Streambed Material (ESM) – 6" dia. to fine sand. This value was determined through engineer cost estimate and initial quotes from prospective contractors/suppliers for 36000 cubic yards @ $12.00 yard. Total estimated cost is $432,000. Federal cost share is being asked to provide $100,000.

18" PVC pipe (non-federal): $133,000. This pipeline is to connect the Flying L Pumps to the Shasta River below Dwinnell Reservoir for cold water releases. Total estimated cost is $133,000 for 7000 ft. at $19/ft. This value was determined through engineer cost estimate and initial quotes from prospective contractors/suppliers. Federal cost share is being asked to provide $0.

Office/Office Equipment Lease (non-federal): $2,800. Includes lease of office space and office equipment including phone, fax, computer, and copier for an estimated 50 months with a combined monthly rate of $200 per month. Total estimated cost is $10,000. Federal cost share is being asked to provide $0.

Materials and Supplies – (applicant): $69,200

Delivered Quarry Rock (applicant): $30,000. Quarry Rock 6"-24" dia. for release channel enlargement and crossings along treated reaches of main canal. This value was determined through engineer cost estimate and initial quotes from prospective contractors/suppliers for 1200 cubic yards @ $40.00 yard. Total estimated cost is $48,000. Federal cost share is being asked to provide $0.

Delivered base/Engineered Streambed Material (ESM) (applicant): $32,000. Engineered Streambed Material (ESM) – 6" dia. to fine sand. This value was determined through engineer cost estimate and initial quotes from prospective contractors/suppliers for 36000 cubic yards @ $12.00 yard. Total estimated cost is $432,000. Federal cost share is being asked to provide $100,000.

Office/Office Equipment Lease (applicant): $7,200. Includes lease of office space and office equipment including phone, fax, computer, and copier for an estimated 50 months with a combined monthly rate of $200 per month. Total estimated cost is $10,000. Federal cost share is being asked to provide $0.

Materials and Supplies (leverage): $1,300,000

Canal lining material (leverage): $1,200,000. Cost for selected material to line and/or pipe identified sections where significant loss occurs. Total estimated cost is $2,333,700 for 41000 ft. at $57/ft. This value was determined through engineer cost estimate and initial quotes from prospective contractors/suppliers. Federal cost share is being asked to provide $300,000.

Delivered base/Engineered Streambed Material (ESM) (leverage): $100,000. Engineered Streambed Material (ESM) – 6" dia. to fine sand. This value was determined through engineer cost estimate and initial quotes from prospective contractors/suppliers for 36000 cubic yards @ $12.00 yard. Total estimated cost is $432,000. Federal cost share is being asked to provide $100,000.

Contractual: Contractual line items include all work to be performed by sub-contractors to the Applicant. Description of specific work products is broken down into the following line items.

Contractual (Federal): $462,000

Mobilization/set up (federal): $33,000. Contractor line item includes move in/out of materials/equipment required for the project. Includes move in/out of equipment, trailer pumps, and rental equipment delivery/return. Line item also includes job site set-up including toilets and field office site. Total estimated cost is $81,000. This value was determined through engineer cost estimate and initial quotes from prospective contractors. Federal cost share is being asked to provide $33,000.

Main Canal Excavation (federal): $70,000. Contractor duties under this line item include all excavation tasks related to the project. Specifically tasks related to dewatering, excavation and prep work to shape channel for treatment. Total estimated cost is $280,000. This value was determined through engineer cost estimate and initial quotes from prospective contractors at $1,400/ft. for 200 ft. Federal cost share is being asked to provide $70,000.

Dwinnell Release Channel Excavation (federal): $0. Contractor duties under this line item include all excavation tasks related to expanding the cross canal for increased releases to the Shasta River. Specifically tasks related to dewatering, excavation, bank armoring installation, riparian planting and back fill. Total estimated cost is $112,000. This value was determined through engineer cost estimate and initial quotes from prospective contractors at $1400/ft for 80 ft. Federal cost share is being asked to provide $0.

Canal Lining Installation (federal): $200,000. This line item includes lining or piping the canal as prescribed by the design team through the treatment sites. Total estimated cost is $1,640,000. This value was determined through engineer cost estimate and initial quotes from prospective contractors who estimated $40/ft. for 41000 ft. of boring. Federal cost share is being asked to provide $200,000.

Electrical (federal): $0. Included duties including installation of gauging incorporation, pump components retrofitting and real time links. Total estimated cost is $37,000. This value was determined through cost estimate. Federal cost share is being asked to provide $0.

Engineering (federal): $21,000 Designing engineer, Joey Howard, is retained to provide design, technical oversight, provide clarification, make in-field adjustments, make routine field visits, be present during installation of critical phases and provide as-built designs and survey at project completion. Total estimated cost is $131,000. This value was determined through engineer cost estimate. Federal cost share is being asked to provide $21,000.

Environmental Compliance (federal): $60,000. Professionals including, legal assistance consulting engineers and hydrologist will be used to acquire necessary permitting and environmental review for the project. Total estimated cost is $368,000. This value was determined through cost estimate. Federal cost share is being asked to provide $60,000.

Project Coordination (federal): $36,000. Prime contractor to MWCD, Gary Black, will be the project lead and will provide the following tasks: Coordinate sub-contractors, agency coordination, permitting, project schedule adjustment, sub-contractor review, materials sourcing and selection, instream dedication approval, purchasing and engineering coordination. Total estimated cost is $110,000. This value was determined through engineer cost estimate. Federal cost share is being asked to provide $36,000.

Laborer (federal): $10,000. Sub-contracted labor will be used to supplement other sub-contracted tasks including, pipe installation, dewatering. Total estimated cost is $49,500. This value was determined through engineer cost estimate and estimated 150 work days @ $330 a day. Federal cost share is being asked to provide $10,000.

Materials delivery (federal): $0. Sub-contracted duties of materials delivery includes delivery of standard materials such as pipe, rock/fill other then RSP and ESM, and base. Total estimated cost is $38,400. This value was determined through engineer cost estimate. Federal cost share is being asked to provide $0.

Dewatering (federal): $0. Dewatering sub-contractor will provide continued dewatering services including continual pump maintenance/operation, water quality protection measures, and development/reconfiguration of dewatering infrastructure. May also require installation of shallow wells to pump hyper-reheric water. Total estimated cost is $18,000. This value was determined through engineer cost estimate and initial quotes from perspective contractors. Federal cost share is being asked to provide $0.

Project Monitoring (federal): $12,000. Sub-contractor duties will include pre and post monitoring of project conditions to determine change and effectiveness of project. Duties include: monitoring inline meters and stream flow gage. Total estimated cost is $46,000. This value was determined through engineer cost estimate and initial quotes from perspective contractors. Federal cost share is being asked to provide $12,000.

Access and Maintenance (federal): $20,000. Sub-contractor duties include working with MWCD and neighboring property owners to maintain the access road. Duties include routine grading and watering of the road. Total estimated cost is $50,000. This value was determined through engineer cost estimate and initial quotes from perspective contractors. Federal cost share is being asked to provide $20,000.

Contractual (Non-Federal): $989,000

Mobilization/set up (non-federal): $40,000. Contractor line item includes move in/out of materials/equipment required for the project. Includes move in/out of equipment, trailer pumps, and rental equipment delivery/return. Line item also includes job site set-up including toilets and field office site. Total estimated cost is $81,000. This value was determined through engineer cost estimate and initial quotes from prospective contractors. Federal cost share is being asked to provide $33,000.

Main Canal Excavation (non-federal): $140,000. Contractor duties under this line item include all excavation tasks related to the project. Specifically tasks related to dewatering, excavation and prep work to shape channel for treatment. Total estimated cost is $280,000. This value was determined through engineer cost estimate and initial quotes from prospective contractors at $1,400/ft. for 200 ft. Federal cost share is being asked to provide $70,000.

Dwinnell Release Channel Excavation (non-federal): $112,000. Contractor duties under this line item include all excavation tasks related to expanding the cross canal for increased releases to the Shasta River. Specifically tasks related to dewatering, excavation, bank armoring installation, riparian planting and back fill. Total estimated cost is $112,000. This value was determined through engineer cost estimate and initial quotes from prospective contractors at $1400/ft. for 80 ft. Federal cost share is being asked to provide $0.

Canal Lining Installation (non-federal): $260,000. This line item includes lining or piping the canal as prescribed by the design team through the treatment sites. Total estimated cost is $1,640,000. This value was determined through engineer cost estimate and initial quotes from prospective contractors who estimated $40/ft. for 41000 ft. of boring. Federal cost share is being asked to provide $200,000.

Engineering (non-federal): $60,000 Designing engineers, Joey Howard,, are retained to provide design, technical oversight, provide clarification, make in-field adjustments, make routine field visits, be present during installation of critical phases and provide as-built designs and survey at project completion. Total estimated cost is $131,000. This value was determined through engineer cost estimate. Federal cost share is being asked to provide $21,000.

Environmental Compliance (non-federal): $293,000. Professionals including, legal assistance consulting engineers and hydrologist will be used to acquire necessary permitting and environmental review for the project. Total estimated cost is $368,000. This value was determined through cost estimate. Federal cost share is being asked to provide $60,000.

Project Coordination (non-federal): $20,000. Prime contractor to MWCD, Gary Black, will be the project lead and will provide the following tasks: Coordinate sub-contractors, agency coordination, permitting, project schedule adjustment, sub-contractor review, materials sourcing and selection, instream dedication approval, purchasing and engineering coordination. Total estimated cost is $110,000. This value was determined through engineer cost estimate. Non-Federal cost share is being asked to provide $36,000.

Laborer (non-federal): $10,000. Sub-contracted labor will be used to supplement other sub-contracted tasks including, pipe installation, dewatering. Total estimated cost is $49,500. This value was determined through engineer cost estimate and estimated 150 work days @ $330 a day. Federal cost share is being asked to provide $10,000.

Materials delivery (non-federal): $20,000. Sub-contracted duties of materials delivery includes delivery of standard materials such as pipe, rock/fill other than RSP and ESM, and base. Total estimated cost is $38,400. This value was determined through engineer cost estimate. Federal cost share is being asked to provide $0.

Dewatering (non-federal): $14,000. Dewatering sub-contractor will provide continued dewatering services including continual pump maintenance/operation, water quality protection measures, and development/reconfiguration of dewatering infrastructure. May also require installation of shallow wells to pump hyper-reheric water. Total estimated cost is $18,000. This value was determined through engineer cost estimate and initial quotes from perspective contractors. Federal cost share is being asked to provide $0.

Project Monitoring (non-federal): $10,000. Sub-contractor duties will include pre and post monitoring of project conditions to determine change and effectiveness of project. Duties include: monitoring inline meters and stream flow gage. Total estimated cost is $46,000. This value was determined through engineer cost estimate and initial quotes from perspective contractors. Federal cost share is being asked to provide $12,000.

Access and Maintenance (non-federal): $10,000. Sub-contractor duties include working with MWCD and neighboring property owners to maintain the access road. Duties include routine grading and watering of the road. Total estimated cost is $50,000. This value was determined through engineer cost estimate and initial quotes from perspective contractors. Federal cost share is being asked to provide $20,000.

Contractual – Applicant: $300,500

Mobilization/set up (applicant): $8,000. Contractor line item includes move in/out of materials/equipment required for the project. Includes move in/out of equipment, trailer pumps, and rental equipment delivery/return. Line item also includes job site set-up including toilets and field office site. Total estimated cost is $81,000. This value was determined through engineer cost estimate and initial quotes from prospective contractors. Federal cost share is being asked to provide $33,000.

Canal Lining Installation (applicant): $180,000. This line item includes lining or piping the canal as prescribed by the design team through the treatment sites. Total estimated cost is $1,640,000. This value was determined through engineer cost estimate and initial quotes from prospective contractors who estimated $40/ft. for 4100 ft. of boring. Federal cost share is being asked to provide $200,000.

Engineering (applicant): $20,000. Designing engineer, Joey Howard, is retained to provide design, technical oversight, provide clarification, make in-field adjustments, make routine field visits, be present during installation of critical phases and provide as-built designs and survey at project completion. Total estimated cost is $131,000. This value was determined through engineer cost estimate. Federal cost share is being asked to provide $21,000.

Environmental Compliance (applicant): $15,000. Professionals including, legal assistance consulting engineers and hydrologist will be used to acquire necessary permitting and environmental review for the project. Total estimated cost is $368,000. This value was determined through cost estimate. Federal cost share is being asked to provide $60,000.

Project Coordination (applicant): $30,000. Prime contractor to MWCD, Gary Black, will be the project lead and will provide the following tasks: Coordinate sub-contractors, agency coordination, permitting, project schedule adjustment, sub-contractor review, materials sourcing and selection, purchasing and engineering coordination, permitting and approvals. Total estimated cost is $110,000. This value was determined through engineer cost estimate. Federal cost share is being asked to provide $36,000.

Laborer (applicant): $9,500. Sub-contracted labor will be used to supplement other sub-contracted tasks including, pipe installation, dewatering and backfill. Total estimated cost is $49,500. This value was determined through engineer cost estimate and estimated 150 work days @ $330 a day. Federal cost share is being asked to provide $10,000.

Materials delivery (applicant): $12,000. Sub-contracted duties of materials delivery includes of standard materials such as pipe, sand and base. Total estimated cost is $38,400. This value was determined through engineer cost estimate. Federal cost share is being asked to provide $0.

Dewatering (applicant): $4,000. Dewatering sub-contractor will provide continued dewatering services including continual pump maintenance/operation, water quality protection measures, and development/reconfiguration of dewatering infrastructure. May also require installation of shallow wells to pump hyper-reheic water. Total estimated cost is $18,000. This value was determined through engineer cost estimate and initial quotes from perspective contractors. Federal cost share is being asked to provide $0.

Project Monitoring (applicant): $12,000. Sub-contractor duties will include pre and post monitoring of project conditions to determine change and effectiveness of project. Duties include: monitoring inline meters and stream flow gage. Total estimated cost is $46,000. This value was determined through engineer cost estimate and initial quotes from perspective contractors. Federal cost share is being asked to provide $12,000.

Access and Maintenance (applicant): $10,000. Sub-contractor duties include working with MWCD and neighboring property owners to maintain the access road. Duties include routine grading and watering of the road. Total estimated cost is $50,000. This value was determined through engineer cost estimate and initial quotes from perspective contractors. Federal cost share is being asked to provide $20,000.

Contractual (Leverage): $1,209,400

Main Canal Excavation (leverage): $70,000. Contractor duties under this line item include all excavation tasks related to the project. Specifically tasks related to dewatering, excavation and prep work to shape channel for treatment. Total estimated cost is $280,000. This value was determined through engineer cost estimate and initial quotes from prospective contractors at $1,400/ft. for 200 ft. Federal cost share is being asked to provide $70,000.

Canal Lining Installation (leverage): $1,000,000. This line item includes lining or piping the canal as prescribed by the design team through the treatment sites. Total estimated cost is $1,640,000. This value was determined through engineer cost estimate and initial quotes from prospective contractors who estimated $40/ft. for 41000 ft. of boring. Federal cost share is being asked to provide $200,000.

Electrical (leverage): $37,000. Included duties including installation of gauging incorporation, pump components retrofitting and real time links. Total estimated cost is $37,000. This value was determined through cost estimate. Federal cost share is being asked to provide $0.

Engineering (leverage): $30,000 Designing engineer, Joey Howard, is retained to provide design, technical oversight, provide clarification, make in-field adjustments, make routine field visits, be present during installation of critical phases and provide as-built designs and survey at project completion. Total estimated cost is $131,000. This value was determined through engineer cost estimate. Federal cost share is being asked to provide $21,000.

Project Coordination (leverage): $24,000. Prime contractor to MWCD, Gary Black, will be the project lead and will provide the following tasks: Coordinate sub-contractors, agency coordination, permitting, project schedule adjustment, sub-contractor review, materials sourcing and selection, instream dedication approval, purchasing and engineering coordination. Total estimated cost is $110,000. This value was determined through engineer cost estimate. Federal cost share is being asked to provide $36,000.

Laborer (leverage): $20,000. Sub-contracted labor will be used to supplement other sub-contracted tasks including, pipe installation, dewatering. Total estimated cost is $49,500. This value was determined through engineer cost estimate and estimated 150 work days @ $330 a day. Federal cost share is being asked to provide $10,000.

Materials delivery (leverage): $6,400. Sub-contracted duties of materials delivery includes delivery of standard materials such as pipe, rock/fill other than RSP and ESM, and base. Total estimated cost is $38,400. This value was determined through engineer cost estimate. Federal cost share is being asked to provide $0.

Project Monitoring (leverage): $12,000. Sub-contractor duties will include pre and post monitoring of project conditions to determine change and effectiveness of project. Duties include: monitoring inline meters and stream flow gage. Total estimated cost is $46,000. This value was determined through engineer cost estimate and initial quotes from perspective contractors. Federal cost share is being asked to provide $12,000.

Access and Maintenance (leverage): $10,000. Sub-contractor duties include working with MWCD and neighboring property owners to maintain the access road. Duties include routine grading and watering of the road. Total estimated cost is $50,000. This value was determined through engineer cost estimate and initial quotes from perspective contractors. Federal cost share is being asked to provide $20,000.

Other:

Other (Federal): $65,000

Permitting/approvals (federal): $0. Includes cost for 1600 permit for MWCD, NEPA review. Total estimated cost is $20,000.These costs are determined through CDFG Stream Alteration billing schedule and estimated CEQA final review and potential minor additions. Federal cost share is being asked to provide $0.

Insurance and bonds (federal): $0. Includes increased liability insurance and potential additional special district bonding for applicant. Total estimated cost is $21,000. Federal cost share is being asked to provide $0.

Administrative Costs (federal): $65,000. Estimated to total 7.3% of the costs, administrative duties include: contracting, audits, agency coordination, invoicing, making payments and progress report development. Total estimated cost is $220,000. Includes sub-contracting to CPA and accounting entities in addition to additional staffing requirements for the district. Federal cost share is being asked to provide $65,000.

Other (Non-Federal): $60,000

Permitting/approvals (non-federal): $10,000. Includes cost for 1600 permit for MWCD, NEPA review. Total estimated cost is $20,000.These costs are determined through CDFG Stream Alteration billing schedule and estimated CEQA final review and potential minor additions. Federal cost share is being asked to provide $0.

Administrative Costs (non-federal): $50,000. Estimated to total 7.3% of the costs, administrative duties include: contracting, audits, agency coordination, invoicing, making payments and progress report development. Total estimated cost is $220,000. Includes sub-contracting to CPA and accounting entities in addition to additional staffing requirements for the district. Federal cost share is being asked to provide $65,000.

Other (Applicant): $54,000

Permitting/approvals (applicant): $10,000. Includes cost for 1600 permit for MWCD, NEPA review. Total estimated cost is $20,000.These costs are determined through CDFG Stream Alteration billing schedule and estimated CEQA final review and potential minor additions. Federal cost share is being asked to provide $0.

Insurance and bonds (applicant): $9,000. Includes increased liability insurance and potential additional special district bonding for applicant. Total estimated cost is $21,000. Federal cost share is being asked to provided $0.

Administrative Costs (applicant): $35,000. Estimated to total 7.3% of the costs, administrative duties include: contracting, audits, agency coordination, invoicing, making payments and progress report development. Total estimated cost is $220,000. Includes sub-contracting to CPA and accounting entities in addition to additional staffing requirements for the district. Federal cost share is being asked to provide $65,000.

Other (Leverage): $82,000

Insurance and bonds (leverage): $12,000. Includes increased liability insurance and potential additional special district bonding for applicant. Total estimated cost is $21,000. Federal cost share is being asked to provided $0.

Administrative Costs (leverage): $70,000. Estimated to total 7.3% of the costs, administrative duties include: contracting, audits, agency coordination, invoicing, making payments and progress report development. Total estimated cost is $220,000. Includes sub-contracting to CPA and accounting entities in addition to additional staffing requirements for the district. Federal cost share is being asked to provide $65,000.

Total Direct Charges (federal):	**$975,000**
Total Direct Charges (non-federal):	**$2,265,500**
Total Direct Charges (applicant):	**$435,700**
Total Direct Charges (leverage):	**$2,591,400**
Total Project Cost:	**$6,267,600**