

Malott Tail Water Recovery Project

WaterSMART Water and Energy Efficiency Grant Proposal January 19, 2012

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Technical Proposal

Executive Summary:

January 19, 2012

Central Oregon Irrigation District

Office Location: Redmond, Deschutes County, Oregon

Project Location: Powell Butte, Crook County, Oregon

Central Oregon Irrigation District (COID) proposes a project that will build a retention system to recapture irrigation and tail water run-off and storm water run-off in an area of Powell Butte, Crook County, Oregon, and reuse this water in an improved irrigation system to decrease the amount of water delivered by COID for the current flood irrigation system. In addition to improving irrigation efficiency, the Project will significantly reduce irrigation, tail water, and storm water run-off that enters the Dry Canyon area of Powell Butte and then enters the Lower Crooked River north of Powell Butte. The Dry Canyon location on the Crooked River has been designated as a non-point source of pollution by the Oregon Department of Environmental Quality and reducing these waters will decrease water quality concerns such as temperature, pollutants, and turbidity; thereby making the Lower Crooked River waters more viable for reintroduced steelhead (an ESA listed species). The Project is a multi-party project that includes COID, the land owner where the retention system and irrigation system will be installed, Crook County Soil and Water Conservation District, and Crooked River Watershed Council. COID will be responsible for the installation of the retention system and assisting with the installation of the pipe for the new irrigation system. Funding from this proposal will be used towards the cost of building the retention structure and a small amount of labor for the pipe installation. COID will have a 50% match on its portion of the Project through in-kind work and COID secured capital funds. Through the process of building a retention system to reuse run-off waters, this Project falls under the **Task A – Water Conservation** category, and by eliminating run-off waters from entering the Crooked River, this Project falls under the **Task C – Benefits to Endangered Species** category.

Background Data:

Project:

COID's *Malott Tail Water Recovery Project* (Project) is located in T 15 S, R 15 E, S 19; Crook County, in the small farming community of Powell Butte, Oregon. The Project site is located on one of COID's patron's properties that are served from the District's main Central Oregon Canal (COC). The entire Project will consist of the following:

1. Retention system to capture tail water run-off and storm water run-off.
 - a. The system will include collection and distribution sites that will prevent run-off from entering the Dry Canyon and allow reuse for the landowner's irrigation system.
2. Up-to-date, efficient irrigation system that will include an energy-efficient pump, irrigation pipe, sprinklers, and pivots.

The installation of a retention system will include collection ditches and a retention "pond" that will hold the collected water. An up-to-date, energy efficient pump will be installed in the pond that will allow the landowner to pump from the retention pond back up to higher grounds through irrigation pipe, allowing him to sprinkle or flood his lands with this water for crops and pasture. Any run-off from this process will be recaptured and disbursed through the system again. By building this system in, water will be collected for reuse, thus allowing COID to deliver less irrigation water from its conveyance system to the landowner for irrigation purposes (measurable at each headgate that delivers to all the properties involved); and the retention pond will stop water run-off from entering the Dry Canyon and therefore, stop the water's eventual reach to the Lower Crooked River at the Dry Canyon/Crooked River confluence. The benefits of stopping this water from entering the Dry Canyon and Lower Crooked River (ODEQ designated non-point source) include improving water quality issues and fish habitat. Some of the water quality issues that will be addressed with this Project are potential temperature increases, increased turbidity, and potential pollutant discharge into the Dry Canyon and Lower Crooked River. By addressing these issues through allowing less water to run-off into the Dry Canyon and Lower Crooked River, the fish habitat would be improved, creating a healthier environment for the reintroduced steelhead in the Lower Crooked River.

The Project is currently scheduled to begin after the end of the 2012 irrigation season (mid-October – early November 2012). All post-Project activities, including post-Project monitoring and sign-ups for landowners interested in completing similar projects, are expected to conclude by December 2017. The Project area is located 5 miles east of Powell Butte and south of Highway 126 in the county of Crook, in T 15 S, R 15 E, S 19, on the Malott Ranch. The Malott Ranch encompasses 467.1 acres of land that sits approximately 6 miles from the Dry Canyon and has 434.9 acres of irrigation water rights that are currently flood irrigated. The Ranch produces hay, grass, pasture land, and cattle. **See Figure 1 below for a map of the project area and Exhibit A for a full page map of the project area.**

*Malott Tail Water Recovery Project
Central Oregon Irrigation District – 2012 WaterSMART Grant Proposal*

Topography and irrigation activities primarily associated with the Malott Ranch and some portions of adjoining irrigated properties, result in upland irrigation tail water run-off that can noticeably contribute to the Dry Canyon flows. It is estimated that at peak times, more than 2,500 gallons per minute (1,989 AF per irrigation season) can leave the project area in one concentrated flow. Upon completion of the Project, the recycled water will be used in an efficient sprinkler irrigation system that will include a 1,000 foot pivot and six big gun sprinklers serviced by mainline. This will have a dual effect on reducing the total amount of tail water collected and leaving the property. First, the amount of water released from the COID diversion points onto the property will be reduced; and second, a portion of the tail water that is about to leave the property will be recycled and reused. It is estimated that the proposed Project will lower the peak tail water exiting the property by 1,500 gallons per minute (1,193 AF per irrigation season).

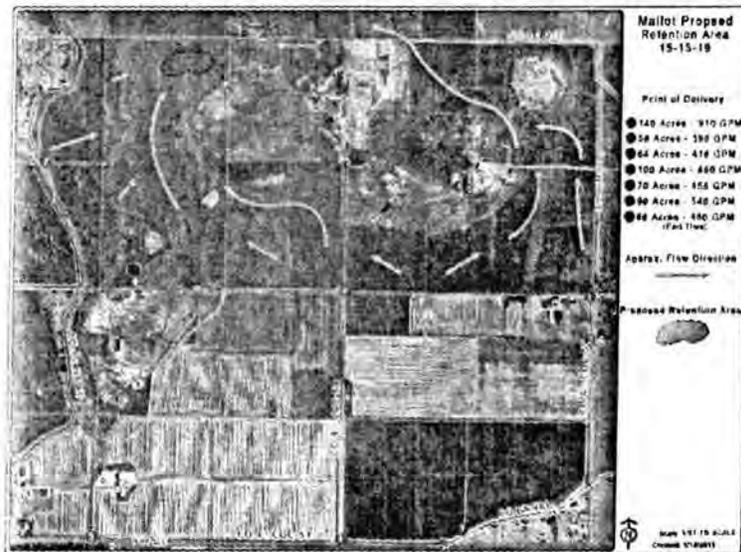


Figure 1: Malott Tail Water Recovery Project Map

The water for the COC is diverted from the Deschutes River south of downtown Bend at Brookswood Blvd. The COC then delivers water east and north to District water users in the eastern reaches of Bend, through Alfalfa, and Powell Butte. The main use of the District's water is for irrigation purposes, with a small amount allocated for municipal and industrial purposes, and its patrons' main use of irrigation is for hay, pasture, specialty crops such as mint, and landscaping in these areas. The District's infrastructure consists of two main canals and many laterals and sub-laterals branching off of each canal spanning over 400 miles in total length. 43,761.027 acres of water rights are delivered to a total of 3,720 deliveries. The COC alone is a 46.8-mile long canal, with multiple laterals and sub-laterals branching off of it, which serves a

total of 25,282.481 acres of water to the District's 1,876 deliveries on the COC. As things continue to change and communities grow in Central Oregon, the demand for irrigation water and COID's services is expected to maintain the same level of demand on each of its canals. Because of COID being the senior water right holder on the Deschutes River, second only to Swalley Irrigation District, it is not anticipated that there will be any potential shortfalls in water supply in the future.

At present, the District operates 2 main canals using water from the Deschutes River. The Central Oregon Canal serves the areas of Alfalfa, Bend, and Powell Butte; and the Pilot Butte Canal serves the areas of Bend, Redmond, and Terrebonne. The COC is mainly an unlined open canal running 46.8 miles in length, much of it running through heavily fractured basalt, and delivering 25,282.481 acres of water rights for a total of 76,776 cfs (152,017 AF) over 187 days in 2011. There are numerous laterals and sub-laterals that branch off of the main COC throughout the entire system to serve its Bend, Alfalfa, and Powell Butte deliveries. There is a portion of one lateral in Bend (C-1) that was piped in 2008 to conserve water and more efficiently deliver water to those deliveries that this lateral serves. All of the conserved water from this piping project was marketed to and permanently instreamed to the Middle Deschutes River through the Deschutes River Conservancy and the Deschutes Water Alliance Water Bank.

The Project site is located east of the Deschutes River and south of the Lower Crooked River in the Dry River Watershed, also known to locals as Dry Canyon or Dry Creek, in Crook County, Powell Butte, Oregon. The Dry River Watershed encompasses the entire Powell Butte Valley and several thousand acres of high-desert rangelands. The Powell Butte Valley once consisted of a small number of large acreage, productive farms, and ranches; but now consists of hundreds of small acreage farms and ranchettes. The Valley has been productive farmland in Crook County for decades, growing high-value crops such as potatoes, mint, garlic, sugar beets, etc. Now the most common crops consist of pastureland, grass hay, alfalfa, and wheat. Due to its plentiful rangelands and crop production, Powell Butte has always been home to large numbers of livestock including horses, cattle, and sheep. The soils of the Dry Canyon Watershed are mostly clay soils with poor percolation, shallow depths, a significant basalt layer, and are highly impermeable.

Historically, heavy rainstorm events, excessive snowmelt runoff, and intermittent springs have contributed to the Dry River flows, and continue to do so today. Over the last century, irrigation tail water from the Powell Butte agricultural lands adjacent to and up-drainage of the canyon has contributed to the flows during the irrigation season (April – October). There is periodic off-season (November – March) flow for livestock use that also contributes to canyon flows during those brief intervals. Most of this watershed is serviced by COID, transferring water from the Deschutes River Watershed to the Crooked River Watershed. The flows from the Dry River eventually reach and enter the Lower Crooked River. The topography, floodwater distribution, shallow hard pan soils (impermeable soils), and historic grazing management throughout the valley have helped contribute to the tail water run-off that enters Dry Creek Canyon. This tail water has created water quality concerns such as potential temperature increases, increased turbidity, and possible bacteria and/or potential pollutant discharge into Dry Creek Canyon. The health and habitat of downstream users such as the reintroduced steelhead in the Lower Crooked

River could be affected by these water resource issues (*Crook County Soil and Water Conservation District OWEB grant application for Malott Tail Water Recovery Project*).

In addition, the Oregon Department of Environmental Quality (DEQ) has notified COID that the Dry Canyon confluence of the Crooked River has been designated as a non-point source of pollution. Parameters of concern cited by DEQ include elevated temperatures, turbidity, and dissolved oxygen. Since DEQ's notification of the non-point source designation, the District has actively pursued cooperative water retention and reuse projects with landowners up-canyon to reduce flows that potentially enter the canyon.

Legacy shows that the Lower Crooked River once sustained a diverse population of fish species including summer steelhead trout. Due to the construction of several dams, including that of the Pelton Round Butte complex on the Deschutes River, certain migratory fish have been denied passage. For decades the Lower Crooked River has not seen the presence of native returning steelhead. Now, years later and after several collaborative efforts of both private and public bodies, the Pelton Dam Project was designed and implemented. The Pelton Dam Project was completed in 2007, which created sufficient passage and population reconnection for several fish species including bull trout and redband trout. In 2008, with continued efforts by local agencies (i.e. ODFW) and private parties (i.e. Portland General Electric) the reintroduction of summer steelhead trout to the Lower Crooked River became a reality. Current environmental regulations, including water quality requirements, draw attention to the Dry Canyon flows and to the Dry Canyon – Lower Crooked River confluence location, which in turn could greatly affect the fish habitat for these reintroduced steelhead trout, returning bull trout, and native redband trout (*Lower Crooked River Watershed Assessment*).

The Malott Tail Water Recovery Project has a large shared interest and connection with several local agency partners: ODFW, OWRD, COID, Crook County Soil and Watershed Conservation District, Oregon State University Extension, and Crooked River Watershed Council. The Project also has a direct management relationship to achieve irrigation efficiency, tail water recovery, tail water recycling, sediment reduction, overland flow reduction, and overall reduction of potential water quality pollutants within the watershed. All partners involved have been waiting for the opportune time to implement a Project such as this one that will demonstrate the importance of tail water recovery in the Powell Butte/Dry River watershed. The District has been successful working with landowners over the past few years on building retention structures for reuse of captured water on their properties. This project is a continuation of that approach.

Relationships with Reclamation:

COID has a long-standing relationship with Reclamation beginning with the Deschutes Project authorization and construction of Crane Prairie Reservoir in 1938, of which COID is the manager and operator, and interacts with local and regional Reclamation offices in that capacity. COID has conducted several piping projects on our canals and laterals over the decades with Reclamation funds, and Water Conservation Field Services Program funds. The most recent piping projects in conjunction with Reclamation funds include the Juniper Ridge piping on the PBC north of Bend completed April 2010, the H-14 and H-14-1 laterals off the PBC in Terrebonne in 2005, and the C-1 lateral in Bend off the COC completed March 2009. The

District has also been awarded Reclamation grants from the Water 2025 program in 2004, 2006, and 2008. The original grant in 2004 assisted COID and other basin stakeholders in creating a regional water planning body named the Deschutes Water Alliance. That same grant also provided for the formulation of a pilot water bank, now called the Deschutes Water Alliance Water Bank, that was and is still one of the few water banks in the country that facilitate permanent as well as temporary water transfers. The subsequent Water 2025 grants were for finalization of the water bank, and then for a basin-wide, multi-irrigation district field conservation study and installation of telemetry stations to better monitor the flows and losses of the canals and laterals throughout the District and basin. Another grant was issued to COID in 2007/2008 through a field technology improvements grant for field computers so that personnel including ditchriders and the District Watermaster are able to have access to COID maps and aerial photos while in the field, as well as their weir books and rotation schedules in electronic format. Water Conservation Field Services Program funds were also awarded to COID for the installation of ramp flumes throughout the District in 2005/2006, and for a water management and telemetry action plan from 2007 - 2009. In addition to COID receiving Reclamation funding for improvements to the District and to be able to conserve water through the DWA Water Bank, COID has also received Water 2025 funds in conjunction with the DRC, DWA, and DWA Water Bank for various projects related to the Deschutes Basin, water conservation, and water marketing.

A major COID project accomplished with financial assistance from Reclamation involved the replacement of an 820 cfs capacity 1.5 mile long wooden flume with a 10' diameter steel pipe in the early 1970s. This pipe became instrumental in not only providing for a much safer and secure facility for COID and its patrons, but also ended up becoming the backbone structure for the construction by COID of a 5.5 MW hydro-electric facility in the late 1980s. COID has owned and operated this facility under FERC license since 1989.

Another major COID project accomplished with financial assistance from Reclamation is the Juniper Ridge Hydropower & Piping Project briefly mentioned above. This project consisted of piping approximately 2.50 miles of the PBC with 9 foot diameter steel pipe and the installation of a hydropower plant consisting of one 5 MW turbine and generator at the north end of the pipe. The plant will produce 3.4 MWH of electricity at the start of its operations, which went on-line September 2010 for final testing and began full season production in the 2011 irrigation season. The plant will generate approximately 13 million kilowatt hours of renewable energy throughout each irrigation season. Through future phases of additional piping of the PBC, it is estimated that 10 cfs per mile (3,782 AF per year) of additional piped canal will be conserved and permanently instreamed through the DWA Water Bank. A maximum of 4 additional miles added to the south end of this project (upstream) is planned to be piped within the next 10 – 20 years, with 1 mile to be completed within 5 years of the completion of this Project. In addition to the conserved water created by the additional sections of pipe, more head will be captured for increased renewable energy through the hydropower plant up to 5 MWH. COID anticipates seeking funding assistance for future phases of piping on this project from Reclamation. COID will own and operate this facility under FERC license.

Project Description:

Currently COID delivers 400+ acres of irrigation water to the Malott Ranch and surrounding irrigated lands each irrigation season (April – October). The majority of these lands have historically been and are currently flood irrigated due to the ever-increasing costs to upgrade to more efficient sprinkler systems. Due to the less efficient irrigation methods in this area and the highly impermeable basalt layered lands, there is a large amount of tail water run-off that leaves the Project area and enters the Dry Canyon – estimated at peak times to be greater than 2,500 gallons per minute (1,989 AF per irrigation season) in the Project area in one concentrated flow. Because of the topography of the land and the tendency for large, heavy thunderstorms to frequent the area in the summer months, there is also significant storm water run-off during these times that leaves the Project area and enters the Dry Canyon.

The purpose of this Project is to capture the tail water and storm water run-off in a retention structure to be recycled and reused in a more efficient sprinkler irrigation system, reduce the amount of water needed to be delivered by COID to the Malott Ranch, and reduce the amount of run-off that reaches the Dry Canyon and Lower Crooked River. It is estimated that this proposed Project will lower the peak tail water run-off that exits the property by 1,500 gallons per minute (1,193 AF per irrigation season).

There are a number of important issues that the Project will address upon its completion.

- Excessive tail water and storm water run-off that enters neighboring property, the Dry Creek Canyon, and the Lower Crooked River.
 - *The flow of water distribution due to flood irrigation characteristics, impermeable soils, land management, and topography causes the run-off to naturally drain to the Dry Creek Canyon and thus into the Crooked River.*
- Inefficient use of COID water.
 - *Inefficient use is, in effect, due to insufficient funds that have been available to the land owner in the past to purchase an efficient irrigation system.*
- Water quality concerns within the steelhead habitat areas of the Lower Crooked River.
 - *The tail water and storm water run-off that enters the Dry Creek Canyon and Lower Crooked River are potentially increasing the temperatures of the water, turbidity, bacteria, nitrates, etc., thus decreasing the health of the steelhead habitat areas of the Lower Crooked River.*
- Elevated flows of a designated non-point source of pollution

The following is a breakdown of the main components of the proposed Project and a description of what is to be accomplished with each component. Also included in the description will be the entity or entities responsible for completing each component.

- **Construct tail water retention structure – COID**

- *There is currently a naturally low gradient area where the Malott's flood irrigation water drains to before leaving the property.*
- *Due to shallow soils, the retention structure will be constructed 2 feet below the surface and at a height of less than 6 – 8 feet using a tracked excavator and dump truck.*
- *A spillway will be constructed with a measuring flume and staff gage for tail water flow monitoring.*
- **Line holding basin with synthetic liner – COID**
 - *Due to the shallow, impermeable soils a synthetic liner will be placed in the deepened area of the holding basin to prevent piping of the water along the impermeable layer and under the retention structure.*
- **Install irrigation mainline pipe – COID & Malotts**
 - *A tracked excavator will perform earthwork of 6,700 feet of 3-foot trench to place 6" – 10" class 125 PVC and necessary fittings.*
- **Install volume and pressure pumps with electrical access – Malotts**
 - *There will be a 3-phase volume pump station placed at the tail water recovery site to transfer the recycled flood water to a distribution pond. The 3-phase pressurized pump system will be installed at the distribution pond where it will service the pivot and other sprinklers.*
- **Construct pivot and sprinklers – Malotts**
 - *A 1,000 foot radius pivot will be constructed at the most southern agricultural fields of the Malott Ranch. Big gun sprinklers will be used on areas where topography makes flood irrigation difficult and inefficient.*
- **Landowner planning – Crook County Soil and Water Conservation District & Malotts**
 - *Meet with land owners to develop and discuss revisions of grazing/farm management plans (using the NRCS Conservation Plan for Farms and Ranches), project coordination, and project designs/details.*
- **Pre-implementation monitoring – Crook County Soil and Water Conservation District & Crooked River Watershed Council**
 - *Locate and install water quality and flow monitoring sites before the flume, after the flume, on Dry Creek, and on the Lower Crooked River.*
 - *Photo points and GPS points will be taken of the key project areas.*
 - *Sites will be re-visited subsequent to project completion and in accordance with the monitoring plan for this Project.*
- **Construction management – Crook County Soil and Water Conservation District**
 - *The Project manager will be on-site for all construction activities to ensure that all aspects of the project design are progressing according to plan and to discuss any changes or modifications with COID and/or land owner.*
- **Post-implementation monitoring – Crook County Soil and Water Conservation District & Crooked River Watershed Council**

- Continue monitoring for 5 years after Project completion by taking photo points of completed key Project areas and write a post-project completion report.
- All aspects of the Project will be inspected by the engineer, Project manager, and COID to ensure all project elements were accomplished according to specifications.
- Crooked River Watershed Council and Project manager will install water sampling locations before the flume, after the flume, in the Dry Creek, and in the Lower Crooked River to conduct multi-parameter water quality sampling including temperature, flows, turbidity, bacteria, dissolved oxygen, etc.
- The measuring flume on Malott's structure and in the Dry Canyon above the Crooked River confluence will also be used to collect tail water flow data.
- **Demonstration project – COID, CCSWCD, CRWC, & Malotts**
 - The excess irrigation run-off is a concern to most land owners and natural resource agencies within the Powell Butte area. This Project will demonstrate the effectiveness of on-farm tail water recovery systems for the benefit of ALL those who use this water.

Following is a list of objectives for this Project broken down by key elements. Included are the methods that will be used to measure the success of each objective.

- **Spillway Flume with staff gage**
 - Reduction in tail water flow leaving the Malott property will be monitored through the flume using the staff gage.
 - Measurements will be taken in cubic feet per second (cfs) and compared to historical measurements to accurately calculate the reduction in tail water entering the Dry Canyon.
- **Retention structure**
 - The retention structure will capture and store irrigation and storm water run-off to redistribute as sprinkler irrigation and to slow flash storm flows that enter neighboring property.
 - The retention structure will be monitored to confirm that it is performing to its design expectations.
- **Pivots and pumps**
 - Utilizing pivots and pumps from the retention structure will reduce irrigation water consumption from COID's canal by 500 gallons per minute (398 AF per irrigation season) and the tail water that leaves the Malott property by up to 1,500 gallons per minute (1,193 AF per irrigation season).
 - Measurements for the water consumption will be determined through the flow rate of the nozzles and pumps.
- **Pre and post implementation water quality monitoring**

- *A series of pre-Project water samples and post-Project water samples will be taken before the recycled irrigation distribution site, directly after the site, within the Dry Canyon, and at the confluence of Dry Creek and the Lower Crooked River to demonstrate water quality before the Project and after the Project.*
- *Temperature, nitrates, phosphorous, E. coli, turbidity, etc. will be tested in all the samples collected.*
- **Pilot project**
 - *Use this Project to demonstrate its effectiveness and success on tail water reduction, recycling of tail water, irrigation efficiency, slowing storm water velocity, and key water quality concerns. This Project will also help to educate students at Powell Butte Charter school and provide awareness toward their natural resources curriculum.*
 - *Measurements of success will be based on feedback from local producers and other landowners that are interested in doing similar projects on their property, feedback from the annual Central Oregon Rancher Tradeshow where the Project will be presented, and the success of the natural resource education curriculum at the Powell Butte Charter School.*

The system design will be completed using USDA/NRCS design, construction, and materials specifications. The specifications include criteria for pipe installation, system pressure operation, and steel and PVC requirements. All USDA/NRCS design specifications are intended to provide system longevity and effectiveness.

The retention structure, measuring flume, and overflow structure will be designed to simultaneously accommodate maximum projected irrigation tail water run-off and large storm event run-off. The pumps and pipe will be used to meet the irrigation demands of the system.

Project design will be completed by a contracted engineering consultant that has a bachelor's degree in engineering and 8 years of irrigation system design experience. The engineering consultant chosen for the Project design also has USDA/NRCS Job Approval Authority for irrigation systems of this Project's nature.

Beginning Project design has been completed. The Project is scheduled to start in June 2012 with the final design work being completed, construction is scheduled to begin November 1, 2012, and post-Project activities will run through December 2017. Following is a breakdown of activities and the proposed schedule.

- **Final Project Design: June – July 2012**
 - *The landowner will contract with the engineering firm chosen to complete the final Project design. The final design will be approved by the Project manager, COID, and the landowner.*
- **Materials and Equipment Acquisition: August – October 2012**

- *The Project manager and landowner will purchase the liner, pipe, flume, electrical wiring, pumps, pivot, big gun sprinklers, fencing materials, and any other materials needed for Project completion.*
- **NEPA Review:** September – October 2012
 - *Cultural and biological professionals will be contracted to complete the required NEPA reviews for effects the Project may have on cultural and biological properties. Reports will be completed from the reviews and submitted to the appropriate Reclamation personnel for final approval to complete the Project.*
- **Project Construction:** November 1 – November 30, 2012
 - *COID, the Project engineer, and contractor construct the retention structure, 3-foot trench, pipe assembly, pump stations, and pivot installation. All construction and assembly will meet NRCS specifications.*
- **Project Inspection:** December 1 – December 31, 2012
 - *COID, the Project engineer, and Project manager will inspect all Project construction and installation of new irrigation system.*
- **Outreach and Education:** September 2012 – November 2017
 - *Crook County Soil and Water Conservation District will coordinate with the Malotts to give an informative presentation and educational Project tour during the annual Central Oregon Rancher Tradeshow.*
 - *Crook County Soil and Water Conservation District will work with Powell Butte Charter School for hands-on curriculum and field trips that identify natural resources and agriculture education within the community.*
- **Post-Project Implementation Review:** January 2013 – November 2017
 - *The Project manager will continue to monitor all aspects of the Project including the water quality monitoring for 5 years post Project completion.*
 - *Photo point monitoring, completion report, feedback, and yearly status reports of this Project will help COID and Crook County Soil and Water Conservation District determine future project possibilities and funding opportunities.*
- **Project Maintenance:** November 2012 – November 2017 (life of some equipment)
 - *COID will maintain the retention structure, flume and staff gage, and the tail water collection pipe. The landowner will repair and maintain the pivot, sprinklers, pump stations, and pipe.*
- **Post-Project Water Quality Monitoring:** December 2012 – December 2017
 - *Crooked River Watershed Council will conduct water quality monitoring at the water quality sampling locations located directly before and after the retention structure, at COID's Dry Canyon weir, and at the Dry Canyon – Lower Crooked River confluence. The collected samples will be compared to baseline indicators to determine the success of the Project in relation to the water quality concerns.*
- **On-Farm Tail Water Recovery Project Sign-ups:** March 2013 – December 2017

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- *Crook County Soil and Water Conservation District will continue to make landowner site visits and encourage other irrigation users to implement similar tail water recovery projects on property that lies within the Dry River Watershed.*

All construction work is scheduled to begin November 1, 2012. This date is pending the approval of Reclamation funds; and if funded by Reclamation, the completion of required NEPA tasks to receive the awarded Reclamation funds for the Project. Should NEPA work not be completed by this date, the construction schedule, Project inspection, post-Project implementation review, Project maintenance, and post-Project water quality monitoring will be rescheduled to the earliest dates possible that will comply with NEPA requirements.

Evaluation Criteria

Evaluation Criterion A: Water Conservation

Subcriterion # A.1 – Water Conservation:

Subcriterion # A.1(a) – Quantifiable Water Savings:

Describe the amount of water saved.

Currently COID delivers 400+ acres of irrigation water to the Malott Ranch and surrounding irrigated lands each irrigation season (April – October). There is a large amount of tail water run-off that leaves the Project area and enters the Dry Canyon – estimated at peak times to be greater than 2,500 gallons per minute (1,989 AF per irrigation season) in one concentrated flow. The purpose of this Project is to capture the tail water and storm water run-off in a retention structure to be recycled and reused in a more efficient sprinkler irrigation system, reduce the amount of water needed to be delivered by COID to the Malott Ranch, and reduce the amount of run-off that reaches the Dry Canyon and Lower Crooked River by 1,500 gallons per minute (1,193 AF per irrigation season).

This Project will reduce the landowner's irrigation water consumption from COID's canal by 398 AF per irrigation season. The 398 AF annual savings was calculated on 500 gallons per minute saved during a 180-day average COID irrigation season. The actual calculation used to compute this savings is as follows:

1,000 gpm for 24 hrs = 4.42 AF per day.

So, 500 gpm for 24 hrs = 2.21 AF per day.

2.21 AF/day x 180 days = 397.8 AF per season (rounded to 398 AF).

The District's infrastructure consists of two main canals and many laterals and sub-laterals branching off of each canal spanning over 400 miles in total length. 43,761.027 acres of water rights are delivered to a total of 3,720 deliveries. The COC is mainly an unlined open canal running 46.8 miles in length, much of it running through heavily fractured basalt, and delivering 25,282.481 acres of water rights to 1,876 deliveries for a total of 76,776 cfs (152,017 AF) over 187 days in 2011. The COC ends just prior to the Lower Crooked River, and the little remaining water is spilled at the end of the ditch; however due to the topography, a small amount of this water may return to Lower Crooked River. The COC is a unique conveyance system, as it draws its water from the Middle Deschutes River and returns any remaining water to the Lower Crooked River.

The delivery that serves the Malott Ranch (Project area) receives its water directly from the COC. Currently the water is delivered to the Malott Ranch for flood irrigation, and the tail water accumulates on one end of the Malott Ranch. It then runs down into the Dry Canyon,

and from there makes its way to the Lower Crooked River at the Dry Canyon/Lower Crooked River confluence.

Once the Project is complete and a delivery reduction of 398 AF per irrigation season to the Malott Ranch is realized, this amount of conserved water will stay in the COID delivery system on the COC to be utilized in other areas that currently are experiencing delivery hardships. When more projects like this one are completed in the future, COID will return the conserved water to the Deschutes River for permanent instream or to be utilized, as lawfully allowed, by junior water rights holder, North Unit Irrigation District.

(1) Canal Lining/Piping:

There is no canal lining or piping element to this Project.

(2) Municipal Metering:

There is no municipal metering element to this Project.

(3) Irrigation Flow Measurement:

There is no irrigation flow measurement element to this Project. Currently water that is delivered to the Malott Ranch (Project site) is measured at the weir. This Project does not propose changing any measuring devices at the point of delivery or changing the ways that the water being delivered is measured.

(4) SCADA and Automation:

There is no SCADA and automation element to this Project.

(5) Groundwater Recharge:

There is no groundwater recharge element to this Project.

(6) Landscape Irrigation Measures:

There is no landscape irrigation measures element to this Project.

(7) High-Efficiency Indoor Appliances and Fixtures:

There is no high-efficiency indoor appliances and fixtures element to this Project.

(8) Other Project Types:

How have average annual water savings estimates been determined? Based on studies done by the Crook County Soil and Water Conservation District, meetings with the Malotts on their ranch, and COID records of the water delivered to their ranch; it has been determined what the amount of COID irrigation water presently delivered to the Malott

property for flood irrigation purposes is, how much water is collected in the northwest portion of the Ranch from run-off, and how much water exits the Malott Ranch from the northwest portion and runs into the Dry Canyon. The Dry Canyon is a natural channel that carries water through the canyon and then flows into the Lower Crooked River. Preliminary design work has been done on this Project to determine the Malotts' needs to capture this tail water to not only make the northwest portion of their property more usable by removing all standing tail water that naturally occurs in this area, but also how to decrease the need on COID's water and the amount of water that exits the Malott property into the Dry Canyon, and eventually the Lower Crooked River.

Once the retention structure is complete and the new irrigation system is in place, the collected run-off will be reused in the new system for sprinkling areas that are difficult to flood irrigate successfully. By reusing the run-off waters in the new system, the Malott Ranch will realize a decreased need for COID delivered water, thus allowing COID to reduce the amount of water delivered to the Malotts for successful irrigation practices.

The expected reduction in irrigation water consumption from COID is to be 398 AF per year. Evaluation measurements will be taken through the flow rate of the sprinkler nozzles and pumps, and through the amount of water measured at the weir for delivery to the Malott Ranch. Post-Project weir readings will be compared with pre-Project weir readings to confirm the amount of water savings on the Malott Ranch.

If new technologies or devices are proposed, how will the savings occur? The *Malott Tail Water Recovery Project* is a pilot project for the Powell Butte area and COID. The concept of capturing tail water and storm water run-off for reuse has not been used before within the District. The landowner and COID have been working closely in conjunction with Crook County Soil and Water Conservation District and Crooked River Watershed Council for many years to devise a solution to be able to recycle and reuse the heavy tail water run-off and intermittent heavy storm water run-off to substantially reduce the amount of run-off that enters the Dry Canyon and Lower Crooked River and reduce the irrigation water consumption from COID. The solution that all parties agreed upon was a retention structure that will capture the tail water and storm water run-off to be reused in a new irrigation system that will include pumps, irrigation pipe, a 1,000-foot radius pivot, and big gun sprinklers to irrigate hard-to-flood areas of the Ranch. The new system will allow more efficient use of water on the lands, reduced reliance on flood irrigation where it is inefficient, and reduced consumptive need of COID's irrigation water. In addition to the conservation of 398 AF per year of COID water, there will also be a 1,193 AF reduction in tail water run-off to the Dry Canyon and Lower Crooked River.

The installation of a retention system will include collection ditches and a retention "pond" that will hold the collected water. An up-to-date, energy efficient pump will be installed in the pond that will allow the landowner to pump from the retention pond back up to higher grounds through irrigation pipe, allowing him to sprinkle or flood his lands with this water for crops and pasture. Any run-off from this process will be recollected and disbursed through the system again. By building this system in, water will be collected for reuse, thus allowing COID to deliver less irrigation water from its conveyance system to the landowner

for irrigation purposes (measurable at each headgate that delivers to all the properties involved); and the retention pond will stop water run-off from entering the Dry Canyon and therefore, stop the water's eventual reach to the Lower Crooked River at the Dry Canyon / Crooked River confluence.

How will actual water savings be verified upon completion of the project? Water measurements will be taken by COID staff at the weir for delivery to the Malott Ranch (Project site) throughout the post-Project irrigation season. These post-Project measurements will be compared with seasonal pre-Project measurements and the difference in amount of water delivered will confirm the savings realized for irrigation water consumption on the Malott Ranch. Projected water consumption savings for the Project are 398 AF per irrigation season.

Measurements will be taken at a point just prior to the tail water run-off entering the retention "pond" and again just after the retention "pond" at the installed flume and staff gage to determine how much tail water is being collected and how much is going past the "pond" to enter the Dry Canyon. These measurements will be compared to previous years' measurements to determine the amount of water captured in the pond and stopped from exiting the Malott property to enter the Dry Canyon. Projected decreases in the amount of run-off entering the Dry Canyon and flowing to the Lower Crooked River are 1,193 AF per irrigation season to drop the total amount of run-off from the Malott property from the current calculated total of 1,989 AF per season to 796 AF per season.

Subcriterion # A.1 – Water Conservation:

Subcriterion # A.1(b) – Improved Water Management:

Describe the amount of water better managed.

The Malott Ranch (Project site) encompasses 467.1 acres of land with 434.9 acres of irrigation water rights on those lands. The current method of irrigating all 434.9 acres is flood irrigation. Many of these irrigated areas are very difficult to flood irrigate successfully and the landowner must use far more water than is efficient to be able to adequately irrigate those areas.

With the installation of the retention structure and new irrigation system, the landowner will be able to pump from the retention "pond" back up to higher grounds that are difficult to flood irrigate. This will allow him to sprinkle these areas with the 1,000-foot radius pivot and big gun sprinklers that will be installed. Any run-off from this process will be recollected and disbursed through the system again. By building this system in, water will be collected for reuse, thus allowing COID to deliver less irrigation water from its conveyance system to the landowner for irrigation purposes (measurable at each headgate that delivers to all the properties involved); and the retention pond will stop a large amount of water run-off from entering the Dry Canyon and therefore, stop the water's eventual reach to the Lower Crooked River at the Dry Canyon / Crooked River confluence.

This Project will realize better water management of all 434.9 acres of water rights through the upgrade of irrigation practices to incorporate sprinklers for use on the hard to irrigate areas instead of the historical flood irrigation on all the irrigated lands of the Project site. Presently there is an average of 9 gallons per minute per acre being delivered to the Malott property which totals 3,114 AF per irrigation season (3,914.1 gallons per minute or 17.3 AF per day for an average of 180 days per year). The calculated water savings after the completion of this Project is 398 AF per year. This will bring the annual total of COID water delivered to the Malott Ranch from 3,114 AF to 2,716 AF per year, a savings of 13% per year in total water delivered to the Malotts.

Subcriterion # A.2 – Percentage of Total Supply:

Provide the percentage of total water supply conserved.

In 2011, there was a total of 152,017 AF diverted down COID's Central Oregon Canal over 187 days. If calculated for a 180-day irrigation season average, there is an average of 146,327 AF diverted down the COC per year. The Project is calculated to save 398 AF per year from historic annual delivery to the Malott Ranch in Powell Butte, Oregon. This provides a 0.003% savings on the total amount of water diverted down the COC each year. The actual calculation used to compute this savings is as follows:

$$\begin{aligned} &146,327 \text{ AF diverted down the COC per 180-day irrigation season} \\ &398 \text{ AF calculated annual savings for the Project} \\ &398 \text{ AF} / 146,327 \text{ AF} = 0.003 \text{ AF per season average savings} \end{aligned}$$

Subcriterion # A.3 – Reasonable Costs:

Total costs for the Project, including administration costs for reporting and post-Project implementation, etc. are \$257,178.20. The annual conserved/better managed water is calculated to be 398 AF per year over nearly 470 acres of land (435 irrigated acres). The expected life of the Project is a minimum of 5 years (the maximum life expectancy for some of the installed irrigation equipment). The retention structure, which is COID's responsibility for the Project, has a life expectancy of 50 years or more. The cost per acre-foot of conserved water is \$129.24/AF. The actual calculation used to compute this savings is as follows:

$$\begin{aligned} &\$257,178.20 \text{ total Project cost} \\ &398 \text{ AF calculated annual savings for the Project} \\ &5 \text{ years life expectancy} \\ &\$257,178.20 / (398 \text{ AF} \times 5 \text{ yrs}) = \$129.24 \text{ per acre-foot} \end{aligned}$$

The irrigation system, per industry accepted life expectancy, is 5 years. This estimate includes the pipe, sprinklers, and pump. Some of the equipment (including the pivot) may have a higher life expectancy with proper maintenance. The retention structure, per industry accepted life expectancy and performance history of other retention structures within COID is 50 years with proper maintenance.

Evaluation Criterion B: Energy – Water Nexus

Subcriterion # B.1 – Implementing Renewable Energy Projects Related to Water Management and Delivery:

Subcriterion # B.2 – Increasing Energy Efficiency in Water Management:

Evaluation Criterion B is not applicable to this Project.

Evaluation Criterion C: Benefits to Endangered Species

Direct Benefit to Federally-Recognized Candidate Species:

Relationship of the species to water supply: The Lower Crooked River once sustained a diverse population of fish species including summer steelhead trout. Due to the construction of several dams, including that of the Pelton Round Butte complex on the Deschutes River (1962), certain migratory fish have been denied upstream and downstream passage. For decades the Lower Crooked River has not seen the presence of native returning steelhead. Now, years later and after several collaborative efforts of both private and public bodies, the Pelton Dam Selective Water Withdrawal Project (Pelton Dam Project) was designed and implemented for downstream passage of reintroduced steelhead and other historically present fish species. The Pelton Dam Project was completed in 2007, which created sufficient passage and population reconnection for several fish species including bull trout and redband trout. In 2008, with continued efforts by local agencies (i.e. ODFW) and private parties (i.e. Portland General Electric and the Confederated Tribes of Warm Springs) the reintroduction of summer steelhead trout to the Lower Crooked River became a reality. Current environmental regulations, including water quality requirements, draw attention to the Dry Canyon flows and to the Dry Canyon – Lower Crooked River confluence location, which in turn could greatly affect the fish habitat for these reintroduced steelhead trout, returning bull trout, and native redband trout (*Lower Crooked River Watershed Assessment*).

What is the extent to which the proposed project would reduce the likelihood of listing or would otherwise improve the status of the species? Historically, heavy rainstorm events, excessive snowmelt runoff, and intermittent springs have contributed to the Dry River flows, and continue to do so today. Over the last century, irrigation tail water from the Powell Butte agricultural lands adjacent to and up-drainage of the canyon has contributed to the flows during the irrigation season (April – October). There is periodic off-season (November – March) flow for livestock use that also contributes to canyon flows during those brief intervals. The flows from the Dry River eventually reach and enter the Lower Crooked River. The topography, floodwater distribution, shallow hard pan soils (impermeable soils), and historic grazing management throughout the valley have helped contribute to the tail water run-off that enters Dry Creek Canyon. This tail water has created water quality concerns such as potential temperature increases, increased turbidity, and possible bacteria and/or potential pollutant discharge into Dry Creek Canyon (and as such has been designated as a non-point source of pollution by ODEQ). The health and habitat of downstream users such as the reintroduced steelhead in the Lower Crooked River could be affected by these water resource issues (*Crook County Soil and Water Conservation District OWEB grant application for Malott Tail Water Recovery Project*).

Topography and irrigation activities primarily associated with the Malott Ranch and some portions of adjoining irrigated properties, result in upland irrigation tail water run-off that can noticeably contribute to the Dry Canyon flows. It is estimated that at peak times, more than 2,500 gallons per minute (1,989 AF per irrigation season) can leave the project area in one concentrated flow. Upon completion of the Project, the recycled water will be used in an

*Malott Tail Water Recovery Project
Central Oregon Irrigation District – 2012 WaterSMART Grant Proposal*

efficient sprinkler irrigation system that will include a 1,000 foot pivot and six big gun sprinklers serviced by mainline. This will have a dual effect on reducing the total amount of tail water collected and leaving the property. First, the amount of water released from the COID diversion points onto the property will be reduced; and second, a portion of the tail water that is about to leave the property will be recycled and reused. It is estimated that the proposed Project will lower the peak tail water exiting the property by 1,500 gallons per minute (1,193 AF per irrigation season).

The Malott Tail Water Recovery Project has a large shared interest and connection with several local agency partners: ODFW, OWRD, COID, Crook County Soil and Watershed Conservation District, Oregon State University Extension, and Crooked River Watershed Council. The Project also has a direct management relationship to achieve irrigation efficiency, tail water recovery, tail water recycling, sediment reduction, overland flow reduction, and overall reduction of potential water quality pollutants within the watershed.

By addressing the tail water and storm water run-off issues with this Project and reducing the amount of run-off from entering the Dry Canyon to exit into the Lower Crooked River, an overall health increase in steelhead habitat should be seen in the Lower Crooked River. Decreasing the peak tail water from exiting the Project site by 1,193 AF per year will assist in reducing lower current river water temperatures; decrease the current amount of turbidity seen at the Dry Canyon / Lower Crooked River confluence; decrease bacteria, nitrates, etc., thus increasing the health of the steelhead habitat areas of the Lower Crooked River.

Evaluation Criterion D: Water Marketing

Briefly describe any water marketing elements included in the proposed project:

Evaluation Criterion D is not applicable to this Project.

Evaluation Criterion E: Other Contributions to Water Supply Sustainability

Will the project make water available to address a specific concern?

The Project site is located east of the Deschutes River and south of the Lower Crooked River in the Dry River Watershed, also known to locals as Dry Canyon or Dry Creek, in Crook County, Powell Butte, Oregon. The Dry River Watershed encompasses the entire Powell Butte Valley and several thousand acres of high-desert rangelands. The Powell Butte Valley once consisted of a small number of large acreage, productive farms, and ranches that were mainly flood irrigated; but now it consists of hundreds of small acreage farms and ranchettes. The Valley has been productive farmland in Crook County for decades, growing high-value crops such as potatoes, mint, garlic, sugar beets, etc. Now the most common crops consist of pastureland, grass hay, alfalfa, and wheat. Due to its plentiful rangelands and crop production, Powell Butte has always been home to large numbers of livestock including horses, cattle, and sheep. The soils of the Dry Canyon Watershed are mostly clay soils with poor percolation, shallow depths, a significant basalt layer, and are highly impermeable.

Upon completion of this Project the landowner's irrigation water consumption from COID's canal will be reduced by 398 AF per irrigation season. The conserved water from the Project will stay in COID's COC delivery system in the Powell Butte Valley to be utilized on other lands that experience delivery hardships. The additional water available for other landowners and COID patrons will assist those that are still flood irrigating get a higher volume of water to allow them to better flood their irrigated lands. When more projects like this one are completed in the future, COID will return the conserved water to the Deschutes River for permanent instream or to be utilized, as lawfully allowed, by junior water rights holder, North Unit Irrigation District.

Does the project promote and encourage collaboration among parties?

Is there widespread support for the project? The Malott Tail Water Recovery Project has a large shared interest and connection with several local agency partners: Oregon Department of Fish and Wildlife, Oregon Water Resources Department, COID, Crook County Soil and Water Conservation District, Oregon State University Extension, Crooked River Watershed Council, and the Project site landowner. The Project also has a direct management relationship to achieve irrigation efficiency, tail water recovery, tail water recycling, sediment reduction, overland flow reduction, and overall reduction of potential water quality pollutants within the watershed.

What is the significance of the collaboration/support? With recent water quality concerns and regulations of the state, all partners involved recognize the importance and the challenge of this Project. The implementation of this Project will only inhibit irrigation runoff from the Malott property from entering the Dry River Canyon. This proactive, willing landowner is taking the first steps in constructing a pilot project that will initiate the interest and conservation efforts of agriculture producers throughout the Powell Butte Valley. The Crook County Soil and Water Conservation District and Crooked River Watershed Council

strive to continue education and outreach efforts that will encourage similar landowners to implement farm tail water recovery systems. COID and the Malotts have long recognized that reduction in this upland run-off can, more than just improve irrigation efficiency, help to improve the watershed as a whole, reduce Dry Canyon flows, and improve the water quality entering the Lower Crooked River.

Will the project help to prevent a water-related crisis or conflict? Although there are no current water-related crises or conflicts in the Dry River Watershed, the Project does address a need to use irrigation water efficiently and promote healthy river water and fish habitat. The Project focuses on capturing tail water and storm water run-off to recycle for improved irrigation efficiency and to stop the run-off from entering the Dry Canyon and making its way to the Lower Crooked River. With the success of this Project and other landowners completing similar projects on their property, COID could see a reduction in need for the amounts of irrigation water currently being delivered to the Powell Butte Valley, and the Lower Crooked River would see a significant increase in its water's health and a more viable, healthy habitat for returning steelhead.

Will the proposed project help to expedite future on-farm irrigation improvements, including future on-farm improvements that may be eligible for NRCS funding?

COID and all of the involved parties would like to see this Project be the pilot project for the Powell Butte Valley. This community has a long-standing history of closeness, open lines of communication, and support amongst its landowners. With the successful completion of the Project, implementation of the new irrigation system, and decrease in tail water entering the Dry Canyon, there are plans to do continuing education and outreach programs to the community to highlight the successes of this Project and promote awareness of the value of similar on-farm irrigation improvements.

Excess irrigation run-off is a concern to most landowners and natural resource agencies within the Powell Butte area. This Project will demonstrate the effectiveness of on-farm tail water recovery systems for the benefit of all those who use irrigation water. An element of post-Project activities is to use this Project to demonstrate its effectiveness and success with tail water reduction, recycling tail water, irrigation efficiency, slowing storm water velocity, and key water quality concerns. The Project will also help to educate students at Powell Butte Charter School in their natural resource curriculum. There will be presentations on this Project's successes at the annual Central Oregon Rancher Tradeshow and natural resource education classes at the Powell Butte Charter School. Feedback on the Project will be provided by local producers and other landowners interested in doing a similar project on their property.

On-farm tail water recovery project sign-ups will be done by Crook County Soil and Water Conservation District during outreach programs and through contact with other Powell Butte farmers and landowners that use irrigation water in the Dry River Watershed. The SWCD will continue to make landowner site visits through 2017 to encourage irrigation users to implement projects like this one on their property. While doing site visits and outreach events, the SWCD will make the landowners aware of programs available to them to help

make on-farm irrigation improvements a reality. The major programs that SWCD supports are the Oregon Watershed Enhancement Board's *Watershed Restoration Grant Program*, the NRCS Farm Bill's *Environmental Quality Incentive Program*, and the NRCS Farm Bill's *Agricultural Water Enhancement Program*.

Will the project increase awareness of water and/or energy conservation efficiency efforts?

Will the project serve as an example of water and/or energy conservation and efficiency within a community? Part of the design concept of this Project is that it be a pilot project for the Powell Butte Valley irrigators. It is the intent of all parties involved with this Project to showcase its successes to other landowners and irrigators in the Powell Butte community and to encourage similar on-farm tail water recovery projects. With the successful completion of the Project, implementation of the new irrigation system, and decrease in tail water entering the Dry Canyon, there are plans to do continuing education and outreach programs to the community to highlight the successes of this Project and promote awareness of the value of similar on-farm irrigation improvements. There will be presentations on this Project's successes at the annual Central Oregon Rancher Tradeshow, natural resource education classes at the Powell Butte Charter School, and on the COID website.

On-farm tail water recovery project sign-ups will be done by Crook County Soil and Water Conservation District during outreach programs and through contact with other Powell Butte farmers and landowners that use irrigation water in the Dry River Watershed. The SWCD will continue to make landowner site visits through 2017 to encourage irrigation users to implement projects like this one on their property.

Evaluation Criterion F: Implementation and Results

Subcriterion # F.1 – Project Planning:

Does the project have a Water Conservation Plan, System Optimization Review, and/or district or geographic area drought contingency plans in place? Is the project part of a comprehensive water management plan?

COID has had an approved Water Management Conservation Plan on file with the Oregon Water Resources Department since 2002. An updated Conservation Plan was filed with the OWRD on September 9, 2011, and is currently in the approval process. The District also has a board approved Water Conservation Policy that was last updated in 2010, and it was board approved and adopted at the November 9, 2010 COID board meeting.

Preliminary design work for the Project has been completed by an engineering firm that the landowner contracted with. Upon securing the final amount of funds (pending approval of OWEB application), the final Project design will be completed and construction will begin. The preliminary design work includes the design of the retention structure and new irrigation system, along with the anticipated results of Project completion.

The installation of a retention system will include collection ditches and a retention “pond” that will hold the collected water. An up-to-date, energy efficient pump will be installed in the pond that will allow the landowner to pump from the retention pond back up to higher grounds through irrigation pipe, allowing him to sprinkle or flood his lands with this water for crops and pasture. Any run-off from this process will be recollected and disbursed through the system again. By building this system in, water will be collected for reuse, thus allowing COID to deliver less irrigation water from its conveyance system to the landowner for irrigation purposes; and the retention pond will stop a large amount of water run-off from entering the Dry Canyon and therefore, stop the water’s eventual reach to the Lower Crooked River at the Dry Canyon/Crooked River confluence. The benefits of stopping this water from entering the Dry Canyon and Lower Crooked River include improving water quality issues and fish habitat. Some of the water quality issues that will be addressed with this Project are potential temperature increases, increased turbidity, and potential pollutant discharge into the Dry Canyon and Lower Crooked River. By addressing these issues through allowing less water to run-off into the Dry Canyon and Lower Crooked River, the fish habitat would be improved, creating a healthier environment for the reintroduced steelhead in the Lower Crooked River.

Subcriterion # F.2 – Readiness to Proceed:

Beginning Project design has been completed. The Project is scheduled to start in June 2012 with the final design work being completed, construction is scheduled to begin November 1, 2012, and post-Project activities will run through December 2017. Following is a breakdown of activities and the proposed schedule.

- **Final Project Design: June – July 2012**
 - *The landowner will contract with the engineering firm chosen to complete the final Project design. The final design will be approved by the Project manager, COID, and the landowner.*
- **Materials and Equipment Acquisition: August – October 2012**
 - *The Project manager and landowner will purchase the liner, pipe, flume, electrical wiring, pumps, pivot, big gun sprinklers, fencing materials, and any other materials needed for Project completion.*
- **NEPA Review: September – October 2012**
 - *Cultural and biological professionals will be contracted to complete the required NEPA reviews for effects the Project may have on cultural and biological properties. Reports will be completed from the reviews and submitted to the appropriate Reclamation personnel for final approval to complete the Project.*
- **Project Construction: November 1 – November 30, 2012**
 - *COID, the Project engineer, and contractor construct the retention structure, 3-foot trench, pipe assembly, pump stations, and pivot installation. All construction and assembly will meet NRCS specifications.*
- **Project Inspection: December 1 – December 31, 2012**
 - *COID, the Project engineer, and Project manager will inspect all Project construction and installation of new irrigation system.*
- **Outreach and Education: September 2012 – November 2017**
 - *Crook County Soil and Water Conservation District will coordinate with the Malotts to give an informative presentation and educational Project tour during the annual Central Oregon Rancher Tradeshow.*
 - *Crook County Soil and Water Conservation District will work with Powell Butte Charter School for hands-on curriculum and field trips that identify natural resources and agriculture education within the community.*
- **Post-Project Implementation Review: January 2013 – November 2017**
 - *The Project manager will continue to monitor all aspects of the Project including the water quality monitoring for 5 years post Project completion.*
 - *Photo point monitoring, completion report, feedback, and yearly status reports of this Project will help COID and Crook County Soil and Water Conservation District determine future project possibilities and funding opportunities.*
- **Project Maintenance: November 2012 – November 2017 (life of some equipment)**
 - *COID will maintain the retention structure, flume and staff gage, and the tail water collection pipe. The landowner will repair and maintain the pivot, sprinklers, pump stations, and pipe.*
- **Post-Project Water Quality Monitoring: December 2012 – December 2017**
 - *Crooked River Watershed Council will conduct water quality monitoring at the water quality sampling locations located directly before and after the retention*

structure, at COID's Dry Canyon weir, and at the Dry Canyon – Lower Crooked River confluence. The collected samples will be compared to baseline indicators to determine the success of the Project in relation to the water quality concerns.

- **On-Farm Tail Water Recovery Project Sign-ups: March 2013 – December 2017**
 - *Crook County Soil and Water Conservation District will continue to make landowner site visits and encourage other irrigation users to implement similar tail water recovery projects on property that lies within the Dry River Watershed.*

All construction work is scheduled to begin November 1, 2012. This date is pending the approval of Reclamation funds; and if funded by Reclamation, the completion of required NEPA tasks to receive the awarded Reclamation funds for the Project. Should NEPA work not be completed by this date, the construction schedule, Project inspection, post-Project implementation review, Project maintenance, and post-Project water quality monitoring will be rescheduled to the earliest dates possible that will comply with NEPA requirements.

There are no anticipated permitting requirements for the Project. Should the need arise for any permits to be obtained for any portion of the Project, the landowner will be responsible for obtaining the proper permits from Crook County and will do so before any Project work begins that falls under a required permitting regulation.

Subcriterion # F.3 – Performance Measures:

Following is a list of methods that will be used to measure the success of this Project broken down by key elements.

- **Spillway Flume with staff gage**
 - *Reduction in tail water flow leaving the Malott property will be monitored through the flume using the staff gage.*
 - *Measurements will be taken in cubic feet per second (cfs) and compared to historical measurements to accurately calculate the reduction in tail water entering the Dry Canyon.*
- **Retention structure**
 - *The retention structure will capture and store irrigation and storm water run-off to redistribute as sprinkler irrigation and to slow flash storm flows that enter neighboring property.*
 - *The retention structure will be monitored to confirm that it is performing to its design expectations.*
- **Pivots and pumps**
 - *Utilizing pivots and pumps from the retention structure will reduce irrigation water consumption from COID's canal by 500 gallons per minute (398 AF per*

- irrigation season) and the tail water that leaves the Malott property by up to 1,500 gallons per minute (1,193 AF per irrigation season).*
- *Measurements for the water consumption will be determined through the flow rate of the nozzles and pumps.*
 - **Pre- and post-implementation water quality monitoring**
 - *A series of pre-Project water samples and post-Project water samples will be taken before the recycled irrigation distribution site, directly after the site, within the Dry Canyon, and at the confluence of Dry Creek and the Lower Crooked River to demonstrate water quality before the Project and after the Project.*
 - *Temperature, nitrates, phosphorous, E. coli, turbidity, etc. will be tested in all the samples collected.*
 - **Pilot project**
 - *Use this Project to demonstrate its effectiveness and success on tail water reduction, recycling of tail water, irrigation efficiency, slowing storm water velocity, and key water quality concerns. This Project will also help to educate students at Powell Butte Charter school and provide awareness toward their natural resources curriculum.*
 - *Measurements of success will be based on feedback from local producers and other landowners that are interested in doing similar projects on their property, feedback from the annual Central Oregon Rancher Tradeshow where the Project will be presented, and the success of the natural resource education curriculum at the Powell Butte Charter School.*

Measurements at the weirs that deliver COID water to the Malott Ranch will be taken throughout the irrigation season following completion of the Project. The anticipated irrigation season for measuring savings is 2013. These measurements will be compared to historic weir measurements to calculate the amount of water saved from pre-Project delivered water quantities to post-Project delivered water quantities.

Reporting of Project function, conserved water, and water quality will be done by the appropriate agency involved in the Project. The agencies responsible for fulfilling reporting requirements are COID, Crook County Soil and Water Conservation District, and Crooked River Watershed Council. COID will prepare and submit the final Reclamation report for the Project the end of the WaterSMART agreement as required by the signed agreement.

Evaluation Criterion G: Connection to Reclamation Project Activities

How is the proposed project connected to Reclamation project activities?

The Project intends to decrease water run-off from entering the Dry Canyon which then makes its way to the Lower Crooked River. The Crooked River water is currently one of the main water supplies for the North Unit Irrigation District (a Reclamation District). The water that currently enters the Lower Crooked River from the Dry Canyon is upstream from where North Unit Irrigation District diverts its water. By reducing the rate of contaminants and pollutants that currently enters the Crooked River at the Dry Canyon/Crooked River confluence, a healthier environment for steelhead and other river habitat is created; and healthier diversions are realized for North Unit Irrigation District. This creates cleaner, healthier water for NUID patrons and Haystack Reservoir. Haystack Reservoir is used for irrigation water delivery to NUID patrons, fish habitat, and recreation purposes such as swimming, fishing, and boating.

Does the applicant receive Reclamation project water?

COID has a long-standing relationship with Reclamation beginning with the Deschutes Project authorization and construction of Crane Prairie Reservoir in 1938, of which COID is the manager and operator; and COID interacts with local and regional Reclamation offices in that capacity. COID's primary water right is diverted from Deschutes River natural flow in Bend, Oregon. The District's supplemental water right, when needed, is diverted from Crane Prairie Reservoir. When the supplemental right is used, the water diverts from Crane Prairie Reservoir, through the Crane Prairie Dam, and into the Deschutes River where it is diverted for COID use at the Central Oregon Canal and/or Pilot Butte Canal diversions in Bend.

Is the project on Reclamation project lands or involving Reclamation facilities?

The Project site is located within COID boundaries, but is not on Reclamation project lands. There is an indirect involvement with Reclamation facilities due to the use of supplemental water rights diverted from Crane Prairie Reservoir (a Reclamation facility).

Is the project in the same basin as a Reclamation project or activity?

The Project is located within the Deschutes Basin which is home to North Unit Irrigation District (a Reclamation project). As the Project is located in Crook County, it also falls in the same county as Ochoco Irrigation District (a Reclamation project). Ochoco Irrigation District is located in Prineville, Oregon, and the Project site is located in the community of Powell Butte, Oregon, neighboring communities in Crook County.

Will the proposed work contribute water to a basin where a Reclamation project is located?

The Project intends to conserve water being delivered to the Malott Ranch and decrease irrigation and storm water run-off from entering the Dry Canyon which then makes its way to

the Lower Crooked River. The conserved water will be left in COID's conveyance system to be utilized for distribution to other problem areas within the Powell Butte area. The additional water that will remain in the system will allow for COID to be more efficient and practical in its water delivery to other Powell Butte irrigators using COID water. With COID being the manager of the Crane Prairie Reservoir for Reclamation, this Project will indirectly contribute to making the Deschutes Basin healthier.

The Crooked River is currently one of the main water supplies for the North Unit Irrigation District (a Reclamation District) located in the Deschutes Basin. The water that currently enters the Lower Crooked River from the Dry Canyon is upstream from where North Unit Irrigation District diverts its water. Due to the Project's benefits of reducing irrigation and storm water run-off that enters the Lower Crooked River, the improved health of the river's water due to the decrease, and this water being diverted to North Unit Irrigation District; the Project will contribute to a healthier water environment in the Lower Crooked River and the Deschutes Basin.

Environmental Compliance

All construction work is scheduled to begin November 1, 2012. This date is pending the approval of Reclamation funds; and if funded by Reclamation, the completion of required NEPA, ESA, and NHPA tasks to receive the awarded Reclamation funds for the Project. Should the required environmental compliance work not be completed by this date, the construction schedule, Project inspection, post-Project implementation review, Project maintenance, and post-Project water quality monitoring will be rescheduled to the earliest dates possible that will comply with these requirements.

COID has not initiated discussions with Reclamation regarding environmental compliance of NEPA, ESA, and NHPA concerns for this Project. The District is ready, willing, and able to work towards completing these requirements if awarded Reclamation funding. Realizing that cultural resource issues can often complicate implementation of a project, COID is ready to hire an archeologist to survey the Project area, and assist in consultation with the Oregon State Historic Preservation Office (SHPO) as needed. The District is also ready to hire a biological consultant to survey the Project area, and assist in with ESA compliance as needed.

The Project has no direct connection to any local Tribes, therefore it is not anticipated that there will be a need for consultation with the Tribes. COID is ready and willing to consult with the Tribes if needed.

The majority of the potential project impacts will be beneficial, such as the conserved water of 398 AF per year, the reduction of 1,193 AF of tail water run-off into the Crooked River per year, and the improvements in stream flow to create a healthier river and fish habitats. Other impacts will be minor, and will consist primarily of temporary construction impacts, such as increased noise levels and dust.

Will the project impact the surrounding environment?

Earth-disturbing work: There is a naturally low gradient area where the Malott's flood irrigation water and heavy storm water run-off drains to before leaving the property. Due to shallow soils in this low gradient area, the retention structure will be constructed 2 feet below the surface and at a height of less than 6 – 8 feet using a tracked excavator and dump truck. A spillway with a measuring flume and staff gage will also be constructed in this area.

Irrigation mainline pipe will be installed from the retention structure to higher grounds on the Malott Ranch. A tracked excavator will perform the earthwork for the 6,700 feet of 3-foot trench to place 6 – 10 inch class 125 PVC pipe and necessary fittings.

Earth-disturbing impacts are expected to be minor. Of the 467.1 acre area that the Malott Ranch encompasses, only a small amount of that land will be disturbed for the construction phase of the Project. Actions to minimize the impacts will include bringing the equipment in

on pre-existing roads and only using the equipment in the areas where the actual retention structure is being built and the trench is being dug.

Air Quality: Impacts to air quality from construction dust will be minor. Construction will occur in fall, winter, and/or spring, when conditions will not be as dry, reducing air-borne dust. As impacts are expected to be minor and short-term, no actions to minimize dust are expected.

Water: The Project will have a beneficial impact on water quality in the Lower Crooked River by decreasing the amount of tail water that enters the Crooked River from the Dry Canyon confluence, thereby decreasing the water temperature in the river, pollutants that enter the river, and turbidity; and improving fish habitat, particularly for the reintroduced steelhead. The Project will also be reducing flows of a designated non-point source of pollution. The Project site is not near any bodies of water. Construction on the Project site will occur during the irrigation off-season (November – March), and no water will be running in the Central Oregon Canal or the delivery ditches, leaving no chance for tail water run-off to the Dry Canyon and Lower Crooked River. Therefore, construction activities are not expected to impact any waters of the U.S. See the question regarding threatened and endangered species for a discussion of potential beneficial impacts to threatened species in the Lower Crooked River.

Animal Habitat: The Project site is located on a ranch that is comprised mostly of farmed pasture grass, hay, and cattle. The Powell Butte area is also home to many forms of wildlife including deer, coyotes, eagles, hawks, and various other smaller wild animals (such as mice and geese). Because of the nature of the lands on the Malott Ranch, the installation of a retention structure to eliminate marshy ground and significantly decrease water run-off to the Dry Canyon may realize a small effect on the animal habitat, although COID does not foresee an adverse negative effect caused by the Project's completion. Marshy ground would be eliminated, thus opening up the land to possibly make it more attractive to deer, coyotes, etc. The addition of the retention pond will provide a possible area for animals to drink from, and the fowl that would no longer have the marshy area to frequent would now have an open man-made feature to use. There would be no change to the bovine habitat, other than opening up more ground for possible grazing. Overall, COID sees a very small impact to animal habitat and does not see a need to minimize the impacts of the Project.

The Central Oregon Canal offers no significant habitat for water-dependent wildlife because of its intensive seasonal maintenance, and because of its extreme seasonal flow variations. The canal itself will not be modified during the proposed Project, thus eliminating any impacts to wildlife habitats.

If federal funding is received, COID will comply with the Migratory Bird Treaty Act, which prohibits clearing of trees and ground cover during nesting season. In the Central Oregon area, nesting season has been considered to be between March 15 and August 15 (this was the advice given by Oregon Department of Fish and Wildlife for other projects in the area). While COID does not anticipate any clearing to be needed for this Project, avoiding clearing during this time frame will minimize impacts to nesting birds.

Are you aware of any species listed or proposed to be listed as a Federal threatened or endangered species, or designated critical habitat in the project area? If so, would they be affected by any activities associated with the proposed project?

The only listed species identified by the U.S. Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration (NOAA) as occurring in the Lower Crooked River area are steelhead trout, bull trout, and northern spotted owl (all threatened). Steelhead were reintroduced into the Lower Crooked River after the completion of the Pelton Dam project in 2007. Returning bull trout also make their home in the Lower Crooked River. There are no known threatened or endangered species at the Project site on the Malott Ranch.

- The Project proposes to reduce tail water run-off from entering the Dry Canyon and Lower Crooked River by 1,193 AF per year, which in turn will show benefits to the Lower Crooked River such as reduced water temperatures, lower turbidity, and lower pollutant levels; and thereby providing benefits to Middle Columbia River (MCR) steelhead and bull trout. For this Project, it is anticipated that Reclamation will determine that decreased run-off to the Crooked River may affect, but is not likely to adversely affect listed MCR steelhead and bull trout in the Crooked River. Effects from the proposed action will be beneficial to the two fish species. It is also anticipated that both NOAA and USFWS will concur with a positive affect finding by Reclamation.

Are there any wetlands or other surface waters inside the project boundaries that potentially fall under CWA jurisdiction as “waters of the United States?” If so, please describe and estimate any impacts the project may have.

There are no known wetlands at the Project site. Wetland plants in the surrounding areas are found along the fringes of the Central Oregon Canal and Dry Canyon, and their function is similar to that of a riparian zone. There are wetlands found along the Crooked River at the Dry Canyon/Crooked River confluence and outside of the Project area.

There will be no impact to the wetland plants found along the COC, as the Project does not impact the canal.

Impact to the Dry Canyon will be minimal from the decrease of tail water run-off, as the majority of run-off that will be decreased comes from irrigation water, and not natural sources. If irrigation water were not present in the Powell Butte Valley, there would be no run-off, except natural storm water run-off, entering the Dry Canyon, and wetlands or wetland plants would not be present to the extent they are.

The Dry Canyon/Crooked River confluence should see very minimal to no impact on its wetlands and wetland plants. Compared to the amount of water that flows in the Crooked River in this section, the decrease of run-off entering the river is a very small percentage, which will not be sufficient enough to cause a drying effect in the wetland/riparian range of the Crooked River at the Dry Canyon confluence. There may actually be a positive effect realized due to the decrease of run-off water entering the river. Lower water temperatures,

less turbidity, and fewer water pollutants should realize a healthier living environment for the riparian and wetland areas.

No impact will be made to the wetlands on the Crooked River beyond the Dry Canyon / Crooked River confluence as the proposed Project area is outside of the river's wetland and riparian zones past the Dry Canyon confluence.

When was the water delivery system constructed?

Construction on the Central Oregon Canal began in 1904 in Bend and continued east and north through 1909. In 1908, COID, then known as Deschutes Irrigation and Power Company, completed construction of the Dry Canyon siphon at the end of the Central Oregon Canal.

Will the project result in any modification of or effects to individual features of an irrigation system? If so, state when those features were constructed and describe the nature and timing of any extensive alterations or modifications to those features completed previously.

The Project includes installing a new irrigation system to the landowner's property to update the irrigation practices from flood irrigation to sprinkle irrigation. Even though this is an upgrade to an existing system, there are no features of the current system that will be affected. No modifications will take place on the Central Oregon Canal or any existing headgates and weirs that deliver to the properties where the Project site is located.

Are any buildings, structures, or features in the irrigation district listed or eligible for listing on the National Register of Historic Places?

There are no features of COID or the District itself listed on the NRHP. Preliminary review of documents relevant to the District has led COID to conclude that the Oregon SHPO determined the entire Pilot Butte Canal eligible for nomination to the National Register in 1991. However, the Central Oregon Canal has not been determined to be eligible for nomination. At some time in the future, it is possible the COID irrigation system may be proposed as a historic district.

Due to the nature of the proposed Project, there will be no affect on any portion of the COID irrigation system itself. Therefore, there will be no affect on any future possibilities of the irrigation district's eligibility for listing on the NRHP.

Are there any known archeological sites in the proposed project area?

There are no known archeological sites in the proposed project area.

Will the project have a disproportionately high and adverse effect on low income or minority populations?

No disproportionately high or adverse effect on low income or minority populations will be realized from the Project.

Will the project limit access to any ceremonial use of Indian sacred sites or result in other impacts on tribal lands?

There are no known Indian sacred sites or other tribal lands within the Project area. The Project will not limit access or result in any other impacts to tribal lands or ceremonial use of sacred sites.

Will the project contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area?

There will be some earth-disturbing work that may cause some displacement of noxious weed and non-native invasive species seeds and/or pollen. Because most of the earth-disturbing work will be done during the winter months, it is not anticipated that there will be any contributions to the introduction or spread of noxious weeds or non-native invasive species. The Project is not designed to address the existence of or prevention of noxious weeds and non-native invasive species, therefore it is anticipated that the Project will neither contribute to continued existence nor decrease existence of noxious weeds.

Required Permits or Approvals

The entire portion of the COC for the proposed project lies within the boundaries of the 1891 Federal Right of Way, which allows for projects of this type without a cooperative agreement or need for permits.

No fill and removal permit with the Army Corp of Engineers (ACOE) under section 404 of the Clean Water Act will be necessary. COID has extensive experience with the ACOE in past projects and projects of this type are exempt from fill and removal permit requirement under the maintenance exemption. COID does not need to file a permit and maintenance exemption request with the ACOE because the Project does not have any effect on the canal and all work will be done away from the canal and any of its deliveries, laterals, or other features.

Crook County building code (the jurisdiction on the lands where the Project will be completed) allows for upgrades to landowners' properties. The Malotts will be required to file a Land Use form with Crook County before digging and trenching can be completed on the retention structure and new irrigation system. The Land Use form will be completed and filed with Crook County before any on-ground work begins. The landowner is also working with Crook County's Land Use department to assure that all permitting requirements are met; and if any additional permits or forms are needed, they will be obtained before any construction work begins.

Appropriate locate requests will be completed prior to construction to confirm that there are no power, gas, telephone, cable, or other lines located in the construction area.

Funding Plan

Total cost for the Project is \$257,178.20 (See Exhibit E for detailed Project budget information). Non-Reclamation funding totaling \$238,218.20 will be obtained from multiple sources.

COID will be contributing \$18,963.00 of cash and in-kind work for the construction of the retention structure, digging trenches, installing the flume and staff gage, and monitoring at the flume and staff gage. Crook County Soil and Water Conservation District will be contributing \$735.00 in-kind work for reporting, Project management, and water quality monitoring aspects of the Project (See Exhibit C – CCSWCD Letter of Commitment). Mark and Ann Malott (Malott Ranch owners) are contributing \$82,500.00 cash for the irrigation system, permitting requirements, and other expenses (See Exhibit D – Malott Letter of Commitment). A grant proposal has been submitted on behalf of Mark and Ann Malott to the Oregon Watershed Enhancement Board's *Watershed Restoration Grant Program* requesting \$135,976.00 for the balance of the Project costs and is pending approval of the application.

The balance of \$18,960.00 is being requested in this proposal for partial funding of COID's share of the Project work and expenses. This amount is approximately 50% of COID's expected costs and 7.4% of the total Project costs.

How will you make your contribution to the cost share requirement, such as monetary and/or in-kind contributions and source funds contributed by the applicant?

COID will provide its cost share through in-kind contributions of \$18,963.00. The in-kind work will include labor costs for the construction of the retention structure, trenching for the irrigation pipe, and installation of the flume and staff gage. Also included in COID's in-kind costs are equipment usage costs. The funds used to pay for COID labor/in-kind costs are secured through 2012 COID budgeted capital funds. \$1,500.00 in cash will be provided by COID to pay for one-half of the NEPA/ESA/NHPA costs. The COID cash contribution is secured through 2012 COID budgeted capital funds.

Crook County Soil and Water Conservation District contributions of \$735.00 are for in-kind work, including Project management, pre- and post-Project water quality monitoring, and required reporting for OWEB funding and other Project participants.

Landowner contributions to the Project (\$82,500 cash) will be used to pay for Project costs including the irrigation system, permitting requirements, engineering costs, etc. These funds are secured funds through the Malott Ranch budget.

OWEB funds (\$135,976.00) have been applied for and are pending approval by the OWEB grant review board. If funding is approved, a funding agreement is expected to be completed by June 2012 with funds being available upon execution of a funding agreement.

Describe any in-kind costs incurred before the anticipated project start date that you seek to include as project costs.

There are no anticipated in-kind costs to be incurred prior to the anticipated Project start date that will be included in the total Project costs.

Provide the identity and amount of funding to be provided by funding partners, as well as the required letters of commitment.

- Crook County Soil and Water Conservation District - \$735.00 in-kind
 - See Exhibit C – CCSWCD Letter of Commitment
- Mark and Ann Malott (Project site landowners) - \$82,500.00 cash
 - See Exhibit D – Malott Letter of Commitment
- Oregon Watershed Enhancement Board - \$135,976.00 pending cash funds
 - Pending OWEB grant review board approval

Describe any funding requested or received from other Federal partners.

Funding has not been requested or received from any other Federal partners. The only anticipated Federal funds for the Project, if awarded, will be Reclamation funds from this application.

Describe any pending funding requests that have not yet been approved, and explain how the project will be affected if such funding is denied.

- Oregon Watershed Enhancement Board - \$135,976.00 pending cash funds
 - Pending OWEB grant review board approval

Crook County Soil and Water Conservation District filed a grant application for OWEB *Watershed Enhancement Grant Program* funds on behalf of Mark and Ann Malott (Malott Ranch/Project site landowners) in October 2011. The application requested \$150,363.00, the projected balance needed at the time of the application completion for the remaining unfunded Project costs. As of the completion of this grant proposal (January 19, 2012), no decision has been made by the OWEB grant review board. It is anticipated that a decision will be made and, if funded, a funding agreement will be completed and executed by June 2012. Once a funding agreement with OWEB is executed, funds will be available for use to begin the Project.

Should OWEB not approve funds, the Project will move forward with some design changes and cost cuts. A retention structure will still be built to capture irrigation tail water and storm water run-off. The flume and staff gage will still be put in place and used for monitoring purposes. The irrigation system will be modified to run pipe back uphill to reuse the collected run-off for flood irrigation. Run-off from the flood irrigation will continue to be re-collected and reused in this fashion throughout the irrigation seasons. If cost reductions still require the need for additional funding, some of the Project work will be delayed while Crook County Soil and Water Conservation District reapplies to OWEB for a smaller amount of funding.

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| Funding Sources | Funding Amount |
|---------------------------------------------------------------|-----------------------|
| Non-Federal Entities | |
| 1. Mark and Ann Malott | \$82,544.00 |
| 2. <i>Crook County Soil and Water Conservation District *</i> | \$735.00 |
| 3. <i>Central Oregon Irrigation District *</i> | \$14,313.00 |
| 4. Central Oregon Irrigation District | \$4,650.00 |
| 5. Oregon Watershed Enhancement Board (<i>PENDING</i>) | \$135,976.00 |
| Non-Federal Subtotal: | \$238,218.00 |
| Other Federal Entities | |
| 1. None | |
| Other Federal Subtotal: | \$0.00 |
| Requested Reclamation Funding: | \$18,960.00 |
| Total Project Funding | \$257,178.00 |
| <i>* Denotes In-Kind contribution</i> | |

Figure 2: Summary of Non-Federal and Federal Funding Sources

Official Resolution

On December 13, 2011 the Central Oregon Irrigation District Board of Directors passed and signed a resolution to approve the submittal of a WaterSMART grant application to the Bureau of Reclamation for the Malott Tail Water Recovery Project. The resolution verifies the general Project purposes regarding irrigation water concerns, the capability of COID to provide the amount of funding and in-kind contributions specified in the funding plan, and that COID will work with Reclamation to enter into a cooperative agreement if approved for funding.

Signing officials for COID's Board of Directors are Steve Johnson, District Manager; Carroll Penhollow, Board President; and board members Terry Blackwell, Robert Borlen, Thomas Burke, and Paul Kasberger.

See Exhibit D – Malott Tail Water Recovery Project COID Board Resolution

Budget Proposal

Budget Narrative:

Of the total \$257,178.20 Project cost (COID portion totals \$37,923.00), the District is requesting \$18,960.00 from Reclamation for the *Malott Tail Water Recovery Project*. The \$18,960.00 request is approximately 7.4% of the total cost of the Project (50% of COID's cost for the Project). The additional 92.6% of the total cost is to be funded by secured landowner funds, secured Crook County Soil and Water District funds (through in-kind work), pending OWEB grant funds, and secured COID funds (in-kind work and cash). The additional 50% of COID's total cost for the Project is to be funded by secured District funds and in-kind work. **Exhibit E provides the Project Budget in detail.**

Pre-Implementation:

The following is a list of Project pre-implementation items that must be completed. The term pre-implementation is used for pre-construction requirements.

- Land Use Form – \$44.00
 - The cost to file the required Land Use form with Crook County.
 - Landowner to pay full \$44.00 cost from secured landowner funds.
- Surveying and Engineering Design – \$6,000.00
 - The cost of the final Project design (Preliminary designs were completed before any funding was secured). The Project Engineer has already been contracted.
 - The Engineer will spend approximately 80 hours on final Project design.
 - Cost for the Engineer's design time is \$75.00 per hour.
- Sample Collection from Monitor Sites – \$1,400.00
 - Pre-Project water samples must be collected for data comparison with post-Project samples.
 - Sample collection will be done by Crook County Soil and Water Conservation District personnel or contracted personnel.
 - Data used to determine successful outcome of the Project's objectives.
 - Pre-Project sample collections will take approximately 40 hours.
 - Cost for the sample collections is \$35.00 per hour

All Pre-Implementation costs, except the Land Use form, will be funded with OWEB funds.

Total Pre-Implementation costs – \$7,444.00

Project Management:

The following is a list of Project management people that will be used to oversee the Project. This list includes Project partners only. COID personnel are listed in the following section.

- Engineering Construction Management – \$6,000.00
 - The Engineer will spend approximately 80 hours on Project management which includes overseeing the construction portion of the Project.
 - Cost for Engineers management time is 75.00 per hour.
- Crook County Soil and Water Conservation District Project Management – \$4,200.00
 - The CCSWCD Project manager will spend approximately 120 hours on Project management duties which include overseeing construction, implementation, contractor work, and outreach programs.
 - Cost for CCSWCD Project Manager is \$35.00 per hour.

All Project Management costs will be funded with OWEB funds.

Total Project Management costs – \$10,200.00

COID Personnel - Salaries and Wages:

The following is a list of COID personnel that will be working on the Project.

- Operations Manager – \$5,000.00
 - The Operations Manager will spend approximately 100 hours on Project management for the proposed Project. Project management includes:
 - Site visits to Malott property to check on progress of construction work.
 - Supervision of COID field staff as needed.
 - Communications with all Project partners as needed.
 - Cost for Operations Manager is \$50.00 per hour which includes fringe benefits.
 - COID to provide \$2,500.00 of Operation Manager's wages as in-kind services.
- Business Manager – \$2,500.00
 - The Business Manager will spend approximately 50 hours on administrative requirements for the proposed Project. This time includes:
 - Quarterly and final reports as required by Reclamation and/or any other entity involved in the Project.
 - Funding/cost updates to Project partners as needed/required.
 - Requests for funds and bill payments.
 - Cost for Business Manager is \$50.00 per hour which includes fringe benefits.
 - COID to provide \$1,250.00 of Business Manager's wages as in-kind services.
- Maintenance Crew – \$7,000.00
 - Maintenance crew will spend approximately 200 total man hours on the proposed Project. This time includes:
 - Construction of the retention structure and flumes.
 - Trenching for irrigation pipe installation.
 - 2 COID employees will be used for the Project at approximately 100 hours each.
 - Cost for field staff is \$35.00 per hour which includes fringe benefits.
 - COID to provide \$3,500.00 of the Maintenance Crew's wages as in-kind services.

- Water Quality Monitoring Specialist – \$1,120.00
 - The Monitoring Specialist will spend approximately 32 hours on post-Project water quality monitoring.
 - Cost for this employee is \$35.00 per hour which includes fringe benefits.
 - COID to provide \$560.00 of this employee's wages as in-kind services.

There are no proposed wage increases for COID personnel during the proposed Project.

All fringe benefits costs are included in the hourly rates above. COID fringe benefits include:

- Vacation
- Sick leave
- Health insurance
- Retirement plan contributions to Oregon PERS
- Life insurance

\$7,810.00 of COID personnel wages will be funded with Reclamation funds.

Total Salaries and Wages – \$15,620.00

Travel:

The following is a list of travel-related expenses needed to oversee completion of the Project. All travel expenses are for local travel to and from the Project site/area and use the state of Oregon's listed mileage rate at the time the budget was prepared (\$0.51 per mile).

- CCSWCD Project Manager – \$153.00
 - The CCSWCD Project Manager will make approximately 15 trips for Project and post-Project activities.
 - Round-trip mileage from the CCSWCD office to the Project site is 20 miles.
 - Total miles are approximately 300 miles.
- Engineer – \$163.20
 - The Engineer will make approximately 8 trips over the course of the Project.
 - Round-trip mileage from the Engineer's office to the Project site is 40 miles.
 - Total miles are approximately 320 miles.
- Water Quality Monitoring Specialist – \$153.00
 - The WQ Monitoring Specialist will make approximately 15 trips for Project and post-Project activities.
 - Round-trip mileage from the COID office to the Project site is 20 miles.
 - Total miles are approximately 300 miles.
 - COID to provide \$78.00 of the Monitoring Specialist's travel as in-kind services.

CCSWCD and Engineer travel costs will be funded with OWEB funds.

\$75.00 of the WQ Monitoring Specialist's travel will be funded with Reclamation funds.

Total Travel costs – \$469.20

Equipment:

The following is a list of equipment that will be needed for the Project.

- Excavator – \$9,000.00
 - COID owned equipment to be used in construction of the retention structure and trenching for pipe installation.
 - Cost for use of the excavator is \$60.00 per hour.
 - Approximately 150 hours of machine time is needed for the Project.
 - COID to provide \$4,500.00 of the excavator's cost as in-kind services.
- Dump Truck – \$2,250.00
 - COID owned equipment to be used in construction of the retention structure and trenching for pipe installation.
 - Cost for use of the dump truck is \$45.00 per hour.
 - Approximately 50 hours of machine time is needed for the Project.
 - COID to provide \$1,125.00 of the dump truck's cost as in-kind services.
- Pumps – \$6,000.00
 - COID to purchase 2 pumps needed for the retention structure.
 - Cost for the pumps is \$3,000.00 each.
 - COID to provide \$3,000.00 cash for the cost of the pumps.
- 1,000-foot Radius Pivot – \$75,000.00
 - Landowner to purchase 1 pivot needed for new irrigation system.
 - Landowner to provide \$75,000.00 cash for the cost of the pivot.
- Big Gun Sprinklers – \$7,500.00
 - Landowner to purchase 6 "Big Gun" sprinklers needed for new irrigation system.
 - Cost for the sprinklers is \$1,250.00 each.
 - Landowner to provide \$7,500.00 cash for the cost of the sprinklers.

\$8,625.00 of equipment expenses will be funded with Reclamation funds.

Total Equipment costs – \$99,750.00

Supplies/Materials:

The following is a list of supplies and materials that will be needed for the Project.

- Pond Liner – \$11,000.00
 - A 20,000 square-foot liner will be purchased to line the retention structure.
 - Cost of the liner is \$0.55 per square-foot.
- Wire and Conduit to Pivot – \$15,250.00
 - 5,000 feet of wire and conduit will be purchased for proper wiring to the pivot.
 - Cost of the wire and conduit is \$3.05 per foot.
- Overflow, Measuring Flume, and Headgates – \$9,500.00

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- An overflow flume, measuring flume, and headgate package will be purchased for the retention structure.
- Cost for all of these items is \$9,500.00, including installation.
- Pump Station w/Frequency Drive – \$7,000.00
 - A pump station will be purchased for the new irrigation system.
 - 1 pump station is needed at a cost of \$7,000.00.
- Water Collection Pipes – \$11,900.00
 - 1,400 water collection pipes will be purchased for water quality monitoring.
 - Cost for the pipes is \$8.50 each.
- Fencing – \$5,000.00
 - 2,000 feet of fencing will be purchased to fence around the retention structure.
 - Cost of the fencing material is \$2.50 per foot, including installation.
- Miscellaneous Pump and Pivot Fittings – \$3,500.00
 - Misc. pump and pivot fittings will be purchased for the new irrigation system.
 - Cost of the fittings is \$3,500.00 for all fitting items needed.
- 10" Class 125 PVC pipe – \$11,730.00
 - 1,700 feet of 10" class 125 PVC will be purchased for the new irrigation system.
 - Cost for the 10" PVC pipe is \$6.90 per foot.
- 8" Class 125 PVC pipe – \$16,005.00
 - 3,300 feet of 8" class 125 PVC will be purchased for the new irrigation system.
 - Cost for the 8" PVC pipe is \$4.85 per foot.
- 6" Class 125 PVC pipe – \$7,905.00
 - 1,700 feet of 6" class 125 PVC will be purchased for the new irrigation system.
 - Cost for the 6" PVC pipe is \$4.65 per foot.
- Miscellaneous PVC Fittings – \$4,500.00
 - Misc. PVC fittings will be purchased for the new irrigation system.
 - Cost of the fittings is \$4,500.00 for all fitting items needed.
- Temperature Loggers – \$300.00
 - COID will purchase 2 temperature loggers for the water quality monitoring.
 - Cost for the loggers is \$150.00 each.
 - COID to provide \$150.00 cash for the cost of the loggers.

All supplies and materials purchases, except the temperature loggers, will be funded with \$103,290.00 of OWEB funds.

\$150.00 of supplies and materials expenses for the temperature loggers will be funded with Reclamation funds.

Total Supplies and Materials costs – \$103,590.00

Contractual:

The following is a list of contractual services that will be used for the Project.

- Pivot Installation – \$5,500.00
 - A contractor will be hired to professionally install the 1,000-foot radius pivot.

- Cost for professional pivot installation is \$5,500.00
- Power Relocation – \$7,000.00
 - Power relocation must be completed to allow for proper electrical system operations for the new irrigation system.
 - Cost for power relocation is \$7,000.00.

\$12,500.00 of contract costs will be funded with OWEB funds.

Total Contractual costs – \$12,500.00

Environmental and Regulatory Compliance Costs:

The following is a list of environmental and regulatory compliance costs that will be needed to begin the Project if Reclamation funds are awarded.

- NEPA/ESA/NHPA Reviews – \$3,000.00
 - Reclamation approved contractors will be hired to complete the required environmental and regulatory compliance requirements for federal funding.
 - COID to provide \$1,500.00 cash for the cost of environmental compliance.

\$1,500.00 of environmental compliance costs will be funded with Reclamation funds.

Total Environmental and Regulatory Compliance costs – \$3,000.00

Outreach:

Outreach refers to the planned informational and promotional activities associated with the Project. The following is a list of outreach items that will be completed for the Project.

- CCSWCD Project Awareness Sign – \$800.00
 - A custom sign will be purchased and posted at the Project site to promote the Project to other Powell Butte landowners.
 - OWEB funds will be used to purchase the sign.
- Central Oregon Ranch Supply Tradeshow Event – \$525.00
 - CCSWCD and the Malott's will make a Project presentation and site tour during the Central Oregon Ranch Supply Tradeshow Event in 2013.
 - CCSWCD to provide \$525.00 of in-kind services for the event's presentation.

No Outreach costs will be funded with Reclamation funds.

Total Outreach costs – \$1,325.00

Post-Implementation Status Reporting:

The following is a list of post-implementation status reporting costs for the Project.

- COID Project Completion Report – \$800.00
 - COID staff will spend approximately 16 hours on Project completion report requirements for the proposed Project.
 - Cost for COID staff time is \$50.00 per hour which includes fringe benefits.
 - COID to provide \$400.00 of staff wages as in-kind services.
- CCSWCD Project Completion Report – \$560.00
 - CCSWCD staff will spend approximately 16 hours on Project completion report requirements for the proposed Project.
 - Cost for CCSWCD staff time is \$35.00 per hour.
 - CCSWCD to provide \$70.00 of wages as in-kind services.
 - OWEB funds will be used for the remaining \$490.00.
- COID Project Evaluation Reports – \$800.00
 - COID staff will spend approximately 16 hours on Project evaluation reporting requirements for the proposed Project.
 - Cost for COID staff time is \$50.00 per hour which includes fringe benefits.
 - COID to provide \$400.00 of staff wages as in-kind services.
- CCSWCD Year 3 OWEB Report – \$560.00
 - CCSWCD staff will spend approximately 16 hours on Year 3 report requirements for the proposed Project.
 - Cost for CCSWCD staff time is \$35.00 per hour.
 - CCSWCD to provide \$70.00 of wages as in-kind services.
 - OWEB funds will be used for the remaining \$490.00.
- CCSWCD Year 5 OWEB Report – \$560.00
 - CCSWCD staff will spend approximately 16 hours on Year 5 report requirements for the proposed Project.
 - Cost for CCSWCD staff time is \$35.00 per hour.
 - CCSWCD to provide \$70.00 of wages as in-kind services.
 - OWEB funds will be used for the remaining \$490.00.

\$1,470.00 of CCSWCD post-implementation status reporting costs will be funded with OWEB funds.

\$800.00 of COID post-implementation status reporting costs will be funded with Reclamation funds.

Total Post-Implementation Status Reporting costs – \$3,280.00

Other costs:

No additional costs are anticipated for the proposed Project.

Indirect Costs:

No indirect costs are anticipated for the proposed Project.

Contingency Costs:

Contingency costs were not calculated for the proposed Project or included in the budget.

Total Cost:

Total Project are being funded by 3 entities and pending OWEB funds. The following is a list of Project partners and the amount of contributed funding.

- COID (including requested Reclamation funds) – \$37,923.00
 - COID will provide \$14,313.00 of in-kind services.
 - COID will provide \$4,650.00 of cash.
 - COID has requested \$18,960.00 in Reclamation funding through this application.
- Crook County Soil and Water Conservation District – \$735.00
 - CCSWCD will provide \$735.00 of in-kind services.
- Mark and Ann Malott (landowner) – \$82,544.00
 - Mark and Ann Malott will provide \$82,544.00 of cash.
- Oregon Watershed Enhancement Board (funds pending) – \$135,976.20
 - OWEB will provide \$135,976.20 of cash.
 - Funds are pending approval of grant application submitted in October 2011.
 - Execution of a funding agreement is anticipated to be complete by June 2012.

Total Project Cost – \$257,178.20

Budget Form:

See Exhibit E – Malott Tail Water Recovery Project Budget. Also see Form SF-424C, Budget Information – Construction Programs.



CENTRAL OREGON IRRIGATION DISTRICT

1055 SW LAKE COURT, REDMOND, OR 97756

PHONE: 541.548.6047 FAX: 541.548.0243

www.coid.org

A MUNICIPAL CORPORATION OF THE STATE OF OREGON

RESOLUTION NUMBER: 2011-12 WATERSMART GRANT AUTHORIZATION MALOTT TAIL WATER RECOVERY PROJECT

A RESOLUTION AUTHORIZING AND APPROVING EXECUTION OF A COOPERATIVE AGREEMENT FOR THE FISCAL YEAR 2012 – 2013 BUREAU OF RECLAMATION WATERSMART GRANT PROVIDING SUPPLEMENTAL FINANCING FOR THE MALOTT TAIL WATER RECOVERY PROJECT LOCATED IN POWELL BUTTE.

WHEREAS: The project will provide an opportunity for tail water to be reused by the landowner creating a pond to capture the tail water and then pump the water out to be productively used by sprinklers.

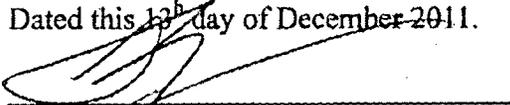
WHEREAS: This project will allow the areas of the landowner's property to be restored from marsh areas to more useful and productive land as a result.

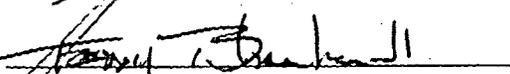
THEREFORE, BE IT RESOLVED that the Board of Directors of Central Oregon Irrigation District agrees and authorizes that:

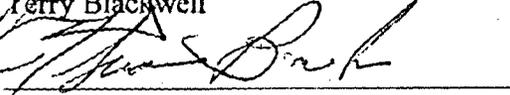
1. The Board and or governing body has reviewed and supports the proposal submitted;
2. The district is capable of providing the amount of funding and/or in-kind contributions, specified in the funding plan; and
3. If selected to receive funds from a WaterSmart Grant under the Fiscal Year 2012 program the district will work with Reclamation to meet established deadlines for entering into a cooperative agreement.

ATTEST: CENTRAL OREGON IRRIGATION DISTRICT

Dated this 13th day of December 2011.


Steven C. Johnson, Manager


Terry Blackwell


Thomas Burke


Carroll Penhollow, President


Robert Borlen


Paul Kasberger

January 19, 2012

Bureau of Reclamation
Financial Assistance Services
Attn: Michelle Maher
Mail Code: 84-27850
PO Box 25007
Denver, CO 80225

RE: WaterSMART: Water and Energy Efficiency Grants for FY 2012

Mark and Ann Malott, LLC would like to express our support and commitment to Central Oregon Irrigation District (COID) for the WaterSMART: Water and Energy Efficiency Grants application titled "Malott Tail Water Recovery Project". As the landowner where the recovery project is to be located, we are highly motivated to see this project to fruition.

Mark and Ann Malott, LLC is the owner of the Malott Ranch located in Powell Butte, Oregon. The Ranch encompasses 467.1 acres of land and has 434.9 acres of COID's irrigation water rights. Currently all 434.9 acres are flood irrigated for crops and livestock.

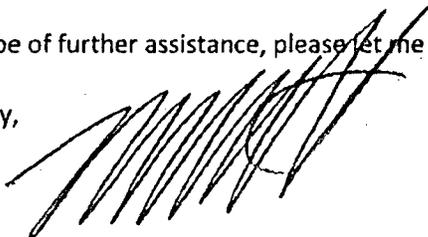
It is our goal, along with COID and Crook County Soil and Water Conservation District (CCSWCD) to install a retention structure (pond) to capture tail water and storm water run-off from our lands and neighboring lands, then utilize the water in the pond to more efficiently irrigate the Malott Ranch. A new irrigation system will be installed on the Ranch that will include pumping to a 1,000-ft radius pivot to irrigate our lands. In turn, water conservation will be recognized by not having to rely solely on flood irrigation which has been the historical practice of the Malott Ranch. Through utilization of this new system, COID will be able to reduce the amount of irrigation water delivered to the Malott Ranch. It is also the hopes of COID, CCSWCD, and Mark and Ann Malott, LLC that the success of this Project will encourage other irrigators in the Powell Butte community to exercise similar projects to conserve an even greater amount of water in the future.

Mark and Ann Malott, LLC have secured funding for this Project in the amount of \$82,500 and have applied for additional funding from the Oregon Watershed Enhancement Board in the amount of \$150,363 through OWEB's Watershed Restoration Grant program. The OWEB grant application was submitted by CCSWCD in October 2011, and we are awaiting approval of the application. We are responsible for utilizing the retention structure and new irrigation system once all work is complete, and equipment maintenance for the life of the system.

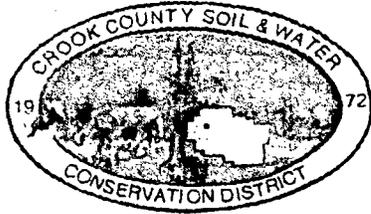
COID's goal is to install a retention structure on the Malott Ranch to capture tail water and storm water run-off and reduce run-off from entering the Dry Canyon and Crooked River. In addition, the retention structure will allow us to install an efficient, up-to-date irrigation system for improved water management. It is also the goal of all Project partners to encourage other Powell Butte irrigators to complete similar projects.

If I can be of further assistance, please let me know. I can be reached at 541-480-7157 or Malott4M@aol.com.

Sincerely,



Mark Malott
Malott Ranch / Mark and Ann Malott, LLC



498 SE Lynn Blvd.
Prineville, Oregon 97754

Phone: (541) 447-3548 Fax: (541) 416-2115

Libby.rodgers@oregonstate.edu

January 12, 2012

Dear Water SMART Grant Committee:

I am writing you today in regards to Central Oregon Irrigation District's (COID) grant application for the Malott Tail Water Recovery Project. The Crook County Soil and Water Conservation District (CCSWCD) has partnered with both Mark Malott (landowner) and COID to implement an irrigation water savings project within Crook County. This project will include the construction of a tail water retention structure that will capture excess flood, irrigation and spring runoff water. The water retention structure will service the proposed pivot irrigation system that will be installed to better utilize and efficiently distribute this captured tail water. The landowner will then use less water, while improving possible agricultural water quality concerns further downstream within the system.

The CCSWCD will provide technical assistance, project management, and engineering needs to the Malott Tail Water Recovery Project. On behalf of Mark Malott and benefits this project will provide, the CCSWCD has submitted a grant application to the Oregon Watershed Enhancement Board asking for project assistance in the amount of \$154,363.00.

The CCSWCD strongly recommends that you consider COID's application for funding and the importance that this project has to both the landowner and the Crooked River Watershed.

Sincerely,

Libby Stahancyk
Project Manager

Mallot Propsed Retention Area 15-15-19

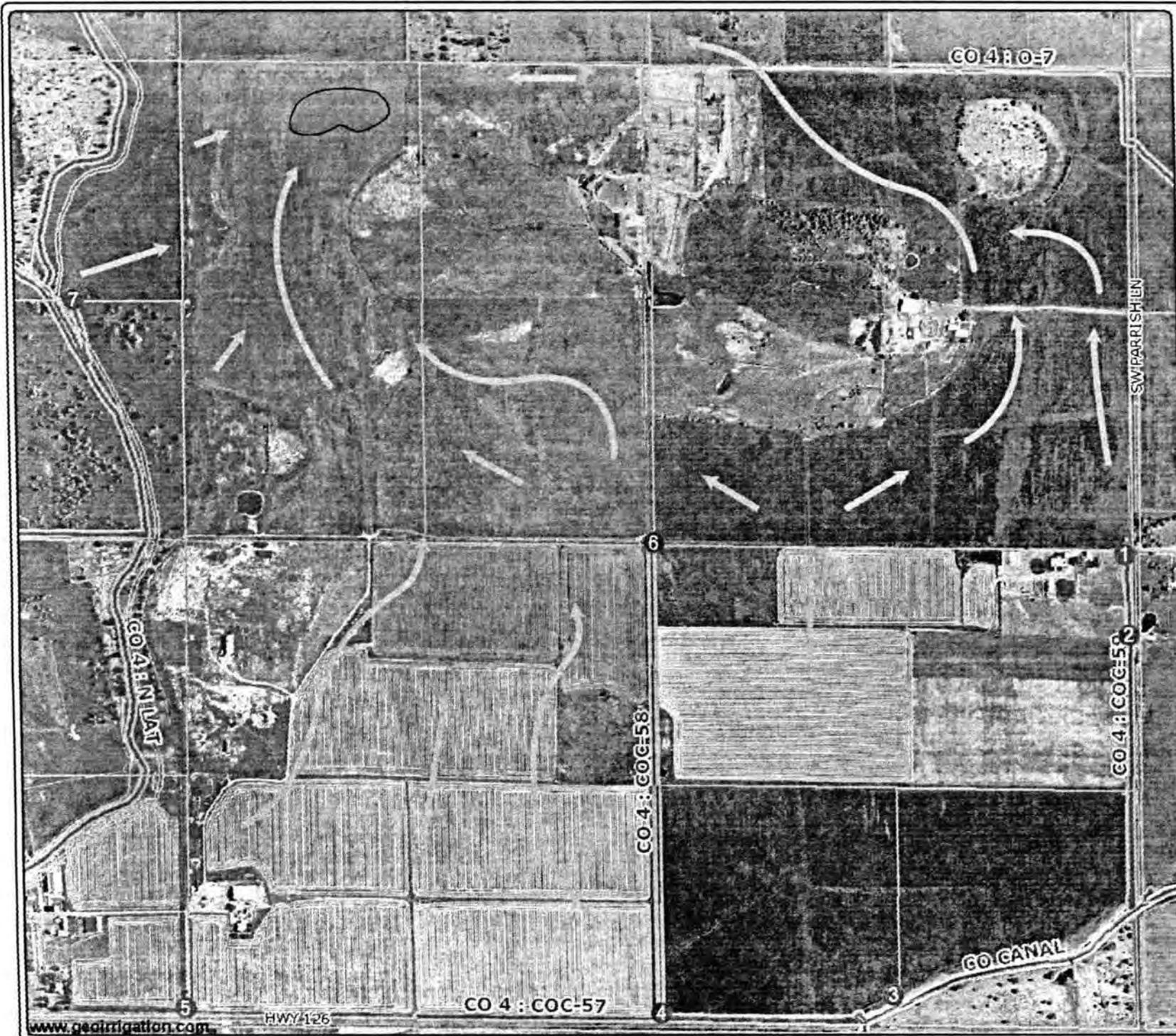
Point of Delivery

- ① 140 Acres - 910 GPM
- ② 59 Acres - 380 GPM
- ③ 64 Acres - 416 GPM
- ④ 100 Acres - 650 GPM
- ⑤ 70 Acres - 455 GPM
- ⑥ 90 Acres - 540 GPM
- ⑦ 96 Acres - 480 GPM (Part Time)

Approx. Flow Direction



Proposed Retention Area



Scale NOT TO SCALE
Created: 1/12/2011

**Malott Tail Water Recovery Project Budget
WaterSMART Water and Energy Efficiency Grant Proposal
January 19, 2012**

| | Unit Number | Unit Cost | In-Kind Match | Cash Match Funds | OWEB Funds | Reclamation Funds | Total Cost |
|----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|---------------------------------------|-------------------|------------------|--------------------|-------------------|--------------------|
| | <i>(e.g., # of hours, units)</i> | <i>(e.g., hourly rate, cost/unit)</i> | | | | | |
| PRE-IMPLEMENTATION: | | | | | | | |
| Land Use Form | 1 | \$44.00 | | \$44.00 | | \$0.00 | \$44.00 |
| Surveying/Engineering Design | 80 | \$75.00 | | | \$6,000.00 | \$0.00 | \$6,000.00 |
| Sample Collection from Monitor Sites | 40 | \$35.00 | | | \$1,400.00 | \$0.00 | \$1,400.00 |
| PRE-IMPLEMENTATION TOTAL | | | \$0.00 | \$44.00 | \$7,400.00 | \$0.00 | \$7,444.00 |
| PROJECT MANAGEMENT: <i>(Includes project partners or contractors who coordinate project implementation. Excludes COID personnel.)</i> | | | | | | | |
| Project Construction Management <i>(Engineer)</i> | 80 | \$75.00 | | | \$6,000.00 | \$0.00 | \$6,000.00 |
| Project Management <i>(CCSWCD Contractor)</i> | 120 | \$35.00 | | | \$4,200.00 | \$0.00 | \$4,200.00 |
| PROJECT MANAGEMENT TOTAL | | | \$0.00 | \$0.00 | \$10,200.00 | \$0.00 | \$10,200.00 |
| COID PERSONNEL: | | | | | | | |
| Laborer <i>(Pond construction & trenching)</i> | 100 | \$35.00 | \$1,750.00 | | | \$1,750.00 | \$3,500.00 |
| Laborer <i>(Pond construction & trenching)</i> | 100 | \$35.00 | \$1,750.00 | | | \$1,750.00 | \$3,500.00 |
| WQ Monitoring Specialist | 32 | \$35.00 | \$560.00 | | | \$560.00 | \$1,120.00 |
| Supervisor/COID Project Manager | 100 | \$50.00 | \$2,500.00 | | | \$2,500.00 | \$5,000.00 |
| Business Manager <i>(Preparation of required reports, money management, accounting, etc.)</i> | 50 | \$50.00 | \$1,250.00 | | | \$1,250.00 | \$2,500.00 |
| COID PERSONNEL TOTAL | | | \$7,810.00 | \$0.00 | \$0.00 | \$7,810.00 | \$15,620.00 |
| TRAVEL: <i>(Using State of Oregon mileage rate.)</i> | | | | | | | |
| Project Manager <i>(CCSWCD to & from project location and monitoring sites - 15 trips x 20 miles)</i> | 300 | \$0.51 | | | \$153.00 | \$0.00 | \$153.00 |
| Water Quality Monitoring Specialist <i>(COID to & from project location and monitoring sites - 15 trips x 20 miles)</i> | 300 | \$0.51 | \$78.00 | | | \$75.00 | \$153.00 |
| Engineer Mileage <i>(to & from project location - 8 trips x 40 miles)</i> | 320 | \$0.51 | | | \$163.20 | \$0.00 | \$163.20 |
| TRAVEL TOTAL | | | \$78.00 | \$0.00 | \$316.20 | \$75.00 | \$469.20 |

| | Unit Number | Unit Cost | In-Kind Match | Cash Match Funds | OWEB Funds | Reclamation Funds | Total Cost |
|-----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|------------------------------------------|-------------------|---------------------|---------------------|----------------------|---------------------|
| | <i>(e.g. # of hours, units)</i> | <i>(e.g. hourly rate, cost/unit)</i> | | | | | |
| EQUIPMENT: <i>(Includes equipment to be used for project construction and equipment to be installed for landowner use)</i> | | | | | | | |
| Excavator (COID owned) | 150 | \$60.00 | \$4,500.00 | | | \$4,500.00 | \$9,000.00 |
| Dump Truck (COID owned) | 50 | \$45.00 | \$1,125.00 | | | \$1,125.00 | \$2,250.00 |
| Pumps (COID to purchase) | 2 | \$3,000.00 | | \$3,000.00 | | \$3,000.00 | \$6,000.00 |
| 1,000 ft. Radius Pivot (Landowner to purchase) | 1 | \$75,000.00 | | \$75,000.00 | | \$0.00 | \$75,000.00 |
| Big Gun Sprinklers (Landowner to purchase) | 6 | \$1,250.00 | | \$7,500.00 | | \$0.00 | \$7,500.00 |
| EQUIPMENT TOTAL | | | \$5,625.00 | \$85,500.00 | \$0.00 | \$8,625.00 | \$99,750.00 |
| SUPPLIES/MATERIALS: | | | | | | | |
| Pond Liner (sq*ft) | 20,000 | \$0.55 | | | \$11,000.00 | \$0.00 | \$11,000.00 |
| Wire & Conduit to Pivot | 5000 | \$3.05 | | | \$15,250.00 | \$0.00 | \$15,250.00 |
| Overflow, Measuring Flume, Headgates <i>(installation included)</i> | 1 | \$9,500.00 | | | \$9,500.00 | \$0.00 | \$9,500.00 |
| Pump Station w/ Frequency Drive | 1 | \$7,000.00 | | | \$7,000.00 | \$0.00 | \$7,000.00 |
| Water Collection Pipes | 1400 | \$8.50 | | | \$11,900.00 | \$0.00 | \$11,900.00 |
| Fencing <i>(installation included)</i> | 2000 | \$2.50 | | | \$5,000.00 | \$0.00 | \$5,000.00 |
| Miscellaneous Pump & Pivot fittings | 1 | \$3,500.00 | | | \$3,500.00 | \$0.00 | \$3,500.00 |
| 10" Class 125 PVC | 1700 | \$6.90 | | | \$11,730.00 | \$0.00 | \$11,730.00 |
| 8" Class 125 PVC | 3300 | \$4.85 | | | \$16,005.00 | \$0.00 | \$16,005.00 |
| 6" Class 125 PVC | 1700 | \$4.65 | | | \$7,905.00 | \$0.00 | \$7,905.00 |
| Miscellaneous PVC Fittings | 1 | \$4,500.00 | | | \$4,500.00 | \$0.00 | \$4,500.00 |
| Temperature Loggers (COID to purchase) | 2 | \$150.00 | | \$150.00 | | \$150.00 | \$300.00 |
| SUPPLIES/MATERIALS TOTAL | | | \$0.00 | \$150.00 | \$103,290.00 | \$150.00 | \$103,590.00 |
| CONTRACTED SERVICES: <i>(Labor, supplies, and materials to be provided by non-staff for project implementation.)</i> | | | | | | | |
| Pivot Installation (Contractor) | 1 | \$5,500.00 | | | \$5,500.00 | \$0.00 | \$5,500.00 |
| Power Relocation | 1 | \$7,000.00 | | | \$7,000.00 | \$0.00 | \$7,000.00 |
| CONTRACTED SERVICES TOTAL | | | \$0.00 | \$0.00 | \$12,500.00 | \$0.00 | \$12,500.00 |
| ENVIRONMENTAL COMPLIANCE COSTS: | | | | | | | |
| NEPA/ESA/NHPA Reviews (Contractor) | 1 | \$3,000.00 | | \$1,500.00 | | \$1,500.00 | \$3,000.00 |
| ENVIRONMENTAL COMPLIANCE TOTAL | | | \$0.00 | \$1,500.00 | \$0.00 | \$1,500.00 | \$3,000.00 |

| | Unit Number | Unit Cost | In-Kind Match | Cash Match Funds | OWEB Funds | Reclamation Funds | Total Cost |
|-----------------------------------------------------------------------------------------------------------|----------------------------------|---------------------------------------|--------------------|--------------------|---------------------|--------------------|---------------------|
| | <i>(e.g., # of hours, units)</i> | <i>(e.g., hourly rate, cost/unit)</i> | | | | | |
| OUTREACH: <i>(Refers to informational and promotional activities associated with the project.)</i> | | | | | | | |
| CCSWCD Project Awareness Sign | 1 | \$800.00 | | | \$800.00 | \$0.00 | \$800.00 |
| Central Oregon Ranch Supply Tradeshow Event <i>(CCSWCD Project Presentation & Tour)</i> | 15 | \$35.00 | \$525.00 | | | \$0.00 | \$525.00 |
| OUTREACH TOTAL | | | \$525.00 | \$0.00 | \$800.00 | \$0.00 | \$1,325.00 |
| POST-IMPLEMENTATION STATUS REPORTING: | | | | | | | |
| Project Completion Report <i>(COID)</i> | 16 | \$50.00 | \$400.00 | | | \$400.00 | \$800.00 |
| Project Completion Report <i>(CCSWCD)</i> | 16 | \$35.00 | \$70.00 | | \$490.00 | \$0.00 | \$560.00 |
| Project Evaluation Reports <i>(COID)</i> | 16 | \$50.00 | \$400.00 | | | \$400.00 | \$800.00 |
| Year 3 OWEB Report <i>(CCSWCD)</i> | 16 | \$35.00 | \$70.00 | | \$490.00 | \$0.00 | \$560.00 |
| Year 5 OWEB Report <i>(CCSWCD)</i> | 16 | \$35.00 | \$70.00 | | \$490.00 | \$0.00 | \$560.00 |
| POST-IMPLEMENTATION STATUS REPORTING TOTAL | | | \$1,010.00 | \$0.00 | \$1,470.00 | \$800.00 | \$3,280.00 |
| | | | | | | | |
| PROJECT TOTAL | | | \$15,048.00 | \$87,194.00 | \$135,976.20 | \$18,960.00 | \$257,178.20 |

| PROJECT PARTNER CONTRIBUTIONS: | | | | | | | |
|--------------------------------------------|--|--|--------------------|--------------------|---------------------|--------------------|---------------------|
| COID Contributions | | | \$14,313.00 | \$4,650.00 | | \$18,960.00 | \$37,923.00 |
| CCSWCD Contributions | | | \$735.00 | | | | \$735.00 |
| Landowner Contributions | | | | \$82,544.00 | | | \$82,544.00 |
| OWEB Contributions | | | | | \$135,976.20 | | \$135,976.20 |
| PROJECT PARTNER CONTRIBUTIONS TOTAL | | | \$15,048.00 | \$87,194.00 | \$135,976.20 | \$18,960.00 | \$257,178.20 |