WaterSMART: Funding Opportunity Announcement No. R15AS00002
Water and Energy Efficiency Grant for FY 2015

KLAMATH IRRIGATION DISTRICT
STUKEL SPILL PROJECT
In Concert with
C-DROP LLC

K L A M A T H COUNTY OREGON

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TABLE OF CONTENTS

Technical Proposal: Executive Summary

January 09, 2015

Klamath Irrigation District
Klamath Falls, Klamath County, Oregon

The Stukel Spill project includes components that accomplish goals set out in Tasks A, B, C, and D of the 2014 funding announcement. Klamath Irrigation District (KID) is asking the U. S. Bureau of Reclamation (USBR) for $80,535.70 to complete this project which is located in the Klamath Project within a USBR owned canal and KID owned property. The project can begin November 2015 and is likely to be completed in 90 days or by the end of January 2016. Project funds will be used for design, materials, permitting and construction of a large capacity (150 cfs) operational spill structure near the Stukel pump site. The spill will consist of a concrete intake structure and electric actuated roller gate and pipe discharge with measuring device and SCADA intertie which will discharge to Lost River. KID operational spill can be decreased and shifted higher in the delivery system, providing Tulelake Irrigation District (TID) with portions of their demand, allowing them to reduce their diversion from Upper Klamath Lake (UKL) through Station 48 by the same amount. The project will enhance re-use and reduce excess spill to TID drains and sump system. When system capacity allows, water spilled at this facility will enhance power production at our C-Drop hydroelectric plant. Reduced diversions from Project water supply make it easier for the USBR to manage limited water supplies for all competing stakeholders.

Stukel Spill Project goals are:

- ✓ Improve management of KID water deliveries
- ✓ Reduce KID and Project demand
- ✓ Increase the availability of Project water supply to other USBR contractors in water short years and in years with no shortage increase supplies to National Wildlife Refuges, UKL storage, ESA, Tribal Trust and Upper Basin irrigation needs.
- ✓ Increase renewable hydroelectric production at C-Drop.
- ✓ Provide more timely and effective measurable reductions in G & D canal systems for emergency operations (i.e., canal breaches and power outages etc.)

Task A: Water Conservation: The project will provide for better management of water deliveries in the KID delivery system which can result in the reduction of diversions from UKL required for operational spill which is less available for reuse by the Klamath Project, specifically Tulelake Irrigation District (TID). KID estimates that 6500 acre feet could be conserved annually. This can stretch available water supplies in UKL making more available to all stakeholders. Because of the length of the KID delivery system, timely and effective deliveries in the D canal system require KID to divert significant amounts of water from UKL and operationally spill that water from the D canal and laterals every day so that it can be picked up and made available to meet irrigation demands. This spill water flows to the TID drainage system or Lost River below TID's diversion and to their sump system. Having a large capacity Stukel Spill structure with water available to meet increased

demand fluctuations in the D canal system in a more timely fashion will allow KID to reduce its daily diversions from UKL for necessary operational spill in the D canal and laterals. Water spilled through the Stukel Spill to Lost River above the TID diversion point in Lost River can be effectively used by TID as opposed to spilling water to the TID drainage or sumps. The Stukel Spill will also provide a place to put water from decreased demand fluctuations in a more timely fashion where it can be effectively used by TID. Either way water spilled through the Stukel spill allows TID to reduce their diversions from UKL through Station 48 by the same amount. This results in an overall reduction in the KID required diversion from UKL on a daily basis. This process is explained in further detail in the evaluation criterion section and in Exhibit F.

Task B: Energy -Water Nexus: In 2012 KID with its private partner C-Drop LLC sited a 1.1 MW hydroelectric plant at the C-Drop structure through a Lease of Power Privilege agreement with Reclamation. Completion of the Stukel Spill Project will allow the increase of average daily flows through the power plant increasing power production as compared to historical operations. KID will increase diversions from UKL and deliver this water to the Stukel spill. This extra flow will pass through the C-Drop hydroelectric plant and essentially be delivered to Lost River for TID and TID diversions from UKL through Station 48 can be reduced by the same amount resulting in no net increase in total diversion from UKL. KID, C-Drop LLC and USBR all share in the revenue produced by the C-Drop hydroelectric plant's renewable, clean green energy production. The C-Drop plant uses water delivered for irrigation through KID's delivery system to produce electricity. We estimate that this project can increase production 14-15%. The USBR receives an annual lease payment at the rate of (1) mill per kilowatt-hour (kwh) for the first gigawatt-hours of production, 1.5 mills per kwh for over 40 up to 80 gigawatt-hours and 2 mills per kwh for any production over 80 gigawatt-hours. More details are provided in the evaluation criterion section.

Task C: Benefits to Endangered Species: A large capacity spill structure such as the Stukel Spill Project located near the Stukel pump site can benefit endangered species in the following ways: Better management and conservation of KID water supplies in sufficient water supply years provides more storage in UKL which can benefit Klamath River flows, UKL levels and available riparian habitat, which provides needs for Shortnose and Lost River Suckers, DPS Green Sturgeon, SONCC Coho Salmon ESU and Southern DPS Eulachon. Increased revenues to the C-Drop hydroelectric plant can provide seed monies for future management and conservation projects which can intern benefit endangered species as described above. Increased deliveries to TID through the KID delivery system will reduce their demand from TID's diversion point Station 48 located in the Lost River Diversion Canal (LRDC), which could reduce future potential screening requirements for ESA listed fish. Reduced demand through Station 48 would mean smaller scale fish screens. Future conservation projects being considered are long crested weirs to replace current flash board checks and a regulating reservoir at the end of the D Canal. Both would provide for better water management and conservation.

Task D: Water Marketing: Currently water supply shortages in the Klamath Project are distributed amongst the various priorities of USBR contracts, or mitigated by the USBR sponsored Water User Mitigation Program (WUMP), which provides monetary incentives for farmers to irrigate with their own private wells or to idle farmland. WUMP funds are limited and ground water use has been high for multiple years which have had a detrimental impact on ground water levels. Water better

managed and conserved will reduce the dependence on the WUMP program and make it more sustainable. Additionally any conserved water increases net supply to the Project and reduces the impacts of state water right regulation on non project upper Klamath basin water users. The Final Order in the Klamath Basin Adjudication gave KID and the Project a senior water right over a majority of the Upper Klamath Basin water users. When water shortages do exist, contract duties are often times traded between the various contractors, allowing irrigation of lesser priority higher production contract lands in lieu of not irrigating higher priority contract lands.

Technical Proposal: Background Data

• See attached map in Appendix Exhibit A

The Klamath Irrigation District is located within Klamath County, Oregon generally south of the City of Klamath Falls to the Oregon/California state line. KID is one district in the USBR Klamath Project which was authorized in 1905 under the Reclamation Act of 1902. KID repaid its construction obligation on November 29, 1954 and entered into an amendatory contract with Reclamation that provided for KID to assume the operation and maintenance of the A,B,C,D,E,F and G canals, including all of their related distribution systems, the drainage systems and the related pumping plants. KID is a part of the Klamath Reclamation project which serves irrigation water to 210,000 acres with over 1300 family farms, Ranches and two National Wildlife Refuges. The Tulelake Irrigation District, another Project district lies generally directly South of KID just across the California border. It serves approximately 60,000 acres of private and federal lease lands. TID diverts water from UKL and from Lost River, their primary Diversion point is at the end of Lost River at Anderson Rose Dam. They supplement Lost River flows with a diversion at Station 48 from the Lost River Diversion canal which is supplied from UKL.

The KID water supply originates from UKL, Klamath River, Lake Ewauna, and is available to KID through its contract with Reclamation, and Oregon State water right – Final Order of Determination, March 7, 2013 with a priority of May 19, 1905 and duty of 3.5 acre feet/acre. KID continues to be an active participant in the Klamath River Basin Adjudication. KID's average surface water use for irrigation deliveries (1980-2012 excluding 2001 & 2010) has been 271,740 acre feet. In the past 5 years (2010-2014 KID's average available surface water supply has been only 215,536 acre feet. Drought and ESA issues have created water supply shortages in the Klamath Project since 1992.

KID delivers water to approximately 2500 individual parcels with 39,500 acres of irrigable land in KID proper. KID also conveys water through KID canals providing deliveries to nine other Districts under contract with USBR and over 100 individual Warren Act contracts. Total acreage served is approximately 75,000 acres. KID is a quasi political subdivision of the State and operates under the provisions of Chapter 545 of the Oregon Revised Statutes.

The majority of agricultural return flows and KID operation spills end up in the Lost River or the TID drainage system. KID has seven pumping plants which can pump from Lost River back into our canal system for reuse as irrigation. Any or all of the return flows in Lost River above Anderson Rose Dam can be gravity diverted by TID into the J canal for their irrigation supplies. Those return flows below Anderson Rose Dam must be pumped twice for irrigation or more times for Tulelake

sump and drainage flood control. Water that is pumped for flood control is lost as agricultural supply.

Crops grown within the KID service area include potatoes, alfalfa, pasture, cereal grains, grass hay, orchard, strawberry root stock and landscape plants. Most crops are sprinkler irrigated except pasture which is typically flood irrigated.

KID facilities include the following:
* 200 miles of supply canals and laterals
* 200 miles of drainage ditches
* 7 pumping plants with VFD improvements in 2010
* 2 major elevated flumes. KID is in the process to replace the C-Flume with a pipeline/siphon.
* Pipelines, siphons, bridges and control & delivery structures. KID has piped 6.5 miles of laterals since 2007.
* C-Drop hydroelectric plant
* A Canal head works fish screens

In May of 2012 KID with private partner C-Drop LLC. completed construction of and began operating a 1.1 megawatt capacity hydroelectric plant at the C-Drop structure under a Lease of Power Privilege agreement (LOPP) with USBR. Average power production during a normal water supply and demand year is estimated at 2900 MWHs. KID provides daily operation and minor maintenance of the plant and receives a percentage of the gross revenues as per the agreement with C-Drop LLC. C-Drop LLC is a limited liability corporation formed by Ted Sorenson and Dennis Daugherty to partner with KID to develop the C-Drop hydroelectric plant. Dennis Daugherty is the owner of Riverside Inc. is an irrigation/hydroelectric construction and repair company in Parma, Idaho. Ted Sorenson owns Sorenson Engineering in Idaho Falls, Idaho. C-Drop LLC designed, funded and constructed the C-Drop hydroelectric plant. An agreement between C-Drop LLC and KID dictates the responsibilities for operations and maintenance and share of the revenues in accordance with the LOPP. Power produced is sold to PacifiCorp under a Power Sales Agreement. C-Drop LLC. is an outstanding partner. They provide high quality timely work at reasonable prices. The C-Drop project was completed in less than 5 months with excellent workmanship during construction and upon completion. Ted and Dennis have partnered numerous times to develop hydroelectric projects under agreements with other irrigation districts. When a major maintenance problem occurs they provide an immediate response.

There are five ESA listed species within the Klamath Project. KID operates pursuant to ESA Biological opinions associated with the Klamath Project. The Klamath Project has been described as a "hot spot" for ESA issues. Water supplies in the Klamath Basin have also been described as over allocated, which when supplies are limited, has created a lot of tension and litigation over available supplies.

KID is a signatory to the Klamath Basin Restoration Agreement (KBRA), composed of Federal, State, and local government agencies, irrigation districts, Indian tribes and environmental groups. This agreements purpose is to restore and sustain natural fish production, establish reliable water and power supplies which sustain agriculture, communities and national wildlife refuges and contribute to the public welfare and sustainability of all Klamath Basin communities. The implementation of the

KBRA including management of Klamath Project water supplies has been described as the largest river and salmon restoration project in history. Under KBRA, Klamath Project water supplies are limited and could be reduced by as much as 100,000 acre feet or more in the driest years, should the KBRA be authorized and implemented. The associated bill to authorize it is currently receiving attention in Congress. KID is also participating in the ON Project Plan (OPP), a requirement of the KBRA, which is soon to be completed and will provide tools to help deal with project supply shortages. The OPP goal is to match Project demand with available supply in a given year. Benefits from the Stukel Spill Project will reduce project demand making the OPP process easier, while providing agriculture with a more reliable supply and making more water available for fish and wildlife.

KID and the Klamath Project will need to continue to work on projects that provide better water management and conservation of available supplies to meet the Projects future needs. The Stukel Spill Project is one more step forward in this necessary ongoing process.

KID has a long history with Reclamation originally stemming from the O&M contract (14-06-200-3784) dated November 29, 1954. KID has received grant funding and followed through to completion on the following projects:

- 2010: Purchase of seven variable frequency drives (VFD) and five compatible replacement motors for KID pumping plants, Title II 2010 Drought Relief Program Agreement No. 13272010, with a funding amount of $246,000.00 KID paid for installation costs.

- 2010: Purchase of HDPE pipe to pipe the remainder of the D-1-c lateral, Agreement No. R10AP20015, Water Conservation Field Services Program, with a funding amount of $50,000.00 KID provided installation.

- 2008: Purchase of HDPE pipe to pipe a portion of D-1-c lateral, Agreement No. 08SF200017, Water Conservation Field Services Program, with a funding amount of $66,500.00 KID provided installation.

- 2008: Purchase of HDPE pipe to pipe various laterals, A-3a, A-3-b, A-3-c, A-3-d, A-3-f Agreement No. 08FG200073, Water Conservation Field Services Program, with a funding amount of $114,000.00 KID provided installation.

- 2007-2008: Purchase of HDPE pipe for the E-canal, Agreement No. 07FG200106, Water Conservation Field Services Program, with a funding amount of $716,000.00 KID provided installation and purchased cleanout connections.

- 2007: Miller Hill Pumping Plant Upgrade, replace two pumping units, add VFDs, new control building and sump with measuring devices, telemetry and SCADA, Water 2025 Challenge Grant, Agreement No. 07FG200123, with a funding amount of $300,000.00 Total cost of project $697,231.00.

- 2005: KID Preliminary Modernization Study by Irrigation Training and Research Center

(ITRC) California Polytechnic State University (Cal Poly) sponsored by USBR under the 2003 Water Development Act (PL 108-137). Subsequent implementation of, KID Canal Measurement and Operation Modernization, B, C & D canal. Sontec measuring devices, Stukel pumps, C, G, D, & B canal monitoring and telemetry, and SCADA system with a total funding amount of $613,000.00 KID provided installation assistance and constructed required lined concrete canal sections.

The VFD project, KID Canal Measurement and Operation Modernization and Miller Hill pumping plant upgrade provided for better water management, monitoring, reductions in water supply demand, and conserved power usage and power costs. KID's power costs for pumping have decreased approximately 50%. We now only pump what we need instead of maximum pump capacity which requires TID to divert more at Station 48 and fighting regulation of A Canal diversions and managing the fluctuations.

The HDPE piping projects reduced delivery losses and improved safety concerns and maintenance issues in the suburban area of Klamath Falls and other areas.

Other Completed Projects:

- 2013 KID sited a new small capacity (10 cfs) concrete operational flash board spill structure with a USBR permit which spills upstream from the TID diversion into Lost River at KIDs cost. This spill provides the same benefits as the proposed Stukel spill on a lesser scale.

Technical Proposal: Technical Project Description

Klamath Irrigation District will construct a large capacity spill structure (150 cfs) in the G Canal near the Stukel Pump Station. The spill will be composed of a concrete intake structure in the west bank of the G canal and 235 feet of 48 inch coated steel pipeline discharge. A roller gate assembly will control discharge and will be controlled by a manual electrically controlled actuator. Discharge will be measured with a yet to be determined measuring device reported onsite and to the KID SCADA system. Spill water will go to the Lost River via the Stukel pump channel. Ditchriders will control the spill structure onsite.

Actual construction time is anticipated to take 60 days and with a grant award will begin in early November of 2015. We have allowed for 150 days for project completion. The concrete structure and gate will be constructed first which would allow for normal district operations beginning in April should any delays hamper the project, allowing even more time for completion. Stukel Spill operations would not be possible until the full project is completed. C-Drop LLC will provide Project supervision expertise and KID will provide manual labor and required equipment needs for excavation, concrete forming and pouring, backfill and assembly for the gate, intake structure, and pipe laying. C-Drop LLC through Sorenson engineering Inc. will provide engineering services. A licensed electrician will provide electrical services and pipe will be welded by a certified welder.

Pipe, intake transition materials, measuring device, roller gate assembly and related materials will need to be ordered in advance of construction. The roller gate assembly and related materials will be provide by KID's partner Riverside Inc. These items will be ordered in August of 2015 according to the readiness to proceed schedule.

KID will work with the USBR in the processes of Environmental Compliance, permitting, oversight and inspections. Initiation of these processes will begin soon after award. Initial discussions with the KBAO office reveal that the project is likely to fall into the categorical exclusion scenario.

Technical Proposal: Evaluation Criteria

Technical Proposal: Evaluation Criteria Evaluation Criterion A: Water Conservation (28 points) Subcriterion No. A.1 -Quantifiable Water Savings (24 points):

Water conservation from the Stukel Spill Project will occur by the reduction of diversions from UKL required for operational spill in the lower D canal and 18 laterals which is less available for reuse by the Klamath Project, specifically TID, and may be lost as Project supply requiring costly pumping to evacuate for flood control. Ditchriders will require less operational spill in the D Canal system if water is available to them from the Stukel Spill in a timelier basis rather than from UKL or expensive pumping at the Stukel supplemental pump site. The D Canal is an extension of the G Canal which is a lateral of the Upper C Canal where C-Drop is located. It serves agricultural irrigation from the city of Merrill to the California border and below, including the Shasta View Irrigation District (SVID) and Malin Irrigation District (MID). In order to make timely deliveries in the lower D canal, KIDs system requires operational spill for irrigation orders on and off. KID estimates that up to 1/3 of historical operational spill or 6500 acre feet can be conserved Through the Stukel Spill Project.

Average operational spill in the D canal system and laterals (2006-2011 excluding 2010 an extremely water supply limited year) is 19,500 acre feet as measured by Ditchriders in the field with gauges over flash board spill structures on a daily basis. This information is compiled by KID staff in annual water reports to the KBAO office.

• *What is the applicant's average annual acre-feet of water supply?*

KIDs average annual water supply needs and diversion from UKL (1980-2012 excluding 2001 & 2010) has been 271,740 acre feet. Historically the entire Klamath Projects annual supply and diversion averages 390,000-410,000 acre feet. In more recent years, (2010-2014 averaged) KID's average available supply has been 215,536 acre feet and the entire Project between 260,000-350,000 acre feet, although determination of supply has been based on Biological Opinions (BO), USBR mandated Operations Plans and the result of water banking programs - Water Use Mitigation Program(WUMP) which has affected demand with land idling and well water substitution. In 2001 no water was delivered until August, and only accumulated to 40,000 acre feet. In 2010, 2013 and 2014 the Klamath Project water supply needed was short over 100,000, 65,000 and 100,000 acre feet respectively. The current Oregon State Final Order of Determination allows total Klamath Project diversions of 570,110 acre feet. Biological Opinions for downstream Klamath River flows have greatly affected KID and Project available supplies. WUMP programs are impacting the C-Drop hydroelectric operations. Reduced surface water irrigation demand from land idling and ground water substitution limits water available for power production. The Stukel spill project can improve this situation in water short years and enhance production in full supply years by KID providing a portion of TID demand through the C-Drop hydroelectric plant while intern TID reduces their UKL diversions by the same amount.

• *Where is that water currently going (i.e., back to the stream, spilled at the end of the ditch, seeping into the ground, etc.)?*

Currently the operational spill water from the D Canal system necessary to meet demand fluctuations is spilling into the Lost River downstream from TIDs diversion or the TID drainage system. Excess water from these systems must be pumped 3-4 times back to the Klamath River where it is lost as water supply to the project. Current BO's treat this water as additions to required Klamath River flows with no credit to Project supplies.

• *Where will the conserved water go?*

The potential conserved water will not need to be diverted from UKL, reducing overall KID demand and will be available as Project supply to other USBR contractors in the Project to help mitigate supply shortages or if not needed provides storage in UKL and could be made available to other stakeholders competing for Klamath Basin water supplies or left in storage for future years.

(3) Irrigation Flow Measurement and (8) Other Project Types

(a) *How have average annual water savings estimates been determined? Please provide all relevant calculations, assumptions, and supporting data. Reference relevant studies or past project documentation that support the water savings estimate.*

Klamath Irrigation Districts current delivery system is lengthy, specifically the D canal system, which from the A canal head works is 36.8 miles from beginning to end. Slopes in canals are low and typical water velocities are 2 feet/second or less. Water deliveries from the A canal head works to the end of the D canal can take up to 27 hours and even longer for some laterals. (36.8 miles x 5280 ft/mile ÷ 2 ft/sec. ÷ 60 sec/min ÷ 60 min/hr) Two of KIDs largest delivery contractors SVID and MID are located at mile 28 and 30 respectively. Each of these Districts demands can be as high as 70 cfs. Daily irrigation deliveries for these Districts and KID users can fluctuate greatly and currently requires that KID use operational spills in the canals and laterals to provide timely deliveries and manage shutdowns to prevent canal overflows. Additionally, emergency shutdowns and electrical outages often require the use of operational spills for canal safety. Current location of spill structures in the lower D Canal are limited in their capacity of use because of existing drain and culvert capacities and the fact that all flow to Lost River below the TID diversion or the TID drain system which requires expensive pumping to manage. Currently increased demand fluctuations can only be met by increases or decreases to A Canal diversions or by expensive supplemental pumping from Lost River at the Stukel pumping station located at mile 15 on the G Canal. Decreases in demand must be spilled to the less available for use TID drain system, eventually ending up in the TID sumps which evaporate all season long and must be managed for flood control by pumping to the Lower Klamath area and eventually the Klamath River until reductions in flow at A Canal diversions reaches the lower D canal area. Increases in demand work the same way and take 27 hours coming from the A Canal diversion or require pumping from the Stukel pump station for a quicker response. Errors in management of the system can empty canals requiring refill before irrigation can take place. This creates a situation where KID operations require spilling large amounts of water in inopportune areas to manage the system. Using the same calculations, the Stukel spill site while providing TID water supplies can also be used to manage D Canal demand fluctuations to SVID and MID in a timelier manner, 9.5- 11 hours. Ditchriders could adjust their required flows for the D canal system using the Stukel spill, at the end of their day to meet demand for the next day, instead of constantly spilling larger amounts of water where it is less useable. Changes made the following morning will still conserve water because of better timing. TIDs required flows in Lost River will not be adversely affected because the reservoir behind Anderson Rose Dam will cushion fluctuations. The average operational spill in the D Canal (2006-2011 excluding 2010) has been 19,500 acre feet as documented by operational records. Spills are measured with gauges and rating tables over flash board spill structures. KID estimates that up to 1/3 or 6500 acre feet could be saved by managing necessary operational spills at the Stukel spill site while reducing TID demand through Station 48 which is TID's diversion from UKL.

Historical operational spill necessary to meet demand fluctuations in the D Canal system including laterals occurs 24 hours a day 7 days a week during irrigation season. This volume of water is spilled whether or not there are increases in irrigation demand because there could be each day. The Stukel Spill will provide a closer source to provide for these demand fluctuations in a timelier fashion. The typical irrigation season for KID is April through October 15 for a total of 183 days. Averaging the average yearly required spill to daily required spill in the D Canal system to cfs/day would be (19,500 acre feet) ÷ (1.9835 acre feet/cfs/24 hrs.) ÷ (183 days) = 53.72 cfs spilled/day.

District operation of the D Canal system including 18 laterals, will always require some operational spill to accommodate for operational errors, evaporation fluctuations and water user delivery errors etc.

However the Stukel Spill by providing a timelier source of water for demand fluctuations allows the District to reduce the operational spill which occurs constantly. The estimated 6500 acre feet of water saved is a conservative estimate resulting from 17.9 cfs or 33% less water spilled per day as operational spill. KID would instruct it's Ditchriders to operate the D canal system with less spill in the D canal system. If a Ditchrider has the ability to cover increases in demand by moving water from the Stukel Spill in a timely manner they will be comfortable with less operational spill lower in the D canal system. 17.9 cfs per day would not have to be diverted for KID operations. Moving this 17.9 cfs to the Stukel Spill as part of the total delivery to TID through Lost River allows TID to reduce their delivery from Station 48 by 17.9 cfs and correspondently diversions for TID at Station 48 from UKL can be reduced by 17.9 cfs per day. Water taken from the Stukel Spill to meet KID demand can be replaced if necessary from A Canal to Stukel Spill also in a timelier manner and the regulating reservoir behind Malone Dam will provide the flexibility for these operations. TID receives agricultural return flows and operational spill from all of KID's delivery system above Anderson Rose Dam and their supply in Lost River is dynamic. They adjust for this with Station 48 flows on daily basis if not more often.

The same principal works when water user demand in the G-D Canal system decreases. Currently there is no structure in place to remove excess water from the G-D Canal system in large quantities without operationally spilling water to the Tulelake drainage and sump system. Farmers order their water on or off the day prior to their delivery or shutdown, with the dedicated time for receiving orders being 5-7 PM. These changes are typically made at the A canal the next morning. Catastrophic power outages or pump shutdowns can exacerbate this situation. This excess water must be spilled until a reduction in flow is made at the A canal headworks 36.8 miles from the tail end of the D Canal, estimated at 27 hours of excess flow until the reduction in flow shows up to correct the situation. Using the Stukel Spill to transfer this excess flow to the Lost River in the regulating reservoir upstream from the TID diversion point at a single measured point keeps the excess water in the system for Project supply and the reservoir provides flexibility for TID diversions. Excess flows would only occur from the Stukel Spill downstream and proper regulation of check structures in the G-D system would further reduce them. Coordination of flow amounts at Stukel Spill with TID and USBR would allow TID to reduce Station 48 deliveries by the same amount and USBR could correspondently reduce flows for Station 48 from UKL leaving this excess water in UKL making it available for Project supplies at a later date. Using these management strategies less water will be diverted on a daily basis from UKL.

Another benefit provided by the Stukel spill would be that it can provide for better water management dealing with frost protection for potato crops. A killing frost can occur any day during the irrigation season in the Klamath Basin and often times will occur multiple nights in a row. Potato producer's frost protect their potato fields with sprinkler irrigation, usually solid sets. The rule of thumb for solid set irrigation systems is 1 cfs required for each 10 acres of potatoes. Frost water needs add up quickly using these numbers, with for example 400 acres of potatoes requiring 40 cfs of demand. The D Canal system produces the majority of the potato acreage in the District because of the preferred sandy soil conditions. When frost is anticipated excessively large amount of water must be spilled from the D Canal system so it is available to protect potato crops without draining canals. This sometimes occurs for days, while the water is typically only used for a few hours during the night. Using the same management practices described earlier the Stukel spill could provide this water in a more efficient manner.

In summary the Stukel Spill structure will provide a critical management tool to improve logistical operations of water control for KID and the Project. It will save 6500 acre feet of water per year which will not be needed for operational spill, keeps more water in the Project irrigation system and enhances C-drop hydroelectric production by transferring a portion of TID diversion requirements at Station 48 to the KID system which must flow through C-Drop. Water will also be saved through the logistical timing in the change in operations. The volume of water related to hours and miles of canal that must be spilled with reductions in irrigation demand and frost water needs, while waiting for corrected flows from the A Canal diversion is difficult to quantify and was not considered in the stated amount of water saved, but it does exist and is likely significant. Our 6500 acre feet saved is likely conservative and is only based on our ability to reduce diversions needed for operational spill on a daily and annual basis.

Water management schematic examples provided in Exhibit F and H may provide a clear picture of how water will be conserved, hydro production at C-Drop is enhanced, and flood control pumping costs can be reduced using the Stukel Spill.

(b) Are flows currently measured at proposed sites and if so what is the accuracy of existing devices? How has the existing measurement been established.

Existing spill numbers in the D Canal and lateral system are measured by staff gauge over flash board spill structures using Reclamation developed rating tables. Ditchriders document these spills on a daily basis. Accuracy is estimated at plus or minus 10%.

(c) Provide detailed descriptions of all proposed flow measurement devices, including accuracy and basis for accuracy.

A yet to be determined real time measuring device will be part of the Stukel Spill Project allowing more accurate measurement of water spilling. This will allow Ditchriders to accurately adjust flows daily and the SCADA tie in will allow office staff to coordinate with TID and USBR diversion needs verses our operations. Engineering evaluations will determine the best type of device to use with the goal of 2-5% accuracy. We are currently speaking with manufactures to determine the best device for our project.

(d) *How will actual water savings be verified upon completion of the project? Please explain the calculations and the analyses for this verification.*

Average annual water savings and verification of those savings are difficult in the Klamath Irrigation District and Klamath Project. The Klamath Project is a complicated system with many factors affecting irrigation use and operations. Supply issues and benefits of a complicated reuse system with Districts within the project are interdependent upon what goes on in each District. Irrigation diversions fluctuate annually according to cropping patterns and climate. Verification of savings will be done by compiling the reduction of water spilled in the D canal system in comparison with past year averages and total G, D and A canal diversion averages. KID Ditchriders will be instructed to reduce their D canal system operational spill and to manage demand fluctuations with the Stukel Spill whenever possible. KID staff compile monthly and annual operational spill in each canal and lateral which will include the Stukel spill, and can use this information to monitor ongoing and ultimate success of the project. Reduction in

annual Stukel, TID D plant and four drain pumping plants in their main drain can also be used as a measure for success. Multiple years of diversion and spill data will need to be compiled and compared before results could be interpreted.

SCADA and Automation:

The Stukel Spill flows will be tied into the existing KID SCADA system allowing real time monitoring. A remote terminal unit already exists at the proposed site making interconnection simple. The local KBAO office has access to the KID SCADA system.

Subcriterion No. A.2-Percentage of Total Supply (4 points)
Provide the percentage of total water supply conserved: State the applicant's total average annual water supply in acre-feet. Please use the following formula:
Estimated Amount of Water Conserved/Average Annual Water Supply

Estimated amount of water conserved 6500 acre feet ÷ 271,740 KID historical average annual supply = 2.4%
Using more recent average annual supply available from UKL (2010-2014), which has been affected by BO's, USBR Operation Plans and drought conditions, KID's average supply has been 215,536 acre feet. 6500 acre feet conserved ÷ 215,536 would equal 3.0% supply conserved.

Evaluation Criterion B: Energy-Water Nexus (16 points)

Describe the amount of energy capacity and energy generated.

In the spring of 2012 KID with its partner C-Drop LLC sited a 1.1 MW hydroelectric plant at the C-Drop structure through a LOPP agreement with Reclamation. The completion of the Stukel spill structure will allow for an increase in average daily flows through the power plant without increasing net diversions, as compared to historical operation in which flows through the plant depended only on KID irrigation diversion demand through the C-Drop. KID will be able to increase flows through C-Drop over and above normal KID irrigation demand and provide those flows to TID with corresponding decreases in diversions at Station 48 from UKL.

Maximum rated flows for C-Drop hydroelectric plant = 700 cfs + 5% allowable increase.
C-Drop flows supply water to the Upper C, C, C-1 and G canals. Max. rated capacity - Upper C is 750 cfs, G canal 400 cfs, C canal 345 cfs, C-1 5 cfs.

Spilling water at the proposed Stukel spill to better manage water deliveries in the G-D Canal system while providing TID with flows in Lost River for their irrigation demand will allow increased flows through the C-Drop hydroelectric plant and increase generation and revenues. KID will need to closely monitor TID Station 48 diversions to determine allowable spill. TID provides Station 48 deliveries to KID and KBAO on a daily basis or more if changes are made.

The original C-Drop feasibility study showed that according to KID historical operations, C-Drop hydroelectric plant would produce an average annual 2,900,000 kilowatt/hrs of renewable energy. Using 2008 delivery records we have determined that by incorporating Stukel Spill operations, the potential increase to C-drop flows would be 11,130 cfs. This was done comparing G canal flows vs. capacity, Stukel pump needs, and TID station 48 deliveries from LRDC which originate from UKL and Klamath River using an excel spread sheet with formulas. See Appendix Exhibit B – C-Drop Increased Flows Excell Spreadsheet & Flows vs. KW. The C-Drop hydroelectric plant flow vs. KW spreadsheet shows that each 100 cfs of increase is generally equal to 160 KW of production. Assuming a total increase of 11,130 cfs during the irrigation season that equates to an increase of 427,392 KWHs of production a 14.74% increase from average. 11,130 cfs ÷ 100 x 160 kw x 24 hrs. = 427,392 ÷ 2900 = 14.74% See Exhibit B.
Future years will yield similar results.

Describe any other benefits of the renewable energy project. *Please describe and provide sufficient detail on any additional benefits expected to result from the renewable energy project including:*

•*Expected environmental benefits of the renewable energy system.*

The system already exists, it is screened for fish we are just increasing the potential production.

•*Any expected reduction in the use of energy currently supplied through a Reclamation Project.*

Spilling water at the Stukel Spill project will reduce the energy use required to pump at the Stukel pump station to alleviate fluctuations in delivery needs for the D Canal, by providing access to no cost gravity water. It will also reduce energy use by the pump stations in the TID drain and sump systems. See Exhibit H.

•*Anticipated beneficiaries, other than the applicant, of the renewable energy system.*

C-Drop LLC, KIDs partner in the hydroelectric plant will benefit from increased production and revenues. USBR also benefits monetarily from increased production through the LOPP. Pacificorp benefits from an increase in their portfolio of clean green renewable energy production.

•*Expected water needs of the renewable energy system.*

No new diversions will be required. All increases to flow through C-Drop require no net increase in water use just better management and all irrigation flows through C-Drop up to 700 cfs are covered in the State hydroelectric water right, and Final Order of Determination rates.

Subcriterion No. B.2-Increasing Energy Efficiency in Water Management
Describe any energy efficiencies that are expected to result from implementation of the water conservation or water management project (e.g., reduced pumping). Please provide sufficient detail supporting the calculation of any energy savings expected to result from water conservation

improvements

•Please provide sufficient detail supporting the calculation of any energy savings expected to result from water conservation improvements. If quantifiable energy savings are expected to result from water conservation improvements, please provide sufficient details and supporting calculations. If quantifying energy savings, please state the estimated amount in kilowatt hours per year.

•Please describe the current pumping requirements and the types of pumps (e.g., size) currently being used. How would the proposed project impact the current pumping requirements?

As stated earlier, spilling water at the Stukel spill site will reduce energy consumption at the Stukel pumping plant, TID drain and D pumping plants. Quantifiable energy savings will have to be determined using future years of operations as compared to historical operations. The Stukel pumping plant has 3 pumps for a total of 500 HP and pumping capacity of 100 cfs. TIDs D plant has five pumps for a total of 3750 HP and pumping capacity of 334 cfs. Various other TID drain pumps are too numerous to mention. Supplemental Stukel pumping would still be necessary when G canal maximum rated capacity would not meet D canal irrigation demand, but would not be needed to supply more timely water to the D Canal system when emergency shortages occur because of operational or water user error. The Stukel spill could provide water for these shortages. The Stukel pumping plant takes water from the Lost River above the TID diversion point so effects are the same to TID using either method; the Stukel Spill option however does not require power for pumping.

•Please indicate whether your energy savings estimate originates from the point of diversion, or whether the estimate is based upon an alternate site.

Energy savings would be based on required pumping at the supplemental Stukel pumping plant from Lost River and TID drain D pumping plants not the point of Diversions from UKL.

•Does the calculation include the energy required to treat the water?

No energy is required to treat the water.

•Will the project result in reduced vehicle miles driven, in turn reducing carbon emissions? Please provide supporting details and calculations.

Better management of KID operational spills concentrating them at the Stukel spill structure will remove dependence of operational spill at multiple current spill sites in the D canal and 18 D canal laterals resulting in less vehicle miles and corresponding reduction in fuel use and carbon emissions. Travel to many spill sites by Ditchriders to regulate fluctuations in D canal deliveries will be reduced. Spills are typically located at the end of laterals. Currently to provide for demand fluctuations, Ditchriders must visit and regulate many spills and checks to provide needed water to certain areas in the system.

Evaluation Criterion C: Benefits to Endangered Species (12 points)
For projects that will directly benefit federally-recognized candidate species, please include the

following elements:

(1) Relationship of the species to water supply.

Species	Scientific name	Listing/Status	Critical Habitat
Shortnose sucker	Chasmistes brevirostris	Endangered	Designated
Lost River sucker	Deltistes luxatus	Endangered	Designated
DPS Green sturgeon	Acipenser medirostris	Threatened	Designated
SONCC Coho salmon ESU	Oncorhynchus kisutch	Threatened	Designated
DPS eulachon	Thaleichthys pacificus	Threatened	Designated
Oregon spotted frog	Rana pretiosa	Threatened	Proposed
Great Basin redband trout	Oncorhynchus mykiss gibbsi	Species of Concern	No
Applegate's milk -vetch	Astragalus applegatei	Endangered	No
Green's tuctoria	Tuctoria greenei	Endangered	Designated

What is the relationship of the species to water supply?

SONCC coho salmon, DPS green sturgeon, and DPS euluchon inhabit the Klamath River. Shortnose and Lost River suckers inhabit UKL, Lost River and Klamath River all of which are water supply sources for KID. KID and Klamath Project operations are influenced by Biological Opinions on the Effects of Proposed Klamath Project Operations from May 31, 2013 Through March 31, 2023 on Five Federally Listed Threatened Endangered Species prepared by National Marine Fisheries Service Southwest Region, Northern California Office and U.S Fish & Wildlife Service, Pacific Southwest Region, Klamath Falls Fish and Wildlife Office, May 2013, NMFS file number: SWR-2012-9372 and FWS file number: 08EKLA00-2013-F-0014. These combined opinions provide Non Jeopardy Status for Klamath Project operations.

What is the extent to which the proposed project would reduce the likelihood of listing or would otherwise improve the status of the species?

Any water savings or better water management makes more water available to Project contractors in water supply short years and in flush years provides more storage in UKL which benefits in stream and riparian habitat for the species mentioned. Generally the Biological Opinions determine available water supply and distribute it between downstream Klamath River ESA needs, Klamath Project Irrigation supply and UKL. These BO's require specific UKL levels throughout the year to benefit endangered species. Improved water management within KID provides for improved water management in the Project as a whole and can stretch available water use through reuse higher in the system rather than dealing with excess water lower in the system which decreases the availability for reuse. Any of the water supply available not used by KID or the Project is available for National Refuge use, downstream Klamath River needs or UKL storage which benefits lake levels and or future Project supplies.

Water discharges from the Stukel spill will be at high velocities and drop into the Stukel pump station intake channel connected to Lost River. This process could help oxygenate the Lost River system. The Lost River is listed as oxygen deficient in both Oregon and California Clean Water Act Section

303(d) lists. Improved oxygen levels in water results in better habitat for all aquatic species. KID diversions from UKL are screened, preventing fish entrainment. Any water delivered to Lost River from the G canal system is screened water. TID diversions from the LRDC through Station 48 are not screened. Providing more of TIDs demand from the KID system reduces the unscreened diversions from Station 48. In the future if fish screening becomes a requirement for Station 48 diversions, reducing the quantity of diversion necessary from Station 48 could reduce the size and cost of screening that may become necessary.

For projects that will directly accelerate the recovery of threatened or endangered species or address designated critical habitats, please include the following elements:

(1) How is the species adversely affected by a Reclamation project?

The listed species above can be affected by irrigation withdrawals from UKL, Klamath River and Lost River, or O&M and construction activities.

(2) Is the species subject to a recovery plan or conservation plan under the Endangered Species Act?

Yes
Lost River and Shortnose suckers Final Revised Recovery Plan 4/16/13
SONCC Coho Salmon Draft Recovery Plan 4/12
Green's tuctoria Recovery Plan Vernal Pool Ecosystems of California and Southern Oregon 3/7/06

(3) What is the extent to which the proposed project would reduce the likelihood of listing or would otherwise improve the status of the species?

Better water management will lead to less water required for KID operations which can make more water available for Refuges, downstream Klamath River flows and UKL storage which can improve habitat for listed species.

Stukel spill discharges to Lost River will drop at high velocities and could improve dissolved oxygen levels in Lost River.

Stukel spill reduces potential fish entrainment through Station 48 deliveries. Reducing Station 48 diversions by providing spill to meet TID demand reduces draw velocities at the gate. Lower velocities allow smaller fish to potentially avoid entrainment.

Evaluation Criterion D: Water Marketing (12 points)
Briefly describe any water marketing elements included in the proposed project. Include the following elements:

(1) Estimated amount of water to be marketed.

KID estimates that approximately 1/3 of D canal spill below TID diversion in Lost River (6500 ac/ft) could be eliminated as required diversion from UKL.

(2) A detailed description of the mechanism through which water will be marketed (e.g., individual sale, contribution to an existing market, the creation of a new water market, or construction of a recharge facility)

With the current May 2013, ten year Biological Opinions, any water initially not required for Klamath Project irrigation will benefit UKL storage, stretch available Project supplies and if not needed can provide water to the Lower Klamath and Tulelake National Wildlife Refuges which have junior state water rights and USBR contracts, not to mention reducing the potential for regulation on non Project Upper Basin irrigation. Reclamation controls water supplies in the Klamath Project which doesn't currently allow KID to market any water savings.

Currently, neither KID or the Project have an Oregon state water right certificate or decree. The ongoing Klamath Basin Adjudication is in the Exceptions phase. Because we have no certificate or decree typical state sponsored water marketing strategies are not yet legally available to us. Water marketing strategies are being considered but a true water market does not yet exist in our area.

In years with a projected supply shortage the USBR funds a Water Use Mitigation Program (WUMP) which is currently managed by a local water user organization: Klamath Water and Power Association (KWAPA). Monetary compensation is provided to farmers and ranchers in the Project who use private well resources in lieu of using surface water supplies or idle land and do not irrigate. Any reduction in demand will reduce the costs for this program. In recent years higher priority contract duties are often traded between the various lower priority contracts. In 2014 the Oregon governor declared an emergency drought which relaxes some water related statutes and OWRD allowed a temporary partial duty transfer of water from senior priority KID served land within the Project to junior priority non-Project land outside the Klamath Project.

(3) Number of users, types of water use, etc. in the water market.

The Klamath Project of which KID is a part of, serves approximately 210,000 acres consisting of approximately 1364 farms and ranches under hundreds of individual contracts and through 18 or more contracts with districts or ditch companies and two national wildlife refuges. Each of these contracts has a priority of use as related to each other. In years with a shortage in water supply some entities may be restricted or curtailed according to the Klamath Project Drought Plan.

The Final Order of Determination by the State of Oregon recognizing KID's and the Projects state water right gives us the ability to make a call on hundreds of junior upper Klamath Basin non Project water users who could also be potential water market customers. Any reduction in Project water needs reduces the likelihood of a call.

(4) A description of any legal issues pertaining to water marketing (e.g., restrictions under Reclamation law or contracts, individual project authorities, or State water laws).

Generally, Oregon law encourages the efficient beneficial use of water and includes several mechanisms for the marketing or other transfer of water realized from conservation measures, such as piping, or from a change in land use that makes the water available to others. Oregon statutory procedures set forth in ORS 540.505 to 540.585 broadly allows the transfer of the place of use of water, transfer of the point of diversion of water, and a change in the use of water, subject generally only to the change not adversely impacting other existing water right users. Through its statutes, Oregon broadly encourages basin-wide management plans with water marketing as a tool to enhance watershed management, see ORS 541.890 to 541.969, and provides water development funding for conservation, establishment of storage, water conveyance, and marketing. See ORS 541.700 to 541.855. Perhaps the best examples of water marketing in the state are in the Deschutes River Basin where the Deschutes River Conservancy established a water-marketing program, which provides a market for temporary and permanent water transfers. That program is described in detail, including the water marketing aspects of the program, on that organization's website, www.deschutesriver.org.

The Klamath Irrigation District is a founding member of the Klamath Water and Power Agency, an intergovernmental organization established for the specific purposes of developing and implementing a water management program for the Klamath Reclamation Project and for developing affordable electric power to maximize efficiency of water management, delivery, and use in the Klamath Project. KWAPA and KID are parties to the Klamath Basin Restoration Agreement for the Sustainability of Public and Trust Resources and Affected Communities ("KBRA"). In the KBRA, the Klamath Project Districts, including KID, have agreed to limit the amount of surface water diverted from Upper Klamath Lake to between 330,000 and 385,000 acre-feet per year. Typically, Project Districts divert 390,000 to 410,000 acre-feet of water From Upper Klamath Lake per year.

Under Section 15 of the KBRA, KWAPA has the obligation of developing an "On-Project Plan" ("OPP"). The OPP is nearing completion, and the parties anticipate KWAPA's Board of Directors to adopt the OPP in February 2014. The OPP provides mechanisms for marketing of water, including entering into agreements with landowners to idle land to allow the water to be used elsewhere for irrigation within the Project or to remain in Upper Klamath Lake to be used for habitat requirements of endangered sucker fish in Upper Klamath Lake and for in stream flows in the main stream of the Klamath River to aid fisheries downstream of Upper Klamath Lake. In addition to providing for the idling of land in some years, the OPP provides for the use of groundwater by some irrigators in lieu of surface water, again to provide water for other irrigators and for in stream uses. Much of the water marketing associated with the OPP will occur in the service area of KID and Tulelake Irrigation District, which uses the return flows from KID as its primary water source.

Oregon law provides one obstacle to water marketing within KID. Current provisions of Oregon law limit the temporary or permanent transfer of the place of use of water to districts that have permitted, certificated, or decreed water rights. As of this date, the water rights held by KID and its members have not been fully adjudicated and, therefore, KID has a limited ability to transfer water on a temporary or permanent basis. However, we are working to change this through the Oregon Legislature with OWRD's blessing. KWAPA, the Oregon Department of Water Resources, and other interested parties, are preparing legislation that will allow the transfer of water pending entry of a Final Decree of Adjudication. Recently, State Senator, Douglas Whitsett, advised he will support legislation to allow water transfers within the Klamath Basin, thereby facilitating the marketing of water from one party to another or water realized because of conservation and management projects and procedures.

The only contractual issues faced by KID with respect to water marketing are the provisions of

its Contracts with the United States for the operation and maintenance of certain irrigation district facilities owned by the United States. The Contracts prevent the District from changing its boundary by excluding land that may no longer be irrigated or by including land that desires irrigation services without approval of the Bureau of Reclamation. The intent of the provisions of the Contracts is that KID maintain its assessment base to have adequate revenue to operate and maintain the facilities owned by the United States. That Contract provision, however, does not limit the District's ability, or its members, to market water on a year-to-year or other basis, as long as it does not require or result in a change in the District's boundaries.

(5) Estimated duration of the water market

Better water management and conservation resulting in reductions in demand by KID can provide benefits for all other stakeholders using water in the Klamath basin in perpetuity. Future developed water markets will better take advantage of such opportunities. The opportunities are still in their infancy.

Evaluation Criterion E: Other Contributions to Water Supply Sustainability (14 points)
This criterion is intended to provide an opportunity for the applicant to explain 1) how the project relates to a completed ***WaterSMART Basin Study****; 2) how the project could expedite future* ***on-farm improvements****; 3) how the project will* ***build resiliency to drought****; and/or 4) how the project will provide* ***other benefits to water supply sustainability*** *within the basin.*

(1) NA

(2) Expediting Future On-Farm Irrigation Improvements:

With potential future automation of canal regulation structures such as long crested weirs or level/flow control check structures, farmers may have more flexibility in the timing of their irrigation to take better advantage of differential power rates and to conserve the system delivery needs to provide the on field application. Currently because of KID irrigation system design limitations water is delivered and accounted for on a 24 hour basis whether the farmer needs it for that full time or not. Having a place to put water when not needed where it is still readily available as supply and is not lost, provides a starting block for this concept.

Over the past 10 years or so a substantial number of farms have participated in NRCS funded projects to convert flood and wheel line irrigation systems to pivot systems. While these pivot systems are more efficient and conserve water they often do not operate on a 24 hour basis.

(3) Building Drought Resiliency

Water supply for the Klamath Project originates from UKL which has a storage capacity of 873,000 acre feet. Project supply in potential storage is constrained by Biological Opinions which mandate minimum lake levels and downstream Klamath River flows. Available Project storage only occurs between the full capacity surface elevation of 4143.3 and minimum required elevation 4137.72.

Available potential Project storage supply is approximately 419,000 acre feet. Daily and full year downstream Klamath River flows are calculated according to watershed conditions with subscribed minimum flows no matter what the conditions. In any one year these downstream river flows will demand a large portion of the available stored water and spring summer inflows to UKL. USBR has provided these required ESA flows despite the State of Oregon's March 2013 Final Order of determination in the Klamath Basin Adjudication which gave the USBR a storage right in UKL but for Project irrigation only.

Tributary flows to UKL during the year, contributes to available UKL supply and is wholly dependent upon precipitation in the watershed and affected by Upper Basin irrigation of approximately 200,000 acres. Particularly important is snowpack in the watershed. Snowpack sustains the tributary inflow to UKL throughout the irrigation season.

The combination of useable storage in UKL on April 1 plus the estimated tributary inflows to UKL April through September minus required ESA Klamath River deliveries determines Klamath Project supply.

Average precipitation for the Klamath Basin is 12 inches per year, with the majority falling as snow in the winter months. However recent years rain has been more prevalent. In the past five years, 2010-2014 percent of average precipitation has been 81%, 126%, 96%, 87% & 76% in chronological order. In the same period SWE snow pack prior to irrigation season has been as a percent of average; 110%, 210%, 96%, 28%, & 31%. The percent of available Project supply as compared to normal, 400,000 acre feet in the same years has been 47%, 100%, 96%, 83% & 65%.

In 2010, 2011, 2013 & 2014 UKL lake did not fill to operating capacity by the start of the irrigation season and surface water elevations were 4140..51, 4143.09, 4141.98 & 4142.23 respectively.

With below normal precipitation and snow pack occurring for years in a row our watershed and what it can produce for our water supplies is declining. Drought and ESA constraints are negatively affecting our water supply and it could take years of above normal and normal precipitation and snowpack to improve supply conditions.

Impacts occurring as a result of drought conditions:

* Over use of ground water which has detrimentally affected this resource and may bring state regulation.
* Federal Funds expended for WUMP programs to idle lands and use ground water to irrigate.
* USBR contractors with junior contracts receiving limited allocations and partial or whole season curtailments of water supplies.
* Loss of permanent crops and yield losses.
* Economic hardship for farmers, ranchers and the local economy.
* Farmers and ranchers difficulties in acquiring operation financing.
* Loss of markets and contracts for the production of crops.
* Decreased options for crop types for farmers with junior contracts.
* Too much time effort and money spent on band-aid crisis management and not enough time effort

Money spent on long term solutions such as this project.
* Little or no water deliveries to the Tulelake and Lower Klamath Lake National Wildlife Refuges because of junior water rights and contracts.

Impacts expected to occur as a result of drought conditions:

* All of the above with the addition of a loss of interest in farming and ranching for future generations, reductions in farm and ranch property values and increased litigation related to water use.

The Stukel Spill Project will decrease the annual diversion demand for KID operations and the entire Klamath Project, stretching available Project supplies for all Project contractors. Reduced daily diversion demand by the Project will also reduce the potential for a call on junior Upper Basin tributary irrigators according to State water law. The USBR process for allocation of water supply from UKL will become 6,500 acre feet easier.

(4) Other Water Supply Sustainability Benefits (10 points)

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

Yes, the ultimate goal is to manage our available water supply as effectively as possible through conservation and management strategies and practices. Our water supply is affected by climate, ESA issues, state water right regulation, Tribal water rights and USBR contracts. It would be an understatement to say that water supplies in the Klamath Basin watershed are over allocated in limited supply years. The last 20 years has produced numerous litigation actions, mass demonstrations, large and small curtailments of irrigation including the infamous shutdown of the Klamath Project in 2001. In 2010 and 2013 the Project required 100,000 acre feet of ground water application through WUMP each year to allow the Project to remain whole. In 2013 all of Upper Basin irrigation was curtailed in June. In 2014 the Project required over 80,000 acre feet of ground water and 17,000 acres of land idling, contract allocation reductions and still had involuntary contract curtailments in August. State regulation curtailed irrigation June - October of Junior Upper Klamath basin non project irrigation. Better management and conservation of water will promote sustainable farming and address ESA, CWA, and competition issues among stakeholders in the Klamath Basin. Increased power production at C-drop increases revenues to KID reducing the cost burden on its constituents' and ultimately can provide more availability of funds for future water management and conservation projects. Reduced demand needs make our water supply available to more Project contractors. 6500 acre feet is enough water to supply one or more other smaller Reclamation contract Districts that KID serves.

Our available supply in UKL is currently more influenced by tributary inflows to UKL and there is really no carry over storage. Climate changes such as drought and precipitation type have a tremendous impact on water supply. Drought certainly reduces inflows and more rain than snow changes the timing of the normally sustained inflow, leaving us with the possibility of early flood control releases from the lake and shortages later in the irrigation season.

ESA requirements, drought and litigation has interrupted Klamath Project and KID water supplies in

most years since 2001. Drought conditions still prevail in our area. Better water management and conservation will help us meet supplies which are currently limited by Biological Opinions in which both irrigators and species benefit from increased supplies.

•*Will the project make additional water available for Indian tribes?*

Yes. The Stukel Spill project will result in better management of water in KID operations which can reduce annual demand, potentially resulting in more water available for storage in UKL, increasing lake levels and downstream Klamath River flows. The Klamath Tribe has water rights in UKL in the form of lake levels. The Klamath Project Irrigators negotiated a stipulated agreement with the Klamath Tribe as part of the Klamath Basin Adjudication in which the tribe will not enforce their water right against the Klamath Project as related to the KBRA. The Karuk, Yurok and Hoopa Tribes all can benefit from increased flows in the Klamath River which can improve fisheries that the Tribes are dependent on.

• *Will the project make water available for rural or economically disadvantaged communities?*

Klamath County is mostly rural and is disadvantaged economically compared to most other counties in the state. Wells are regulated by the Oregon Water Resources Department as it related to their influence on ground water inflows to UKL. In 2014 two City of Klamath Falls domestic production wells were limited in use by the state as a result of the Projects call for the benefit of their state water right. A reduction in project demand reduces this potential of regulating ground water wells.

•*Does the project promote and encourage collaboration among parties?*

Yes. The KBRA represents a collaborative agreement of over 30 organizations representing the United States, State governments, local governments, Irrigation Districts, environmental groups and Indian Tribes. This agreement generally calls for better water management of irrigation supplies and habitat restoration in the Klamath Basin, and provides for some regulatory assurances under ESA and other laws related to the performance of these activities.

The SVID and MID irrigation districts have recently installed VFDs to help minimize delivery fluctuation extremes in The D canal system. KID communicates with TID on a daily basis to determine their Demand from Station 48.

KID, TID and USBR will need to coordinate their water management activities at Stukel Spill, Station 48 and at Link River Dam from UKL to make this project successful.

•*Is there widespread support for the project?*

Yes, see above and letters of support in Exhibit C.

•*What is the significance of the collaboration/support?*

The significance of the collaboration and support is essential and important. Litigation and fights over

limited water supplies has plagued our area for several decades. It is costly and time consuming. Time and money is better spent on projects that provide solutions. The KBRA calls for this type of collaboration and support. The Stukel Spill Project will show all water user stakeholders in the Basin that the USBR and Project water users are committed to provide solutions and better manage water supplies.

•*Will the project help to prevent a water-related crisis or conflict?*

Yes, any reduction in irrigation demand for KID stretches available water supply for all stakeholders and reduces the potential for reduced allocations or involuntary curtailments within the Project. Additionally the Lost River has developed a pinch point from silt bars and vegetation growth upstream from the Stukel spill site. When TID demand from Station 48 to Lost River is high, the river has come out of its banks causing property damage along the river upstream. A Tort claim was brought against Reclamation and TID by a property owner along the river. Providing some of TID irrigation demand through the Stukel spill downstream from the pinch point could alleviate this problem.

•*Is there frequently tension or litigation over water in the Basin?*

Yes, almost annually over the last couple of decades.

•*Is the possibility of future water conservation improvements enhanced by completion of the project?*

Yes. To date there have not been a tremendous number of water conservation activities in KID or the Klamath Project. Completion of the Stukel Spill Project will provide an example of what collaboration between governments, irrigation districts and private enterprise can accomplish and could serve as a spring board for future activities by KID and other districts in the project. The OPP which is required by KBRA is identifying beneficial water conservation projects to be implemented with KBRA authorization and associated funding. Increased revenues from C-Drop hydroelectric production could provide seed monies for future projects. Having a large capacity spill structure in this location and a place to put excess water where it can be effectively used aids in the ability to implement automated water control structures in our system.

•*(c) Will the project increase awareness of water and/or energy conservation and efficiency efforts?*

Yes. Reduction in operational spill needs will show up in overall reduction in demand and will also show up in reduction of supplemental and flood control pumping costs in KID, and TID budgets. Irrigating through a season with limited water supplies and lower assessments attributed to lower pumping costs will always catch the attention of irrigators and water managers

•*Will the project serve as an example of water and/or energy conservation and efficiency within a community?*

Yes. KID will promote the success of the project through newsletters and the press. It will serve as an example to the community, state and nation of what can be accomplished as part of a larger picture of conservation and efficiency.

•Will the project increase the capability of future water conservation or energy efficiency efforts for use by others?

Yes, the Stukel Spill Project will set and example in the Klamath Project and reduce energy consumption for pumping.

•Does the project integrate water and energy components?

Yes. The Stukel Spill Project will conserve water, minimizes electrical usage required for supplemental and flood control pumping and produces more renewable clean energy.

Evaluation Criterion F: Implementation and Results (10 points)
Subcriterion No. F.1-ProjectPlanning

(1) Identify any district-wide, or system-wide, planning that provides support for the proposed project. This could include a Water Conservation Plan, SOR, or other planning efforts done to determine the priority of this project in relation to other potential projects.

*KID has a water management conservation plan. The 5 year update of the plan was approved in December of 2014 by the Oregon Water Resources Department. The plan is on file in the KID office, the KBAO office and OWRD. Page 29 refers to Short Term Goals 1-5 years, of which one is to relocate a large capacity spill structure; the #9 Spill on the D canal which would allow for better water management and conservation. The #9 Spill currently spills to the Lost River downstream of TID's diversion. The Stukel Spill would replace this spill for operations.

*The KBAO produces a drought plan document annually in water supply short years.

*KID Preliminary Modernization Study sponsored by U.S. Bureau of Reclamation Klamath Falls, December 2003. Performed and Reported by the Irrigation Training and Research Center (ITRC) California Polytechnic State University San Luis Obispo, CA 93407 www.itrc.org

*Master Development Plan, Conceptual Overview of System Improvements, Klamath Reclamation Project March 2008. Performed and Reported by ITRC.

Both ITRC studies and reports cite the need for better operational spill management to more effectively manage water deliveries and timing of, in the G-D Canal system. They recommended an operational spill, capacity (150 cfs), to Lost River in the lower end of the G canal system, and or a regulating reservoir. This would allow TID to more effectively use KID operational spill while providing more timely and flexible delivery options for KID, SVID, and MID water users, while providing a safety outlet for emergencies and reducing total diversions.

*Klamath Project Yield and Water Quality Improvement Options Appraisal Study, Klamath Project Mid Pacific Region April 2012, Prepared by the U.S. Department of Interior, Bureau of Reclamation.

This study concluded that an operational spill structure near the Stukel pumping plant would allow for more efficient use of irrigation deliveries in the G-D canal system, reduce deliveries at Station 48 and minimize the future needs of a fish screen at Station 48. Estimated cost of the project was $970,000.

The length of these studies and plans prohibits inclusion in the Water Smart Application because of page length constraints.

Under Oregon's Integrated Water Resources Strategy adopted 9/2/12 heading: Critical Issue The Water Energy Nexus, goals are:

*Take advantage of existing infrastructure to develop hydro power.
*Promote strategies that increase/integrate energy and water savings.

(2) Describe how the project conforms to and meets the goals of any applicable planning efforts and identify any aspect of the project that implements a feature of an existing water plan

The Stukel Spill Project was identified in ITRC studies and USBR study mentioned earlier. It is located in the lower G canal system, takes advantage of existing infrastructure to increase hydropower production, improves management of water and provides water savings through decreased daily demand.

Subcriterion No. F.2-Readiness to Proceed
Describe the implementation plan of the proposed project. Please include an estimated project schedule that shows the stages and duration of the proposed work, including major tasks, milestones, and dates. Please explain any permits that will be required, along with the process for obtaining such permits.

KID has the dedicated funding, equipment, manpower and partners in place and available to complete this project in a timely fashion. KBAO is aware of the potential project and has worked well with us in the past regarding permitting and NEPA requirements and does not believe there will be issues that will cause major delays. C-Drop LLC will dedicate time, funding, supplies and personnel necessary if the grant is awarded. Their Project supervisor will reside locally during construction and he has supervised and constructed many similar type gate structures for hydro projects and irrigation districts in the U.S. including our own C-Drop.

June	2015	Potential Water Smart Grant Award, Notify C-Drop LLC
June	2015	Contract for NEPA, CE & SHPO - USBR
June	2015	Project Engineering. Apply for permits (county building, Division State Lands Removal Fill – if necessary, USBR Additions or Alterations to Conveyance and Distribution Facilities, MP-620.) Determination of measuring device.
July	2015	Financial Assistance Agreement complete
August	2015	USBR permits, Engineering and other permits approved.
August	2015	Order pipes and materials necessary.
September	2015	Complete NEPA (CE and SHPO consultation) and permits acquired.

October	2015	Delivery of pipe, gate assembly, measurement device and materials.
November	2015	Start Project construction with USBR approval. Grading, staking, site prep, and staging-4 days, Excavation-3 days, Concrete forming & pouring-4 weeks, gate installation-1 week, Pipe installation-4 days, Backfill & compaction-3 days, Electrical, measurement device & SCADA connection-3 days & Program Reporting.
January	2016	Project construction complete, final USBR inspection and Reporting.
March	2016	Complete DOC & SOP
April	2016	KID water up. Test and operate spill structure, site restoration if necessary & Program Reporting.

Construction in the G Canal must be done when water is not present in the G Canal – November-March. Most of the work will be performed by C-Drop LLC engineers and staff and KID staff. KID equipment will be used unless specialized contracting is required. All work will be inspected and approved by USBR personnel. Installation of the Stukel Spill structure will be done in an area of highly disturbed ground and no environmental, cultural or historical issues are anticipated. Discussions with local KBAO staff about the project have suggested that the project will likely qualify for a Categorical Exclusion, with no significant impacts and would not impede the project schedule. KID & C-Drop LLC has funds to cover costs until the Financial Service Agreement is complete and funding distributed. We chose an aggressive schedule believing that it helps processes move more quickly. The concrete spill & gate structure inside the G Canal will be constructed first which will allow for normal irrigation operations beginning April 1 2016 if weather or other issues delay the project construction completion. The rest of the project would have as much time as needed to complete if necessary. Preliminary civil site plans and drawings have been completed already. A small coffer dam in the existing Stukel pump channel may be necessary for the pipe discharge structure construction to dewater the work area. The need for a removal fill permit or exemption (50 cubic yards) will need to be determined by engineering. Application is made to Oregon Division of State Lands. Progress reports to USBR for the project and grant reporting will be provided as requested.

Subcriterion No. F.3-Performance Measures

Provide a brief summary describing the performance measure that will be used to quantify actual benefits upon completion of the project (i.e., water saved, marketed, or better managed, or energy saved). For more information calculating performance measure, see Section VIII.A.l. "FY2013 WaterSMART Water and Energy Efficiency Grants: Performance Measures".

Performance measures used to quantify actual benefits of the Project will be as follows:

*Hydroelectric production in MWHs at C-Drop is variable according to Irrigation demand and yearly comparisons would prove difficult to easily quantify benefits, any water spilled at the proposed Stukel spill structure to meet TID demand will directly increase hydroelectric production at C-Drop at the rate of 160 kwhs per 100 cfs of spill according to the C-Drop performance spreadsheet. Using 2008 as an example, increases in production could have been 427,392 kwhs, a 14.74% increase from average with historical operations.

*Reductions in historical unscreened Station 48 deliveries to Lost River from the LRDC documented by TID and USBR. These will vary according to irrigation year types.

*Reductions in historical Stukel pumping plant demands and associated power costs. These will vary according to irrigation year type.

*Reductions in historical diversion demands from UKL and operational spill in the D canal system, documented by KID and USBR. Diversions from UKL will vary according to irrigation year type.

*Reductions in historical TID D plant pumping operations and other pumping operations and associated power costs.

*A yet to be determined measuring device at the Stukel spill site will allow exact delivery adjustments to be made to the G-D canal system vs. less exact by existing flashboard spill structures. Deliveries will be measured to Lost River according to TID needs. Tying this measuring device into the KID SCADA system will allow real time comparisons with TID Station 48 demand. Operation and flows will also be available at the site for Ditchriders to check. Maintenance on the SCADA system will be done by KIDs assistant manager who has a B.S. in computer science and has performed maintenance on our current system.

All of these measures with the exception of increased production at C-Drop which will be immediate upon Station 48 demand, will take time, potentially years to determine because climate, crop irrigation demand, WUMP programs which reduce surface water irrigation demand and off season drainage can affect the results. Short term comparisons are difficult. Comparing future operations over a period of years with historical operations will be necessary.

KID will document and compile on a daily, monthly and yearly basis: Stukel Spill releases, A Canal Upper C, G Canal, and D Canal diversions for pre and post Project comparisons. We will also document and compile D Canal and lateral spill in the same manner for comparisons. The size and hours a Stukel pump is run to supplement D canal shortages will be documented. C Drop hydroelectric production is recorded and reported to KBAO monthly and annually. D Canal system Ditchriders will be instructed to reduce their daily spill and work with the Stukel Spill for their operational needs. Monthly Ditchrider reports showing daily D canal system spill will be monitored by KID Staff to insure success. TID documents and reports Station 48 diversion daily to KID. TID pumping records can be accessed for similar comparison. Spill over Anderson Rose dam is reported daily and compiled by TID. All available data will be used for pre-project and post project comparisons.

Subcriterion No. F.4: Reasonableness of Costs

Total Project cost: $231,666.00 Expected water conserved: 6500 acre feet.
Expected increase C-Drop hydroelectric production: 427,392 KWH's
Dollar value of increased production: $32,323 in 2016. (Will increase annually with Pacificorp Schedule 37 power sales agreement rates)

The Project will provide yet quantified reductions in supplemental and flood control pumping costs for KID and TID, Spreads Project water supplies further, reduces the likelihood of a call on Upper Basin irrigators, and could provide future environmental benefits all described earlier.

The Stukel Spill project will be composed of basically a concrete structure, roller gates and steel pipeline. Similar concrete structures in the Klamath Project have lasted 100 years, the steel roller gates and pipeline is estimated to last 50+ years. Roller gates and pipe will be painted for corrosion protection to improve lifespan. Average life of entire project = 75+ years. Attention to maintenance will potentially increase the lifespan.

Using the 2014 WaterSMART formula for Reasonableness of Cost
$231,666.00 project cost ÷ (6500 ac/ft conserved x 75 years) = .475

Evaluation Criterion G: Additional Non-Federal Funding (4 points)
State the percentage of non-Federal funding provided.

Non-Federal funding	$151,130.30	=	65.3%
Total Project Cost	$231,666.00		

Evaluation Criterion H: Connection to Reclamation Project Activities (4 points)

(1) How is the proposed project connected to Reclamation project activities?

KID is part of the Klamath Project and has an O & M contract with Reclamation for the operation and maintenance for its facilities. The Klamath Basin Area Office administrates the contract and operates and maintains the reserve works which includes the LRDC. KID also serves water to many of the other Reclamation contractors in the Klamath Project.

(2) Does the applicant receive Reclamation project water?

Yes. KID receives water through USBR facilities by contract and the State Final Order of Determination for state water rights said that Reclamation, KID and the water users all had an interest in the right. KID is one of the highest priority contracts in the Klamath Project.

(3) Is the project on Reclamation project lands or involving Reclamation facilities?

Yes, part on Reclamation owned land, the G canal and part on land owned by KID.

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

Yes

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

Yes.

6) Will the project help Reclamation meet trust responsibilities to Tribes?

Yes. Annual reductions in demand by KID and the project if not needed as project supply keeps water in UKL which helps meet Tribal UKL levels and or downstream Klamath River Flows for Tribal salmon fisheries.

Environmental and Cultural Resources Compliance

(1) Will the project impact the surrounding environment (e.g., soil [dust], air, water [quality and quantity], animal habitat)? Please briefly describe all earth disturbing work and any work that will affect the air, water, or animal habitat in the project area. Please also explain the impacts of such work on the surrounding environment and any steps that could be taken to minimize the impacts.

Wildlife: Bald eagles frequent the Klamath basin. There are no known nesting sites in the vicinity of the project. The following species can be found in the project area: mule deer, mountain lion, golden eagle, redtailed hawk, turkey vultures, muskrats, coyotes, porcupine, ground squirrels, turtles, bull frogs, snakes, quail and various other species of waterfowl and birds. Irrigated agriculture provides habitat, forage and water sources for these numerous wildlife species.

Fisheries: the Shortnosed and Lost River sucker can inhabit the Lost River in the vicinity of the project, along with bass, bluegill, crappie, fathead minnows, toui chub, large scale sucker, and other invasive fish species.

Stukel Spill and Pipeline Construction: Spill excavation and pipeline construction will occur in the Fee Right of Way of the G canal owned by USBR and on land owned by KID where the Stukel pumping plant resides. The area is isolated, must be accessed by the G canal bank road and is .14 miles from the nearest residence which is across the G canal and across Hill Road. This area is highly disturbed from previous Klamath Project activities. Typical construction noise and upon completion falling water are the only likely audible impacts and should go unnoticed and have no impact. Excavation and construction activities will occur in winter months when soils tend to be wet or frozen which could eliminate the need for dust control. A water truck will be used for dust control if necessary. Silt fences or other erosion control methods will be employed to if necessary to prevent erosion into Lost River. Reclamation review, NEPA, Cultural, and NHPA compliance and necessary permitting will be completed prior to beginning construction. Recommendations will be implemented into the project.

(2) 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?

Yes. Endangered Lost River and Shortnose suckers can be found in Lost River. The ESA Status, distribution, life history, habitat requirements, and Klamath Project operation requirements can be found in Reclamations Final Biological Assessment on the Effects of the Proposed Action to Operate the Klamath Project from April 1, 2013 Through March 31, 2023 on Five Federally-Listed Threatened and Endangered Species, December 2012, and Biological Opinions on the Effects of Proposed Klamath Project Operations from May 31, 2013 Through March 31, on Five Federally-Listed Threatened and Endangered Species, May 2013.

Applegates' milk-vetch can be found in isolated small areas within the Klamath Project but no stands have been identified in the vicinity of the Stukel spill project.

The Oregon spotted frog was listed as threatened in August 2014, with designation of Critical Habitat. It does not appear that this species is present in the vicinity of the project.

With proper construction methods we do not believe the project will in any way adversely affect endangered or threatened species, or any other species.

Operations of the spill may contribute positively to dissolved oxygen levels in Lost River.

(3) Are there 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 jurisdictional wetlands along the G canal in the immediate vicinity of the project. The pipe discharge will occur to the man made inlet channel of the Stukel pumping plant which is connected to Lost River. Proper construction and planning will eliminate any adverse impacts to Lost River. Historically most KID operational spills flow to Lost River.

(4) When was the water delivery system constructed?

Klamath Project construction began in 1906. The G Canal (location of the project) was constructed from 1913 – 1915. The Stukel pump station was constructed in 1965.

(5) Will the project result in any modification of or effects to, individual features of an irrigation system (e.g., headgates, canals, or flumes)? 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 G Canal will be modified by installation of the Stukel spill structure. There are no other affects to or modifications of the irrigation system. See (4)

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

Yes, most all canals, major structures and buildings in KID are eligible to the NRHP.

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

We are not aware of any however the cultural resources investigations will make the determination.

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

No.

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

No.

(10) 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?

No. If natural vegetation does not re-grow in the disturbed area of the project, KID will control invasive vegetation and plant native dry land grasses.

Required Permits or Approvals

Applicants must state in the application whether any permits or approvals are required and explain the plan for obtaining such permits or approvals.

*KID and C-Drop LLC will work with Reclamation's KBAO to comply with all NEPA requirements (including CE and SHPO) and the Clean Water Act.

*KID will acquire any necessary Klamath County Building Permits.

*Locates will be performed before excavation.

*KID will acquire any necessary removal fill permits from Division of State Lands.

*KID will acquire DOI USBR Mid Pacific Region Permit for Additions or Alterations to conveyance and Distribution Facilities & MP-620. Application will be done through KBAO.

*KID and C-Drop LLC will wait for USBR approval prior to construction.

Project Budget

Funding Plan and Letters of Commitment

Letters of commitment are found in the Appendix Exhibit C

The funding plan must include all project costs, as follows:

(1) How you will make your contribution to the cost share requirement, such as monetary and/or in-kind contributions and source funds contributed by the applicant (e.g., reserve account, tax revenue, and/or assessments).

Funding from KID will be 32.5% of the project or $75,233.30
Funding from C-Drop LLC will be 32.8% of the project or $75,897.00

KID has budgeted for these funds through assessments and has the funds available now. They will be used to pay for labor, equipment costs, materials, contingency costs, or other project costs either in cash or provided in-kind. KID will provide most labor costs in-kind. C-Drop LLC will provide engineering, labor and some materials in-kind. Details provided in Budget spreadsheets.

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

(a) What project expenses have been incurred?

In September 2013 C-Drop LLC prepared preliminary civil site plans and engineering drawings.

(b) How they benefitted the project?

They allowed for planning and budgeting of the project.

(c) The amount of the expense.

$1,500.00

(d) *The date of cost incurrence.*

09/19/13 - 09/30/13

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

KID $75,233.30 C-Drop LLC $75,897.00 USBR $80,535.70

See attached letter in Appendix.

(4) Describe any funding requested or received from other Federal partners.

None.

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

KID is currently soliciting funding from signatories to the KBRA through the Klamath Water User Association. We have also been in contact with the Energy Trust of Oregon for their support. If any requests are successful they will be used to reduce each participant's contribution proportionally for the Project. These requests are for unsubstantiated amounts and are not figured into the budget or success of the project.

Please include the following chart (table 2) to summarize your non-Federal and other Federal funding sources. Denote in-kind contributions with an asterisk (*). Please ensure that the total Federal funding (Reclamation and all other Federal sources) does not exceed 50 percent of the total estimated project cost.

FUNDING SOURCE	FUNDING AMOUNT
Non-Federal Entities	
Klamath Irrigation District	$75,233.30 *($67,233.30)
C-Drop LLC	$75,897.00 *(57,897.00)
Non-Federal Subtotal:	$151,130.30 *(125,130.30)
Reclamation Funding:	$80,535.70 *(4,127.00)
Other	
Federal Subtotal:	$80,535.70 *(4,127.00)
TOTAL PROJECT FUNDING:	$231,666.00 *(129,257.30)

Budget Proposal

General Requirements
Include a project budget that estimates all costs (not just costs to be borne by Reclamation). Include the value of in-kind contributions of goods and services and sources of funds provided to complete the project. The proposal must clearly delineate between Reclamation and applicant contributions.

Budget Proposal Format
The project budget shall include detailed information on the categories listed below and must clearly identify all project costs and the funding source(s) (i.e., Reclamation or other funding sources). Unit costs shall be provided for all budget items including the cost of work to be provided by contractors. Lump sum costs are not acceptable. Additionally, applicants shall include a narrative description of the items included in the project budget. It is strongly advised that applicants use the budget format shown on table 3 at the end of this section or a similar format that provides this information.

FUNDING SOURCE	FUNDING AMOUNT	PERCENT OF TOTAL PROJECT
Non-Federal Entities:		
Klamath Irrigation District	$75,233.30	32.5%
C-Drop LLC	$75,897.00	32.8%
Other		
Non-Federal Subtotal:	$151,130.30	65.3%
Reclamation Funding:	$80,535.70	34.8%
Other		
Federal Subtotal:	$80,535.70	34.8%
TOTAL PROJECT FUNDING:	$231,666.00	100.0%

Budget Narrative Format
Submission of a budget narrative is mandatory. An award will not be made to any applicant who fails to fully disclose this information. The Budget Narrative provides a discussion of, or explanation for, items included in the budget proposal. The types of information to describe in the narrative include, but are not limited, to those listed in the following subsections.

Salaries and Wages
Indicate program manager and other key personnel by name and title. Other personnel may be indicated by title alone. For all positions, indicate salaries and wages, estimated hours or percent of time, and rate of compensation proposed. The labor rates should identify the direct labor rate separate from the fringe rate or fringe cost for each category. All labor estimates, including any proposed subcontractors, shall be allocated to specific tasks as outlined in the recipient's technical project description. Labor rates and proposed hours shall be displayed for each task.
Clearly identify any proposed salary increases and the effective date.
Generally, salaries of administrative and/or clerical personnel will be included as a portion of the stated indirect costs. If these salaries can be adequately documented as direct costs, they should be included in this section; however, a justification should be included in the budget narrative.

Mark Stuntebeck, KID Manager Project Manager Salary $81,418.52. Hourly is $39.14 and fringe benefits are $11.47 per hour. 01/01/14

Fritz Frisendahl, KID Maintenance Foreman Salary is $48536.88 Hourly is $23.34 and fringe benefits are $8.24 per hour. 01/01/14

Darin Kandra, KID Asst. Manager Salary is $64330.00 Hourly is $30.93 and fringe benefits are $9.79 per hour. 01/01/14

Currently KID has 20 maintenance and heavy equipment operators on staff that all have the same hourly rate of $17.96 per hour, and fringe benefit cost of $5.47 per hour. Fringe benefits vary with time of service so they were averaged for all maintenance employees. The spill structure will be built by KID staff along with C-Drop staff. Maintenance staff is part of a collective bargaining unit, wages and benefits rise on May 1, 2014 under contract and these are the numbers used. Administrative staff salary and benefits are determined each year and we will stick with current for this project. Most of the supervision of labor and equipment operations will occur with the Maintenance Foreman and C-Drop LLC Project Supervisor. The KID Assistant Manager will fill in as supervisor as necessary, assist with reporting and compliance and intertie measuring device to SCADA.

Dennis Daugherty, Partner in C-Drop LLC and Riverside Inc. (RSI), Project Supervisor Hourly is $90.00 including fringe benefits. Perdiem is $125/day for all C-Drop employees & includes lodging. Dennis resides in Parma, ID and will reside in Klamath Falls during Project construction.

Ted Sorenson, Partner in C-Drop LLC and Owner Sorenson Engineering is providing engineering at a cost of 11% of Project cost.

Labor for concrete was figured at 66% of total structural concrete estimate of $600/cubic yds.
Labor for pipe installation was figured at 100% of pipe cost.

Office and field administration is treated as a direct cost. All hours and activities are documented on time sheets.

Fringe Benefits
Indicate rates/amounts, what costs are included in this category, and the basis of the rate computations. Indicate whether these rates are used for application purposes only or whether they are fixed or provisional rates for billing purposes. Federally approved rate agreements are acceptable for compliance with this item.

Fringe benefits average 31.5% of salary and wage costs for all KID employees and include health insurance, Retirement, vacation and sick time allowance costs. These rates are used for application costs only.

Travel
Include purpose of trip, destination, number of persons traveling, length of stay, and all travel costs including airfare (basis for rate used), per diem, lodging, and miscellaneous travel expenses. For local travel, include mileage and rate of compensation.

There is no travel by the District anticipated for this project.

Equipment
Itemize costs of all equipment having a value of over $500 and include information as to the need for this equipment, as well as how the equipment was priced if being purchased for the agreement. If equipment is being rented, specify the number of hours and the hourly rate. Local rental rates are only accepted for equipment actually being rented or leased for the project. If equipment currently owned by the applicant is proposed for use under the proposed project, and the cost to use that equipment is being included in the budget as in-kind cost share, provide the rates and hours for each piece of equipment owned and budgeted. These should be ownership rates developed by the recipient for each piece of equipment. If these rates are not available, the U.S. Army Corp of Engineer's recommended equipment rates for the region are acceptable. Blue book, Federal Emergency Management Agency (FEMA), and other data bases should not be used.

KIDs Rates for District owned equipment adopted by Board Policy include operators, fuel and all costs associated with operation during operating hours only, No standby charges.

Excavator JD 200LC	$105.00/hr
Backhoe Case 580SM	$ 80.00/hr
Backhkoe JD 310SJ	$ 80.00/hr
10 YD. Dump Trucks	$ 60.00/hr
Dozer Case 850K	$ 80.00/hr
Truck Tractor and Trailer	$ 55.00/hr
½ Ton P/U	$ 20.00/hr

Materials and Supplies
Itemize supplies by major category, unit price, quantity, and purpose, such as whether the items are needed for office use, research, or construction. Identify how these costs were estimated (i.e., quotes, past experience, engineering estimates or other methodology).

All materials and supplies are identified on the attached budget sheet. These are based on past bids as well as current market information and cost to build information from C-Drop LLC. Coated pipe is a quoted amount from a supplier. Roller Gate assembly and associated materials is a quoted price from Riverside Inc. Intake pipe reducer, air vent and drain valve is a quoted price from Riverside Inc. Concrete structure costs were estimated at $600.00/cubic yard, with $204.00 for materials and $396.00 for Labor.

Contractual
Identify all work that will be accomplished by sub-recipients, consultants, or contractors, including a breakdown of all tasks to be completed, and a detailed budget estimate of time, rates, supplies, and materials that will be required for each task. If a sub-recipient, consultant, or contractor is proposed and approved at time of award, no other approvals will be required. Any changes or additions will require a request for approval. Identify how the budgeted costs for sub-recipients, consultants, or contractors were determined to be fair and reasonable.

KID will contract with RSI for pipe welding. We will contract with a licensed electrician for electrical power source connection. The majority of work will be done by KID & C-Drop LLC.

Environmental and Regulatory Compliance Costs
Applicants must include a line item in their budget to cover environmental compliance costs. "Environmental compliance costs" refer to costs incurred by Reclamation or the recipient in complying with environmental regulations, applicable to a WaterSMART Grant, including costs associated with any required documentation of environmental compliance, analyses, permits, or approvals.
Applicable Federal environmental laws could include NEPA, ESA, NHPA, and the Clean Water Act, and other regulations depending on the project. Such costs may include, but are not limited to:
- *The cost incurred by Reclamation to determine the level of environmental compliance required for the project*
- *The cost incurred by Reclamation, the recipient, or a consultant to prepare any necessary environmental compliance documents or reports*
- *The cost incurred by Reclamation to review any environmental compliance documents prepared by a consultant*
- *The cost incurred by the recipient in acquiring any required approvals or permits, or in implementing any required mitigation measures*

The amount of the line item should be based on the actual expected environmental compliance costs for the project. However, the minimum amount budgeted for environmental compliance should be equal to at least 1-2 percent of the total project costs. If the amount budgeted is less than 1-2 percent of the total project costs, you must include a compelling explanation of why less than 1-2 percent was budgeted.

How environmental compliance activities will be performed (e.g., by Reclamation, the applicant, or a consultant) and how the environmental compliance funds will be spent, will be determined pursuant to subsequent agreement between Reclamation and the applicant. If any portion of the funds budgeted for environmental compliance is not required for compliance activities, such funds may be reallocated to the project, if appropriate.

KID has budgeted a total of $4127.00 for environmental & USBR over-site costs which is 2% of Project cost. We request that USBR Mid Pacific Region and local KBAO handle Environmental compliance

Reporting
Recipients are required to report on the status of their project on a regular basis. Include a line item for reporting costs (including final project and evaluation costs). Please see Section VI.C. for information on types and frequency of reports required.

The line item for the Manager includes time for reporting compliance requirements.
SF-425, Semiannual Performance Reports and Final Report.

Other
Any other expenses not included in the above categories shall be listed in this category, along with a description of the item and what it will be used for. No profit or fee will be allowed.

Indirect Costs
Show the proposed rate, cost base, and proposed amount for allowable indirect costs based on the applicable OMB circular cost principles (see Section III.E., "Cost Sharing Requirement") for the recipient's organization. It is not acceptable to simply incorporate indirect rates within other direct cost line items.
If the recipient has separate rates for recovery of labor overhead and general and administrative costs, each rate shall be shown. The applicant should propose rates for evaluation purposes, which will be used as fixed or ceiling rates in any resulting award. Include a copy of any federally approved indirect cost rate agreement. If a federally approved indirect rate agreement is not available, provide supporting documentation for the rate. This can include a recent recommendation by a qualified certified public accountant (CPA) along with support for the rate calculation.
If you do not have a federally approved indirect cost rate agreement, or if unapproved rates are used, explain why, and include the computational basis for the indirect expense pool and corresponding allocation base for each rate.

For this project the District should not have any indirect costs. All costs associated with the project are direct and can be documented as such.

Contingency Costs
All proposed contingency line-items must be supported by a rationale. Further, in most cases, contingency cost estimates at are limited to 10 percent of projected construction costs.

KID has budgeted $2000.00 for contingency and misc. costs. KID has a long history of being on or under budget on material and project costs. The contingency budget for this project is less than 2%. Weather and increases in cost of materials between now and Project start date can affect costs. Obviously any cost over runs will be the responsibility of KID and C-Drop LLC.

Total Cost
Indicate total amount of project costs, including the Federal and non-Federal cost-share amounts.

FUNDING SOURCE	FUNDING AMOUNT	PERCENT OF TOTAL PROJECT
Non-Federal Entities:		
Klamath Irrigation District	$75,233.30	32.5%
C-Drop LLC	$75,897.00	32.8%
Other		
Non-Federal Subtotal:	$151,130.30	65.3%
Reclamation Funding:	$80,535.70	34.8%
Other		
Federal Subtotal:	$80,535.70	34.8%
TOTAL PROJECT FUNDING:	$231,666.00	100.0%

APPENDIX

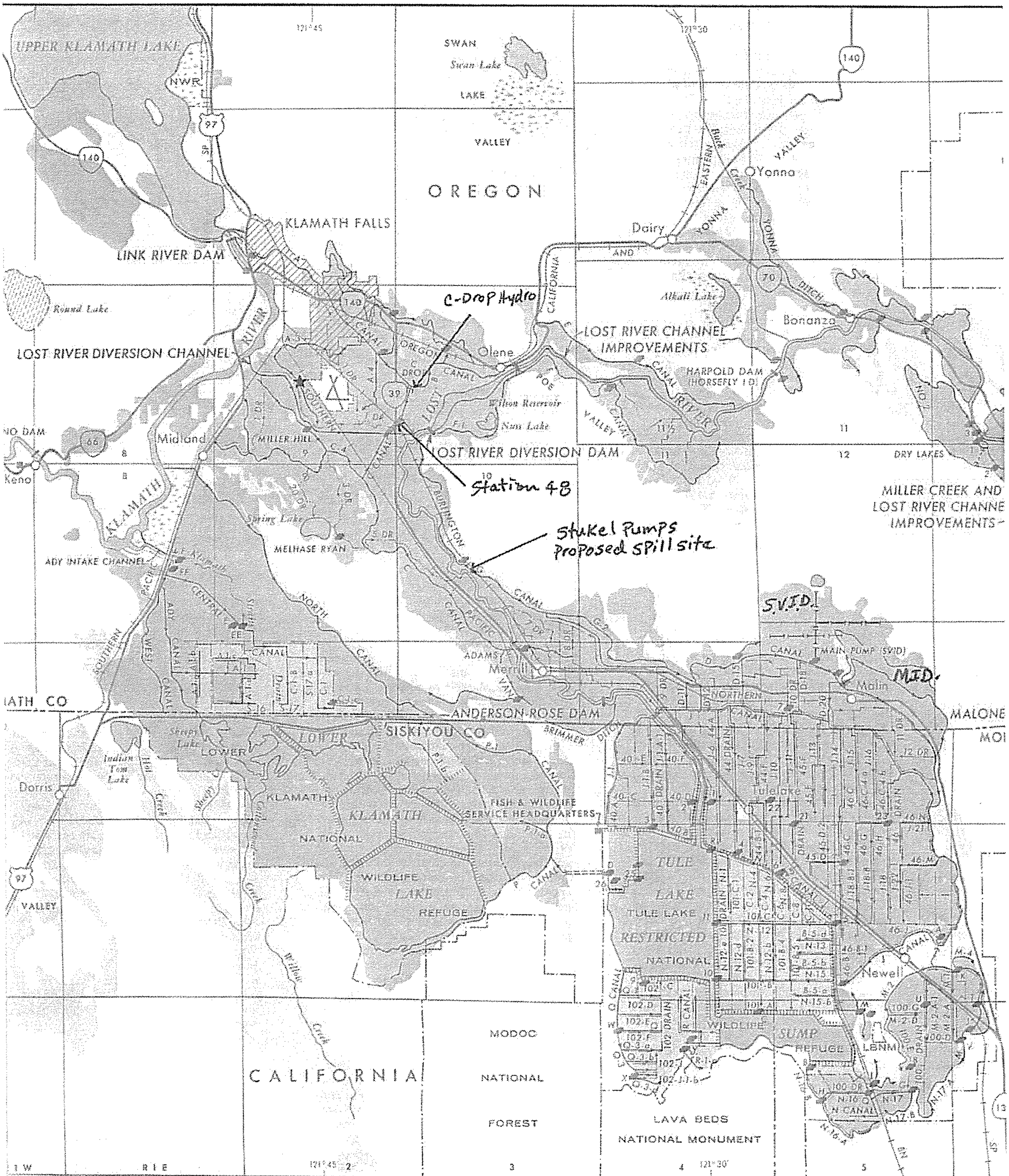

UPPER KLAMATH LAKE
OREGON
KLAMATH FALLS
LINK RIVER DAM
Round Lake
LOST RIVER DIVERSION CHANNEL
C-Drop Hydro
Olene
LOST RIVER CHANNEL IMPROVEMENTS
HARPOLD DAM (HORSEFLY I.D.)
Bonanza
Yonna
Dairy
SWAN LAKE VALLEY
Midland
Keno
LOST RIVER DIVERSION DAM
Station 48
Stukel Pumps proposed spill site
MILLER CREEK AND LOST RIVER CHANNEL IMPROVEMENTS
DRY LAKES
ADY INTAKE CHANNEL
MELHASE RYAN
Spring Lake
S.V.I.D.
MAIN PUMP (SVID)
M.I.D.
Malin
Merrill
ADAMS
ANDERSON-ROSE DAM
SISKIYOU CO
Dorris
LOWER KLAMATH NATIONAL WILDLIFE REFUGE
FISH & WILDLIFE SERVICE HEADQUARTERS
Tulelake
TULE LAKE RESTRICTED NATIONAL WILDLIFE SUMP REFUGE
Newell
LBNM
CALIFORNIA
MODOC NATIONAL FOREST
LAVA BEDS NATIONAL MONUMENT

Exhibit A

		All values in cfs				
	Max	April 2008				
	400			G + Pumps	Stukel Hydro	C-Drop Hydro
Day	G-flow cfs	Station 48	Stukel pumps	<= 400	Spill avail	Increase
1				0	0	0
2				0	0	0
3				0	0	0
4				0	0	0
5				0	0	0
6				0	0	0
7		10		0	10	10
8		25		0	25	25
9	80	42		80	42	42
10	80	50		80	50	50
11	80	59		80	59	59
12	55	50		55	50	50
13	55	50		55	50	50
14	55	34		55	34	34
15	35	25		35	25	25
16	35	25		35	25	25
17	60	58		60	58	58
18	60	75		60	75	75
19	65	75		65	75	75
20	85	75		85	75	75
21	105	67		105	67	67
22	109	50		109	50	50
23	109	50		109	50	50
24	124	50		124	50	50
25	165	50		165	50	50
26	165	81		165	81	81
27	165	117		165	117	117
28	175	150		175	150	150
29	195	183		195	183	183
30	185	169		185	169	169
31				0	0	0
	Max	May 2008				
	400			G + Pumps	Stukel Hydro	C-Drop Hydro
Day	G-flows cfs	Station 48	Stukel pumps	<= 400	Spill avail	Increase
1	165	150		165	150	150
2	185	150		185	150	150
3	240	171		240	160	160
4	255	200		255	145	145
5	255	250		255	145	145

6	275	300		275	125	125
7	285	265		285	115	115
8	295	223		295	105	105
9	295	200		295	105	105
10	305	200		305	95	95
11	305	235		305	95	95
12	290	250		290	110	110
13	295	281		295	105	105
14	305	329		305	95	95
15	305	300		305	95	95
16	285	250		285	115	115
17	330	283		330	70	70
18	330	335		330	70	70
19	330	350		330	70	70
20	330	315		330	70	70
21	335	277		335	65	65
22	325	217		325	75	75
23	325	169		325	75	75
24	290	117		290	110	110
25	245	65		245	65	65
26	215	34		215	34	34
27	175	25		175	25	25
28	140	9		140	9	9
29	120	0		120	0	0
30	65	0		65	0	0
31	65	0		65	0	0
	Max	JUNE 2008				
	400			G + Pumps	Stukel Hydro	C-Drop Hydro
Day	G-flows cfs	Station 48	Stukel pumps	<=400	Spill avail	Increase
1	65			65	0	0
2	65			65	0	0
3	80			80	0	0
4	85			85	0	0
5	100			100	0	0
6	100			100	0	0
7	115	10		115	10	10
8	140	25		140	25	25
9	200	42		200	42	42
10	210	50		210	50	50
11	210	59		210	59	59
12	210	50		210	50	50
13	265	50		265	50	50
14	295	34		295	34	34
15	295	25		295	25	25

16	285	25		285	25	25
17	295	58		295	58	58
18	280	75		280	75	75
19	280	75		280	75	75
20	285	75		285	75	75
21	285	67		285	67	67
22	255	50		255	50	50
23	265	50		265	50	50
24	315	50		315	50	50
25	350	50		350	50	50
26	335	81	21	356	44	65
27	350	117	21	371	29	50
28	350	150	40	390	10	50
29	340	183	40	380	20	60
30	340	169	40	380	20	60
31				0	0	0
	Max	JULY 2008				
	400			G + Pumps	Stukel Hydro	C-Drop Hydro
Day	G-flows cfs	Station 48	Stukel pumps	<=400	Spill avail	Increase
1	340	150	40	380	20	60
2	350	150	61	400	0	50
3	350	171	61	400	0	50
4	345	200	40	385	15	55
5	335	250	21	356	44	65
6	335	300		335	65	65
7	335	265	21	356	44	65
8	330	223	61	391	9	70
9	350	200	61	400	0	50
10	350	200	61	400	0	50
11	350	235	61	400	0	50
12	350	250	40	390	10	50
13	350	281	40	390	10	50
14	350	329	21	371	29	50
15	350	300		350	50	50
16	360	250	40	400	0	40
17	360	283	40	400	0	40
18	350	335	21	371	29	50
19	335	350		335	65	65
20	335	315		335	65	65
21	305	277		305	95	95
22	290	217		290	110	110
23	265	169		265	135	135
24	250	117		250	0	117
25	250	65		250	0	65

26	280	34		280	0	34
27	290	25		290	0	25
28	290	9		290	0	9
29	300	0		300	0	0
30	280	0		280	0	0
31	280	0		280	0	0
	Max	AUGUST 2008				
	400			G + Pumps	Stukel Hydro	C-Drop Hydro
Day	G-flows cfs	Station 48	Stukel pumps	<=400	Spill avail	Increase
1	280	213		280	120	120
2	280	250		280	120	120
3	280	267		280	120	120
4	270	300		270	130	130
5	280	323	21	301	99	120
6	300	313	21	321	79	100
7	315	250	21	336	64	85
8	315	217		315	85	85
9	315	165		315	85	85
10	315	200		315	85	85
11	330	200		330	70	70
12	320	200		320	80	80
13	330	240		330	70	70
14	345	275		345	55	55
15	350	225		350	50	50
16	345	223		345	55	55
17	320	227		320	80	80
18	315	200		315	85	85
19	305	200		305	95	95
20	305	200		305	95	95
21	295	200		295	105	105
22	265	200		265	135	135
23	265	165		265	135	135
24	280	131		280	120	120
25	280	83		280	83	83
26	300	106		300	100	100
27	300	129		300	100	100
28	300	100		300	100	100
29	300	100		300	100	100
30	300	125		300	100	100
31	290	163		290	110	110
	Max	SEPTEMBER 2008				
	400			G + Pumps	Stukel Hydro	C-Drop Hydro

Day	G-flows cfs	Station 48	Stukel pumps	<=400	Spill avail	Increase
1	255	200		255	145	145
2	255	200		255	145	145
3	250	151		250	150	150
4	240	100		240	100	100
5	240	131		240	131	131
6	240	116		240	116	116
7	220	73		220	73	73
8	220	50		220	50	50
9	230	35		230	35	35
10	240	25		240	25	25
11	230	25		230	25	25
12	210	9		210	9	9
13	225			225	0	0
14	225			225	0	0
15	225			225	0	0
16	215			215	0	0
17	215			215	0	0
18	215			215	0	0
19	215			215	0	0
20	235			235	0	0
21	225			225	0	0
22	205			205	0	0
23	195			195	0	0
24	180			180	0	0
25	200			200	0	0
26	210			210	0	0
27	190			190	0	0
28	185			185	0	0
29	185			185	0	0
30	180			180	0	0
31				0	0	0
				Total Hydro Increase		11130

C drop Flow vs KW

Flow CFS	KW	Flow CFS	KW	Flow CFS	KW	Flow CFS	KW	Flow CFS	KW
200	319	300	478	400	637	500	797	600	956
201	320	301	480	401	639	501	798	601	957
202	322	302	481	402	640	502	800	602	959
203	323	303	483	403	642	503	801	603	961
204	325	304	484	404	644	504	803	604	962
205	327	305	486	405	645	505	805	605	964
206	328	306	488	406	647	506	806	606	965
207	330	307	489	407	648	507	808	607	967
208	331	308	491	408	650	508	809	608	969
209	333	309	492	409	652	509	811	609	970
210	335	310	494	410	653	510	813	610	972
211	336	311	495	411	655	511	814	611	973
212	338	312	497	412	656	512	816	612	975
213	339	313	499	413	658	513	817	613	977
214	341	314	500	414	660	514	819	614	978
215	343	315	502	415	661	515	820	615	980
216	344	316	503	416	663	516	822	616	981
217	346	317	505	417	664	517	824	617	983
218	347	318	507	418	666	518	825	618	985
219	349	319	508	419	668	519	827	619	986
220	350	320	510	420	669	520	828	620	988
221	352	321	511	421	671	521	830	621	989
222	354	322	513	422	672	522	832	622	991
223	355	323	515	423	674	523	833	623	993
224	357	324	516	424	676	524	835	624	994
225	358	325	518	425	677	525	836	625	996
226	360	326	519	426	679	526	838	626	997
227	362	327	521	427	680	527	840	627	999
228	363	328	523	428	682	528	841	628	1001
229	365	329	524	429	683	529	843	629	1002
230	366	330	526	430	685	530	844	630	1004
231	368	331	527	431	687	531	846	631	1005
232	370	332	529	432	688	532	848	632	1007
233	371	333	531	433	690	533	849	633	1008
234	373	334	532	434	691	534	851	634	1010
235	374	335	534	435	693	535	852	635	1012
236	376	336	535	436	695	536	854	636	1013
237	378	337	537	437	696	537	856	637	1015
238	379	338	538	438	698	538	857	638	1016
239	381	339	540	439	699	539	859	639	1018
240	382	340	542	440	701	540	860	640	1020
241	384	341	543	441	703	541	862	641	1021
242	386	342	545	442	704	542	863	642	1023
243	387	343	546	443	706	543	865	643	1024
244	389	344	548	444	707	544	867	644	1026
245	390	345	550	445	709	545	868	645	1028
246	392	346	551	446	711	546	870	646	1029
247	394	347	553	447	712	547	871	647	1031
248	395	348	554	448	714	548	873	648	1032
249	397	349	556	449	715	549	875	649	1034
250	398	350	558	450	717	550	876	650	1036

Flow CFS	KW	Flow CFS	KW	Flow CFS	KW	Flow CFS	KW	Flow CFS	KW
251	400	351	559	451	719	551	878	651	1037
252	401	352	561	452	720	552	879	652	1039
253	403	353	562	453	722	553	881	653	1040
254	405	354	564	454	723	554	883	654	1042
255	406	355	566	455	725	555	884	655	1044
256	408	356	567	456	726	556	886	656	1045
257	409	357	569	457	728	557	887	657	1047
258	411	358	570	458	730	558	889	658	1048
259	413	359	572	459	731	559	891	659	1050
260	414	360	574	460	733	560	892	660	1051
261	416	361	575	461	734	561	894	661	1053
262	417	362	577	462	736	562	895	662	1055
263	419	363	578	463	738	563	897	663	1056
264	421	364	580	464	739	564	899	664	1058
265	422	365	582	465	741	565	900	665	1059
266	424	366	583	466	742	566	902	666	1061
267	425	367	585	467	744	567	903	667	1063
268	427	368	586	468	746	568	905	668	1064
269	429	369	588	469	747	569	907	669	1066
270	430	370	589	470	749	570	908	670	1067
271	432	371	591	471	750	571	910	671	1069
272	433	372	593	472	752	572	911	672	1071
273	435	373	594	473	754	573	913	673	1072
274	437	374	596	474	755	574	914	674	1074
275	438	375	597	475	757	575	916	675	1075
276	440	376	599	476	758	576	918	676	1077
277	441	377	601	477	760	577	919	677	1079
278	443	378	602	478	762	578	921	678	1080
279	444	379	604	479	763	579	922	679	1082
280	446	380	605	480	765	580	924	680	1083
281	448	381	607	481	766	581	926	681	1085
282	449	382	609	482	768	582	927	682	1087
283	451	383	610	483	769	583	929	683	1088
284	452	384	612	484	771	584	930	684	1090
285	454	385	613	485	773	585	932	685	1091
286	456	386	615	486	774	586	934	686	1093
287	457	387	617	487	776	587	935	687	1095
288	459	388	618	488	777	588	937	688	1096
289	460	389	620	489	779	589	938	689	1098
290	462	390	621	490	781	590	940	690	1099
291	464	391	623	491	782	591	942	691	1101
292	465	392	625	492	784	592	943	692	1102
293	467	393	626	493	785	593	945	693	1104
294	468	394	628	494	787	594	946	694	1106
295	470	395	629	495	789	595	948	695	1107
296	472	396	631	496	790	596	950	696	1109
297	473	397	632	497	792	597	951	697	1110
298	475	398	634	498	793	598	953	698	1112
299	476	399	636	499	795	599	954	699	1114

Exhibit C

C-Drop Hydro LLC

5203 South 11th East
Idaho Falls, Idaho 83404

Tel 208-529-2469
fax 208-522-8223
Email gayle@tsorenson.net

January 7, 2015

Mark Stuntebeck, Manager
Klamath Irrigation District
6640 K.I.D. Lane
Klamath Falls, OR 97603

Dear Mark:

We are pleased and hereby commit to the Stukel Spill project to improve flows through the C-Drop hydro plant.

1. C-Drop Hydro LLC commits to fund $75,897.00 of the project costs.
2. C-Drop funds will be available upon commitment from Reclamation to the Water Smart grant.
3. We will fund as long as the project is built within 3 years of receiving funds from Reclamation.

Very Truly Yours,

Ted S. Sorenson, P.E.

KLAMATH
Water Users Association

225 Commercial Street, Suite 300
Klamath Falls, OR 97601
Phone: 541.883.6401
Fax: 541.883.8933

January 14, 2014

WaterSMART Application and Review Committee

U.S. Department of Interior
1849 C Street, N.W.
Washington, DC 20240

c/o: Bureau of Reclamation
Policy and Administration

To whom it may Concern,

On behalf of the Klamath Water Users Association and our board of directors, I am writing to you today to express our strong support for the Water Smart Grant proposal submitted by the Klamath Irrigation District (KID) for the Stukel Spill Structure Project located in the Bureau of Reclamation's Klamath Project.

The Klamath Water Users Association (KWUA) is a non-profit corporation whose members include public and private water delivery entities, primarily irrigation districts, that deliver water to about 170,000 acres of land (and over 1,200 family farms and ranches) located on both sides of the Oregon and California border. Most KWUA members are contractors of the U.S. Bureau of Reclamation (Reclamation), and receive water stored by and/or delivered through, Reclamation's Klamath Project and its facilities.

KWUA has reviewed this proposed project and has concluded that the benefits of this project will improve overall efficiency in Klamath Project operations and will ultimately conserve water, which could provide meaningful benefit to listed species, other stakeholder communities and other Klamath Project contractors.

KWUA and KID are signatory parties to the Klamath Basin Restoration Agreement (KBRA) along with three federally recognized tribes, a host of conservation and fishing groups and numerous local government entities. The purposes of the KBRA is to restore and sustain natural fish production, establish reliable water and power supplies which sustain agriculture, communities and national wildlife refuges and contribute to the public welfare and sustainability of all Klamath Basin communities. With full implementation of the KBRA, Klamath Project water supplies (from the Klamath system) would be limited in some years and could be reduced by as much as 100,000 acre-feet in the driest years. KID is participating in the development of an On Project Plan (OPP), a requirement of the KBRA, which is soon to be completed and is intended to provide a variety of tools to help deal with project supply shortages.

KID specifically, and the Klamath Project generally, will need to continue the commitment to develop projects that increase operational efficiency, conserve water and provide benefit not only to the Project's water user community, but also to the larger group of stakeholders in the Basin. We believe the Stukel Spill Project is an example of this sort of mutually beneficial venture and we are pleased to support it.

Sincerely,

Greg Addington,
Executive Director

Shasta View Irrigation District
P.O. Box 46
Malin, Or 97632
541-723-4951

Malin Irrigation District
P.O. Box 355
Malin, Or 97632
541-723-2049

U.S Department of Interior
Bureau of Reclamation
Policy and Administration
Denver, Colorado

Water Smart Application Review Committee:

The Shasta View and Malin Irrigation Districts wish to express their support for the Klamath Irrigation Districts Stukel Spill Project. This Project will have positive impacts for our Districts.

We believe this project will provide more timely irrigation deliveries to our Districts and relieve D canal fluctuation issues. Better management of water deliveries in the D canal should result in conservation of water supplies.

Sincerely,

Luke Robison
Manager Shasta View & Malin Irrigation Districts

Sustainable Northwest

January 16, 2014

United State Department of Interior
Bureau of Reclamation, Policy and Administration
1849 C Street, N.W.
Washington DC 20240

Re: Klamath Irrigation District WaterSMART Application

Dear WaterSMART Review Committee,

On behalf of Sustainable Northwest, please accept our strong support for the Water Smart Grant proposal submitted by the Klamath Irrigation District (KID) to fund improvement of the Stukel Spill Structure located in the Bureau of Reclamation's Klamath Project. We are confident work on the Stukel spill structure will produce greater water use efficiency and screen more flows, critical needs for both agricultural sustainability and fish recovery in the region.

Sustainable Northwest has been working with local partners and landowners in the Klamath Basin for over ten years as an impartial convener, innovator, and problem-solver. We have helped empower local leaders to consider new ideas and create collaborative solutions to help meet the water needs of both wildlife and local communities. Most recently we partnered with the Wy'East Resource Conservation & Development Area Council, the Natural Resources Conservation Services, and the Klamath Soil and Water Conservation District to launch a new initiative that provides on-farm assistance to help area landowners navigate available technologies and funding programs for advancing irrigation improvements that offer water and energy savings. We are committed to finding ways to increase water conservation and efficiency through irrigation improvements and working with the Klamath Irrigation District and others to maximize water supplies for all who rely upon water in the basin.

We believe that the Klamath Irrigation District's work to improve the Stukel structure will improve water use efficiency and sensitive fisheries, outcomes that are paramount to the long-term prosperity of the Klamath Basin.

Thank you for your consideration of this letter of support.

Sincerely yours,

Mike Gerel
Klamath Program Director
Sustainable Northwest

Lee Rahr
Community Energy Program Manager
Sustainable Northwest

cc: Mark Stuntebeck
Klamath Irrigation District
6640 KID Lane, Klamath Falls, OR 97603

813 SW Alder Street, Ste 500
Portland, Oregon 97205
MAIN LINE (503) 221-6911
FACSIMILE (503) 221-4495
SustainableNorthwest.org

TROUT UNLIMITED
Brian J. Johnson
California Director

February 6, 2014

U.S. Department of the Interior
1849 C Street, N.W.
Washington DC 20240

c/o: Bureau of Reclamation
Policy and Administration

WaterSMART Application and Review Committee:

On behalf of the Trout Unlimited, I am writing to you today to express my strong support for the Water Smart Grant proposal submitted by the Klamath Irrigation District (KID) for the Stukel Spill Structure Project located in the Bureau of Reclamation's Klamath Project.

Trout Unlimited (TU) is North America's leading coldwater fisheries conservation organization, dedicated to the conservation, protection and restoration of trout and salmon fisheries and their watersheds. The organization has more than 150,000 members in 400 chapters across the United States. TU's vision is that, by the next generation, trout and salmon will be restored throughout their native range so that our children can enjoy healthy fisheries in their home waters.

We have reviewed this proposed project and concluded that the benefits of this project will improve overall efficiency in Klamath Project operations and will ultimately conserve water, provide meaningful benefit to steelhead and salmon, other help other stakeholders and Klamath Project contractors.

TU and KID are both signatory parties to the Klamath Basin Restoration Agreement (KBRA) along with three federally recognized tribes, a host of conservation and fishing groups and numerous local government entities. The purposes of the KBRA is to restore and sustain natural fish production, establish reliable water and power supplies which sustain agriculture, communities and national wildlife refuges and contribute to the public welfare and sustainability of all Klamath Basin communities. With full implementation of the KBRA, Klamath Project water supplies (from the Klamath system) would be limited in some years and could be reduced by as much as 100,000 acre-feet in the driest years. KID is participating in the development of an On Project Plan (OPP), a requirement of the KBRA, which is soon to be completed and is intended to provide a variety of tools to help deal with project supply shortages.

KID specifically, and the Klamath Project have demonstrated a strong commitment to develop projects that increase operational efficiency, conserve water and provide benefit not only to the Project's water user community, but also to the larger group of stakeholders in the Basin. I

believe the Stukel Spill Project is an example of this sort of mutually beneficial venture and we are pleased to support it.

Thank you for your consideration of the proposal. If you have any questions about this letter or would like more information, please do not hesitate to contact me.

Sincerely,

Brian J. Johnson

CC: Mark Stuntebeck, Klamath Irrigation District
Greg Addington, Klamath Water Users Association

Exhibit D

RESOULTION

KLAMATH IRRIGATION DISTRICT

WHEREAS, The Board of Directors of the Klamath Irrigation District has reviewed and is in support of the Klamath Irrigation District 2015 Bureau of Reclamation WaterSmart Water and Energy Efficiency Grant Application, for the Stukel Spill Project.

WHEREAS, Klamath Irrigation District is capable of providing the amount of funding with in-kind contributions and/or cash, specified in the funding plan; and

WHEREAS, Klamath Irrigation District will work with the Bureau of Reclamation to meet all established deadlines for entering into a cooperative agreement.

NOW THEREFORE, BE IT RESOLVED that the Board of Directors agrees and authorizes this resolution to approve and support this grant application and project:

NOW THEREFORE the Manager Mark Stuntebeck, is authorized, empowered and directed to execute and deliver, in the name and on behalf of the district, the Grant Agreement if so awarded by the Bureau of Reclamation.

DATED: January 8, 2015

David A. Cacka, President

Exhibit E

Stukel Spill Budget

Budget Item Description	Unit Cost$	Qty	Qty Type hrs/days/etc	Total Cost	KID	C-Drop LLC	Reclamation
Salaries and Wages							
Project Manager - KID Manager/Admin	39.14	50	hrs	$ 1,957.00	$ 1,957.00		
Excavation/Construction Labor							
KID Maintenance Foreman - Supervisory of KID Maintenance	23.34	120	hrs	$ 2,800.80	$ 2,800.80		
KID Assistant Manager	30.93	40	hrs	$ 1,237.20	$ 1,237.20		
KID Maintenance Labor	17.96	2080	hrs	$ 37,356.80	$ 37,356.80		
C-Drop Project Supervisor Dennis Daugherty	90.00	480	hrs	$ 43,200.00		$ 43,200.00	
C-Drop Certified Welder	75.00	80	hrs	$ 6,000.00			$ 6,000.00
Fringe Benefits							
KID Manager Project Administrator	11.47	50	hrs	$ 573.50	$ 573.50		
KID Maintenance Forman	8.24	120	hrs	$ 988.80	$ 988.80		
KID Assistant Manager	9.79	40	hrs	$ 391.60	$ 391.60		
KID Maintenance Labor	5.47	2080	hrs	$ 11,377.60	$ 11,377.60		
C-Drop Project Supervisor/Welder - Perdiem	125.00	70	days	$ 8,750.00			$ 8,750.00
KID Equipment (includes operator & fuel)							
Excavator JD 200LC	105.00	80	hrs	$ 8,400.00	$ 8,400.00		
Case Dozer 850K	80.00	10	hrs	$ 800.00	$ 800.00		
Truck - Tractor/Trailer	55.00	10	hrs	$ 550.00	$ 550.00		
1/2 ton Ford F-150 Pickup	20.00	40	hrs	$ 800.00	$ 800.00		
Rental Equipment							
Vibratory Compactor	300.00	1	week	$ 300.00			$ 300.00

Exhibit E

Stukel Spill Budget

Budget Item Description	Unit Cost$	Qty	Qty Type [hrs/days/etc	Total Cost	KID	C-Drop LLC	Reclamation
Engineering & Surveying							
Preliminary Civic Site Plan & Drawings				$ 1,500.00		$ 1,500.00	
Engineering Final C-Drop 11% both				$ 21,197.00	$ 3,500.00	$ 13,197.00	$ 4,500.00
Permits							
Klamath County Building Permit/Others				$ 500.00	$ 500.00		
Supplies / Materials							
48" ID 3/8" Steel Pipe Coated Inside and Outside	103.30	235	ft	$ 24,275.50			$ 24,275.50
Intake Pipe Reducer / Air vent / Drain Valve *Contacted through RSI				$ 3,200.00			$ 3,200.00
Concrete Structure - Includes Concrete, Forms, Reinforcement, all supplies & Materials	204.00	55.8	cubic yds	$ 11,383.20			$ 11,383.20
Intake Roller Gate, Actuator & Controls, Embeds, Pedestal, Maint. Platform & Safety Rails, Conduit *Contracted through RSI for Gate Assembly				$ 25,000.00		$ 18,000.00	$ 7,000.00
Measuring Device - to be determined		1		$ 10,000.00			$ 10,000.00
Contractors							
Licensed Electrical Contractor - to install wire from power source at Stukel Pump Plant to supply actuator controls & to measuring device & telemetry (rate $60/Hr)				$ 1,000.00			$ 1,000.00

Exhibit E

Stukel Spill Budget

Budget Item Description	Unit Cost$	Qty	Qty Type (hrs/days/etc	Total Cost	KID	C-Drop LLC	Reclamation
NEPA Complience including CE & SHPO and Reclamation Oversite 2%				$ 4,127.00			$ 4,127.00

Miscellaneous

Misc				$ 2,000.00	$ 2,000.00		

Contingency

Contingency				$ 2,000.00	$ 2,000.00		

Project Totals	$ 231,666.00	$ 75,233.30	$ 75,897.00	$ 80,535.70
% Contribution	100%	32.5%	32.8%	34.8%

Exhibit F-1

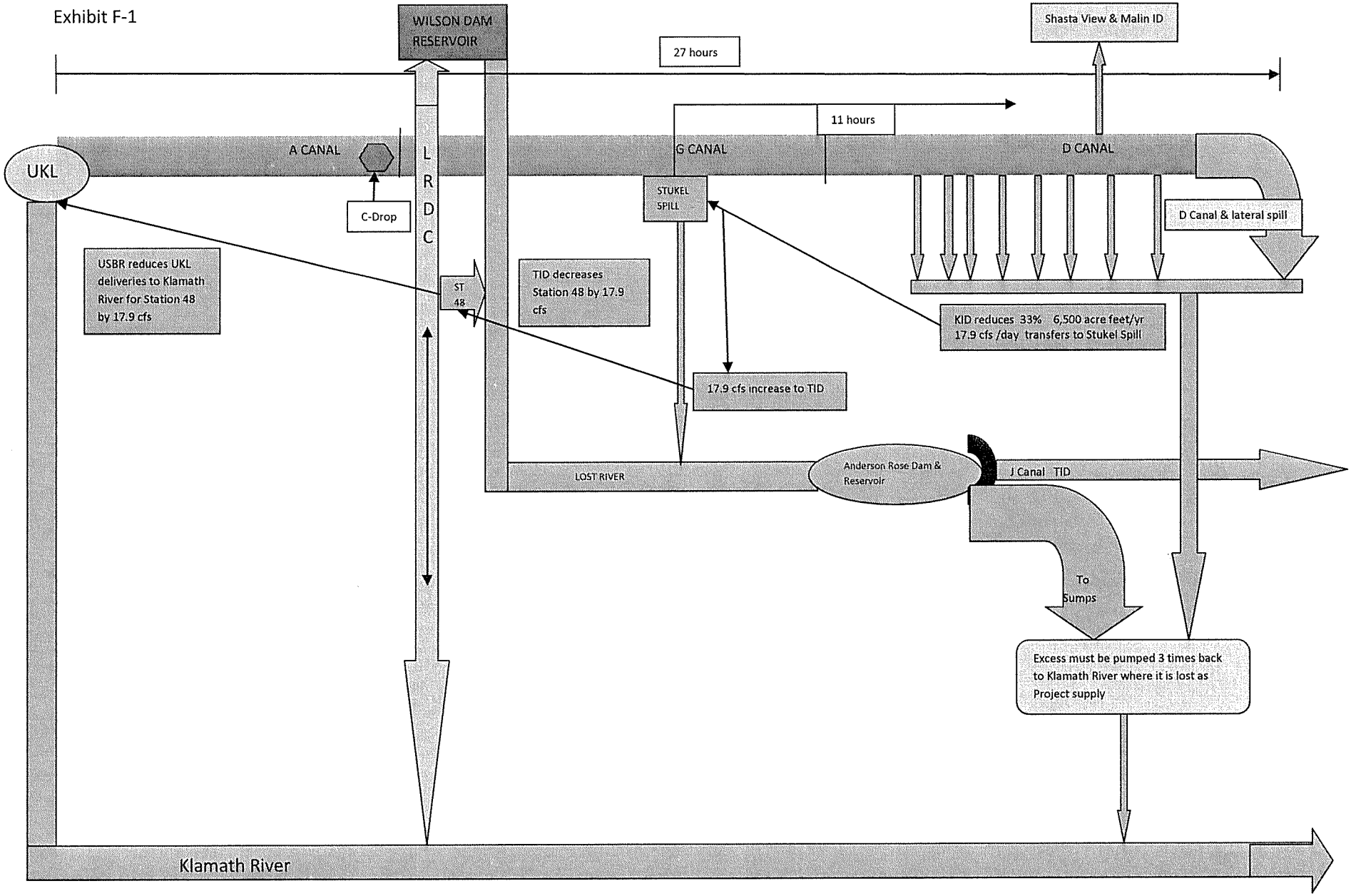

WILSON DAM
RESERVOIR
27 hours
Shasta View & Malin ID
11 hours
A CANAL
G CANAL
D CANAL
UKL
L
R
D
C
C-Drop
STUKEL
SPILL
D Canal & lateral spill
USBR reduces UKL deliveries to Klamath River for Station 48 by 17.9 cfs
ST
48
TID decreases Station 48 by 17.9 cfs
KID reduces 33% 6,500 acre feet/yr
17.9 cfs /day transfers to Stukel Spill
17.9 cfs increase to TID
LOST RIVER
Anderson Rose Dam &
Reservoir
J Canal TID
To
Sumps
Excess must be pumped 3 times back to Klamath River where it is lost as Project supply
Klamath River

Exhibit F-2 Operation Example

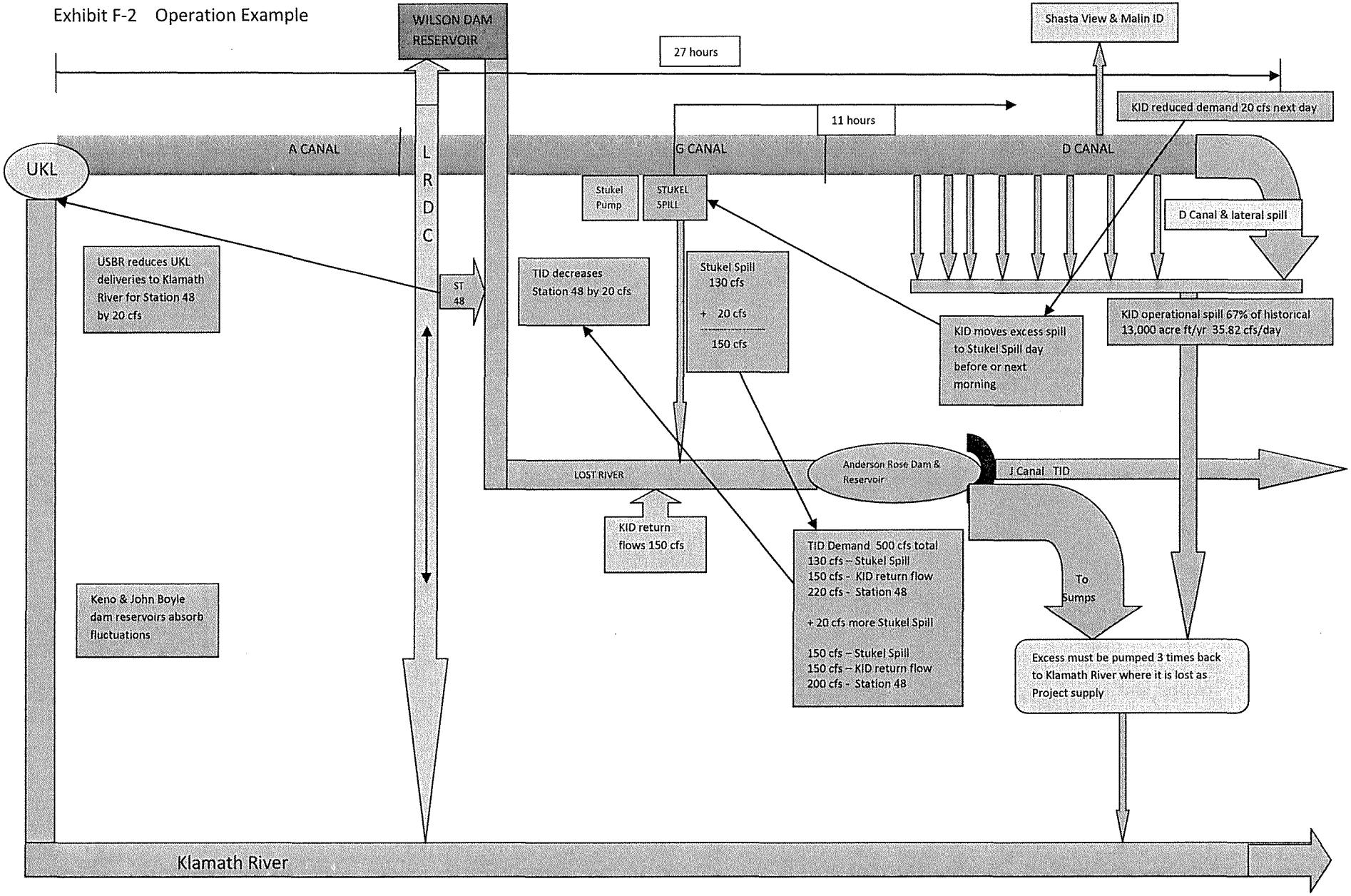


Exhibit F-3 Operation Example

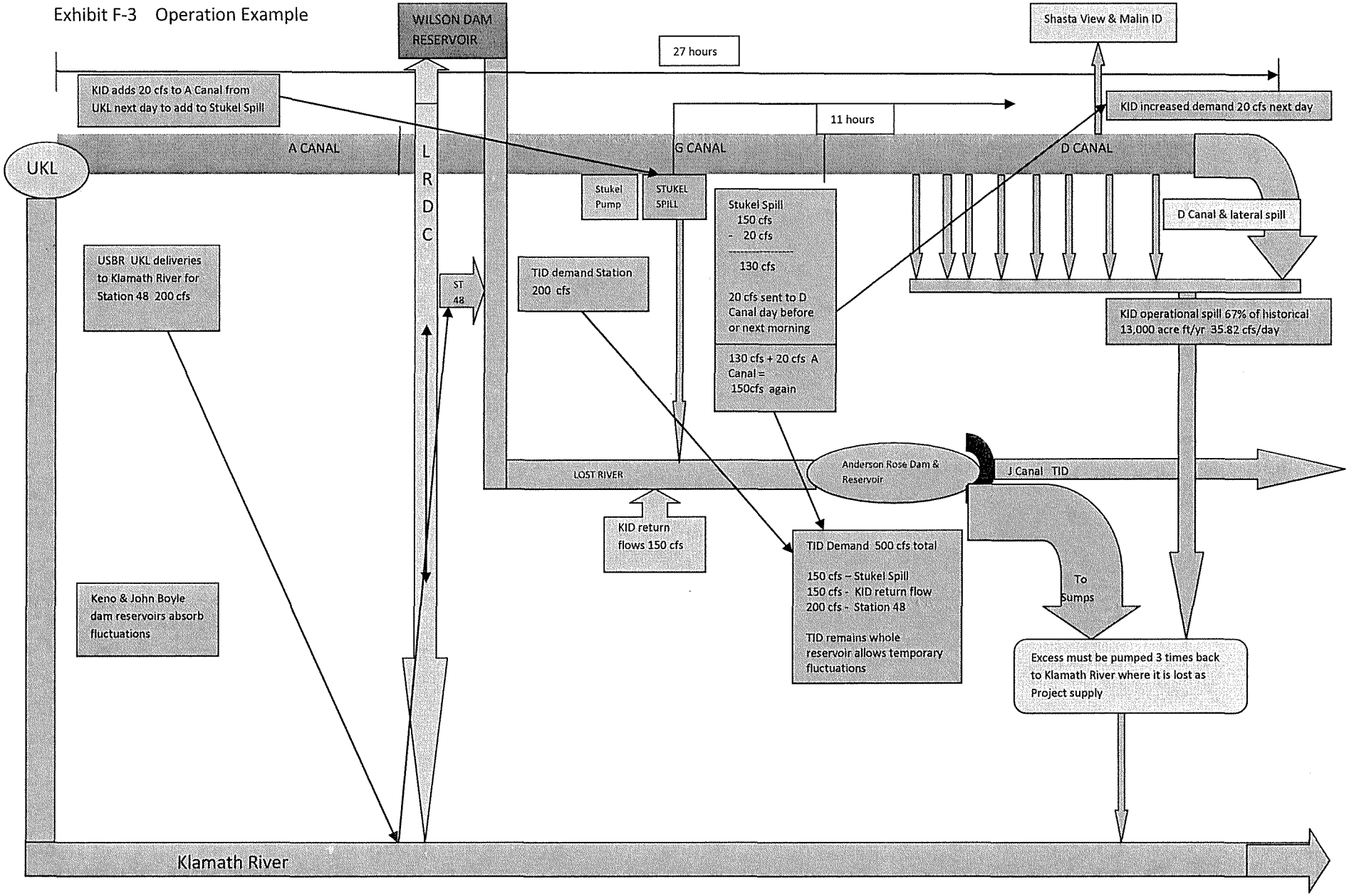
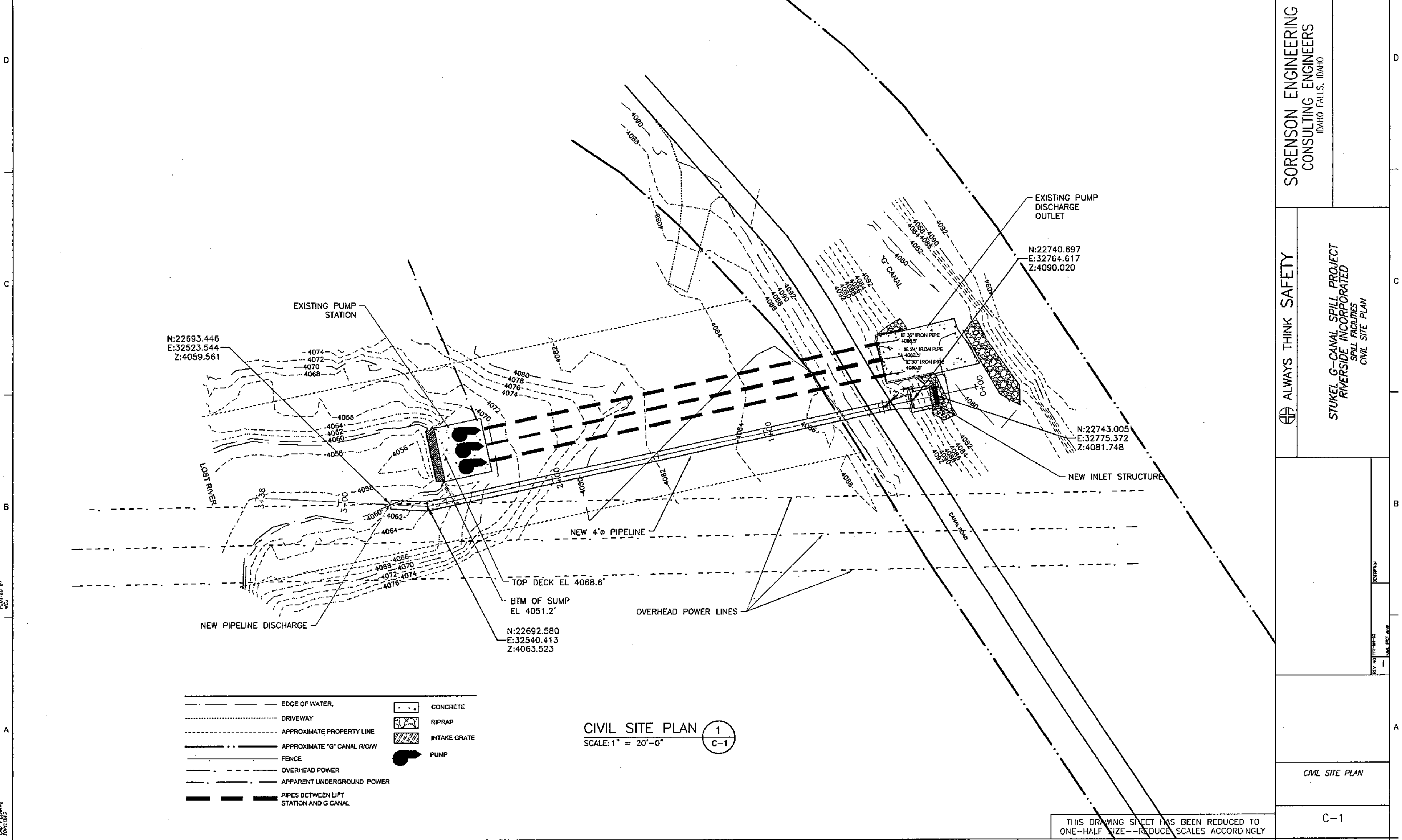
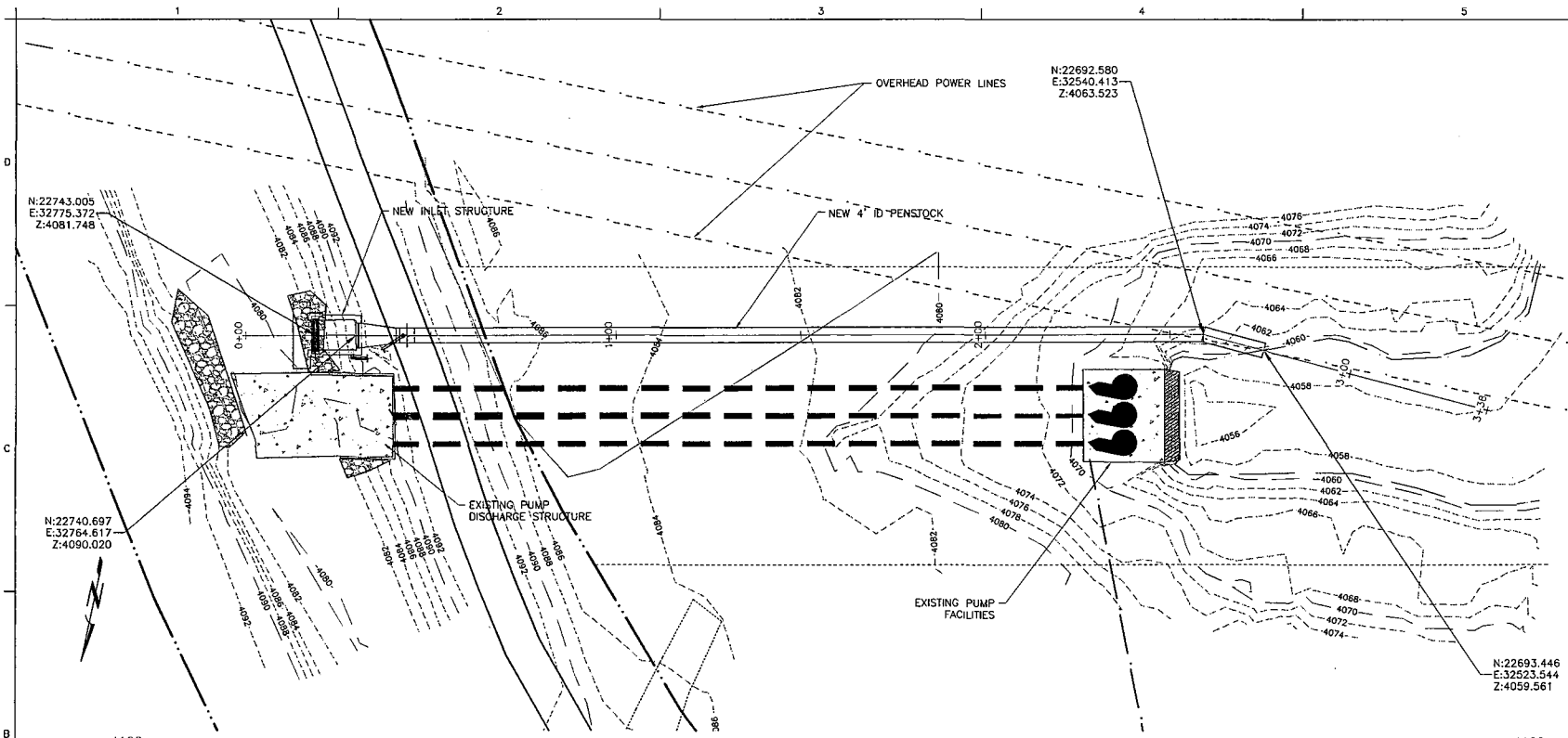
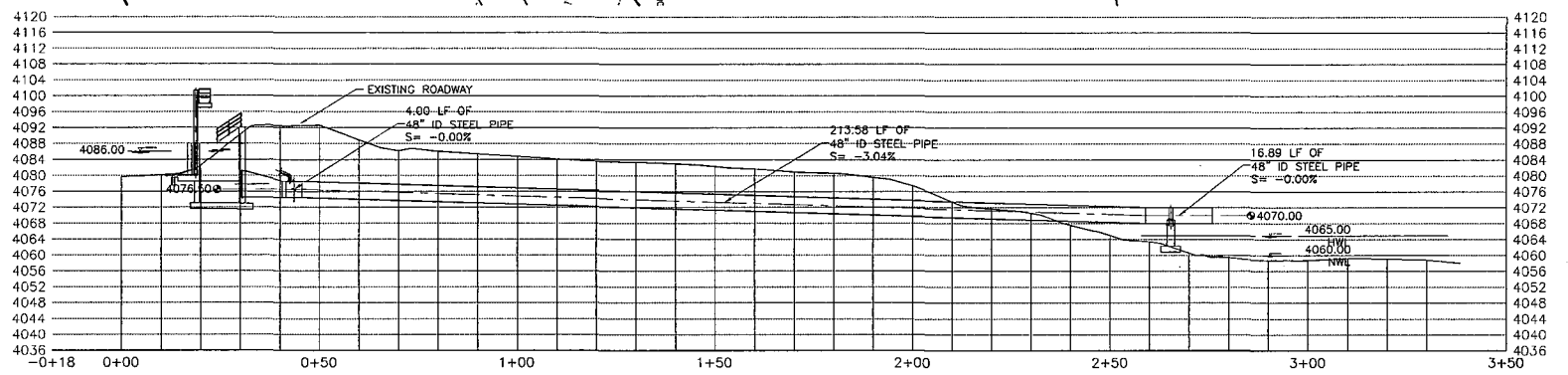


Exhibit G


EXISTING PUMP STATION
N:22693.446
E:32523.544
Z:4059.561
LOST RIVER
NEW PIPELINE DISCHARGE
TOP DECK EL 4068.6'
BTM OF SUMP
EL 4051.2'
N:22692.580
E:32540.413
Z:4063.523
NEW 4'φ PIPELINE
OVERHEAD POWER LINES
"G" CANAL
CANAL ROAD
EXISTING PUMP DISCHARGE OUTLET
N:22740.697
E:32764.617
Z:4090.020
N:22743.005
E:32775.372
Z:4081.748
NEW INLET STRUCTURE
EDGE OF WATER
DRIVEWAY
APPROXIMATE PROPERTY LINE
APPROXIMATE "G" CANAL R/O/W
FENCE
OVERHEAD POWER
APPARENT UNDERGROUND POWER
PIPES BETWEEN LIFT STATION AND G CANAL
CONCRETE
RIPRAP
INTAKE GRATE
PUMP
CIVIL SITE PLAN
SCALE: 1" = 20'-0"
1
C-1
THIS DRAWING SHEET HAS BEEN REDUCED TO ONE-HALF SIZE--REDUCE SCALES ACCORDINGLY
SORENSON ENGINEERING
CONSULTING ENGINEERS
IDAHO FALLS, IDAHO
ALWAYS THINK SAFETY
STUKEL G-CANAL SPILL PROJECT
RIVERSIDE INCORPORATED
SPILL FACILITIES
CIVIL SITE PLAN
CIVIL SITE PLAN
C-1





CIVIL SITE PLAN & PROFILE (1 / C-2)

SCALE: 1" = 15'-0"

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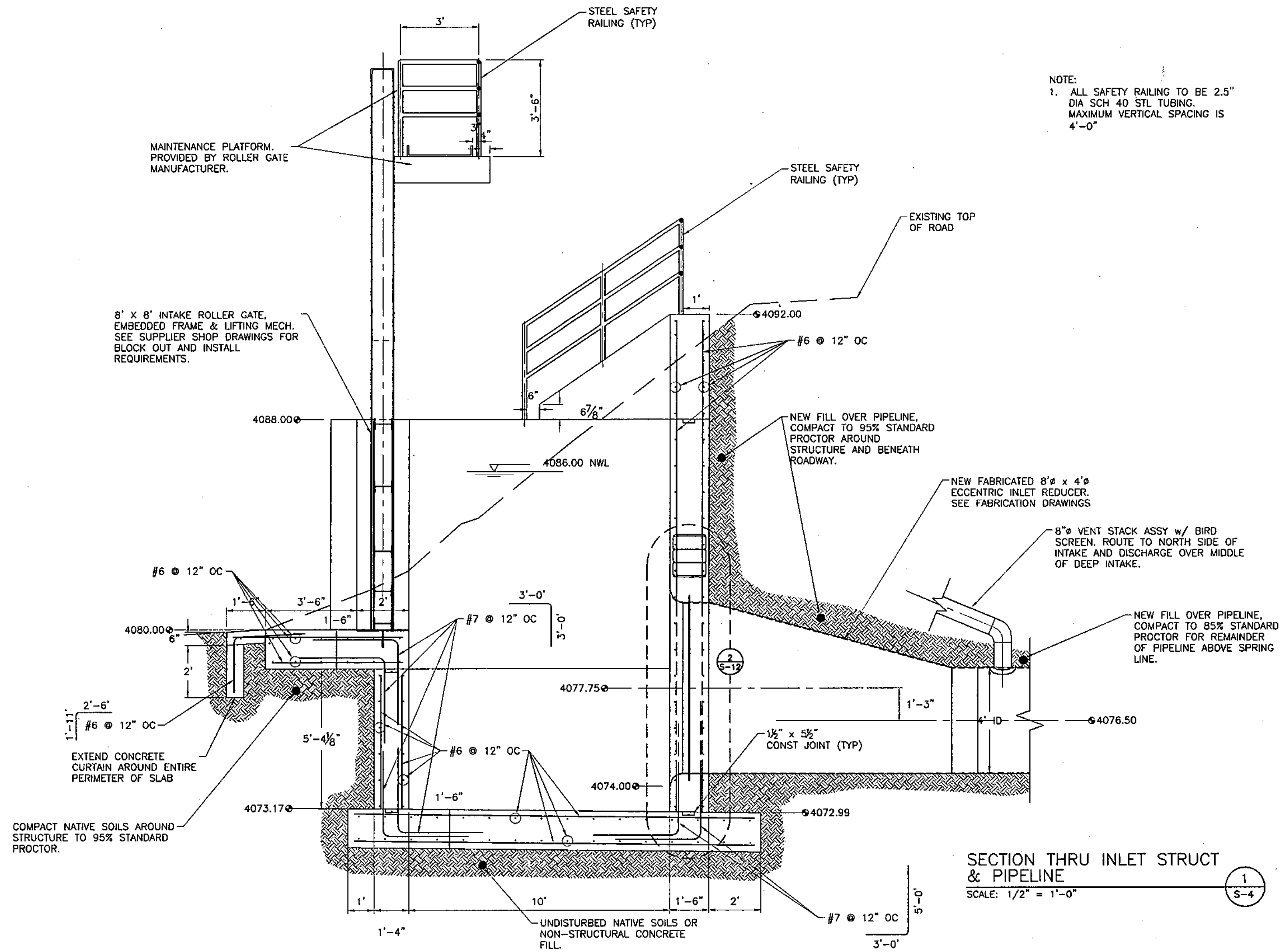
RIVERSIDE INCORPORATED
SPILL FACILITIES
CIVIL SITE PLAN

CIVIL SITE PLAN

C-2



SECTION THRU INLET STRUCT & PIPELINE

SCALE: 1/2" = 1'-0"

1
S-4

NOTE:
1. ALL SAFETY RAILING TO BE 2.5" DIA SCH 40 STL TUBING. MAXIMUM VERTICAL SPACING IS 4'-0"

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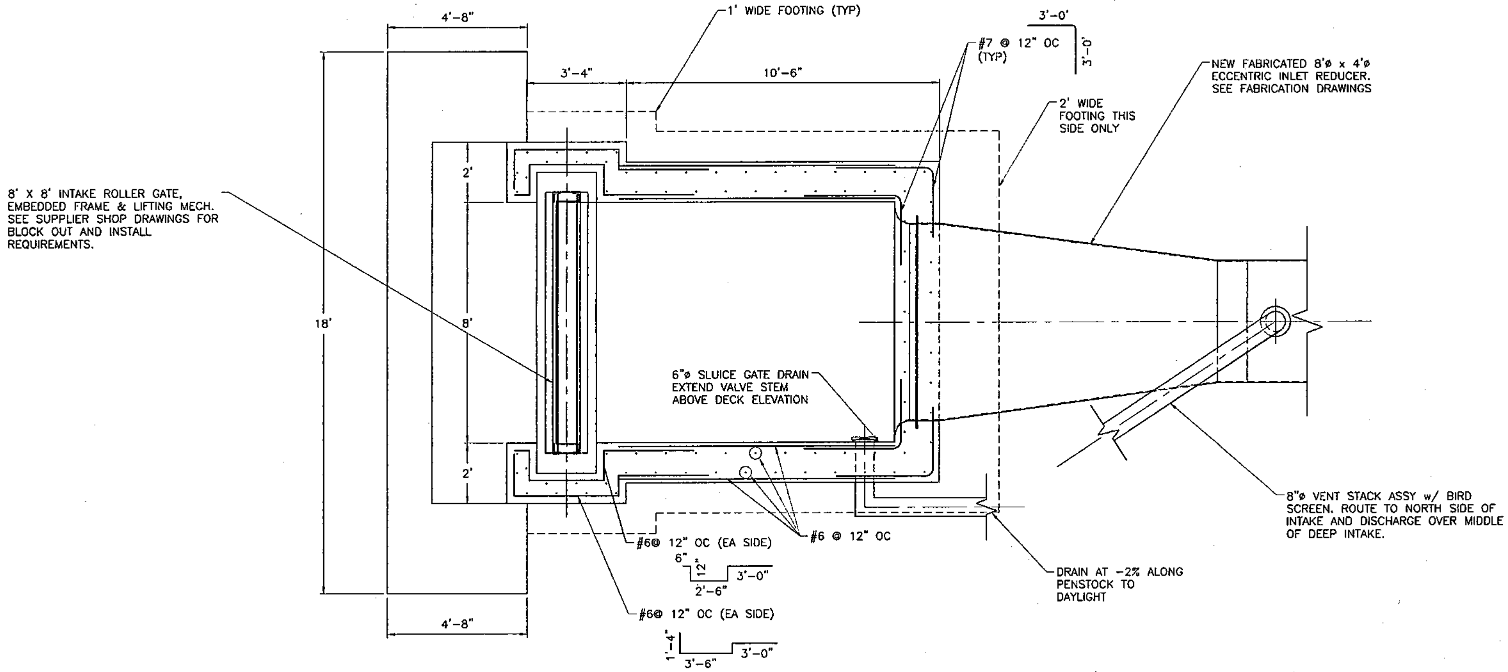
RIVERSIDE INCORPORATED
SPILL FACILITIES
INTAKE STRUCTURE

INTAKE STRUCTURE

S-4



INLET STRUCT
SITE PLAN
SCALE: 1/2" = 1'-0"

1
S-5

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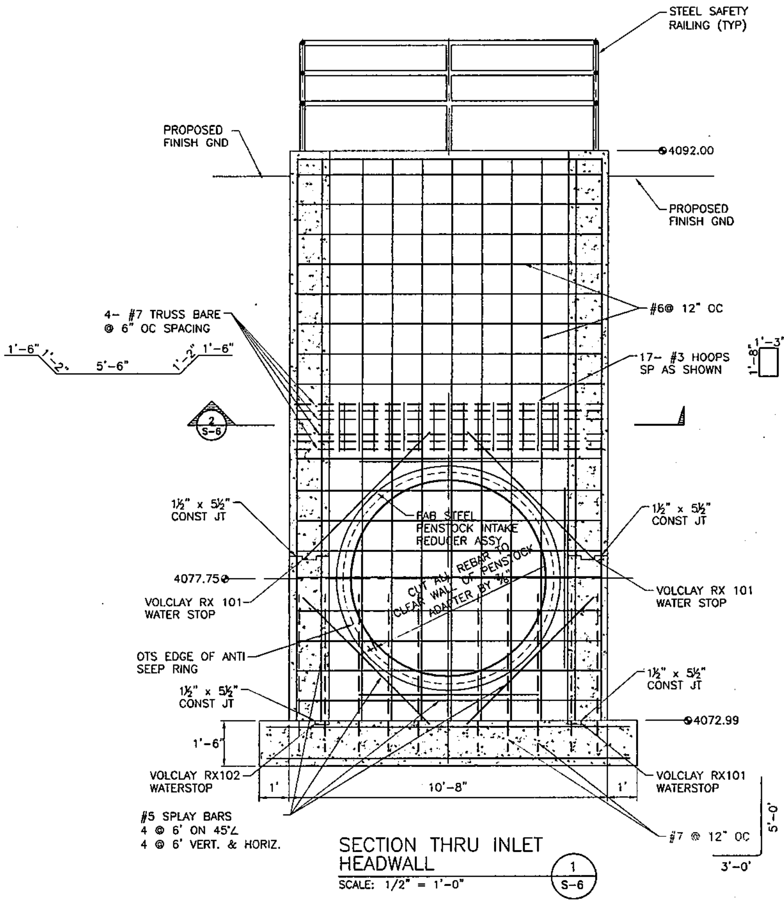
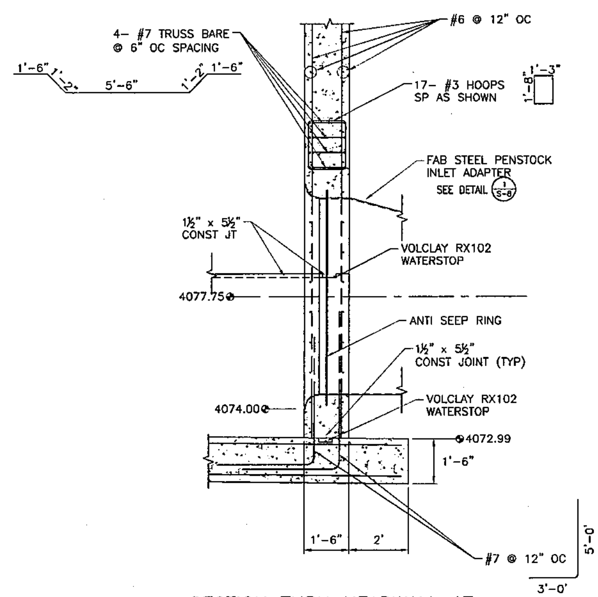
RIVERSIDE INCORPORATED
SPILL FACILITIES
INTAKE STRUCTURE

INTAKE STRUCTURE

S-5



SECTION THRU INLET HEADWALL (1 / S-6)
SCALE: 1/2" = 1'-0"



SECTION THRU HEADWALL AT CL OF PIPELINE (1 / S-6)
SCALE: 1/2" = 1'-0"

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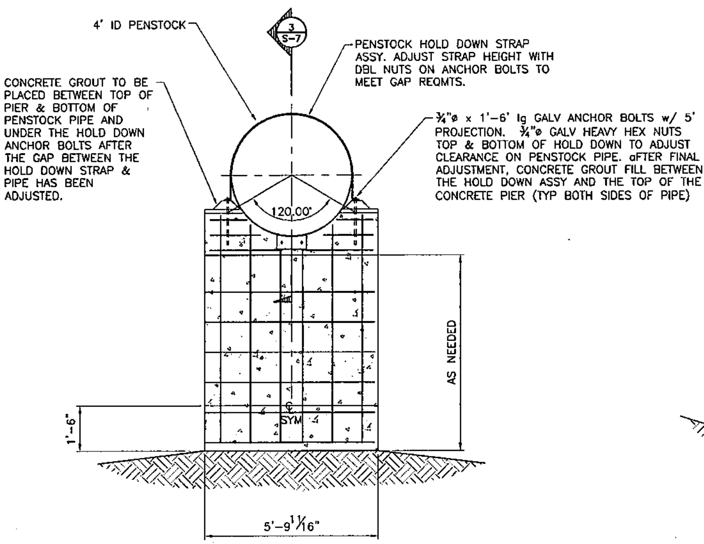
SPILL FACILITIES
INTAKE STRUCTURE DETAILS

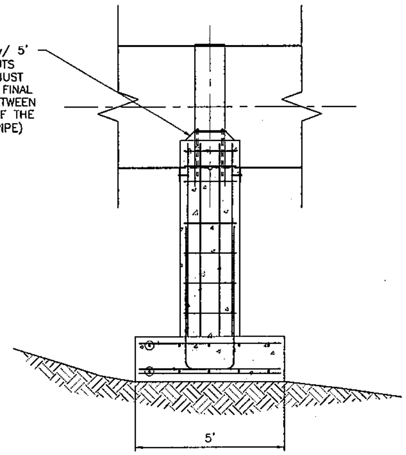
INTAKE STRUCTURE DETAILS

S-6



TYPE 1 PENSTOCK SUPPORT PIER FRONT SECTION (1 / S-7)

SCALE: 1/2" = 1'-0"



TYPE 1 PENSTOCK SUPPORT PIER SIDE SECTION (2 / S-7)

SCALE: 1/2" = 1'-0"

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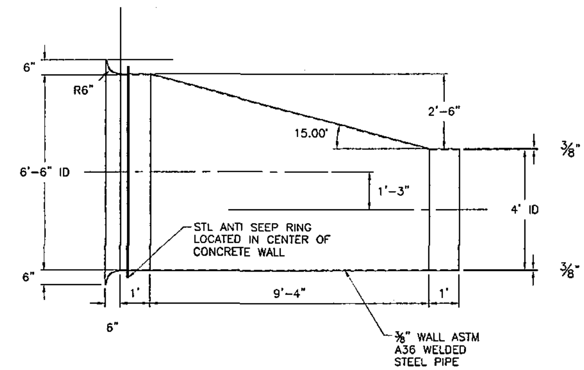
SPILL FACILITIES
PIPELINE PIER
SUPPORT DETAILS

PIPELINE PIER
SUPPORT DETAILS

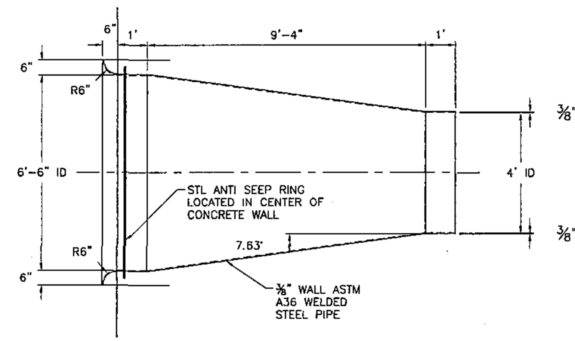
S-7



ECCENTRIC INLET REDUCER ELEVATION DETAIL

SCALE: 1/2" = 1'-0"

1 / S-8



ECCENTRIC INLET REDUCER PLAN DETAIL

SCALE: 1/2" = 1'-0"

2 / S-8

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SPILL FACILITIES
INLET REDUCER
FABRICATION DETAIL

INLET REDUCER
FABRICATION DETAIL

S-8

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Exhibit H

KID Stukel Spill Efficiency Table

All numbers in acre/feet

Year	G canal Diversions	Project Water Banking Wells **	Project Water Banking idling/yield	KID D Canal & Lats Operational Spills	D Plant Pumping April - October	Total D Plant pumping Jan-Dec.
2013 *	72,014	64,622	7,341	18,617	13,658	16,187
2012	89,638	30,620	7,312	19,461	10,900	21,401
2011	85,922	0	0	19,301	15,940	23,066
2010 *	32,924	101,300	86,400	11,690	3,830	10,114
2009	91,441	0	0	20,900	22,650	27,628
2008	89,980	0	0	16,317	24,260	50,171
2007	93,346	38,800	5,900	19,861	26,590	39,063
2006	87,695	37,300	9,200	21,123	35,570	85,408

Years with Water Banking activities –Total of Wells and idling yield would be Project supply shortages (dry years). Idle yield = ac/ft not used.

**Much of well input goes into Project canals for delivery rather than on fields directly. Some but not all into KID system.

*Dry years with pretty extreme Project shortages.

*2013 Deliveries were delayed by one week from normal.

*2010 Deliveries to KID lands were delayed by by five weeks – no deliveries until May 22. No deliveries were made to 35,000 acres of Warren act contractors until July 10. Shasta View & Malin Irrigation Districts Idled in Water Bank Programs all season.

*2010 & 2013 years shows that demand fluctuations influence spill operations more than dry years with supply shortages as % of spill related to G canal diversions which supply D canal is greater than wet or full supply years.

While management practices and coordination with TID Operations has improved from 2006 to 2013 there is still room for more improvement.