

COLORADO RIVER RECOVERY PROGRAM
FY 2018 ANNUAL PROJECT REPORT

RECOVERY PROGRAM
PROJECT NUMBER: FR-171

I. Project Title: Protecting flows in the Price River

II. Bureau of Reclamation Agreement Number(s): N/A

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IV. Abstract:

The proposed project will reconstruct an off-river reservoir to allow for the strategic release of stored water to supplement flows to the Price River for endangered species fish habitat, as well as aid agriculture demands. Associated upgrades to the Carbon Canal will reduce the risk of flooding, and an innovative water agreement will allow the Carbon Canal Company to invest in future water infrastructure improvements that create additional “saved” water that will be used for environmental benefits. Conservation easements will ensure that benefits are realized in perpetuity.

V. Study Schedule: ongoing

VI. Relationship to RIPRAP:

Green: I. C.3. Work with State of Utah and local water users to provide and enhance summer base flow conditions (either increase average daily flow thresholds or increase the frequency that those flows occur) in the lower Price River that are conducive to pikeminnow use. For example, consider securing an emergency pool of water to avoid periods of dewatering in the lower Price River.

VII. Accomplishment of FY 2018 Tasks and Deliverables, Discussion of Initial Findings:

Proposed Action

The Utah Division of Wildlife Resources (UDWR) has a near-term goal of guaranteeing delivery of water from Olsen Reservoir to the Price River, maintaining a base flow that prevents desiccation of that river. This includes working with two to three water users below Olsen Reservoir to ensure that released water would reach the Price River. One water user is interested in selling his property and water rights to The Nature Conservancy (TNC), who in turn would donate the water to the UDWR.

UDWR, in partnership with other interests including TNC is seeking funding to secure tail water from the Carbon Canal Company (CCC) that would be delivered to the reservoir in early spring and late fall. This reservoir storage would restore spring wetland habitat and be released during very low water periods to prevent fish kills. Delivery of water in the spring and fall would fill much of the wetland and provide valuable nesting habitat for waterfowl and other marsh birds. This pool of water could be released periodically during dry periods (July-Aug) to maintain flows, improve water quality, and ultimately prevent Price River fish kills that have occurred in the past. The reservoir is also being investigated as a location for roundtail chub (*Gila robusta*) propagation.

Carbon Canal upgrades (replacement of a water overflow structure, installation of canal flow measurement) and a water agreement to use canal carrier water would allow for increased inflow to the reservoir. A pipeline and open channel would convey water from the canal to the reservoir while maintaining wetland habitats. Upgraded downstream diversion structures would allow for increased delivery of agriculture water. Conservation easements would enhance habitat in perpetuity.

Concurrently, efforts are underway upstream to possibly develop a reservoir on the Garley Wash tributary to the Price River near Price, Utah, and make associated improvements to the existing irrigation system, including piping and pressurizing the currently open and unlined water delivery canals. An anticipated benefit of these improvements would be substantial water savings, a portion of which could be delivered under a long-term agreement to Olsen Reservoir (e.g., 600 acre-feet/year) for purposes of controlled release when needed to support in-stream Price River flows. TNC is working with legal counsel to determine suitability of water savings for environmental flows.

Accomplishments in FY2018

Feasibility Study Summary:

Survey and Data Collection:

Jones & DeMille Engineering completed an aerial survey supplemented by conventional survey data. The aerial survey covered the dam embankment as well as the storage area. Conventional survey data were collected along the dam

embankment as well as other pertinent features surrounding the dam. Conventional data were also collected under the water surface of the reservoir in cross-sections. This information was used to model existing and proposed condition surfaces in Civil 3D. Dam raise and dredging scenarios were modeled to develop stage-storage relationships for further use in the feasibility study. The contours derived from these data were converted to a GIS format for further use. This data were provided to the DNR and TNC as a project deliverable.

Water Balance Analysis & Conveyance Alternatives:

Keller-Bliesner Engineering developed a report titled Olsen Reservoir Water Balance Model and Conveyance Alternatives Draft 2 (2018). This report analyzes the water balance of Olsen Reservoir under existing and proposed conditions in terms of irrigation flows and demands, losses (e.g., evapotranspiration), storage, selenium concentrations, fishery habitat, and other ecological conditions. Water balance models were developed to optimize the system to meet project goals. Options for conveying additional flows into and out of Olsen Reservoir are also analyzed. The general findings of the report conclude that the project is feasible and provides considerable benefit.

Geotechnical Study:

A geotechnical feasibility study titled Olsen Reservoir: Phase 1 Geotechnical / Geological Feasibility Studies was completed by Gerhart Cole (2018). The technical memorandum summarizes a literature review of existing operational and geotechnical data as well as observations made during a geologic reconnaissance and other site visits. The memo discusses geology conditions and potential hazards, historical operations and maintenance, site visit observations on the embankment condition, potential borrow sources, and recommendations for additional analysis. The general findings of the study conclude that improving the dam as proposed is feasible from a geotechnical perspective, and additional analysis and studies are recommended to confirm and further investigate.

Dam Hazard Classification:

A technical memorandum titled Proposed Conditions Dam Hazard Classification was developed by Jones & DeMille Engineering (2018). The proposed improvements of Olsen Reservoir include raising the dam embankment and/or dredging the reservoir to increase the permanent pool storage. The dam is currently classified by Utah Dam Safety as a 'low hazard' dam. It is desirable to maintain a low hazard dam rating in the proposed condition to minimize risk to life and property, keep project costs low, and allow for ease of future operations and maintenance. Based on a meeting that was held with Utah Dam Safety on January 17, 2018, retaining the current hazard rating is very likely and will be based on assessing the risk to life and property downstream of the dam in the event of a dam failure. A dam breach analysis and 2D flood model was developed

which showed that only minor gravel roadways would be inundated during a dam breach scenario. No significant structures including homes would be inundated. Therefore, it is believed that a low hazard dam rating can be retained in the proposed conditions. It is recommended that as the design proceeds the dam risk assessment be updated and refined as needed, and that the project team continue to coordinate and confirm the hazard rating and general design approach with Utah Dam Safety.

Funding:

In September 2018, UDWR in association with TNC received \$660,000 from the NRCS (PL-566 funds) to complete a watershed plan and EA for the Olsen Reservoir Project. Jones and DeMille have created a budget and timeline for completion of the EA, final design, and project construction (Table 1 & 2). In July of 2018 USBR biologist lead an effort to conduct a Wetland Habitat and In-stream Flow Evaluation to determine potential habitat replacement credits generated by the Olsen Reservoir Project. Efforts continued in 2018 to secure Salinity Program Habitat Replacement Funding.

Table 1. Estimated Project Costs

Project Component	PL83-566 Funds		Partner Contributions ¹		Total
	Amount	Percent	Amount	Percent	
Watershed Plan-EA 30% Design	\$600,000	100%	-	-	\$600,000
Final Design	\$744,900	100%	-	-	\$744,900
Construction & Implementation ²	\$3,594,900	66%	\$1,861,010	34%	\$5,455,910
TOTAL	\$4,939,800	73%	\$1,861,010	27%	\$6,800,810

Table 2. Timeline

Project Element	Estimated Duration	Start Date	Completion Date
Watershed Plan-EA 30% Design	2 Years	March 2019	March 2021
Final Design	1 Year	March 2021	March 2022
Construction & Implementation	2 Years	March 2022	March 2024

Selenium Monitoring:

Eggs from coots and yellow-headed blackbirds nesting on Olsen Reservoir were collected in the spring of 2018 and evaluated for selenium (Se) and other contaminants by the Trace Element Research Laboratory. The mean coot Se was 7.04 ppm and yellow-headed black bird was 5.16 ppm. Ohlendorf and Heinz (2011, p. 695) summarized a lot of Se/bird studies and found that reproductive impairment began as reduced egg hatchability around 12 ppm (=mg/kg dry weight) for sensitive (ducks) and moderately sensitive species. Teratogenicity began a bit higher at ~ 20 ppm in sensitive species such as the mallard. Our sampling results indicate Se concentrations are higher than would be expected at an area without seleniferous soils, but still low enough to be safe for the bird populations.

VIII. Additional noteworthy observations:

Endangered and Imperiled Fish Use. In January 2017, the USGS Utah Cooperative Fish and Wildlife Research Unit and the Department of Watershed Science and Ecology Center at Utah State University published the results of a multi-year study, “Tributary habitat use of endangered and imperiled fishes in the Price River, Utah” (Budy et al. 2017). This effort was funded under U.S. Bureau of Reclamation Grant Number R11AC40021. Overall project goals were to (1) investigate and document tributary (Price River) habitat use by Colorado pikeminnow, (2) explore movement patterns and habitat use of the “three species” within the Price River, while obtaining ancillary information on population abundance and distribution, and (3) characterize and quantify fish habitat within the Price River to guide restoration planning. Among the report findings were the detection of “several magnitudes more native fish use and movement than anticipated”, and “more than twice the number of pikeminnow utilizing the Price River relative to the San Rafael River”. Dr. Budy and her associates have subsequently developed a draft *Restoration and Monitoring Plan* for the lower Price River, identifying priority areas for restoration activities, and identifying activities that may best accomplish restoration goals.

Price Watershed Enhancement Proposal. The Price Municipal Corporation submitted an application for funds from the NRCS Watershed Protection and Flood Prevention Program (PL-566), and was awarded \$670,200 for planning and preliminary design of the “Price River Watershed Restoration and Enhancement Project.” The funds will be utilized over a 24-month period, beginning in January, 2019. Activities proposed by the Corporation revolve around plans to construct a new reservoir at Garley Wash, replace open irrigation canals with pressurized pipelines, and upgrade to more efficient irrigation systems. Among the potential benefits are removal of diversion structures in the Price River that inhibit fish passage, removal of invasive plant species from the riparian corridor, and provision of higher and more consistent base flows in the late summer months that could significantly benefit native fishes, including Colorado pikeminnow. While the Program Director's Office and the FWS Utah Ecological Services Office takes no position regarding the Corporation's proposed reservoir, we do wish to be in a position to assist in developing plans to control any non-native fish that may be introduced into that reservoir, and also assist with the development of strategies that could significantly enhance late summer base flows in the lower Price River, should this reservoir project move forward.

IX. Recommendations:

The Recovery Program supports the efforts by UDWR, TNC, the Walton Family Foundation, Utah Water Users, the Price River Enhancement Committee, NRCS, USGS, USU, USFWS, and others to improve and maintain summer base flow conditions that support Colorado pikeminnow seasonal use of the lower Price River, and to remove three fish barriers. We recommend that the Program continue to maintain contact with those organizations and those efforts; see the Program project included in the 2018-19 Program Work Plan tasking the Program Hydrologist with keeping apprised of Price River

discussions and, as appropriate, engaging the Program's technical committees.

X. Project Status:

- Based on discussions with the Carbon Canal Company and initial engineering assessment, project proponents have selected the option to install an 15" pipe at the terminal pond for the Carbon Canal; this pipe will run approximately 6,000 feet to an ephemeral wash that flows into Olsen Reservoir. With this pipe in place, there will be an ability to route excess tail end water from the canal to Olsen Reservoir.
- CCC is interested in pursuing an agreement to capture tail water and deliver it to Olsen Reservoir. A water appraisal has been completed to place a value on the water. The appraisal was \$10-12 per acre/foot. Other costs to be paid to the CCC as part of the agreement that is being negotiated include: new automated headgates in key locations, measuring devices, and costs for marinating the tail end pond.
- Current estimates from CCC indicate approximately 1,000 to 2,500 AF annually of surplus or nondelivered water could be delivered to Olsen Reservoir.
- Significant progress has been made establishing a roundtail chub propagation pond in Emery County. 58 roundtail chub from the upper San Rafael River are now in the pond. The intention is to use progeny from this source to populate Olsen Reservoir and in the future use the water releases from the reservoir to introduce roundtail to the Price River. Roundtail Chub have not been found in the Price River since the late 1970's. TNC is in the process of negotiating an option agreement to purchase the land and water rights below Olsen Reservoir. This would make TNC owner of 38 CCC shares and the storage rights associated with Olsen Reservoir. During 2018, TNC made significant progress towards purchasing the aforementioned property and water right and expect to close the sale in early January 2019.

XI. FY 2018 Budget Status

- A. UCREFRP Funds Provided: \$0
- B. UCREFRP Funds Expended: \$0
- C. Difference: --

XII. Status of Data Submission (Where applicable): N/A.

XIII. Signed:

<u>Dan Keller</u>	<u>12/13/2018</u>
Principal Investigator	Date
<u>Don Anderson</u>	<u>12/14/2018</u>
	Date