I. Title of Proposal: **Annual Operation and Maintenance of the Fish Passage Structure at Redlands Diversion Dam on the Gunnison River.**

II. Relationship to RIPRAP:

Colorado River Action Plan: Gunnison River
II.B.1. Restore passage at Redlands.
II.B.1.c. Operate and maintain fish ladder.

III. Study Background/Rationale and Hypotheses:

The fish passage at Redlands Power and Water Diversion Dam, on the lower Gunnison River, was completed by 1996. It was designed for selective fish passage, with a fish trap at the upstream terminus of the ladder. Fishes are collected, counted and sorted (nonnative fish are removed, native fish and salmonids are allowed to make passage upstream, ictalurids are released downstream), endangered fish (bonytail [*Gila elegans*], Colorado pikeminnow [*Gila cypha*]...
[Ptychocheilus lucius], humpback chub [Gila cypha], razorback sucker [Xyrauchen texanus]) and roundtail chub (Gila robusta) are checked for a PIT tag, and endangered fish without a PIT tag have one implanted. Beginning in 2015, all Colorado pikeminnow are translocated upstream to either Escalante or Delta along with other endangered fish collected the same day.

Project Results to Date

From 1996 to 2018, the total number of fishes processed was 198,405. Native fishes comprised 81% of the total over a 23-year period. There has been a significant downward trend in the relative percentage of native fishes compared to the first 5 years that the ladder was operated when the relative percentage of native fishes was about 92% per year. Endangered fish totals (not individuals, many fish have been collected in the trap on multiple occasions) from 1996 to 2019 include 226 Colorado pikeminnow, 38 razorback sucker, 100 bonytail, and 3 humpback chub (Francis and Ryden 2018).

A final report was completed in July 2001 and distributed in late-August 2001. This report evaluated the use of the fishway by all fishes, with particular reference to the native, listed fish, Colorado pikeminnow, from 1996-2000 (Burdick 2001). This work provides guidance for current standard operation procedures.

IV. Study Goals, Objectives, End Product(s):

Continue to collect data on the number of large-bodied fish, different fish species, and seasonal distribution of fish that use the Redlands passageway. Summarize the annual results of passageway fish use in the annual report.

V. Study Area: Gunnison River: river mile 3.0.

Study Methods/Approach: FY 2020-2021

The fish trap at Redlands fish passageway may be opened by mid-April and closed in mid-October. The trap is designed to collect large-bodied fish. Depending upon manpower, the fish trap at the passageway will be run at least every other day, Monday through Friday, and where possible every weekday. All fish will be sorted by species and counted. Vital statistics including length, weight, and PIT-tag IDs will be collected for all listed species found in the trap. All Colorado pikeminnow will be translocated upstream to either Escalante or Delta along with other endangered fish collected the same day. Other introduced species (e.g., largemouth bass, smallmouth bass, green sunfish, black bullhead, gizzard shad, white sucker, and carp) collected will be sacrificed and disposed of in a manner that will not constitute a nuisance or as otherwise directed by Colorado Parks and Wildlife (CPW). Channel catfish will be returned downstream of the fish ladder alive.

In addition to collecting and counting fish in the fish trap, FWS personnel will continue to be responsible for periodic cleaning of river borne sediment in the fish trap and routine cleaning of surface and submerged trash, debris, and river borne algae from the trash grates and bar screens in the fore bay of the passageway. Other tasks include: regulating river flows through the fish ladder and attraction flow to remove sediment from the fish-way, noxious weed
control, and removing all stranded fish in the fish trap and dewatered portion of the fish ladder prior to winterizing. FWS personnel will also be responsible for opening and winterizing the passageway.

VI. Task Description and Schedule:

Description:

Task 1. Routine O&M of Redlands fish ladder and fish trap which includes monitoring the fish trap, sorting, examining, and enumerating all fish in addition to removing and disposing of all non-native fish; removing sediment from the trap and cleaning trash and debris from the trash racks, bar screens, fish trap, and fish-way entrance; regulating river flows through the fish ladder and attraction flow to remove sediment from the fish-way, noxious weed control, and removing all stranded fish in the fish trap and dewatered portion of the fish ladder prior to winterizing.

Task 2. Compile and summarize fish use data; prepare annual report.

Schedule:


VII. Deliverables, Due Dates, and Budget by Fiscal Year:

Budget Summary: Please See Interagency Agreement Cost Estimating Tool Spreadsheet

Annual report submission by November each year and data submissions to STReaMS by the following January.

Submission of 6-12 photos of project components or individuals completing tasks by February 28th. Images can be uploaded to; https://www.flickr.com/photos/coloradoriverrecovery/

Photographs will likely be taken with cell phone phones and uploaded photos to a folder named by project number. Each image will have a number, and an email will be sent to the I&E Coordinator with the number and a brief description of the photo. For example, date, location, what is happening and who the photographer is.

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Project # C-4bRED Fish Ladder FY 2020-2021 SOW, Page 3
2020-2021 Total = $171,863.49

Estimated Budget Summary for Fiscal Years 2022-2024:

**FY2022**
USFWS-GJ $88,553.06

**FY2023**
USFWS-GJ $90,395.56

**FY2024**
USFWS-GJ $92,313.86

2022-2024 Total = $271,262.48

5-Year Total = $443,125.97

VIII. Reviewers: Program Staff and Biology Committee

IX. References:
