

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

FY 2023 ANNUAL REPORT

PROJECT: C-33/116

Project Title

Operation and maintenance of the Fish Screen and Maintenance of the Fish Passage Facility at the Redlands Water and Power Company Diversion Dam.

U.S. Bureau of Reclamation Agreement Number:

04-WC-40-040

U.S. Bureau of Reclamation and U.S. Fish and Wildlife Service

Project/Grant Period:

Start Date: 03/06/2004

End date: Ongoing

Reporting Period End Date: 09/30/2023

Is This the Final Report: Yes, ___ No X

Prepared By:

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Abstract/Project Summary:

The Redlands Water & Power Diversion is located on the Gunnison River near Grand Junction, CO, and diverts water into the Redlands Power Canal. A Fish Passage structure was constructed around the diversion dam in 1996. A Fish Screen and Fish Return pipeline was constructed in the canal in 2004 just downstream from the diversion structure. The Fish Passage is operated by the U.S. Fish and Wildlife Service (USFWS). Redlands Water and Power Company owns, operates, and maintains the Fish Screen and Fish Return pipeline and performs maintenance on the Fish Passage through an agreement with the U.S. Bureau of Reclamation (BOR) for reimbursement of these operations.

Redlands Water & Power company (RW&PC) makes every effort to operate the Fish Screen whenever diverting water into Power Canal from the Gunnison River and adequate water supply allows for RW&PC's decreed diversion amount. Maintenance on the Fish Passage is performed after the U.S. Fish and Wildlife Service (USFWS) has completed annual operations, usually in the winter months.

Study Schedule:

Ongoing.

Relationship to RIPRAP: Colorado River Action Plan:

- A. Gunnison River II.B.1.c Operate and maintain Fish Ladder at Redlands
- B. Gunnison River II.B.1.h Operate and maintain Fish Screen at Redlands

Accomplishment of FY- 2023 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:

- A. The following maintenance activities were completed on the Fish Screen.
 - 1) October 1 through 26, 2022: Trash Rake is still down for repairs from 9-28-22. Rake stuck in alarm mode and working on issues. Lots of debris, logs, and limbs in the river and canal (see Figure 'A' below). The trash rake pulley assembly broke and was repaired (see Figure 'B' below) as was the

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cable sensor circuit board replaced (see **Figure 'C'** below). Fish Screen Offline due to end of irrigation season and conducting seasonal maintenance also.

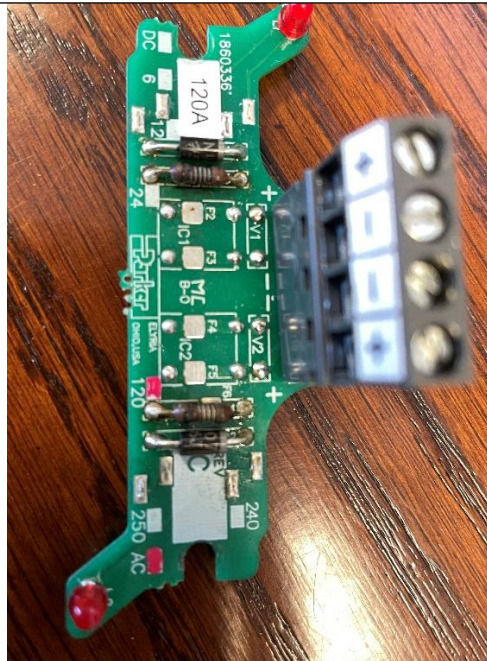
Figure 'A' - Debris at canal gates.



Figure 'B' - Broken trash rake pulley assembly.



Figure 'C' - Cable sensor circuit board.



- 2) October 27 through 31, 2022; Irrigation season ended on Oct. 17th for RW&PC and water was out of the Power Canal for annual Fall Power Plant and Pump Station #1 maintenance, and also for inspections on Fish Screen. Some daily inspections were done with typical maintenance items done.

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- 3) November 1, 2022, through December 23, 2022; Typical servicing, maintenance, cleaning, and adjustments were made as required and needed.
- 4) December 24, 2022, through April 4, 2023; The Fish Screen was offline and being bypassed due to ice build-up in the canal and grates. Performed maintenance and mitigation work on the Power Canal. Also, more work was done on the trash rake which is close to reaching its' life expectancy (20-years). More removal of silt was done at the outside areas of the Fish Screen during this time as well with a long-reach excavator and handwork.
- 5) April 4 through 11, 2023; The Fish Screen was put Online for these 8-days until storms hit and water had excessive debris and trash.
- 6) April 12 through 15, 2023; Due to heavy rains and run-off the Gunnison River brought large debris, trees, limbs and much debris into the canal which caused operations to go offline and bypass for 4-days similar to last year. This also happened again later in the spring, experiencing a lot of debris and the automated trash rake had been working very hard.
- 7) April 16 through 26, 2023; More heavy rains and run-off the Gunnison River brought large debris, trees, limbs and much debris into the canal which caused operations to go offline.
- 8) April 27 through 30, 2023; Fish Screen back online for those 4-days. Manually pulling large tree limbs and debris from screens while trash rake worked hard.
- 9) May 1 through 9, 2023; Took Fish Screen offline again due to same issues of high flows with debris and trash rake being overworked with large tree limbs and logs.
- 10) May 10 through September 30, 2023; The Fish Screen was online during this time. However, in late July the trash rake's internal guide rollers broke and required replacement which took days and manlift equipment to make the repairs.
 - Last year (FY-2022) the automated (Atlas) trash rake had to be repaired due to the cable pulleys breaking off and causing the cylinder yoke to also break. The hydraulic ram and other components are going to need to be replaced next year. Getting parts and spare parts next FY year is scheduled to get done. Some parts had been ordered in FY-2023, however this Atlas model trash rake has many discontinued parts and has reached its' service life.
 - RWP has had conversations with Mark Wernke, PE, Technical Services Division Manager of Bureau of Reclamation, Western Colorado Area Office about the issues and service life of the Atlas trash rake. Other similar trash rake systems are now available that RWP will be looking into for replacement of this Atlas trash rake and those costs to budget for FY-2024 or FY-2025.

B. The following major maintenance activities were completed on the **Fish Passage**.

- 1) Typical weed mitigation and spraying was done in the summer August & September.
- 2) Due to a large snowpack run-off and heavy rains this 2023 spring, the Gunnison River, and other rivers experienced flooding in lower areas. In late May the Gunnison flooded the Redlands property and Fish Passage facility for days causing silt and debris to build and plug the Passage forebays, screens, and exciter pipe as well as the ladder. On May 30th Dale Ryden, Project Leader of U.S. Fish and Wildlife Service Grand Junction Fish and Wildlife Conservation Office sent an email to RWP on the flooding problem and photos. RWP and USFWS staff met on site within days to plan clean-up and mitigation from the flooding. RWP oversaw and hired an experienced local

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contractor, reviewed the site and planned the work that was completed in mid-July within days. Including work to remove sediment and river overgrowth along riverbank just upstream of the fish return gate and also in front of the upper river gates of the passage. ***see Exhibit-1 “Fish Passage Flood Mitigation”**

- C. The following improvements were made to the **Fish Screen**:
 Repaired Trash Rake at Fish Screen inlet screens. RWP believes these repairs may last although the current Atlas Trash Rake system is reaching its’ life expectancy and needs to be replaced with a new system.
- D. The following improvements were made to the **Fish Passage**:
 None made, other than the flood mitigation work done as described above in item ‘B’ as major maintenance activities.
- E. The **Fish Screen** was operated during the following periods: **see Table-1, Operation Period*

Table-1 : “Operation Period”

FY-2023 Redlands Fish Screen Operation Periods:				
Dates Online	(bypassed) Dates Offline	Operation and Description of Event	Days ON	Days OFF
Oct. 1 to 4, 2022		Working - Online, Trash Rake alarm & issues	4	
	Oct. 5 to 16, 2022	Offline - Due to problems & repairs to trash rake.		12
	Oct. 17 to 26, 2022	Offline - Due to end of irrigation season and scheduled maintenance of canal and facilities.		10
Oct. 27 to 31, 2022		Working - Online	5	
Nov. 1 to 30, 2022		Working - Online	30	
Dec. 1 to 23, 2022		Working - Online	23	
	Dec. 24 to 31, 2022	Offline/Bypassing - Due to Ice Build-up		8
	Jan. 1 to 31, 2023	Offline/Bypassing - Due to Ice Build-up		31
	Feb. 1 to 28, 2023	Offline/Bypassing - Due to Ice Build-up and work on Trash Rake.		28
	March 1 to 31, 2023	Offline - Due to work on canal and maintenance.		31
	April 1 to 3, 2023	Offline - Due to work on canal and maintenance.		3
April 4 to 11, 2023		Working - Online	8	
	April 12 to 15, 2023	Offline/Bypassing - Due to heavy rains & excessive debris from river		4
	April 16 to 26, 2023	Offline/Bypassing - Due to heavy rains & excessive debris from river and trash rake issues.		12
April 27 to 30, 2023		Working - Online	4	
	May 1 to 9, 2023	Offline/Bypassing - Due to heavy rains & excessive debris from river		8
May 10 to 31, 2023		Working - Online	22	
June 1 to 30, 2023		Working - Online	30	
July 1 to 31, 2023		Working - Online	31	
Aug. 1 to 31, 2023		Working - Online	31	
Sept. 1 to 30, 2023		Working - Online	30	
<i>Non-Leap Year (365-days)</i>			FY-2023 Operational days Total:	218
<i>Winter Shut-down for RW&PC system, maintenance, or issues:</i>				147

Additional Noteworthy Observations:

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- A. This past FY-2023 season came with a number of high debris days in the Gunnison River and subsequently at the Fish Screen and flooding at the Fish Passage.
- B. Crane and Hoist inspections were done at both the Fish Screen and Passage by Sterling Crane's certified inspector Bob Herron (970) 250-6412. All cranes and hoists were found to be satisfactory per OSHA and/or ANSI/ASME.

Recommendations:

A. Recommendations for **Fish Screen**:

- 1) Install an electric security gate at the main access road going out to the fish screen. There still seems to be trespassing in the Fish Screen area and it had again been vandalized with some RWP tools stolen within the locked and gated area. RWP is working with the property owners to be granted permission to install this gate.
- 2) Utilize flowmeter to readjust the screen baffles (wicket-gates) for better and more even flows over the entire screen system. The BOR has offered to provide a device with an operator, but schedules and lack of labor did not allow for that to happen in FY-2023 but possible in FY-2024.
- 3) As reported last year FY-2022, RWP had hoped that when the canal was dewatered this work in the fish screen bypass where the rip-rap had washed away downstream of the roller gate's structure could be done. However, that area again was still heavily silted over and it was decided to postpone any mitigation work and continue to monitor the area in the future. Removal of silt and debris in the bypass will be planned for pre-start up March 2024 (FY-2024) if conditions are favorable.

Note:

In April of 2021 RW&PC noticed needed repair of the Fish Screen bypass canal where the rip-rap has been washed away and the geotextile fabric needs to be replaced with new and existing rip-rap, and some possible de-energizer boulders or concrete just downstream of roller gate structure . This area had build-up of silt this last shut-down (dewater) days (FY-2022) and was postponed for future schedule if conditions allow and change. In October 2021 RW&PC had a contractor provide a budget for this repair which was \$64,855.00, so we can assume that cost is now closer to \$72,800.00 to \$76,400.00 in FY-2024 or FY-2025.

- 4) Plan to removal of excess silt from both the Fish Screen and Fish Screen Bypass sections to improve water flows and the screen baffles (wicket-gates) for better and more even flows over the entire screen system. **Figures below "Fish Screen Silt Build-up"**



B. Recommendations for **Fish Passage**: (per local USFWS)

- 1) Sediment and river overgrowth removal again next Fall 2024 in front of the fish ladder entrance and fish return tube since this issue seems reoccurring annually.

Project Status:

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On schedule and on budget. RWP did include a Property Insurance coverage for the Fish Screen and Fish Passage that had not been included prior to this last FY-2023 4th quarter reimbursement request. This property damage policy and coverage is reimbursable to RWP as stated in the 2004 agreement and will be renewed annually.

FY 2023 Budget Status:

- A. Funds Budgeted: **\$102,866.20**
- B. Funds Expended: **\$97,781.23**
- C. Difference: **-\$5,084.97**
- D. Percent of the FY 2023 work completed: **100%**

See FY-2023 invoice summary table below for detail of expenditures by activity.

SUMMARY OF DETAILED EXPENDITURES					
Operation, Maintenance, and Repair of Redlands Fish Screen and Fish Passage Facilities					
PERIOD OF WORK PERFORMED	<u>01-Oct-22</u>	THRU	<u>30-Sep-23</u>		<u>FY-2023</u>
Activity / Facility	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	TOTALS
FISH SCREEN FACILITY					
Administration & Labor Costs	\$3,799.00	\$9,058.00	\$12,935.50	\$16,916.63	\$42,709.13
Materials,	\$1,208.98	\$774.22	\$2,475.48	\$1,190.52	\$5,649.20
Equipment, Safety, Security	\$0.00	\$0.00	\$0.00	\$1,139.76	\$1,139.76
Utilities, Telephone & Internet	\$3,237.74	\$1,647.23	\$4,358.10	\$5,263.11	\$14,506.18
Outside Services & Rental	\$255.00	\$255.00	\$255.00	\$1,535.00	\$2,300.00
Total Fish Screen Expense, O&M	\$8,500.72	\$11,734.45	\$20,024.08	\$26,045.02	\$66,304.27
Annual Property Insurance coverage premium for both Fish Screen and Passage					\$2,778.00
FISH PASSAGE FACILITY O&M					
Administration & Labor Costs	\$0.00	\$0.00	\$41.50	\$2,055.75	\$2,097.25
Materials,	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Equipment, Safety, Security	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Utilities, Telephone & Internet	\$114.29	\$96.15	\$100.51	\$166.50	\$477.45
Outside Services & Rental	\$0.00	\$0.00	\$0.00	\$26,124.26	\$26,124.26
Total Fish Passage Expense, O&M	\$114.29	\$96.15	\$142.01	\$28,346.51	\$28,698.96
Both Facilities FY-2023					\$97,781.23

Status of Data Submission:

Not applicable.

Signed: _____

Kyle R. Vanderberg
Superintendent/Manager

November 13, 2023

Date

*see attached Exhibit-1 "Fish Passage Flod Mitigation"