COLORADO RIVER RECOVERY PROGRAM RECOVERY PROGRAM
FY **2004**ANNUAL PROJECT REPORT PROJECT NUMBER: **C-20**

I. Project Title**: Highline Lake screening O&M**

II. Principal Investigators:

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III. Project Summary:

A spillway barrier net designed to control escapement of nonnative, warm water fishes from Highline Reservoir (Highline Lake State Park, Colorado) that might enter the Colorado River was installed in August 1999. Research has shown that nonnative fishes eat young, native fish and compete for food and habitat in the river. In addition to keeping the nonnative and native fishes apart, installation of the fish barrier net brings the reservoir into compliance with the nonnative fish stocking requirements established by the states of Colorado, Utah, and Wyoming, and the U.S. Fish and Wildlife Service.

The fish barrier net is made of Dynema, a high molecular weight polyethylene material, which is extremely strong and durable. The net is approximately 363 feet wide, 19 feet deep, weighs 1,400 pounds, and has mesh openings no larger than a quarter inch. The net stretches across an area of the reservoir that empties into a concrete spillway that flows into Mack Wash and Salt Creek before reaching the Colorado River. It is designed to flex with the surge of the current and changing water depth to prevent fish from escaping over or under it.

As this is the first time this separation has been attempted an MOU was reached between the Colorado Division of Parks (CDP), the Colorado Recovery Program, and the Colorado Division of Wildlife (CDOW) to permit CDP to operate and maintain the net with funding from the CDOW and the Colorado Recovery Program.

IV. Study Schedule: 1999-2004

V. Relationship to RIPRAP: Colorado River Action Plan: Mainstem

The Procedures for Stocking Nonnative Fish Species in the Upper Colorado River Basin (CDOW et al. 1996) included specific reference to the need to screen the spillway at Highline Lake to control escapement of nonnative, warmwater fish species. This requirement prescribed that "Public and private waters that have a direct connection to rivers in the Upper Colorado River Basin (e.g., Elkhead Reservoir, Highline Reservoir and many ponds) will be equipped or managed with an anti-escapement device or practice acceptable to the Service (USFWS) and the State fish and Wildlife Agency." In addition, the Procedures, section IV.6, state that "The Program (RIP) will pursue funding for

equipping public reservoirs with anti-escapement devices" (CDOW et al. 1996, Martinez 1997). Funding from the Recovery Implementation Program for Endangered Fishes in the Upper Colorado River Basin (RIP) became available in 1998 (Martinez 1999) for installation of a fish screen at Highline Lake and the net was installed on 18 August 1999.

General Recovery Program Support Action Plan:

III. Reduce negative impacts of nonnative fishes and sport fish management activities.

III.A.2. Identify and implement viable control measures.

III.A.2.c. Implement and evaluate the effectiveness of viable active control measures.

III.B. Reduce negative impacts to endangered fish from sport fish management activities.

III.C. Ensure public involvement occurs as appropriate.

Colorado River Action Plan: Mainstem

III.B.1.a. Operate and maintain Highline Reservoir net.

VI. Accomplishment of **FY 2004** Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:

Task Description and Schedule:

Task 1. Maintain Protective Buoy Line: The buoy line was inspected on a weekly schedule with the Park's Patrol Boat during the summer season and no issues or problems were identified. The floating sign, buoys, and connecting cable are functioning well and we foresee not having to replace this unit with the replacement of the net itself.

Task 2. Net Cleaning and Repair Operations (in water): Cleaning of the net was done hydraulically from the barge in August of 2003 by Park personnel, manually by divers at the end of March prior to the inflow from the Highline Canal arriving, and hydraulically from the work barge in early August 2004 by a contractor. This timing appears to be effective in providing the opening of the clogged net to permit water flow without pulling the net down. We continue to experience high flows most of the year with the highest flows occurring in spring and fall.

Task 3. Weekly visual survey—The net top line and floats along with the skirt and the PVC pipe sections that we use to deploy the skirts were visually checked on a weekly basis with the Park Patrol Boat – on weekends the Patrol Boat would be on-the-water for several hours and when time permitted we would examine the net from the water surface. We had some problems with the PVC sections of pipe that were used to deploy the skirt and we had to refasten them to the top line and the skirt line on multiple occasions.

Task 4. Underwater Survey— The net was inspected by divers, the same divers that have been checking the net for the last several years and they shot video of the inspection. The video and a report are available at the park. The highlights of the inspection by United Underwater Contractors on March 27th, 2003 were: 1) The jetty on the North end of the net should be extended. *Construction was initiated on this project on October 6th, 2004 and will continue after the lake level drops November 1st;* 2) The main net was clogged

with algae below where the hydraulic cleaning had occurred. *The Divers were asked to attempt a manual cleaning of the areas that were too deep to hydraulically clean and were clogged with algae and this was completed the first week in April;* 3) Several of the Manta-Ray anchor bolts were out of the lake bottom by 18". *This condition will be checked again when the new net is installed and if additional stress is apparent we will clean the net at a higher frequency.*

Task 5. Continue to evaluate the most effective manner to properly deploy the fish net skirt – the use of 1" PVC pipe notched at each end appears to be an excellent solution. *This method works well. However, adequate fastening of the pipe to the buoy line and the skirt buoy line needs to be secure. This issue was discussed with Bob Norman (BOR) when discussing the ordering of the new net on October 20th, 2004.*

Task 6. Coordinate the net replacement project scheduled for Federal Fiscal Year 2003-2004 with DOW and FWS. *The replacement project was pushed back to 2004-2005. Bob Norman has agreed to purchase the net through a Purchase Order and we are currently working on this process.*

Task 7. Continue to evaluate the siltation issue on the west end of the net – heavy loads of sand and gravel continue to be deposited on the net as wave action pushes the material down the shoreline. *See note on action taken under Task #4. We have initiated construction on an improvement project to the existing jetty. However, we will now be waiting until the water is turned off to continue.*

VII. Recommendations:
The "letter of Agreement" between CDP, CDOW & CRRIP needs to be extended as the original has letter has expired. This process was initiated 11-26-02. *The Letter of Agreement was not signed, and a revised Letter of Agreement was sent for signature on October 14th, 2004.*

VIII. Project Status:
This project is on-track and on-going

IX. FY 2004 Budget Status:
- A. Funds provided: $3470 (DOW).
- B. Funds Expended: $1770
- C. Difference: $1700
- D. Percent of the FY 2004 work completed, and projected costs to complete: NA

X. Status of Data Submission: NA

XI. Signed: ***Chris Foreman*** 10-27-04
Principal Investigator Date