

I. Project Title: **Retrieval of fish from the Grand Valley Irrigation Company and Grand Valley Water Users canals**

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III. Project Summary:

A fish screen was constructed on the Grand Valley Irrigation Company (GVIC) irrigation canal in winter 2001 – 2002. However, for the first few years following construction, the screen was not operated for a full season. The GVIC fish screen is now fully operational. A fish screen was completed in the summer of 2005 for the Grand Valley Water Users (GVWU's) Canal. It was not fully operational until the spring of 2010. However, during events when debris overloads the screens (3/32-inch spacing) and water cannot pass through them to provide water down canal to irrigation users and for power generation, the irrigation companies have the option of lifting the screens and diverting water through the bypass channel. When this occurs, fish can pass downstream of the fish screen and thus cannot be returned to the river via the underground bypass pipe. Hence, fish can swim down canal and ultimately become stranded in the canal when it is dewatered during the fall. While the fish screens are intended to bypass larger juvenile and adult fish back to the river, larval fish entrained into the canals from the river can freely pass through the 3/32-inch wedge wire spacing, move down canal, and reside in the canal while it is fully watered.

Fish salvage is conducted by driving major portions of the canals looking for pools of water that contain fish after the irrigation water is turned off for the year. Irrigation water diverted from the Colorado River during the spring and summer months for irrigation and power generation are halted usually in early November. The pools are sampled with truck-mounted electrofishing or seines. All native fish collected are identified and loaded into a hatchery truck, transported, and ultimately released in the Colorado River. Total numbers of native fish collected and transported are recorded. Nonnative fish encountered are usually left in the canal. Sampling ceases usually immediately prior to

Thanksgiving or until ice becomes too thick in the remaining pools to effectively collect fish.

IV. Study Schedule:

- A. initial year: 2002
- B. final year: Ongoing

V. Relationship to RIPRAP:

A. Colorado River Action Plan: Colorado River

- II.B.1.b. Screen GVIC diversion canal to prevent endangered fish entrainment.
- II.B.3.b. Screen Government Highline diversion canal to prevent endangered fish entrainment.

VI. Accomplishment of FY 2011 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:

A. FY-2011 Tasks and Deliverables:

Task 1. Sample GVIC and GVWU canals; remove native fish and re-locate to the Colorado River.

Task completed.

B. Findings (2010 Highlights)

Grand Valley Irrigation Company

Parts of the canal were sampled from the diversion dam head works in the Colorado River to 22 Road in the fall (early- to mid- November of 2010). Sampling was limited to areas where the roads were dry enough to avoid damaging the road surface by our heavy vehicles. Crews traveled the canal road and sampled every pool encountered that could hold fish.

A total of 1,061 fish were collected. This was comprised of 571 sub-adult and adult flannelmouth suckers, 478 roundtail chubs, 80 speckled dace, and 4 bluehead suckers. No endangered fish were collected in the GVIC canal in the fall of 2010. As in previous years, most of the fish were collected in the upper portion of the canal between 32 Road and the headworks (Appendix; Table 1). A running total of all native fishes collected in this canal from 2002-2010 is provided in Appendix; Table 1. However, effort varied considerably among these nine years and, therefore, direct comparison of individual fish species collected and the total number collected among years is not advisable.

The GVIC fish screen was operated about 59% or 125 days of the 211 days water was diverted from the Colorado River. Conversely, the fish screen was not operational 41 % (86 days) in 2011 (personal communication, Phil Bertrand, manager, Grand Valley Irrigation Company).

#### Grand Valley Water User's (Highline Canal)

The Highline Canal was sampled from the point at which the canal enters the Grand Valley east of Palisade to about 18 Road when the roads were dry enough to travel in the fall (early- to mid- November of 2010). As with the GVIC canal, sampling crews traveled the canal roads searching for pools of water that might hold fish. Pools were sampled using either truck-mounted electrofishing or seines. A combined total of 25,977 fish comprising 23,299 roundtail chub, 1,517 flannelmouth sucker, 1,043 speckled dace, 88 bluehead sucker, and 30 mountain whitefish were collected. Most of the roundtail chub, bluehead sucker, and flannelmouth suckers were small juveniles. The greatest number of fish (23,465; 90 %) were collected in a 0.4 mile reach of the canal between 35.3 and 35.7 Roads west of Palisade. At this one site, juvenile roundtail chub comprised about 89% of all fish collected. A vast majority of the roundtail chub collected in the Highline Canal were mostly age-0 and age-1 fish. No endangered fish were collected from the Highline Canal in 2010.

The GVWU's fish screen was operated for almost the entire year except for only about two days when the bypass had to be used due to an electrical outage created by high winds (personal communication, Kevin Conrad, assistant manager, Grand Valley Water User's Association). At this time, the screens had to be lifted because electrical power was not available to operate the brushes and air jets necessary to maintain adequate water flow through the screens. As a result, water had to be re-directed to the bypass canal which is not screened. This is the second year that the fish screen at this site has operated almost the entire season since construction completion in the summer of 2005.

A running total of all native fishes collected in this canal from 2002-2010 is provided in Appendix; Table 2. However, effort varied considerably among these nine years and, therefore, direct comparison of individual fish species collected and the total number collected among years is not advisable.

#### VII. Recommendations:

- A. Continue operating the fish screens.
- B. Continue late-fall salvage operations to re-locate large-sized juvenile and adult native fish that either are entrained into the canal system when the screens are not operational or pass between the 3/32-inch wedge wire screen spacing (e.g., larval fish).

VIII. Project Status:

A. "On track and ongoing".

IX. FY 2011 Budget Status

A. Funds Provided: \$ 30,094

B. Funds Expended: \$ 30,094

C. Difference: \$ -0-

D. Percent of the FY 2011 work completed, and projected costs to complete: 100%.

Recovery Program funds spent for publication charges: \$ -0-

X. Status of Data Submission (Where applicable):

XI. Signed: Bob D. Burdick                      11/13/2011  
Principal Investigator                      Date

APPENDIX:

A. More comprehensive/final project reports. If distributed previously, simply reference the document or report.

B. Appendix: 2 tables attached.

Prepared and compiled by Bob D. Burdick, 11/13/2011  
2011GVIC\_GVWUFishSalvage\_rpt.doc

Table 1. Total numbers of native fish collected by species and by year from 2002-2010 in the Grand Valley Irrigation Company Canal.

<b>2002-2010 GVIC Canal Fish Salvage</b>									
	<b>Native Fish Species <sup>a</sup></b>								
<b>Location</b>	FM	BH	RT	SD	MF	MS	RZ	CS	<b>TOTALS</b>
32 Rd-Head works	277	4	184	3	0	0	0	0	
12 <sup>th</sup> Street-30.5 Rd	0	0	0	0	0	0	0	0	
Lakeside-22 Rd	294	0	294	77	0	0	0	0	
12 <sup>th</sup> Street Siphon	NS	NS	NS	NS	NS	NS	NS	NS	
<b>All Totals (2010)</b>	<b>571</b>	<b>4</b>	<b>478</b>	<b>80</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,061</b>
All Totals (2009)	877	48	79	232	4	0	0	0	1,240
All Totals (2008)	892	59	150	0	0	0	1 <sup>b</sup>	0	1,102
All Totals (2007)	128	3	35	0	0	0	0	0	166
All Totals (2006)	2,252	123	1,322	0	0	0	1 <sup>c</sup>	0	3,698
All Totals (2005)	897	80	730	0	0	0	0	0	1,707
All Totals (2004)	1,783	22	588	26	0	0	0	0	2,419
All Totals (2003)	---	---	---	---	---	---	---	---	2,908
All Totals (2002)	---	---	---	---	---	---	---	---	3,371

<sup>a</sup> Fish Species: FM-flannelmouth sucker, BH-bluehead sucker, RT-roundtail chub, SD-speckled dace, MF=mountain whitefish, MS-mottled sculpin, RZ-razorback sucker, CS-Colorado pikeminnow

<sup>b</sup> Stocked in the Gunnison River at Delta, CO, in 2002; recaptured once in the Colorado River in the Grand Valley in 2004.

<sup>c</sup> Stocked in the Colorado River downstream of the GVIC diversion dam in September 2006. It moved upstream over the dam and into the canal during the intervening period.

NS: not sampled.

Table 2. Total numbers of native fish collected by species and by year from 2002-2010 in the Grand Valley Water User's Canal.

<b>2002-2009 GVWUser's Canal Fish Salvage</b>									
	<b>Native Fish Species <sup>a</sup></b>								
<b>Location</b>	FM	BH	RT	SD	MF	MS	RZ	CS	TOTALS
18-19 Rd	0	0	0	0	0	0	0	0	
20-26 Rd	14	0	47	6	0	0	0	0	
26-27 Rd	33	5	1,634	23	30	0	0	0	
27 Rd-I-70	37	0	923	21	0	0	0	0	
I-70 East-32 Rd	9	0	10	0	0	0	0	0	
32 Rd-35.3 Rd	0	0	0	0	0	0	0	0	
35.3-35.7 Rd	1,424	83	20,695	993	0	0	0	0	
<b>All Totals (2010)</b>	<b>1,517</b>	<b>88</b>	<b>23,299</b>	<b>1,043</b>	<b>30</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>25,977</b>
All Totals (2009)	6,255	797	26,527	5,135	7	1	0	0	38,722
All Totals (2008)	738	77	754	23	6	0	0	0	1,598
All Totals (2007)	433	93	6,543	70	0	0	1	0	7,140
All Totals (2006)									
All Totals (2005)	722	173	3,815	48	0	0	0	1 <sup>b</sup>	4,759
All Totals (2004)	893	118	5,166	140	0	1	0	24 <sup>c</sup>	6,343 <sup>d</sup>
All Totals (2003)	---	---	---	---	---	---	---	---	~ 3,000
All Totals (2002)	---	---	---	---	---	---	---	---	~ 1,000

<sup>a</sup> Fish Species: FM-flannemouth sucker, BH-bluehead sucker, RT-roundtail chub, SD-speckled dace, MF=mountain whitefish, MS-mottled sculpin, RZ-razorback sucker, CS-Colorado pikeminnow.

<sup>b</sup> Stocked near Rifle, CO, in 2004.

<sup>c</sup> Includes one wild Colorado pikeminnow stocked upstream at the Rulison Bridge, 5/10/2001.

<sup>d</sup> Includes 1 flannemouth sucker X bluehead sucker hybrid.