

**COLORADO RIVER RECOVERY PROGRAM
FY-2018-2019 SCOPE OF WORK**

Project No. 163

Aspinall-related fish monitoring – Gunnison and Colorado rivers

Reclamation Agreement number: R15PG00083

Reclamation Agreement term: October 1, 2014 – Sep. 30, 2019

Lead Agency: U.S. Fish and Wildlife Service
Grand Junction Fish and Wildlife Conservation Office

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Category:

- Ongoing
 Ongoing-revised project
 Requested new project
 Unsolicited proposal

Expected Funding Source:

- Annual funds
 Capital funds
 Other (explain)

I. Title of Proposal: Monitoring multiple life stages of the fish community in the lower Gunnison and upper Colorado rivers, with emphasis on Colorado pikeminnow and razorback sucker populations, in response to reoperation of the Aspinall Unit and implementation of the Selenium Management Plan.

II. Relationship to RIPRAP:

Gunnison River Action Plan: Gunnison River Mainstem

V. Monitor populations and habitat and conduct research to support recovery actions.

V.A. Conduct research to acquire life history information and enhance scientific techniques required to complete recovery actions.

Colorado River Action Plan: Colorado River Mainstem

V. Monitor populations and habitat and conduct research to support recovery actions.

V.A. Conduct research to acquire life history information and enhance scientific techniques required to complete recovery actions.

III. Study Background/Rationale and Hypotheses:

The Programmatic Biological Opinion (PBO) for water depletions in the Gunnison River Basin (USFWS 2009) stipulates that endangered fishes, as well as the entire fish community, be monitored to determine the status of the species before and after the Selenium Management Plan (SMP) is implemented and following reoperation of the Aspinall Unit reservoirs. The PBO calls for monitoring of multiple life stages and density estimates of Colorado pikeminnow and razorback sucker in the lower Gunnison and Colorado rivers.

Density estimates can be calculated by first developing population estimates through mark-recapture techniques. The standard for monitoring populations of Colorado River endangered fishes is to periodically develop population estimates using closed-model capture-recapture methods. Such estimates provide information on population status (abundance), and when repeated periodically over an extended period can also provide information on population trends. Such estimates have been made for Colorado River populations of Colorado pikeminnow and humpback chub.

Because sub-adult and adult Colorado pikeminnow and razorback sucker are few and/or difficult to locate in the Gunnison River (Burdick 1995), the approach used here was to first see (in the first two years of sampling: 2011 and 2012) if sufficient numbers of each could be captured to allow mark-recapture abundance estimation. This was to be accomplished with a limited sampling effort of only two electrofishing passes each year (see protocol below for fish community monitoring). It was anticipated that if sufficient numbers of endangered fish were caught to allow for generation of population estimates (and subsequently density estimates) annual sampling during 2013, 2014 and 2015 would be increased to five passes. Hence, the first two years were essentially a feasibility study for adult density estimation (number of individuals per unit area). Because 2011-2012 sampling failed to collect sufficient numbers of endangered fish to allow for generation of population estimates (and subsequently density estimates), monitoring in 2013 and outyears will continue to employ the less precise index of catch-per-unit-effort (number of fish caught per hour of electrofishing). This means continuing with two electrofishing passes per year, allowing comparison of catch rates through time, until such time that sufficient numbers of endangered fish are caught to allow for population and density estimates to be generated. The assumption inherent when using this index as a monitoring tool is that trends in catch rates are indicative of underlying trends in abundance, although the level of actual abundance is never known or estimated. Since numbers of endangered Colorado pikeminnow and razorback sucker collected in 2011-2016 were well

below the levels needed for generating population estimates, sampling in 2018 and beyond will continue with two electrofishing passes.

The fish assemblage in the Gunnison River will also be monitored, using electrofishing catch-per-effort as an index to track trends in relative abundance of each species. Burdick (1995) conducted four passes of raft-based electrofishing to characterize the Gunnison River fish community in 1992 and 1993. He sampled once during pre-runoff, once during runoff, and twice during post-runoff. To allow comparison of our results with those of Burdick (1995), which were collected almost 20 years ago, we will use a similar sampling protocol but scale back the number of electrofishing passes to two each year and conduct these only during the post-runoff period. It is during these two electrofishing passes that capture rates of endangered fish will be assessed to determine if mark-recapture abundance estimation will be feasible in subsequent years (see above).

For young-of-the-year (YOY) and small-bodied fish monitoring, we propose to use beach seine sampling of backwaters during fall (late September-early October) using ISMP methodology (see McAda 1994). Burdick (1995) found that Gunnison River backwater habitat was very scarce and therefore he deviated from the ISMP protocol (sampling two backwaters in every five-mile segment) by sampling every backwater encountered. We propose to follow Burdick's modification of the ISMP methodology in this regard.

Concurrent with 2011-2014 fish community monitoring in the Gunnison River, tissue samples were collected to determine selenium concentrations in fish before and after implementation of the SMP. Muscle plug samples were collected from all adult Colorado pikeminnow, razorback sucker, and bonytail encountered. In addition, from 2011-2014, muscle plug samples were collected from common carp and roundtail chub, as well as whole-body samples of speckled dace (ubiquitous species) to insure that statistical comparisons could be made regarding selenium in fish tissue before and during SMP implementation.

In the Colorado River, downstream of the Gunnison River inflow, the population of adult Colorado pikeminnow is already being monitored (Project 127) with mark-recapture abundance estimation (see Osmundson and White 2014). During field sampling, razorback sucker capture-recapture data will continue to be collected; estimates of adult razorback sucker abundance will be developed from these data. In 2013, abundance estimates were developed for adult razorback sucker in the Colorado River for the years 2008, 2009, and 2010 (Osmundson in prep.). Distribution of any running ripe females collected will also be mapped to help ascertain spawning site locations. The assumption here is that improvement in flow regimes in the Gunnison River will have positive ramifications in the downstream Colorado River as well and hopefully result in benefits to endangered fish populations in both rivers.

Osmundson and Seal (2009) found increasing catch rates of razorback sucker larvae in the Colorado River from 2004 to 2007 and an apparent (non-significant) decrease in catch rates in the Gunnison River. Hand seine sampling for larval fish was performed from 2011-2016 in both rivers from mid-May to early-July, to encompass the spawning season for razorback sucker. This work will be continued in 2018-2022. Larval hand seine sampling during the Colorado pikeminnow spawning period (mid-June to mid-August) was originally planned (though not budgeted for) in the 2011-2014 SOW. However, due to funding constraints related to sequestration and the lack of collections of adult Colorado pikeminnow precluded this activity being initiated between 2011 and 2014. Larval hand seine sampling will provide an index to reproductive success of each species using catch-per-effort (mean number per sample) of endangered fish larvae. For razorback sucker larvae, results can be compared with those provided earlier (2002-2007) by Osmundson and Seal (2009). Colorado pikeminnow larval catch rates in the Colorado River can be compared with results provided by Osmundson and Burnham (1998) for the years 1986-1994. If the Program Director's Office deems that conducting larval sampling for Colorado pikeminnow is a priority, then this SOW would need to be updated to reflect this additional work (manpower and equipment), as well as the necessary funding. We recommend that this decision be based upon adult Colorado pikeminnow becoming more abundant in Gunnison River collections prior to initiating larval collection activities.

Trends in large-bodied fish community composition and species relative abundance will also be monitored in the Colorado River in the 18-mile reach immediately downstream of the Gunnison River inflow. As in the Gunnison River, shoreline electrofishing will be used to generate annual catch-per-effort statistics as a monitoring index. The Interagency Standardized Monitoring Program (ISMP) of the 1980s and 1990s included an annual, adult, spring, electrofishing survey, but was designed to detect trends only in endangered species and thus no systematic sampling of the fish community was performed. The only systematic community sampling conducted under the auspices of the Recovery Program that could now serve as a baseline for future monitoring was the electrofishing sampling conducted in 1994 and 1995 as part of the food-availability study, Project No. 48-A (see Osmundson 1999). From 2011-2016, we replicated that sampling protocol and sample the reaches randomly selected and sampled at that time so results in coming years can be compared to those earlier catch rates. This work will also continue from 2018-2022.

IV. Study Goals, Objectives, End Product:

Goals

- 1) Continue the long-term, multi-life-stage, monitoring program for Colorado pikeminnow and razorback sucker populations in the Gunnison and Colorado rivers whereby population responses can be

used to evaluate the effectiveness of implementation of Aspinall re-operation and the Selenium Management Program (SMP).

- 2) Determine selenium concentrations in endangered fish before and after implementation of the Selenium Management Program as a means to assess whether environmental selenium reductions result in concomitant reductions in endangered fish. The performance and reporting of this work will be done with funding other than Recovery Program funds.

Objectives

- 1) Continue long-term monitoring program for sub-adult and adult Colorado pikeminnow and razorback sucker in the lower Gunnison River while simultaneously bolstering existing monitoring efforts in the Colorado River by including abundance estimation of stocked razorback sucker.
- 2) Continue to evaluate reproductive success of endangered fish in the Gunnison and 18-mile reach of the Colorado rivers by performing early-life-phase abundance monitoring through systematic collections of larvae (hand seining) and young-of-the-year (beach seining).
- 3) Continue monitoring of the fish community in the Gunnison River and 18-mile reach of the upper Colorado River, including both large- (electrofishing) and small-bodied fish (beach-seining) using protocols modeled after Burdick (1995), Osmundson (1999) and ISMP young-of-year sampling (McAda et al. 1994).
- 4) Continue to determine selenium concentrations in Colorado pikeminnow, razorback sucker, and bonytail inhabiting the Gunnison River, downstream of delta, CO. The performance and reporting of this work will be done with funding other than Recovery Program funds.

End Product

A final report detailing study findings, including results of endangered and sympatric fish community monitoring -- adult, YOY, and larval sampling (to be produced by GJ FWCO - Grand Junction). In addition, a report detailing the results of selenium concentrations found in fish samples (to be produced by Grand Junction, CO Ecological Services field station; work to be funded outside of the Recovery Program) will be provided to the Recovery Program as a courtesy, upon its completion.

Fish Community Monitoring Report:

Draft report ready for peer review on August 30, 2020.

Draft final ready for approval consideration October 31, 2020.

Report finalized November 31, 2020.

Larval Fish Monitoring Report:

Draft report ready for peer review on August 30, 2021.

Draft final ready for approval consideration October 31, 2021.

Report finalized November 31, 2021.

Contaminants Report (funded outside of the Recovery Program):

Draft report ready for peer review on August 30, 2020.

Draft final ready for approval consideration October 31, 2020.

Report finalized November 31, 2020.

V. Study Area:

Large-bodied fish, YOY, and larval fish will be sampled along shorelines and zero-velocity habitats of the lower Gunnison River from Hartland Diversion Dam (RM 59.9) downstream to a point immediately upstream from the Redlands Diversion Dam near Grand Junction (RM 3). In the Colorado River, large-bodied fish will be sampled in sub-reaches of the 18-mile reach extending downstream from the Gunnison River inflow (RM 171) downstream to the Colorado-Utah state line. Fall YOY sampling will occur throughout the same 18-mile reach and extend downstream to the Colorado-Utah line to stay consistent with the former ISMP YOY sampling area. Larval sampling in the Colorado River will be conducted from the Gunnison River inflow downstream Colorado/Utah stateline.

VI. Study Methods/Approach:

Gunnison River

Colorado pikeminnow and razorback sucker capture rates will be monitored by sampling the entirety of the Gunnison River study area. Larval sampling will be conducted four days per week from mid-May through the mid-July, or about 9 weeks each year. One complete pass can be made through the study area in four days. For larval seine sampling, the study area will be divided into 5-mile segments and 1-6 sites will be sampled per segment each week, depending on availability of low-velocity habitats, consistent with methods used by Osmundson and Seal (2009). An investigator will spend about five minutes at each site seining with a one-person, two-handled, fine-meshed seine. River-mile location of each site will be noted, as well as presence or absence of larvae. If larvae are found, they will be preserved in individually labeled bottles of 100% ethanol. Larval collections will be sent to the Larval Fish Laboratory at Colorado State University for specimen identification and archiving.

For YOY sampling, one trip will be made each fall during sometime between mid-September and mid-October, consistent with Burdick (1995). In general, the protocol used by the Interagency Standardized Monitoring Program (ISMP) for YOY sampling will be followed (see McAda et al. 1994). However, because backwater habitat is scarce in the Gunnison River, most if not all backwaters encountered will be sampled, rather than hoping to sample two in each 5-mile reach, as stipulated in the ISMP. Two non-overlapping hauls will be made in each backwater. A 30-foot-long x 6-ft-deep 1/8 inch mesh seine or a 15-foot-long x 4-ft-deep 1/8 inch mesh seine will be used depending upon the size of the habitat to be sampled. Size of seine used at each backwater will be recorded to calculate area sampled. Fish that can be identified in the field will be counted and released; others will be preserved in 100% ethanol and sent to the Larval Fish Lab for enumeration. Area seined at each backwater will be recorded so that catch-per-effort can be calculated in terms of fish per unit area.

Large-bodied fish community sampling will follow the protocol established by Burdick (1995), who followed that of previous FWS investigators (Archer et al. 1980; Miller et al. 1982). The study area will be divided into the four primary study strata described by Burdick (1995) varying in length from 11.3 to 17.9 miles. Burdick selected one 5.5-mile sub-reach (starting mile selected from a random numbers table) within each stratum each time a pass was made; hence, sampling reaches were not consistent through time. Because we will make fewer annual passes than did Burdick, it is possible that such a method may not provide a good annual representation of the fish or habitat of each stratum, making among-year comparisons of catch rate difficult. We will therefore deviate from this protocol by sampling smaller sub-reaches within each stratum and spreading them out spatially so as to assure better geographic coverage and representation of each stratum. Three sub-reaches will be selected randomly within each stratum and each will consist of one riffle-run, meander sequence (approximately 0.5-2.0 miles long); these same three sub-reaches will be sampled each time an electrofishing pass is made. Most reaches (between available launch sites) in the Gunnison River downstream of Delta are long and electrofishing crews will need to camp as they proceed downriver. One week will be required to complete one shocking pass. Two post-runoff electrofishing passes will be completed annually, one in late July or early August and the other in either late September or early October.

Two 2-person crews will electrofish the right and left shorelines simultaneously, in a downstream direction, using either rafts or hard-bottomed boats. Electrofishing crews will attempt to collect all stunned fish within these sub-reaches. Fish will be worked up separately for each sub-reach and shocking time recorded for each. All fish collected in these sub-reaches will be identified by species, enumerated by life-stage (based on species-specific length classes), weighed (to the nearest gram), and measured (to the nearest mm total length {TL}). All T&E fish (bonytail, Colorado pikeminnow, and razorback sucker), as well as roundtail chub (in support of CPW's 3-species monitoring), collected in

these sub-reaches will follow that same protocol, but they will also be checked for the presence of a PIT tag. Endangered fish species will have a muscle plug taken from them (see below). If no PIT tag is present in a T&E fish, one will be implanted. Roundtail chub will neither be PIT-tagged nor have muscle plugs taken. All native fish will be returned alive to the river.

In the sections of river separating sub-reaches, electrofishing will continue to be conducted. However, only T&E fish will be collected in these “in-between” sections of river. This will allow complete coverage for endangered fish sampling (see above). Handling protocols for T&E fish collected in these “in-between” areas will be the same as those listed above.

Muscle plugs will be taken from adult Colorado pikeminnow and razorback sucker following procedures specified by Williamson (1992). Muscle plugs will be taken using a 5-mm biopsy punch. A different punch will be used on each fish and discarded after use. Muscle plugs will be taken 1 to 2 cm below the dorsal fin by inserting the punch with a slight twisting motion. Tilting the punch allows the tissue sample to break off at the end. The sample will be emptied into sterile cryogenic vials, placed on dry (or wet) ice in the field until they are eventually frozen. Wounds will be disinfected using betadine swabs, to decrease the chance of infection. Selenium analyses will be conducted by neutron activation, which is the method of choice for selenium analysis on small biomass samples. Up to 30 muscle plug (MP) samples may be taken in a given year (10 adult razorback; 10 adult pikeminnow; 10 bonytail).

Colorado River

The fish community sampling protocol established during Project 48-A (see Osmundson 1999) will be repeated in the 18-mile reach. At that time, the river from Rifle to Westwater was stratified by geomorphology and tributary input. On aerial photos, each of five strata was divided into multiple reaches, each consisting of one meander (riffle-run) sequence 0.5-1.2 miles long. The reaches were numbered and three study reaches were selected within each stratum using a random numbers table. The 18-mile reach was one of the strata and the three study reaches selected within the 18-mile reach then will continue to be sampled for this SOW. Both shorelines will be sampled with boat electrofishing. To keep effort consistent with the earlier methods, two netters will be stationed at the front of each boat. Fish will be identified, measured for TL, and weighed. Two boats with a crew of three people each will be needed. One deviation from the earlier design, however, will be to reduce costs by sampling only once per year in the fall (Sep-Oct), instead of both spring and fall.

In 2013, population estimates of razorback sucker (> 400 mm TL) were developed for the years 2008, 2009, and 2010 (Osmundson in prep.) from data collected during the Colorado pikeminnow monitoring project (Recovery Program Project No. 127). The preliminary estimates of were: 2008 – 2,035 (1,333-2738),

2009 – 1,680 (1,070-2,291), 2010 – 1,637 (1,179-2,095). Ninety-five percent CIs are in parenthesis. This will provide a baseline for adult razorback sucker monitoring. Estimates will again be calculated in 2017 for the years 2013, 2014, and 2015 also using data collected during the Colorado pikeminnow monitoring project (Recovery Program Project No. 127).

Larval sampling will follow the protocol outlined above for the Gunnison River, extending from mid-May through the first week of August for razorback larvae. If at some point it is deemed feasible to begin sampling for larval Colorado pikeminnow, that sampling would occur from mid-June through the end of August (pending available funding, personnel, and equipment). The 18-mile reach and from Loma downstream to the Colorado-Utah state line will be sampled for comparison with results of Osmundson and Seal (2009).

Fall YOY sampling will be restricted to the 18-mile reach and Loma downstream to the Colorado-Utah state line, following ISMP protocol with two seine hauls in each of two backwaters within each 5-mile reach (see McAda et al. 1994).

The Principal Investigator will train crew members, act as overall crew leader and actively participate in data collection efforts. Along with annual data collection efforts, additional time will be required prior to field sampling to ready equipment and train new crew members in motor boat operation and field techniques specific to this project and later to input and check data.

The Principal Investigator will work closely with a biostatistician familiar with running program MARK to estimate razorback sucker abundance in the Colorado River and abundance of both Colorado pikeminnow and razorback sucker in the Gunnison River if mark-recapture estimation proves feasible there.

VII. Task Description and Schedule

Description

- | | |
|---------|--|
| Task 1. | Electrofishing Gunnison River for endangered fish CPE, fish community monitoring, and fish tissue collection; two trips (late July or early August and again in mid-September to mid-October). |
| Task 2. | Electrofishing Colorado River for fish community monitoring; one trip (late September or early October). |
| Task 3. | Sample fish larvae (mid-May to early July): Colorado River |
| Task 4. | Sample fish larvae (mid-May to early July): Gunnison River |
| Task 5. | Sample YOY in the Gunnison River (one pass – in late September or early October) |
| Task 6. | Sample YOY in the Colorado River (one pass – in late September or early October) |

- Task 7. Analyze tissue samples for selenium
- Task 8. Develop population estimates of razorback sucker in Colorado River
- Task 9. Analyze larval samples (CSU Larval Fish Lab)
- Task 10. Analyze data
- Task 11. Write annual reports
- Task 12. Prepare final contaminants report (Barb Osmundson)
- Task 13. Prepare final fish monitoring report No. 1 (Large-bodied and YOY fish)
- Task 14. Prepare final fish monitoring report No. 2 (Larval fish)

Schedule

Task 1, 2, 3, 4, 5, 6, 7, 9, 10, 11:	2018
Task 1, 2, 3, 4, 5, 6, 7, 9, 10, 11,	2019
Task 1, 2, 3, 4, 5, 6, 7, 9, 10, 11, 13:	2020
Task 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 14:	2021
Task 1, 2, 3, 4, 5, 6, 7, 9, 10, 11:	2022

VIII. FY-2018 Work (Eighth year of multi-year study)

Deliverables/Due Dates: Annual Report for 2018 field work due 11/2018

Budget

Task 1. Electrofish Gunnison River (two 5-day trips x 6 people/trip)						
Labor (Federal Salary + Benefits)						
	Title	Number of Personnel	Hours Per Person	Total Hours	Rate	Total
	Fishery Biologist (GS-11)	1	120	120	\$52.80	\$6,336
	Biological Technician Crew Leader (GS-7)	1	80	80	\$31.82	\$2,546
	Biological Technician (GS-5)	4	72	288	\$22.94	\$6,607
Labor Subtotal						\$15,488
Travel						
	Per Diem (Camp Rate = \$28/day)	Number of Personnel	Days Per Trip	Trips Per Year	Rate	Total
	6 people x 5 days/trip x 2 trips	6	5	2	\$28.00	\$1,680
Travel Subtotal						\$1,680
Equipment and Supplies						
				Units	Rate	Total
	Generator repair/tune-up (4 hours @ \$75/hour)			4	\$75.00	\$300
	Raft trailer maintenance			1	\$30.00	\$30
	Repair raft frames - aluminum welding			3	\$150.00	\$450
	Spark plugs			2	\$7.50	\$15
	Boat Gas (5 gallons per day per boat)			100	\$4.00	\$400
	(2 boats per trip/5 days per trip/2 trips per year)					
Equipment and Supplies Subtotal						\$1,195
Vehicles						
	Vehicle maintenance and fuel (\$365/month lease = \$12.17 per day based on 30 days in an "average" month + \$0.42/mile)	Number of Vehicles	Days or Miles per Vehicle	Total Units	Rate	Total

3 vehicles for boats 5 days/trip x 2 trips/year		3	10	30	\$12.17	\$365
1 shuttle vehicle x 2 day/trip x 2 trips/year		1	4	4	\$12.17	\$49
4 vehicles x 80 miles round-trip = 320 total miles		4	80	320	\$0.42	\$134
Vehicles subtotal						\$548
Task 1 Total						
						\$18,912
Task 2 Electrofish 18-Mile Reach of the Colorado River (one 2-day trip x 4 people trip)						
	Title	Number of Personnel	Hours Per Person	Total Hours	Rate	Total
	Fishery Biologist (GS-11)	1	16	16	\$52.80	\$845
	Biological Technician (GS-5)	2	32	64	\$22.94	\$1,468
Labor Subtotal						\$2,313
Travel - No per diem required for this task						
						\$0
Equipment and Supplies						
				Units	Rate	Total
	Duraframe electrofishing dip nets			2	\$300.00	\$600
	Gas (10 gallons per day per boat) for outboards and generators			20	\$4.00	\$80
Equipment and Supplies Subtotal						\$680
Vehicles						
	Vehicle maintenance and fuel (\$365/month lease = \$12.17 per day based on 30 days in an "average" month + \$0.42/mile)					
		Number of Vehicles	Days or Miles per Vehicle	Total Units	Rate	Total
	2 vehicles for boats 2 days/trip x 1 trip/year	2	2	4	\$12.17	\$49
	1 shuttle vehicle x 2 day/trip x 1 trip/year	1	2	2	\$12.17	\$24
	3 vehicles x 23 miles round-trip x 2 days	3	23	138	\$0.42	\$58
Vehicles subtotal						\$131

Task 2 Total						\$3,124	
Task 3. Sample larvae in the Gunnison River (4 days/week for 8 weeks)							
Labor (Federal Salary + Benefits)							
	Title	Number of Personnel	Hours Per Person	Total Hours	Rate	Total	
	Biological Technician Crew Leader (GS-7)	1	200	200	\$31.82	\$6,364	
	Biological Technician (GS-5)	2	200	400	\$22.94	\$9,176	
Labor Subtotal						\$15,540	
Travel - No per diem required for this task							
						\$0	
Equipment and Supplies							
				Units	Rate	Total	
	Boat Gas (5 gallons per day per boat)			640	\$4.00	\$2,560	
	Ethanol (95%) two 3-gallon containers			2	\$120.00	\$240	
	Sample bottles (\$325 per case)			1	\$325.00	\$325	
Equipment and Supplies Subtotal						\$3,125	
Vehicles							
	Vehicle maintenance and fuel (\$365/month lease = \$12.17 per day based on 30 days in an "average" month + \$0.42/mile)						
		Number of Vehicles	Days or Miles per Vehicle	Total Units	Rate	Total	
		Delta to Escalante Section (2 vehicles) \$12.17/day	2	8	16	\$12.17	\$195
		Delta to Escalante Section (2 vehicles) \$0.42/mile	2	640	1280	\$0.42	\$538
		Escalante to Bridgeport (2 vehicles) \$12.17/day	2	8	16	\$12.17	\$195
		Escalante to Bridgeport (2 vehicles) \$0.42/mile	2	480	960	\$0.42	\$403
		Bridgeport to Whitewater (2 vehicles) \$12.17/day	2	8	16	\$12.17	\$195
		Bridgeport to Whitewater (2 vehicles) \$0.42/mile	2	320	640	\$0.42	\$269

Whitewater to Redlands Dame (2 vehicles) \$12.17/day		2	8	16	\$12.17	\$195
Whitewater to Redlands Dame (2 vehicles) \$0.42/mile		2	160	320	\$0.42	\$134
Vehicles subtotal						\$2,123
Task 3 Total						
Task 4. Sample larvae in the Colorado River (2 10-hour days per week for 8 weeks)						
Labor (Federal Salary + Benefits)						
	Title	Number of Personnel	Hours Per Person	Total Hours	Rate	Total
	Fishery Biologist (GS-11)	1	200	200	\$52.80	\$10,560
	Biological Technician (GS-5)	2	128	256	\$22.94	\$5,873
Labor Subtotal						\$16,433
Travel - No per diem required for this task						
Equipment and Supplies						
	Streams Type III life jackets			3	\$70.00	\$210
	Larval Seines			3	\$200.00	\$600
	Hip waders			2	\$50.00	\$100
	Chest waders			1	\$125.00	\$125
	Boat Gas (5 gallons per day per boat)			200	\$4.00	\$800
	Ethanol (95%) one 3-gallon container			1	\$120.00	\$120
	Sample bottles (\$325 per case)			1	\$325.00	\$325
Equipment and Supplies Subtotal						\$2,280
Vehicles						
	Vehicle maintenance and fuel (\$365/month)					

	lease = \$12.17 per day based on 30 days in an "average" month + \$0.42/mile)	Number of Vehicles	Days or Miles per Vehicle	Total Units	Rate	Total
	Redlands Dam to Redlands Parkway	2	8	16	\$12.17	\$195
	Redlands Dam to Redlands Parkway	2	160	320	\$0.42	\$134
	Redlands Parkway to Loma	2	8	16	\$12.17	\$195
	Redlands Parkway to Loma	2	160	320	\$0.42	\$134
Vehicles subtotal						\$658
Task 4 Total						\$19,371
Task 5. Sample YOY in the Gunnison River (one trip per year)						
Labor (Federal Salary + Benefits)						
	Title	Number of Personnel	Hours Per Person	Total Hours	Rate	Total
	Fishery Biologist (GS-11)	1	48	48	\$52.80	\$2,534
	Biological Technician (GS-5)	3	48	144	\$22.94	\$3,303
Labor Subtotal						\$5,838
Travel - No per diem required for this task						\$0
Equipment and Supplies						
				Units	Rate	Total
	Boat Gas			100	\$4.00	\$400
	Ethanol (95%) one 3-gallon container			1	\$120.00	\$120
Equipment and Supplies Subtotal						\$520
Vehicles						
	Vehicle maintenance and fuel (\$365/month lease = \$12.17 per day based on 30 days in an "average" month + \$0.42/mile)	Number of Vehicles	Days or Miles per Vehicle	Total Units	Rate	Total

Delta to Escalante (2 vehicles) \$12.17/day	2	1	2	\$12.17	\$24
Delta to Escalante (2 vehicles) \$0.42/mile	2	80	160	\$0.42	\$67
Escalante to Bridgeport (2 vehicles) \$12.17/day	2	1	2	\$12.17	\$24
Escalante to Bridgeport (2 vehicles) \$0.42/mile	2	60	120	\$0.42	\$50
Bridgeport to Whitewater (2 vehicles) \$12.17/day	2	1	2	\$12.17	\$24
Bridgeport to Whitewater (2 vehicles) \$0.42/mile	2	40	80	\$0.42	\$34
Whitewater to Redlands Dame (2 vehicles) \$12.17/day	2	1	2	\$12.17	\$24
Whitewater to Redlands Dame (2 vehicles) \$0.42/mile	2	20	40	\$0.42	\$17
Vehicles Subtotal					\$265
Task 5 Total					
					\$6,623
Task 6. Sample YOY in the Colorado River (one trip per year)					
Labor (Federal Salary + Benefits)					
	Title	Number of Personnel	Hours Per Person	Total Hours	Rate
	Fishery Biologist (GS-11)	1	32	32	\$52.80
	Biological Technician (GS-5)	3	32	96	\$22.94
	Labor Subtotal				\$3,892
Travel - No per diem required for this task					
					\$0
Equipment and Supplies					
			Units	Rate	Total
	Boat Gas		47	\$4.00	\$188
	Ethanol (95%) one 3-gallon container		1	\$120.00	\$120
	Equipment and Supplies Subtotal				\$308
Vehicles	Vehicle maintenance and fuel (\$365/month				

	lease = \$12.17 per day based on 30 days in an "average" month + \$0.42/mile)	Number of Vehicles	Days or Miles per Vehicle	Total Units	Rate	Total
	Redlands Dam to Redlands Parkway \$12.17/day	2	1	2	\$12.17	\$24
	Redlands Dam to Redlands Parkway \$0.42/mile	2	20	40	\$0.42	\$17
	Redlands Parkway to Loma \$12.17/day	2	1	2	\$12.17	\$24
	Redlands Parkway to Loma \$0.42/mile	2	20	40	\$0.42	\$17
	Loma to Stateline \$12.17/day	2	1	2	\$12.17	\$24
	Loma to Stateline \$0.42/mile	2	36	72	\$0.42	\$30
Vehicles subtotal						\$137
Task 6 Total						\$4,337
Task 7. Analyze muscle plug samples to determine selenium concentrations (USFWS - Ecological Services)						
Task 7 Total						\$0
Task 9. Analyze larval fish samples (CSU-LFL). Funded under SOW 15.						
Task 9 Total						\$0
Tasks 10 and 11. Input and analyze data, write annual report.						
Labor (Federal Salary + Benefits)						
	Title	Number of Personnel	Hours Per Person	Total Hours	Rate	Total
	Fishery Biologist (GS-11)	1	160	160	\$52.80	\$8,448
Labor Subtotal						\$8,448
Tasks 10 and 11 Total						\$8,448
Project Management: Permitting, Coordination, Office and Administrative Support						
Labor (Federal Salary + Benefits)						

	Title	Number of Personnel	Hours Per Person	Total Hours	Rate	Total
	Administrative Officer	1	40	40	\$42.14	\$1,686
	Project Leader	1	40	40	\$80.95	\$3,238
Labor Subtotal						\$4,924
Project Management Total						\$4,924
Totals by Task						
	Task 1 (USFWS-GJFWCO)					\$18,912
	Task 2 (USFWS-GJFWCO)					\$3,124
	Task 3 (USFWS-GJFWCO)					\$20,788
	Task 4 (USFWS-GJFWCO)					\$19,371
	Task 5 (USFWS-GJFWCO)					\$6,623
	Task 6 (USFWS-GJFWCO)					\$4,337
	Task 7 (USFWS-Ecological Services)					\$0
	Task 9 (CSU-LFL)					\$0
	Tasks 10 and 11 (USFWS-GJFWCO)					\$8,448
	Project Management (USFWS-GJFWCO)					\$4,924
FY 2018 Grand Total						\$86,526

FY 2019 (Ninth year of Multi-year Study)

Deliverable/Due Dates: Annual Report for 2019 field work due 11/2019

Budget

Task 1. Electrofish Gunnison River (two 5-day trips x 6 people/trip)						
Labor (Federal Salary + Benefits)						
	Title	Number of Personnel	Hours Per Person	Total Hours	Rate	Total
	Fishery Biologist (GS-11)	1	120	120	\$53.84	\$6,461
	Biological Technician Crew Leader (GS-7)	1	80	80	\$32.46	\$2,597
	Biological Technician (GS-5)	4	72	288	\$23.40	\$6,739
Labor Subtotal						\$15,797
Travel						
	Per Diem (Camp Rate = \$28/day)	Number of Personnel	Days Per Trip	Trips Per Year	Rate	Total
	6 people x 5 days/trip x 2 trips	6	5	2	\$28.00	\$1,680
Travel Subtotal						\$1,680
Equipment and Supplies						
				Units	Rate	Total
	Generator repair/tune-up (4 hours @ \$76.50/hour)			4	\$76.50	\$306
	Raft trailer maintenance			1	\$30.60	\$31
	Repair raft frames - aluminum welding			3	\$153.00	\$459
	Spark plugs			2	\$7.65	\$15
	Boat Gas (5 gallons per day per boat)			100	\$4.08	\$408
	(2 boats per trip/5 days per trip/2 trips per year)					
Equipment and Supplies Subtotal						\$1,219

Vehicles	Vehicle maintenance and fuel (\$372/month lease = \$12.41 per day based on 30 days in an "average" month + \$0.43/mile)					
		Number of Vehicles	Days or Miles per Vehicle	Total Units	Rate	Total
	3 vehicles for boats 5 days/trip x 2 trips/year	3	10	30	\$12.41	\$372
	1 shuttle vehicle x 2 day/trip x 2 trips/year	1	4	4	\$12.41	\$50
	4 vehicles x 80 miles round-trip = 320 total miles	4	80	320	\$0.43	\$138
Vehicles subtotal						\$560
Task 1 Total						
						\$19,255
Task 2 Electrofish 18-Mile Reach of the Colorado River (one 2-day trip x 4 people trip)						
	Title	Number of Personnel	Hours Per Person	Total Hours	Rate	Total
	Fishery Biologist (GS-11)	1	16	16	\$53.84	\$861
	Biological Technician (GS-5)	2	32	64	\$23.40	\$1,498
Labor Subtotal						\$2,359
Travel - No per diem required for this task						
						\$0
Equipment and Supplies						
				Units	Rate	Total
	Duraframe electrofishing dip nets			2	\$306.00	\$612
	Gas (10 gallons per day per boat) for outboards and generators			20	\$4.08	\$82
Equipment and Supplies Subtotal						\$694
Vehicles	Vehicle maintenance and fuel (\$372/month lease = \$12.41 per day based on 30 days in an "average" month + \$0.43/mile)					
		Number of Vehicles	Days or Miles per Vehicle	Total Units	Rate	Total

2 vehicles for boats 2 days/trip x 1 trip/year		2	2	4	\$12.41	\$50
1 shuttle vehicle x 2 day/trip x 1 trip/year		1	2	2	\$12.41	\$25
3 vehicles x 23 miles round-trip x 2 days		3	23	138	\$0.43	\$59
Vehicles subtotal						\$134
Task 2 Total						
						\$3,186
Task 3. Sample larvae in the Gunnison River (4 days/week for 8 weeks)						
Labor (Federal Salary + Benefits)						
	Title	Number of Personnel	Hours Per Person	Total Hours	Rate	Total
	Biological Technician Crew Leader (GS-7)	1	200	200	\$32.46	\$6,492
	Biological Technician (GS-5)	2	200	400	\$23.40	\$9,360
Labor Subtotal						\$15,852
Travel - No per diem required for this task						
						\$0
Equipment and Supplies						
				Units	Rate	Total
	Boat Gas (5 gallons per day per boat)			640	\$4.08	\$2,611
	Ethanol (95%) two 3-gallon containers			2	\$122.40	\$245
	Sample bottles (\$325 per case)			1	\$331.50	\$332
Equipment and Supplies Subtotal						\$3,188
Vehicles						
	Vehicle maintenance and fuel (\$372/month lease = \$12.41 per day based on 30 days in an "average" month + \$0.43/mile)					
		Number of Vehicles	Days or Miles per Vehicle	Total Units	Rate	Total
	Delta to Escalante Section (2 vehicles) \$12.41/day	2	8	16	\$12.41	\$199
	Delta to Escalante Section (2 vehicles) \$0.43/mile	2	640	1280	\$0.43	\$550

Escalante to Bridgeport (2 vehicles) \$12.41/day	2	8	16	\$12.41	\$199	
Escalante to Bridgeport (2 vehicles) \$0.43/mile	2	480	960	\$0.43	\$413	
Bridgeport to Whitewater (2 vehicles) \$12.41/day	2	8	16	\$12.41	\$199	
Bridgeport to Whitewater (2 vehicles) \$0.43/mile	2	320	640	\$0.43	\$275	
Whitewater to Redlands Dame (2 vehicles) \$12.41/day	2	8	16	\$12.41	\$199	
Whitewater to Redlands Dame (2 vehicles) \$0.43/mile	2	160	320	\$0.43	\$138	
Vehicles subtotal					\$2,170	
Task 3 Total						
					\$21,210	
Task 4. Sample larvae in the Colorado River (2 10-hour days per week for 8 weeks)						
Labor (Federal Salary + Benefits)						
	Title	Number of Personnel	Hours Per Person	Total Hours	Rate	Total
	Fishery Biologist (GS-11)	1	200	200	\$53.84	\$10,768
	Biological Technician (GS-5)	2	128	256	\$23.40	\$5,990
Labor Subtotal						
					\$16,758	
Travel - No per diem required for this task						
					\$0	
Equipment and Supplies						
			Units	Rate	Total	
	Streams Type III life jackets		3	\$71.40	\$214	
	Larval Seines		3	\$204.00	\$612	
	Hip waders		2	\$51.00	\$102	
	Chest waders		1	\$127.50	\$128	
	Boat Gas (5 gallons per day per boat)		200	\$4.08	\$816	
	Ethanol (95%) one 3-gallon container		1	\$122.40	\$122	
	Sample bottles (\$325 per case)		1	\$331.50	\$332	

Equipment and Supplies Subtotal						\$2,326
Vehicles						
	Vehicle maintenance and fuel (\$372/month lease = \$12.41 per day based on 30 days in an "average" month + \$0.43/mile)					
		Number of Vehicles	Days or Miles per Vehicle	Total Units	Rate	Total
	Redlands Dam to Redlands Parkway	2	8	16	\$12.41	\$199
	Redlands Dam to Redlands Parkway	2	160	320	\$0.43	\$138
	Redlands Parkway to Loma	2	8	16	\$12.41	\$199
	Redlands Parkway to Loma	2	160	320	\$0.43	\$138
Vehicles subtotal						\$672
Task 4 Total						\$19,756
Task 5. Sample YOY in the Gunnison River (one trip per year)						
Labor (Federal Salary + Benefits)						
	Title	Number of Personnel	Hours Per Person	Total Hours	Rate	Total
	Fishery Biologist (GS-11)	1	48	48	\$53.84	\$2,584
	Biological Technician (GS-5)	3	48	144	\$23.40	\$3,370
Labor Subtotal						\$5,954
Travel - No per diem required for this task						\$0
Equipment and Supplies						
				Units	Rate	Total
	Boat Gas			100	\$4.08	\$408
	Ethanol (95%) one 3-gallon container			1	\$122.40	\$122
Equipment and Supplies Subtotal						\$530

Vehicles	Vehicle maintenance and fuel (\$372/month lease = \$12.41 per day based on 30 days in an "average" month + \$0.43/mile)					
		Number of Vehicles	Days or Miles per Vehicle	Total Units	Rate	Total
	Delta to Escalante (2 vehicles) \$12.41/day	2	1	2	\$12.41	\$25
	Delta to Escalante (2 vehicles) \$0.43/mile	2	80	160	\$0.43	\$69
	Escalante to Bridgeport (2 vehicles) \$12.41/day	2	1	2	\$12.41	\$25
	Escalante to Bridgeport (2 vehicles) \$0.43/mile	2	60	120	\$0.43	\$52
	Bridgeport to Whitewater (2 vehicles) \$12.41/day	2	1	2	\$12.41	\$25
	Bridgeport to Whitewater (2 vehicles) \$0.43/mile	2	40	80	\$0.43	\$34
	Whitewater to Redlands Dame (2 vehicles) \$12.41/day	2	1	2	\$12.41	\$25
	Whitewater to Redlands Dame (2 vehicles) \$0.43/mile	2	20	40	\$0.43	\$17
Vehicles Subtotal						\$271
Task 5 Total						\$6,756
Task 6. Sample YOY in the Colorado River (one trip per year)						
Labor (Federal Salary + Benefits)						
	Title	Number of Personnel	Hours Per Person	Total Hours	Rate	Total
	Fishery Biologist (GS-11)	1	32	32	\$53.84	\$1,723
	Biological Technician (GS-5)	3	32	96	\$23.40	\$2,246
Labor Subtotal						\$3,969
Travel - No per diem required for this task						\$0
Equipment and Supplies						
	Boat Gas			47	\$4.08	\$192
	Ethanol (95%) one 3-gallon container			1	\$122.40	\$122

Equipment and Supplies Subtotal							\$314
Vehicles							
	Vehicle maintenance and fuel (\$372/month lease = \$12.41 per day based on 30 days in an "average" month + \$0.43/mile)						
		Number of Vehicles	Days or Miles per Vehicle	Total Units	Rate	Total	
	Redlands Dam to Redlands Parkway \$12.41/day	2	1	2	\$12.41	\$25	
	Redlands Dam to Redlands Parkway \$0.43/mile	2	20	40	\$0.43	\$17	
	Redlands Parkway to Loma \$12.41/day	2	1	2	\$12.41	\$25	
	Redlands Parkway to Loma \$0.43/mile	2	20	40	\$0.43	\$17	
	Loma to Stateline \$12.41/day	2	1	2	\$12.41	\$25	
	Loma to Stateline \$0.43/mile	2	36	72	\$0.43	\$31	
Vehicles subtotal							\$140
Task 6 Total							\$4,423
Task 7. Analyze muscle plug samples to determine selenium concentrations (USFWS - Ecological Services)							
Task 7 Total							\$0
Task 9. Analyze larval fish samples (CSU-LFL). Funded under SOW 15.							
Task 9 Total							\$0
Tasks 10 and 11. Input and analyze data, write annual report.							
Labor (Federal Salary + Benefits)							
	Title	Number of Personnel	Hours Per Person	Total Hours	Rate	Total	
	Fishery Biologist (GS-11)	1	160	160	\$53.84	\$8,614	
Labor Subtotal							\$8,614
Tasks 10 and 11 Total							\$8,614

Project Management: Permitting, Coordination, Office and Administrative Support						
Labor (Federal Salary + Benefits)						
	Title	Number of Personnel	Hours Per Person	Total Hours	Rate	Total
	Administrative Officer	1	40	40	\$42.98	\$1,719
	Project Leader	1	40	40	\$82.57	\$3,303
Labor Subtotal						\$5,022
Project Management Total						\$5,022
Totals by Task						
	Task 1 (USFWS-GJFWCO)					\$19,255
	Task 2 (USFWS-GJFWCO)					\$3,186
	Task 3 (USFWS-GJFWCO)					\$21,210
	Task 4 (USFWS-GJFWCO)					\$19,756
	Task 5 (USFWS-GJFWCO)					\$6,756
	Task 6 (USFWS-GJFWCO)					\$4,423
	Task 7 (USFWS-Ecological Services)					\$0
	Task 9 (CSU-LFL)					\$0
	Tasks 10 and 11 (USFWS-GJFWCO)					\$8,614
	Project Management (USFWS-GJFWCO)					\$5,022
FY 2019 Grand Total						\$88,223

FY 2020 (Tenth Year of Multi-year Study)

Deliverables/Due Dates: Annual Report for 2020 field work due 11/2020

Budget

Task 1. Electrofish Gunnison River (two 5-day trips x 6 people/trip)						
Labor (Federal Salary + Benefits)						
	Title	Number of Personnel	Hours Per Person	Total Hours	Rate	Total
	Fishery Biologist (GS-11)	1	120	120	\$54.92	\$6,590
	Biological Technician Crew Leader (GS-7)	1	80	80	\$33.11	\$2,649
	Biological Technician (GS-5)	4	72	288	\$23.87	\$6,875
Labor Subtotal						\$16,114
Travel						
	Per Diem (Camp Rate = \$28/day)	Number of Personnel	Days Per Trip	Trips Per Year	Rate	Total
	6 people x 5 days/trip x 2 trips	6	5	2	\$28.00	\$1,680
Travel Subtotal						\$1,680
Equipment and Supplies						
				Units	Rate	Total
	Generator repair/tune-up (4 hours @ \$78.03/hour)			4	\$78.03	\$312
	Raft trailer maintenance			1	\$31.21	\$31
	Repair raft frames - aluminum welding			3	\$156.06	\$468
	Spark plugs			2	\$7.80	\$16
	Boat Gas (5 gallons per day per boat)			100	\$4.16	\$416
	(2 boats per trip/5 days per trip/2 trips per year)					
Equipment and Supplies Subtotal						\$1,243

Vehicles	Vehicle maintenance and fuel (\$380/month lease = \$12.66 per day based on 30 days in an "average" month + \$0.44/mile)					
		Number of Vehicles	Days or Miles per Vehicle	Total Units	Rate	Total
	3 vehicles for boats 5 days/trip x 2 trips/year	3	10	30	\$12.66	\$380
	1 shuttle vehicle x 2 day/trip x 2 trips/year	1	4	4	\$12.66	\$51
	4 vehicles x 80 miles round-trip = 320 total miles	4	80	320	\$0.44	\$141
Vehicles subtotal						\$571
Task 1 Total						
						\$19,608
Task 2 Electrofish 18-Mile Reach of the Colorado River (one 2-day trip x 4 people trip)						
	Title	Number of Personnel	Hours Per Person	Total Hours	Rate	Total
	Fishery Biologist (GS-11)	1	16	16	\$54.92	\$879
	Biological Technician (GS-5)	2	32	64	\$23.87	\$1,528
Labor Subtotal						\$2,406
Travel - No per diem required for this task						
						\$0
Equipment and Supplies						
	Duraframe electrofishing dip nets			2	\$312.12	\$624
	Gas (10 gallons per day per boat) for outboards and generators			20	\$4.16	\$83
Equipment and Supplies Subtotal						\$707
Vehicles	Vehicle maintenance and fuel (\$380/month lease = \$12.66 per day based on 30 days in an "average" month + \$0.44/mile)					
		Number of Vehicles	Days or Miles per Vehicle	Total Units	Rate	Total

2 vehicles for boats 2 days/trip x 1 trip/year		2	2	4	\$12.66	\$51
1 shuttle vehicle x 2 day/trip x 1 trip/year		1	2	2	\$12.66	\$25
3 vehicles x 23 miles round-trip x 2 days		3	23	138	\$0.44	\$61
Vehicles subtotal						\$137
Task 2 Total						
						\$3,251
Task 3. Sample larvae in the Gunnison River (4 days/week for 8 weeks)						
Labor (Federal Salary + Benefits)						
	Title	Number of Personnel	Hours Per Person	Total Hours	Rate	Total
	Biological Technician Crew Leader (GS-7)	1	200	200	\$33.11	\$6,622
	Biological Technician (GS-5)	2	200	400	\$23.87	\$9,548
Labor Subtotal						\$16,170
Travel - No per diem required for this task						
						\$0
Equipment and Supplies						
				Units	Rate	Total
	Boat Gas (5 gallons per day per boat)			640	\$4.16	\$2,662
	Ethanol (95%) two 3-gallon containers			2	\$124.85	\$250
	Sample bottles (\$325 per case)			1	\$338.13	\$338
Equipment and Supplies Subtotal						\$3,250
Vehicles						
	Vehicle maintenance and fuel (\$380/month lease = \$12.66 per day based on 30 days in an "average" month + \$0.44/mile)					
		Number of Vehicles	Days or Miles per Vehicle	Total Units	Rate	Total
	Delta to Escalante Section (2 vehicles) \$12.66/day	2	8	16	\$12.66	\$203
	Delta to Escalante Section (2 vehicles) \$0.44/mile	2	640	1280	\$0.44	\$563

Escalante to Bridgeport (2 vehicles) \$12.66/day	2	8	16	\$12.66	\$203	
Escalante to Bridgeport (2 vehicles) \$0.44/mile	2	480	960	\$0.44	\$422	
Bridgeport to Whitewater (2 vehicles) \$12.66/day	2	8	16	\$12.66	\$203	
Bridgeport to Whitewater (2 vehicles) \$0.44/mile	2	320	640	\$0.44	\$282	
Whitewater to Redlands Dame (2 vehicles) \$12.66/day	2	8	16	\$12.66	\$203	
Whitewater to Redlands Dame (2 vehicles) \$0.44/mile	2	160	320	\$0.44	\$141	
Vehicles subtotal					\$2,218	
Task 3 Total						
					\$21,638	
Task 4. Sample larvae in the Colorado River (2 10-hour days per week for 8 weeks)						
Labor (Federal Salary + Benefits)						
	Title	Number of Personnel	Hours Per Person	Total Hours	Rate	Total
	Fishery Biologist (GS-11)	1	200	200	\$54.92	\$10,984
	Biological Technician (GS-5)	2	128	256	\$23.89	\$6,116
Labor Subtotal						\$17,100
Travel - No per diem required for this task						
						\$0
Equipment and Supplies						
	Streams Type III life jackets			3	\$72.83	\$218
	Larval Seines			3	\$208.08	\$624
	Hip waders			2	\$52.02	\$104
	Chest waders			1	\$130.05	\$130
	Boat Gas (5 gallons per day per boat)			200	\$4.16	\$832
	Ethanol (95%) one 3-gallon container			1	\$124.85	\$125
	Sample bottles (\$338.13 per case)			1	\$338.13	\$338

Equipment and Supplies Subtotal						\$2,372
Vehicles						
	Vehicle maintenance and fuel (\$380/month lease = \$12.66 per day based on 30 days in an "average" month + \$0.44/mile)					
		Number of Vehicles	Days or Miles per Vehicle	Total Units	Rate	Total
	Redlands Dam to Redlands Parkway	2	8	16	\$12.66	\$203
	Redlands Dam to Redlands Parkway	2	160	320	\$0.44	\$141
	Redlands Parkway to Loma	2	8	16	\$12.66	\$203
	Redlands Parkway to Loma	2	160	320	\$0.44	\$141
Vehicles subtotal						\$687
Task 4 Total						\$20,158
Task 5. Sample YOY in the Gunnison River (one trip per year)						
Labor (Federal Salary + Benefits)						
	Title	Number of Personnel	Hours Per Person	Total Hours	Rate	Total
	Fishery Biologist (GS-11)	1	48	48	\$54.92	\$2,636
	Biological Technician (GS-5)	3	48	144	\$23.87	\$3,437
Labor Subtotal						\$6,073
Travel - No per diem required for this task						\$0
Equipment and Supplies						
				Units	Rate	Total
	Boat Gas			100	\$4.16	\$416
	Ethanol (95%) one 3-gallon container			1	\$124.85	\$125
Equipment and Supplies Subtotal						\$541

Vehicles	Vehicle maintenance and fuel (\$380/month lease = \$12.66 per day based on 30 days in an "average" month + \$0.44/mile)					
		Number of Vehicles	Days or Miles per Vehicle	Total Units	Rate	Total
	Delta to Escalante (2 vehicles) \$12.66/day	2	1	2	\$12.66	\$25
	Delta to Escalante (2 vehicles) \$0.44/mile	2	80	160	\$0.44	\$70
	Escalante to Bridgeport (2 vehicles) \$12.66/day	2	1	2	\$12.66	\$25
	Escalante to Bridgeport (2 vehicles) \$0.44/mile	2	60	120	\$0.44	\$53
	Bridgeport to Whitewater (2 vehicles) \$12.66/day	2	1	2	\$12.66	\$25
	Bridgeport to Whitewater (2 vehicles) \$0.44/mile	2	40	80	\$0.44	\$35
	Whitewater to Redlands Dame (2 vehicles) \$12.66/day	2	1	2	\$12.66	\$25
	Whitewater to Redlands Dame (2 vehicles) \$0.44/mile	2	20	40	\$0.44	\$18
Vehicles Subtotal						\$277
Task 5 Total						
						\$6,892
Task 6. Sample YOY in the Colorado River (one trip per year)						
Labor (Federal Salary + Benefits)						
	Title	Number of Personnel	Hours Per Person	Total Hours	Rate	Total
	Fishery Biologist (GS-11)	1	32	32	\$54.92	\$1,757
	Biological Technician (GS-5)	3	32	96	\$23.87	\$2,292
Labor Subtotal						\$4,049
Travel - No per diem required for this task						
						\$0
Equipment and Supplies						
				Units	Rate	Total
	Boat Gas			47	\$4.16	\$196
	Ethanol (95%) one 3-gallon container			1	\$124.85	\$125

Equipment and Supplies Subtotal							\$320
Vehicles							
	Vehicle maintenance and fuel (\$380/month lease = \$12.66 per day based on 30 days in an "average" month + \$0.44/mile)						
		Number of Vehicles	Days or Miles per Vehicle	Total Units	Rate	Total	
	Redlands Dam to Redlands Parkway \$12.66/day	2	1	2	\$12.66	\$25	
	Redlands Dam to Redlands Parkway \$0.44/mile	2	20	40	\$0.44	\$18	
	Redlands Parkway to Loma \$12.66/day	2	1	2	\$12.66	\$25	
	Redlands Parkway to Loma \$0.44/mile	2	20	40	\$0.44	\$18	
	Loma to Stateline \$12.66/day	2	1	2	\$12.66	\$25	
	Loma to Stateline \$0.44/mile	2	36	72	\$0.44	\$32	
Vehicles subtotal							\$143
Task 6 Total							\$4,512
Task 7. Analyze muscle plug samples to determine selenium concentrations (USFWS - Ecological Services)							
Task 7 Total							\$0
Task 9. Analyze larval fish samples (CSU-LFL). Funded under SOW 15.							
Task 9 Total							\$0
Tasks 10, 11 and 13. Input and analyze data, write annual report, prepare draft and final large-bodied and YOY fish monitoring report.							
Labor (Federal Salary + Benefits)							
	Title	Number of Personnel	Hours Per Person	Total Hours	Rate	Total	
	Fishery Biologist (GS-11)	1	520	520	\$54.92	\$28,558	
Labor Subtotal							\$28,558
Tasks 10 and 11 Total							\$28,558

Project Management: Permitting, Coordination, Office and Administrative Support						
Labor (Federal Salary + Benefits)						
	Title	Number of Personnel	Hours Per Person	Total Hours	Rate	Total
	Administrative Officer	1	40	40	\$43.84	\$1,754
	Project Leader	1	40	40	\$84.22	\$3,369
Labor Subtotal						\$5,122
Project Management Total						\$5,122
Totals by Task						
	Task 1 (USFWS-GJFWCO)					\$19,608
	Task 2 (USFWS-GJFWCO)					\$3,251
	Task 3 (USFWS-GJFWCO)					\$21,638
	Task 4 (USFWS-GJFWCO)					\$20,158
	Task 5 (USFWS-GJFWCO)					\$6,892
	Task 6 (USFWS-GJFWCO)					\$4,512
	Task 7 (USFWS-Ecological Services)					\$0
	Task 9 (CSU-LFL)					\$0
	Tasks 10, 11, 13 (USFWS-GJFWCO)					\$28,558
	Project Management (USFWS-GJFWCO)					\$5,122
FY 2020 Grand Total						\$109,740

FY 2021 (Eleventh Year of Multi-year Study)

Deliverables/Due Dates: Annual report for 2021 field work due 11/2021. Complete 2nd large-bodied and YOY report.

Budget

Task 1. Electrofish Gunnison River (two 5-day trips x 6 people/trip)						
Labor (Federal Salary + Benefits)						
	Title	Number of Personnel	Hours Per Person	Total Hours	Rate	Total
	Fishery Biologist (GS-11)	1	120	120	\$56.02	\$6,722
	Biological Technician Crew Leader (GS-7)	1	80	80	\$33.77	\$2,702
	Biological Technician (GS-5)	4	72	288	\$24.35	\$7,013
Labor Subtotal						\$16,437
Travel						
	Per Diem (Camp Rate = \$28/day)	Number of Personnel	Days Per Trip	Trips Per Year	Rate	Total
	6 people x 5 days/trip x 2 trips	6	5	2	\$28.00	\$1,680
Travel Subtotal						\$1,680
Equipment and Supplies						
				Units	Rate	Total
	Generator repair/tune-up (4 hours @ \$79.59/hour)			4	\$79.59	\$318
	Raft trailer maintenance			1	\$31.83	\$32
	Repair raft frames - aluminum welding			3	\$159.18	\$478
	Spark plugs			2	\$7.96	\$16
	Boat Gas (5 gallons per day per boat)			100	\$4.24	\$424
	(2 boats per trip/5 days per trip/2 trips per year)					
Equipment and Supplies Subtotal						\$1,268

Vehicles	Vehicle maintenance and fuel (\$387/month lease = \$12.91 per day based on 30 days in an "average" month + \$0.45/mile)					
		Number of Vehicles	Days or Miles per Vehicle	Total Units	Rate	Total
	3 vehicles for boats 5 days/trip x 2 trips/year	3	10	30	\$12.91	\$387
	1 shuttle vehicle x 2 day/trip x 2 trips/year	1	4	4	\$12.91	\$52
	4 vehicles x 80 miles round-trip = 320 total miles	4	80	320	\$0.45	\$144
Vehicles subtotal						\$583
Task 1 Total						
						\$19,967
Task 2 Electrofish 18-Mile Reach of the Colorado River (one 2-day trip x 4 people trip)						
	Title	Number of Personnel	Hours Per Person	Total Hours	Rate	Total
	Fishery Biologist (GS-11)	1	16	16	\$56.02	\$896
	Biological Technician (GS-5)	2	32	64	\$24.35	\$1,558
Labor Subtotal						\$2,455
Travel - No per diem required for this task						
						\$0
Equipment and Supplies						
				Units	Rate	Total
	Duraframe electrofishing dip nets			2	\$318.36	\$637
	Gas (10 gallons per day per boat) for outboards and generators			20	\$4.24	\$85
Equipment and Supplies Subtotal						\$722
Vehicles	Vehicle maintenance and fuel (\$387/month lease = \$12.91 per day based on 30 days in an "average" month + \$0.45/mile)					
		Number of Vehicles	Days or Miles per Vehicle	Total Units	Rate	Total

2 vehicles for boats 2 days/trip x 1 trip/year		2	2	4	\$12.91	\$52
1 shuttle vehicle x 2 day/trip x 1 trip/year		1	2	2	\$12.91	\$26
3 vehicles x 23 miles round-trip x 2 days		3	23	138	\$0.45	\$62
Vehicles subtotal						\$140
Task 2 Total						
						\$3,316
Task 3. Sample larvae in the Gunnison River (4 days/week for 8 weeks)						
Labor (Federal Salary + Benefits)						
	Title	Number of Personnel	Hours Per Person	Total Hours	Rate	Total
	Biological Technician Crew Leader (GS-7)	1	200	200	\$33.77	\$6,754
	Biological Technician (GS-5)	2	200	400	\$24.35	\$9,740
Labor Subtotal						\$16,494
Travel - No per diem required for this task						
						\$0
Equipment and Supplies						
				Units	Rate	Total
	Boat Gas (5 gallons per day per boat)			640	\$4.24	\$2,714
	Ethanol (95%) two 3-gallon containers			2	\$127.35	\$255
	Sample bottles (\$344.89 per case)			1	\$344.89	\$345
Equipment and Supplies Subtotal						\$3,313
Vehicles						
	Vehicle maintenance and fuel (\$387/month lease = \$12.91 per day based on 30 days in an "average" month + \$0.45/mile)					
		Number of Vehicles	Days or Miles per Vehicle	Total Units	Rate	Total
	Delta to Escalante Section (2 vehicles) \$12.91/day	2	8	16	\$12.91	\$207
	Delta to Escalante Section (2 vehicles) \$0.45/mile	2	640	1280	\$0.45	\$576

Escalante to Bridgeport (2 vehicles) \$12.91/day	2	8	16	\$12.91	\$207
Escalante to Bridgeport (2 vehicles) \$0.45/mile	2	480	960	\$0.45	\$432
Bridgeport to Whitewater (2 vehicles) \$12.91/day	2	8	16	\$12.91	\$207
Bridgeport to Whitewater (2 vehicles) \$0.45/mile	2	320	640	\$0.45	\$288
Whitewater to Redlands Dame (2 vehicles) \$12.91/day	2	8	16	\$12.91	\$207
Whitewater to Redlands Dame (2 vehicles) \$0.45/mile	2	160	320	\$0.45	\$144
Vehicles subtotal					\$2,266
Task 3 Total					
					\$22,073
Task 4. Sample larvae in the Colorado River (2 10-hour days per week for 8 weeks)					
Labor (Federal Salary + Benefits)					
	Title	Number of Personnel	Hours Per Person	Total Hours	Rate
	Fishery Biologist (GS-11)	1	200	200	\$56.02
	Biological Technician (GS-5)	2	128	256	\$24.35
Labor Subtotal					\$17,438
Travel - No per diem required for this task					
					\$0
Equipment and Supplies					
	Streams Type III life jackets			3	\$74.29
	Larval Seines			3	\$212.24
	Hip waders			2	\$53.06
	Chest waders			1	\$132.65
	Boat Gas (5 gallons per day per boat)			200	\$4.24
	Ethanol (95%) one 3-gallon container			1	\$127.35
	Sample bottles (\$325 per case)			1	\$344.89
					\$345

Equipment and Supplies Subtotal						\$2,419
Vehicles						
	Vehicle maintenance and fuel (\$387/month lease = \$12.91 per day based on 30 days in an "average" month + \$0.45/mile)					
		Number of Vehicles	Days or Miles per Vehicle	Total Units	Rate	Total
	Redlands Dam to Redlands Parkway	2	8	16	\$12.91	\$207
	Redlands Dam to Redlands Parkway	2	160	320	\$0.45	\$144
	Redlands Parkway to Loma	2	8	16	\$12.91	\$207
	Redlands Parkway to Loma	2	160	320	\$0.45	\$144
Vehicles subtotal						\$701
Task 4 Total						\$20,557
Task 5. Sample YOY in the Gunnison River (one trip per year)						
Labor (Federal Salary + Benefits)						
	Title	Number of Personnel	Hours Per Person	Total Hours	Rate	Total
	Fishery Biologist (GS-11)	1	48	48	\$56.02	\$2,689
	Biological Technician (GS-5)	3	48	144	\$24.35	\$3,506
Labor Subtotal						\$6,195
Travel - No per diem required for this task						\$0
Equipment and Supplies						
				Units	Rate	Total
	Boat Gas			100	\$4.24	\$424
	Ethanol (95%) one 3-gallon container			1	\$127.35	\$127
Equipment and Supplies Subtotal						\$551

Vehicles	Vehicle maintenance and fuel (\$387/month lease = \$12.91 per day based on 30 days in an "average" month + \$0.45/mile)					
		Number of Vehicles	Days or Miles per Vehicle	Total Units	Rate	Total
	Delta to Escalante Section (2 vehicles) \$12.91/day	2	1	2	\$12.91	\$26
	Delta to Escalante Section (2 vehicles) \$0.45/mile	2	80	160	\$0.45	\$72
	Escalante to Bridgeport (2 vehicles) \$12.91/day	2	1	2	\$12.91	\$26
	Escalante to Bridgeport (2 vehicles) \$0.45/mile	2	60	120	\$0.45	\$54
	Bridgeport to Whitewater (2 vehicles) \$12.91/day	2	1	2	\$12.91	\$26
	Bridgeport to Whitewater (2 vehicles) \$0.45/mile	2	40	80	\$0.45	\$36
	Whitewater to Redlands Dame (2 vehicles) \$12.91/day	2	1	2	\$12.91	\$26
	Whitewater to Redlands Dame (2 vehicles) \$0.45/mile	2	20	40	\$0.45	\$18
Vehicles Subtotal						\$283
Task 5 Total						
						\$7,030
Task 6. Sample YOY in the Colorado River (one trip per year)						
Labor (Federal Salary + Benefits)						
	Title	Number of Personnel	Hours Per Person	Total Hours	Rate	Total
	Fishery Biologist (GS-11)	1	32	32	\$56.02	\$1,793
	Biological Technician (GS-5)	3	32	96	\$24.35	\$2,338
Labor Subtotal						\$4,130
Travel - No per diem required for this task						
						\$0
Equipment and Supplies						
				Units	Rate	Total
	Boat Gas			47	\$4.24	\$199
	Ethanol (95%) one 3-gallon container			1	\$127.35	\$127

Equipment and Supplies Subtotal							\$327
Vehicles							
	Vehicle maintenance and fuel (\$387/month lease = \$12.91 per day based on 30 days in an "average" month + \$0.45/mile)						
		Number of Vehicles	Days or Miles per Vehicle	Total Units	Rate	Total	
	Redlands Dam to Redlands Parkway \$12.91/day	2	1	2	\$12.91	\$26	
	Redlands Dam to Redlands Parkway \$0.45/mile	2	20	40	\$0.45	\$18	
	Redlands Parkway to Loma \$12.91/day	2	1	2	\$12.91	\$26	
	Redlands Parkway to Loma \$0.45/mile	2	20	40	\$0.45	\$18	
	Loma to Stateline \$12.91/day	2	1	2	\$12.91	\$26	
	Loma to Stateline \$0.45/mile	2	36	72	\$0.45	\$32	
Vehicles subtotal						\$146	
Task 6 Total							\$4,603
Task 7. Analyze muscle plug samples to determine selenium concentrations (USFWS - Ecological Services)							
Task 7 Total							\$0
Task 8. Develop population estimate of razorback sucker in Colorado River							
Labor (Federal Salary + Benefits)							
	Title	Number of Personnel	Hours Per Person	Total Hours	Rate	Total	
	Fishery Biologist (GS-11)	1	80	80	\$56.02	\$4,482	
	Bio-statistician (CSU-LFL) funded under SOW 15.	0	0	0	0	\$0	
Labor Subtotal						\$4,482	
Tasks 8 Total							\$4,482

Task 9. Analyze larval fish samples (CSU-LFL). Funded under SOW 15.						
Task 9 Total						\$0
Tasks 10, 11 and 14. Input and analyze data, write annual report, prepare draft and final larval fish report.						
Labor (Federal Salary + Benefits)						
	Title	Number of Personnel	Hours Per Person	Total Hours	Rate	Total
	Fishery Biologist (GS-11)	1	560	560	\$56.02	\$31,371
Labor Subtotal						\$31,371
Tasks 10, 11 and 14 Total						\$31,371
Project Management: Permitting, Coordination, Office and Administrative Support						
Labor (Federal Salary + Benefits)						
	Title	Number of Personnel	Hours Per Person	Total Hours	Rate	Total
	Administrative Officer	1	40	40	\$44.72	\$1,789
	Project Leader	1	40	40	\$85.90	\$3,436
Labor Subtotal						\$5,225
Project Management Total						\$5,225
Totals by Task						
	Task 1 (USFWS-GJFWCO)					\$19,967
	Task 2 (USFWS-GJFWCO)					\$3,316
	Task 3 (USFWS-GJFWCO)					\$22,073
	Task 4 (USFWS-GJFWCO)					\$20,557
	Task 5 (USFWS-GJFWCO)					\$7,030
	Task 6 (USFWS-GJFWCO)					\$4,603
	Task 7 (USFWS-Ecological Services)					\$0

	Task 8 (USFWS-GJFWCO)					\$4,482
	Task 9 (CSU-LFL)					\$0
	Tasks 10, 11 and 14 (USFWS-GJFWCO)					\$31,371
	Project Management (USFWS-GJFWCO)					\$5,225
FY 2021 Grand Total						\$118,625

FY 2022 (Twelfth Year of Multi-year Study)

Deliverables/Due Dates: Annual report for 2022 field work due 11/2022 and complete 2nd larval fishes report.

Budget

Task 1. Electrofish Gunnison River (two 5-day trips x 6 people/trip)						
Labor (Federal Salary + Benefits)						
	Title	Number of Personnel	Hours Per Person	Total Hours	Rate	Total
	Fishery Biologist (GS-11)	1	120	120	\$57.14	\$6,857
	Biological Technician Crew Leader (GS-7)	1	80	80	\$34.45	\$2,756
	Biological Technician (GS-5)	4	72	288	\$24.84	\$7,154
Labor Subtotal						\$16,767
Travel						
	Per Diem (Camp Rate = \$28/day)	Number of Personnel	Days Per Trip	Trips Per Year	Rate	Total
	6 people x 5 days/trip x 2 trips	6	5	2	\$28.00	\$1,680
Travel Subtotal						\$1,680

Equipment and Supplies				Units	Rate	Total
	Generator repair/tune-up (4 hours @ \$81.18/hour)			4	\$81.18	\$325
	Raft trailer maintenance			1	\$32.47	\$32
	Repair raft frames - aluminum welding			3	\$162.36	\$487
	Spark plugs			2	\$8.12	\$16
	Boat Gas (5 gallons per day per boat)			100	\$4.32	\$432
	(2 boats per trip/5 days per trip/2 trips per year)					
Equipment and Supplies Subtotal						\$1,293
Vehicles	Vehicle maintenance and fuel (\$395/month lease = \$13.17 per day based on 30 days in an "average" month + \$0.46/mile)					
		Number of Vehicles	Days or Miles per Vehicle	Total Units	Rate	Total
	3 vehicles for boats 5 days/trip x 2 trips/year	3	10	30	\$13.17	\$395
	1 shuttle vehicle x 2 day/trip x 2 trips/year	1	4	4	\$13.17	\$53
	4 vehicles x 80 miles round-trip = 320 total miles	4	80	320	\$0.46	\$147
Vehicles subtotal						\$595
Task 1 Total						\$20,334
Task 2 Electrofish 18-Mile Reach of the Colorado River (one 2-day trip x 4 people trip)						
	Title	Number of Personnel	Hours Per Person	Total Hours	Rate	Total
	Fishery Biologist (GS-11)	1	16	16	\$57.14	\$914
	Biological Technician (GS-5)	2	32	64	\$24.84	\$1,590
Labor Subtotal						\$2,504
Travel - No per diem required for this task						\$0

Equipment and Supplies				Units	Rate	Total
	Duraframe electrofishing dip nets			2	\$324.37	\$649
	Gas (10 gallons per day per boat) for outboards and generators			20	\$4.32	\$86
Equipment and Supplies Subtotal						\$735
Vehicles						
	Vehicle maintenance and fuel (\$395/month lease = \$13.17 per day based on 30 days in an "average" month + \$0.46/mile)					
		Number of Vehicles	Days or Miles per Vehicle	Total Units	Rate	Total
	2 vehicles for boats 2 days/trip x 1 trip/year	2	2	4	\$13.17	\$53
	1 shuttle vehicle x 2 day/trip x 1 trip/year	1	2	2	\$13.17	\$26
	3 vehicles x 23 miles round-trip x 2 days	3	23	138	\$0.46	\$63
Vehicles subtotal						\$143
Task 2 Total						\$3,382
Task 3. Sample larvae in the Gunnison River (4 days/week for 8 weeks)						
Labor (Federal Salary + Benefits)						
	Title	Number of Personnel	Hours Per Person	Total Hours	Rate	Total
	Biological Technician Crew Leader (GS-7)	1	200	200	\$34.45	\$6,890
	Biological Technician (GS-5)	2	200	400	\$24.84	\$9,936
Labor Subtotal						\$16,826
Travel - No per diem required for this task						\$0
Equipment and Supplies						
	Boat Gas (5 gallons per day per boat)			640	\$4.32	\$2,765
	Ethanol (95%) two 3-gallon containers			2	\$129.90	\$260

	Sample bottles (\$325 per case)			1	\$351.79	\$352
Equipment and Supplies Subtotal						\$3,376
Vehicles	Vehicle maintenance and fuel (\$395/month lease = \$13.17 per day based on 30 days in an "average" month + \$0.46/mile)					
		Number of Vehicles	Days or Miles per Vehicle	Total Units	Rate	Total
	Delta to Escalante Section (2 vehicles) \$13.17/day	2	8	16	\$13.17	\$211
	Delta to Escalante Section (2 vehicles) \$0.46/mile	2	640	1280	\$0.46	\$589
	Escalante to Bridgeport (2 vehicles) \$13.17/day	2	8	16	\$13.17	\$211
	Escalante to Bridgeport (2 vehicles) \$0.46/mile	2	480	960	\$0.46	\$442
	Bridgeport to Whitewater (2 vehicles) \$13.17/day	2	8	16	\$13.17	\$211
	Bridgeport to Whitewater (2 vehicles) \$0.46/mile	2	320	640	\$0.46	\$294
	Whitewater to Redlands Dame (2 vehicles) \$13.17/day	2	8	16	\$13.17	\$211
	Whitewater to Redlands Dame (2 vehicles) \$0.46/mile	2	160	320	\$0.46	\$147
Vehicles subtotal						\$2,315
Task 3 Total						\$22,517
Task 4. Sample larvae in the Colorado River (2 10-hour days per week for 8 weeks)						
Labor (Federal Salary + Benefits)						
	Title	Number of Personnel	Hours Per Person	Total Hours	Rate	Total
	Fishery Biologist (GS-11)	1	200	200	\$57.14	\$11,428
	Biological Technician (GS-5)	2	128	256	\$24.84	\$6,359
Labor Subtotal						\$17,787
Travel - No per diem required for this task						\$0

Equipment and Supplies				Units	Rate	Total
	Streams Type III life jackets			3	\$75.78	\$227
	Larval Seines			3	\$216.48	\$649
	Hip waders			2	\$54.12	\$108
	Chest waders			1	\$135.30	\$135
	Boat Gas (5 gallons per day per boat)			200	\$4.32	\$864
	Ethanol (95%) one 3-gallon container			1	\$129.90	\$130
	Sample bottles (\$351.79 per case)			1	\$351.79	\$352
Equipment and Supplies Subtotal						\$2,466
Vehicles						
	Vehicle maintenance and fuel (\$395/month lease = \$13.17 per day based on 30 days in an "average" month + \$0.46/mile)					
		Number of Vehicles	Days or Miles per Vehicle	Total Units	Rate	Total
	Redlands Dam to Redlands Parkway	2	8	16	\$13.17	\$211
	Redlands Dam to Redlands Parkway	2	160	320	\$0.46	\$147
	Redlands Parkway to Loma	2	8	16	\$13.17	\$211
	Redlands Parkway to Loma	2	160	320	\$0.46	\$147
Vehicles subtotal						\$716
Task 4 Total						
						\$20,969
Task 5. Sample YOY in the Gunnison River (one trip per year)						
Labor (Federal Salary + Benefits)						
	Title	Number of Personnel	Hours Per Person	Total Hours	Rate	Total
	Fishery Biologist (GS-11)	1	48	48	\$57.14	\$2,743
	Biological Technician (GS-5)	3	48	144	\$24.84	\$3,577
Labor Subtotal						\$6,320

Travel - No per diem required for this task										\$0
Equipment and Supplies								Units	Rate	Total
	Boat Gas							100	\$4.32	\$432
	Ethanol (95%) one 3-gallon container							1	\$129.90	\$130
Equipment and Supplies Subtotal										\$562
Vehicles	Vehicle maintenance and fuel (\$395/month lease = \$13.17 per day based on 30 days in an "average" month + \$0.46/mile)									
					Number of Vehicles	Days or Miles per Vehicle	Total Units	Rate	Total	
	Delta to Escalante (2 vehicles) \$13.17/day				2	1	2	\$13.17	\$26	
	Delta to Escalante (2 vehicles) \$0.46/mile				2	80	160	\$0.46	\$74	
	Escalante to Bridgeport (2 vehicles) \$13.17/day				2	1	2	\$13.17	\$26	
	Escalante to Bridgeport (2 vehicles) \$0.46/mile				2	60	120	\$0.46	\$55	
	Bridgeport to Whitewater (2 vehicles) \$13.17/day				2	1	2	\$13.17	\$26	
	Bridgeport to Whitewater (2 vehicles) \$0.46/mile				2	40	80	\$0.46	\$37	
	Whitewater to Redlands Dame (2 vehicles) \$13.17/day				2	1	2	\$13.17	\$26	
	Whitewater to Redlands Dame (2 vehicles) \$0.46/mile				2	20	40	\$0.46	\$18	
Vehicles Subtotal										\$289
Task 5 Total										\$7,171
Task 6. Sample YOY in the Colorado River (one trip per year)										
Labor (Federal Salary + Benefits)										
	Title	Number of Personnel	Hours Per Person	Total Hours	Rate	Total				
	Fishery Biologist (GS-11)	1	32	32	\$57.14	\$1,828				

	Biological Technician (GS-5)	3	32	96	\$24.84	\$2,385
Labor Subtotal						\$4,213
Travel - No per diem required for this task						\$0
Equipment and Supplies				Units	Rate	Total
	Boat Gas			47	\$4.32	\$203
	Ethanol (95%) one 3-gallon container			1	\$127.35	\$127
Equipment and Supplies Subtotal						\$330
Vehicles	Vehicle maintenance and fuel (\$395/month lease = \$13.17 per day based on 30 days in an "average" month + \$0.46/mile)					
		Number of Vehicles	Days or Miles per Vehicle	Total Units	Rate	Total
	Redlands Dam to Redlands Parkway \$13.17/day	2	1	2	\$13.17	\$26
	Redlands Dam to Redlands Parkway \$0.46/mile	2	20	40	\$0.46	\$18
	Redlands Parkway to Loma \$13.17/day	2	1	2	\$13.17	\$26
	Redlands Parkway to Loma \$0.46/mile	2	20	40	\$0.46	\$18
	Loma to Stateline \$13.17/day	2	1	2	\$13.17	\$26
	Loma to Stateline \$0.46/mile	2	36	72	\$0.46	\$33
Vehicles subtotal						\$149
Task 6 Total						\$4,692
Task 7. Analyze muscle plug samples to determine selenium concentrations (USFWS - Ecological Services)						
Task 7 Total						\$0
Task 9. Analyze larval fish samples (CSU-LFL). Funded under SOW 15.						

Task 9 Total						\$0
Tasks 10 and 11. Input and analyze data, write annual report.						
Labor (Federal Salary + Benefits)						
	Title	Number of Personnel	Hours Per Person	Total Hours	Rate	Total
	Fishery Biologist (GS-11)	1	160	160	\$57.14	\$9,142
Labor Subtotal						\$9,142
Tasks 10 and 11 Total						\$9,142
Project Management: Permitting, Coordination, Office and Administrative Support						
Labor (Federal Salary + Benefits)						
	Title	Number of Personnel	Hours Per Person	Total Hours	Rate	Total
	Administrative Officer	1	40	40	\$45.61	\$1,824
	Project Leader	1	40	40	\$87.62	\$3,505
Labor Subtotal						\$5,329
Project Management Total						\$5,329
Totals by Task						
	Task 1 (USFWS-GJFWCO)					\$20,334
	Task 2 (USFWS-GJFWCO)					\$3,382
	Task 3 (USFWS-GJFWCO)					\$22,517
	Task 4 (USFWS-GJFWCO)					\$20,969
	Task 5 (USFWS-GJFWCO)					\$7,171
	Task 6 (USFWS-GJFWCO)					\$4,692
	Task 7 (USFWS-Ecological Services)					\$0
	Task 9 (CSU-LFL)					\$0

	Tasks 10 and 11 (USFWS-GJFWCO)					\$9,142
	Project Management (USFWS-GJFWCO)					\$5,329
FY 2022 Grand Total						\$93,537

IX. Budget Summary:

FY-2018	
USFWS- GJFWCO	\$ 86,526
USFWS-ES	\$ 0
Larval Fish Lab	<u>\$ 0</u>
2018 Total	\$ 86,526

FY-2019	
USFWS- GJFWCO	\$ 88,223
USFWS-ES	\$ 0
Larval Fish Lab	\$ 0
2019 Total	\$ 88,223

FY-2020	
USFWS- GJFWCO	\$109,740
USFWS-ES	\$ 0
Larval Fish Lab	<u>\$ 0</u>
2020 Total	\$109,740

FY-2021	
USFWS- GJFWCO	\$118,624
USFWS-ES	\$ 0
CSU-LFL	<u>\$ 0</u>
2021 Total	\$118,624

FY-2022	
USFWS- GJFWCO	\$ 93,537
USFWS-ES	\$ 0
Larval Fish Lab	<u>\$ 0</u>
2022 Total	\$ 93,537

5-Year Total = \$496,650

X. Reviewers: Program staff and Biology Committee

XI. References

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