

**Rearing Endangered Fish at the
Horsethief Canyon Native Fish Facility Ponds
for Stocking into the San Juan River**

**Draft Fiscal Year FY 2021 Project Proposal
Updated: 25 March 2020**

Submitted to
Bureau of Reclamation

From
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Current Contract or Agreement number(s):
R17PG00084 for USFWS – Grand Junction, CO

1 October 2020 to 30 September 2021

Introduction

Along with the workplan entitled, “Razorback Sucker Augmentation/NAPI Pond Management,” this workplan is intended to supply the San Juan River Basin Recovery Implementation Program (SJRBRIP) with a reliable source of endangered Razorback Sucker (*Xyrauchen texanus*) with which to help restore a self-sustaining population via annual fall stocking events.

The Ouray National Fish Hatchery – Grand Valley Unit (NFH-GVU) consists of several distinct facilities located in and around Grand Junction, CO. One of these facilities is the Horseshoe Canyon Native Fish Facility (HCNFF) pond complex (about 7½ miles west of the main hatchery building) near Fruita, CO. The other facility used for this workplan is the 24-Road Hatchery, an intensive water reuse hatchery building, utilizing a municipal water source, thus insuring good water quality, clarity, and freedom from parasites.

The HCNFF consists of 22 ponds, ranging in size from 0.1 to 0.5 surface acres, with a total surface acreage for the entire facility of 6.2 acres. Each pond is 5-6 feet deep and is equipped with a fabric liner to prevent seepage. Each pond also has a concrete kettle and drain structure to facilitate draining and concentrating of fish for ease of harvest. This facility is a multi-species broodstock, production, and rearing facility dedicated to rearing three of the endangered Colorado River fishes: Razorback Sucker, Humpback Chub (*Gila cypha*), and Bonytail (*Gila elegans*).

Until 2012, the operation and maintenance (O&M) of the entire Ouray NFH-GVU complex (Project 29a: Operation and Maintenance of Ouray National Fish Hatchery – Grand Valley Unit) was funded by Upper Colorado River Endangered Fish Recovery Program (UCREFRP). On 25 March 2010, the Coordination Committee of the SJRBRIP voted to cost-share 1/6 of the operation and maintenance costs for the HCNFF pond complex. This equates to a total of one surface acre of pond rearing and production space (either two 0.5 acre ponds, or four 0.25 acre ponds).

Methods

Currently, the one surface acre of grow-out ponds allotted to the SJRBRIP is being used to rear Razorback Sucker that are progeny of 15-20 paired matings of appropriate genetic lineage, produced annually from Razorback Sucker broodstock being held at HCNFF. Spawning takes place at the HCNFF each spring around mid-April, depending upon ambient water temperatures. After spawning, fertilized eggs are transported to the 24-Road Hatchery building where they are reared in flow-through egg jars until they hatch into larvae. Several weeks after spawning, larval Razorback Sucker are then stocked back out into grow-out ponds at HCNFF for the remainder of their age-0 growing season. At the end of their age-0 growing season, the Razorback Sucker grow-out ponds are drained and the young fish are transported back into the 24-Road hatchery building where they continue to be fed and reared in a warm, climate-controlled, indoor environment overwinter, thus allowing fish to continue to grow even during the coldest months of the year.

Several months after they have been brought back into the hatchery, young Razorback Sucker are implanted with PIT tags. This usually happens at 100-200 mm TL (usually in late January or early February). PIT-tagging young Razorback Sucker several months after they are transferred to the hatchery building (i.e., after they have settled down from

being moved into the hatchery building from the HCNFF grow-out ponds) helps reduce stress on these animals and allows them to have abundant time to heal in the hatchery building after being PIT-tagged, but prior to being stocked back into the HCNFF grow-out ponds for their age-1 growing season (which usually happens in late March). Prior to being PIT-tagged, fish are taken off of feed for at least 48 hours and aren't fed again for at least 24 hours following PIT-tagging. This helps reduce stress as well as allowing the fish's intestinal tract to empty and retract, thus reducing the possibility of accidentally puncturing an intestine during PIT tag implantation. After PIT-tagging, fish are monitored in circular hatchery tanks for both PIT tag loss and delayed mortality (both tag loss and mortality due to PIT-tagging are very low, averaging < 0.5% annually).

During the spring of their age-1 year these Razorback Sucker, now about 200 mm TL, are released back into the grow-out ponds. They are not handled again until the fall of that same year. When ponds are harvested, every individual Razorback Sucker is measured and scanned for a PIT tag (a subset are also weighed). This happens at the end of the age-1 growing season (October/November), just prior to stocking. Harvest operations consist of taking fish off of feed 48 hours before harvest, draining grow-out ponds and passively gathering fish into the concrete kettles as the pond drains, anesthetizing fish (using MS-222), measuring fish (all fish), weigh fish (a subset of fish from each pond; minimum of 50 fish per pond), and checking fish for PIT tags. If a PIT tag is found to be missing at this point (which is relatively rare), then a new PIT tag is implanted prior to the fish being loaded for transport and stocking into the San Juan River. Fish are lifted from grow-out ponds to the stocking truck using a fish bucket suspended on the terminal end of a Palfinger brand knuckle boom crane. They are then transported to the appropriate stocking site, tempered following appropriate USFWS protocols, and stocked as either a hard- or soft-release, as per directions from the SJRBRIP and the U. S. Fish and Wildlife Service's New Mexico Fish and Wildlife Conservation Office (NMFWCO).

Daily operation and maintenance (O&M) of the HCNFF ponds and the 24-Road hatchery includes regularly checking and making appropriate adjustments to water quality (dissolved oxygen, pH, nitrates/nitrites, etc.), maintenance, cleaning, and replacement of air distribution systems (air stones, air pads, oxygen cylinders), calculating proper feed ratios and distributing proper types and sizes of feed based on fish life stage, size, and pond/tank densities, cleaning of fish ponds/tanks, checking fish for diseases and applying appropriate treatments for sick/infected fish when necessary, maintenance of pumps, filters (e.g., fluidized sand, drum, UV), and air distribution systems, maintenance of vehicles, equipment and grounds, scheduling and performing USFWS and state-mandated annual fish health inspections and Aquatic Invasive Species (AIS) inspections, applying for and obtaining state fish importation permits, collection and QA/QC of PIT tag database files, submission of data files to the SJRBRIP, preparation of annual reports, etc.

Products/Deliverables

PIT tag files will include all Razorback Sucker handled and scanned at time of pond harvest (including all fish that were re-tagged), immediately prior to transport and stocking. Following QA/QC of the data, this file is submitted the SJRBRIP and the NMFWCO. The SJRBRIP has eliminated stocking any Razorback Sucker that are < 300 mm TL. However, the SJRBRIP is actually getting age-1 fish (i.e., after 2 full growing seasons = approx. 18 months old) from HCNFF that are meeting the Upper Colorado River Basin's minimum size requirements of ≥ 350 mm TL. The stocking size of most

Razorback Sucker sent to the San Juan River from HCNFF is considerably larger than the minimum 300 mm TL target.

It is anticipated that 2,000-4,000 Razorback Sucker (all \geq 300 mm TL) can be reared annually in the one surface acre of ponds allotted to the SJRBRIP. Razorback Sucker of the appropriate target stocking size will be made available to the SJRBRIP in October/November of each calendar year for stocking (after the annual fall fish community monitoring studies are completed). All stockings of Razorback Sucker will be coordinated with personnel from the SJRBRIP office and the NMFWCO.

In fall 2019, a total of 2,209 Razorback Sucker from the HCNFF were stocked into the San Juan River. Their mean total length at stocking was 322 mm. There have now been five years (representing the fall 2013-2017 stockings) during which Razorback Sucker stocked from the HCNFF have been available for recapture during the annual fall Sub-Adult and Adult Large-Bodied Fish Community Monitoring (“Adult Monitoring”) study. During the fall 2017 Adult Monitoring study, Razorback Sucker from HCNFF accounted for 47% of all Razorback Sucker collected (the fall Adult Monitoring study was not performed in 2018 or 2019).

Changes in Future Management Strategies for HCNFF

The SJRBRIP will have the option to change the management approach and species being reared in their one surface acre of pond space as they see fit, but will need to coordinate such changes with Ouray NFH-GVU hatchery staff, allowing enough lead time to prepare for changes in importation/exportation permitting, purchasing of feed proper for the sizes and species of fish being reared, etc. Changes in numbers or sizes of fish desired, species being reared, etc. may lead to adjustments in future years’ budgets. For instance, if the SJRBRIP decides to rear Colorado Pikeminnow (a species not currently being held on station at Ouray NFH-GVU), appropriate lead time will be needed to arrange obtaining young fish from another facility.

Cost Share with Upper Colorado River Endangered Fish Recovery Program

The SJRBRIP’s Coordination Committee voted to cost-share 1/6 of the O&M costs for the HCNFF pond complex. However, the O&M of the HCNFF ponds is in reality part of a much larger picture of the overall O&M of the Ouray NFH-GVU itself. So, the following staffing breakdowns were used to determine the overall O&M of the entire Ouray NFH-GVU:

- 1) 24-Road Hatchery building will require 100% staffing for 6 months of the year
- 2) 24-Road Hatchery building will require 50% staffing for the other 6 months of the year
- 3) The HCNFF ponds will require 40% staffing for 6 months of the year
 - a. One-sixth of the O&M of the HCNFF ponds will be paid for by the SJRBRIP

So, for areas where there are shared costs at the HCNFF ponds, an example of a \$100 cost/year to the UCREFRP, would cost the SJRBRIP:

- \$100 (full year cost) X .50 (the ½ year that the HCNFF ponds operate) = \$50
- \$50 (the ½ year that the HCNFF ponds operate) X .40 (40% staffing) = \$20
- \$20 (1/2 year at 40% staffing) X 0.167 (1/6 cost to SJRBRIP) = \$3.34

So, the dollar cost to SJRBRIP is \$3.34 per \$100 (3.34%) of UCREFRP Project 29a. In other words, take the actual dollar cost to UCREFRP of Project 29a X 0.0334 for all shared costs.

NOTE: There are also costs included in the budget that are unique to the SJRBRIP alone. These costs will not be prorated, but charged at 100% rate to the SJRBRIP (see budget for details).

Possible Outyear Cost Adjustments

If the SJRBRIP decides to change stocking strategies (species, sizes, times of year at which fish are being stocked, etc.) outyear budgets may need to be adjusted to account for this. The costs presented in this workplan represent the best estimates we can develop, based on the species, numbers, and timing of fish to be stocked from our facility to the San Juan River.

FY-2021 Budget:

SJRBRIP SOW # 7: Rearing Endangered Fish at the Horsethief Canyon Native Fish Facility Ponds for Stocking into the San Juan River

(Based on an anticipated FY-2021 costs)

Costs Shared by UCREFRP and SJRBRIP (i.e. O&M Costs)

	# People	# Hours/Person	Rate/Hour	UCREF RP Project 29a Extended Cost to UCREFRP	SJRBRIP SOW 7 Cost	Notes
Personnel/Labor Costs (Federal Salary + Benefits)						
Principal Biologists (GS-11)	2	1,960	\$53.84	\$211,053	\$7,049	Approx. 130 total hours covered
Biological Technician (GS-7)	1	1,960	\$32.46	\$63,622	\$2,125	Approx. 65 total hours covered
Biological Technicians (GS-5)	1	1,960	\$23.40	\$45,864	\$1,532	Approx. 65 total hours covered
Overtime:						
Biological Technician (GS-7)	1	120	\$48.69	\$5,843	\$195	Approx. 4 total hours of over
Biological Technician (GS-5)	1	120	\$35.10	\$4,212	\$141	Approx. 4 total hours of over
Labor Subtotal				\$330,593	\$11,042	
Permitting; Coordination; Data Input, Analysis, Management & Presentation; Report Writing; Office & Administrative Support (Federal Salary + Benefits)						
Project Leader (GS-14)	1	320	\$82.57	\$26,422	\$883	Approx. 10.7 total hours covered

Administrative Officer (GS-9)	1	320	\$42.98	54	\$459	\$13,7
				\$40,1	\$1,34	
Suopport Staff Subtotal				76	2	

Operations (Fish Food, Chemicals and Fertilizer, Hatchery Supplies, Fuel and Vehicles)

Fish Food (see Notes for details)	Lbs	Price/lb	Extended Cost to UCREF RP	SJRB RIP Cost	Based on a quote from Range order will last us ~90 days. W
Rangen # 0 Starter	1,000	\$1.35	\$1,350	\$45	
Rangen # 1 Starter	1,600	\$1.35	\$2,160	\$72	
Rangen # 2 Starter	2,400	\$1.35	\$3,240	\$108	
Razorback Diet (1.2 mm)	8,000	\$1.11	\$8,880	\$297	
Razorback Diet (2.0 mm)	16,000	\$1.03	\$16,480	\$550	
Razorback Diet (3.0 mm)	48,000	\$0.97	\$46,560	\$1,555	
Fish Food Subtotal			\$78,670	\$2,628	

Chemicals and Fertilizer (see Notes for details)	Quantity	Price/Unit	Extended Cost to UCREF RP	SJRB RIP Cost	Exact use of the money in th a given year. Funds for a "typ
Sodium Bicarbonate (pH increaser)	80	\$70	\$5,600	\$187	50-lb bags
Copper Sulfate (pellets)	10	\$95	\$950	\$32	50-lb bags
Copper Sulfate (10% solution)	50	\$77.50	\$3,875	\$129	Gallons
Spartan Sparquat 256 Germicidal Cleaner	10	\$30	\$300	\$10	Gallons
Chloram-X (dechlorinater)	16	\$90	\$1,440	\$48	10-lb buckets

Finquel brand MS-222 (fish anesthetic)	2	\$450	\$900	\$30	1-kg bottles
Chloramine-T (controls bacterial gill disease)	2	\$440	\$880	\$29	55-lb containers
Formalin/Parasite-S (parasite controller)	4	\$275	\$1,100	\$37	55-gallon drums
			0		
			\$1,000		
	1	1,000	0	\$33	Specialized Haz-Mat Shipping
Denatured ethyl alcohol	8	\$95	\$760	\$25	5-gallon jugs
Distilled water	10	\$30	\$300	\$10	2-gallon jugs
Stress Coat (slime coat replacement)	2	\$145	\$290	\$10	5-gallon containers
No-Foam De-Foamer	6	\$35	\$210	\$7	Gallons
Weed killer (2,4-D)	40	\$35	\$1,400	\$47	Quarts of concentrate
			0		
Weed killer (Roundup)	10	\$180	\$1,800	\$60	Gallons of concentrate
			0		
Aquashade (water colorant)	50	\$60	\$3,000	\$100	Gallons
			0		
Dimilin 25W (for anchor worm control)	20	\$250	\$5,000	\$167	5-lb boxes
			0		
			\$28,805		
Chemicals and Fertilizer Subtotal				\$962	

	Quantity	Price/Unit	UCREF RP	Extended Cost to UCREF RP	SJRB RIP Cost	Exact use of the money in thi
Hatchery Supplies and Equipment Repair and Replacement (see Notes for details)						
Egg hatching jars	5	\$85	\$425	\$2,700	\$14	Model J30
24-hr belt feeder	10	\$270	0	0	\$90	Repair/replace 10 units annu
Waders	3	\$75	\$225	\$1,500	\$8	Replace 3 pair annually
Duraframe dip nets	5	\$300	0	\$1,500	\$50	Replace 5 annually
Digital scale repair, replace battery, recalibrate	3	\$500	0	0	\$50	Digital scale repair, replace b
YSI brand water chemistry meters	1	\$2,000	0	\$2,000	\$67	Measures dissolved oxygen,
Hatchery building HVAC system service	1	\$1,200	0	\$1,200	\$40	One service annually
Service fish food cooler refrigeration unit	1	\$750	\$750	0	\$25	One service annually
Service hatchery building backup generator	1	\$700	\$700	0	\$23	One service annually

Portable water pump maintenance/service	1	\$1,700	\$1,700	\$57	Labor & parts to rebuild/repl
One hatchery motor/pump set/year service	1	\$4,000	\$4,000	\$134	Labor & parts to rebuild/repl
Fluorescent hatchery lights	1	\$2,200	\$2,200	\$73	One service annually to repla
One purchase of tank cleaning supplies	1	\$235	\$235	\$8	Scotch-Brite pads, scrubbing
Replace hand tools used for maintenance	1	\$400	\$400	\$13	Replace tools as needed: Scre
Plumbing supplies	1	\$2,000	\$2,000	\$67	Numerous purchases through
Refill compressed oxygen cylinders	50	\$50	\$2,500	\$84	Refill 50 compressed oxygen
Buy new 0.4" air stones	20	\$50	\$1,000	\$33	Replace twenty 0.4" air stone
Buy new tubing, couplers, hose clamps	1	\$500	\$500	\$17	Buy new tubing, couplers, ho
New pond screens	10	\$300	\$3,000	\$100	Buy PVC lumber and metal m
New pond flash boards	100	\$7	\$700	\$23	New redwood pond boards (
Purchase new Koch rings	1	\$500	\$500	\$17	Purchase new Koch rings for
Fine grain sand	1	\$2,000	\$2,000	\$67	One pallet (twenty 80-lb bag
			\$31,735	\$1,060	
		Hatchery Supplies Subtotal			

Office Supplies	Quantity	Price/Unit	Extended Cost to UCREP RP	SJRB RIP Cost	Staples, copier paper, pencils
			\$1,500		
		Office Supplies Subtotal		\$50	

Vehicles (maintenance & repair) and fuel	Quantity	Price/Unit	Extended Cost to UCREP RP	SJRB RIP Cost	Vehicles: GSA-lease rate. Bas
Hatchery pickup truck vehicle lease charges	12	\$365	\$4,380	\$146	12 months vehicle lease X \$3

Hatchery pickup mileage charges	16,425	\$0.42	\$6,899	\$230	24-Road Hatchery building to
Diesel fuel for Kubota tractor	1	\$250	\$250	\$8	One 55-gallon drum of diesel
Diesel fuel For back-up generator at hatchery	25	\$4	\$100	\$3	25 gallons annually @ \$4.00/
Repair/replace shocks, struts, brakes	1	\$800	\$800	<u>\$27</u>	One service/repair annually =
			\$12,429	\$415	
			\$153,139	\$5,115	
			\$523,908	\$17,499	

Costs Unique to SJRBRIP (Harvest, PIT-Tagging & Stocking Costs)

Personnel/Labor Costs (Federal Salary + Benefits)	Total Numer of Man Hours	Rate/Hr	SJRBRIP Cost	Notes
Pond Harvest, PIT-Tagging, Stocking and Database Management				
Principal Biologist (GS-11)	80	\$53.84	\$4,307	1) 2 days X 2 people/day for f
Biological Technician (GS-7)	136	\$32.46	\$4,415	1) 2 days X 1 person for fish h
Biological Technician (GS-5)	320	\$23.40	<u>\$7,488</u>	1) 2 days X 3 people/day for f
			\$16,210	
Labor Costs Unique to SJRBRIP Subtotal				

	# People	# Nights (or Days)	Night (or Day) \$124.0	Rate Per SJRBRIP Cost \$1,240	
Lodging and Per Diem (Based on Published FY-2020 GSA Per Diem Rates)					
Lodging	2	5	0	0	5 nights lodging in Cortez, Co
Per Diem	2	10	\$61	<u>\$1,220</u>	10 days hotel rate (Cortez, CO
				\$2,460	
					Lodging and Per Diem Subtotal

	Quantity	Price/ Unit	SJRBRIP Cost \$1,652	
Fuel				
Diesel fuel for stocking truck	413	\$4	2	Stocking truck (gets ~8 miles
Fuel for water pump for tempering fish	20	\$4	<u>\$80</u>	91 Octane fuel for water pum
			\$1,732	
				Fuel Subtotal

Subtotal for Costs Unique to SJRBRIP \$20,402

<u>Total of All Costs Incurred by SJRBRIP</u>	\$37,900
USFWS-Ouray NFH-GVU (Grand Junction, CO) Total	\$1,137
USFWS-Interior Region 7 Administrative Overhead (3.00%)	\$39,037
USFWS-Interior Region 7 Total	\$37,900

<u>Cost/Fish Comparison</u>	Quantity	Price/ Fish
Workplan total cost in FY-2021 = \$39,037		
Estimated production = 2,000-4,000 fish		
For 2,000 fish produced/delivered	2,000	\$19.52
For 3,000 fish produced/delivered	3,000	\$13.01
For 4,000 fish produced/delivered	4,000	\$9.76