RECOVERY PROGRAM Recovery Program Project Number: 131 (22a-3)
FY 2016-2017 SCOPE OF WORK for:
Black Rocks Humpback Chub Population Estimate

Reclamation Agreement number: R13PG40018
Reclamation Agreement term: June 3, 2013 – Sept. 30, 2017

Note: Recovery Program FY16-17 scopes of work are drafted in May 2015. They often are revised before final Program approval and may subsequently be revised again in response to changing Program needs. Program participants also recognize the need and allow for some flexibility in scopes of work to accommodate new information (especially in nonnative fish management projects) and changing hydrological conditions.

Lead agency: Fish and Wildlife Service
Colorado River Fishery Project – Grand Junction (CRFP-GJ)

Submitted by: Travis Francis, Fishery Biologist
Dale Ryden, Project Leader
Address: 445 West Gunnison Ave.
Grand Junction, CO 81501
Phone: (970) 628-7204
FAX: (970) 628-7217
Email: travis_francis@fws.gov
dale_ryden@fws.gov

Date Last Modified: 8/26/2015 4:15:00 PM

Category:
__ Ongoing project
X Ongoing-revised project
__ Requested new project
__ Unsolicited proposal

Expected Funding Source:
X Annual funds
__ Capital funds
__ Other *[explain]*

I. Title of Proposal: **Population Estimate of Humpback Chub in Black Rocks.**

II. Relationship to RIPRAP: Colorado River Action Plan: Mainstem
V. Monitor Populations.
C.1. Estimate Humpback Chub Populations in Black Rocks.

III. Study Background/Rationale and Hypotheses: Robust population estimates are now critical to monitor recovery of the humpback chub population (USFWS 2001). Recovery goals require estimates of population size at regular intervals to measure population response to management activities under the Recovery Program. A population estimate was made for the 1998-2000 time period (McAda 2002) a second estimate was made for 2003 - 2004 (McAda 2007) a third estimate was conducted 2007-2008 (Francis and McAda 2011), and a fourth estimate was conducted in 2011-2012 (Francis, in prep). This scope of work identifies the work necessary to complete a fifth estimate of population size for humpback chub in Black Rocks in 2016-2017.

IV. Study Goals, Objectives, End Product(s):

A. Goals:

1. Estimate size and recruitment of the humpback chub population in Black Rocks.

2. Evaluate young-of-year (YOY) *Gila* year-class strength and determine what habitats and capture techniques are most productive for capturing YOY.

B. Objectives:

1. Use mark-recapture to estimate the population size (including adults $\geq$ 200 mm TL) and recruitment (i.e., juveniles 150-199 mm TL) of humpback chub in Black Rocks.

2. Describe population structure of humpback chub in Black Rocks by analyzing length-frequency distributions.

3. Monitor and describe relative condition of the chub populations.

4. Determine and describe YOY *Gila* hatch dates and year-class strength (densities) if the numbers of fish collected warrant such analysis.

C. End Products:

1. Complete final report describing population size and structure of humpback chub in Black Rocks; winter, spring, summer 2018. Draft report December 15, 2018. Final Report, March 15, 2019.

V. Study Area: Upper Colorado River Basin – Black Rocks area (RM 135.5-136.5).

VI. Study Methods/Approach: :

The Recovery Program (2002) summarized population estimates conducted through 2001 and made recommendations for sampling methodologies for future work. The study methodology outlined here corresponds to those recommendations.

Conduct four intensive 4-day (3 nights) sampling efforts in Black Rocks between mid-September and late October in 2016 and 2017, with intervals of 1-2 weeks between samples. Capture as many adult-size chubs as possible using the most efficient gear for handling as many fish as possible for the effort expended. Sampling will encompass the entire length of Black Rocks occupied by humpback chub to ensure that all fish have an equal chance of being captured.

Based on previous field efforts the most effective gear is 1-in inner mesh trammel nets (McAda 2002; Chart and Lentsch 1999). However, there is some concern that trammel nets can produce injuries that might lead to delayed mortality if not used carefully (McAda 2002). To reduce stress to humpback chub, sampling will be done in fall as temperatures are falling in the

river (mid-September through October). Trammel nets will be run every hour to the extent possible, with 1.5 hr as the absolute maximum length of set. Fewer nets may be set than during the previous study to ensure that maximum length of set is not exceeded.

Extensive sampling will also be done with electrofishing, seining and with baited hoop nets. The extra sampling will especially target chubs < 200 mm TL to estimate population size of fish about to recruit into the adult population. Recapture rates for fish this size are low, so catch per effort may have to be relied on to estimate recruitment rates. The extra sampling will also be used to evaluate techniques that might supplement or replace (if deemed necessary) trammel netting and reduce potential stress to the fish.

YOY *Gila* will be collected during four overnight trips in late July and August using the methods described in the Interagency Standardized Monitoring Program Handbook (ISMP, USFWS 1987). Sample sites will include the Colorado River above Black Rocks proper (as far upstream as Mee Canyon, RM 138.3), sites within Black Rocks and sites below Black Rocks extending downstream as far as Westwater Wash (RM 124.8). Larval and YOY fish will be collected with a beach seine (4.6 m in length, 1.5 mm mesh) or a one-man seine (1 m in length, 0.8 mm mesh). Physical data (site length and width, depth, temperature, and secchi measurements) will be collected at each collection site. Spawning date (subtract 6 days from hatch date, Muth et al 1985, Marsh 1985) will be calculated from a back calculated hatch date (Muth 1990) that will be generated from YOY total lengths (collected in the field) which will be converted to standard lengths (SL, required to calculate days after hatch) by using the following regression:

SL = 2.02 + .7205(TL)

This YOY *Gila* work should provide insight on where and how to proceed with future investigations into environmental variables (abiotic and biotic) that may limit or promote these species ability to successfully produce YOY and recruit fish into the adult life stage.

All specimens captured will be identified to species using criteria described by Douglas et al. (1989, 1998). Careful examination and use of specific criteria will be especially important for fish < 200 mm which can be difficult to distinguish to species. After handling, all chubs will be treated in a salt dip (1.5%, ~20 min) before release. In addition, treatment with a commercial fungicide (200 ppm, ~1 hr) will be explored. However, use of the fungicide will require holding the fish in a tank with aeration for about one hour before release.

All Colorado pikeminnow, humpback chub, and roundtail chub captured will have their total length (mm) and weight (g) measured. All Colorado pikeminnow, humpback chub and roundtail chub, greater than 160 mm total length, will be PIT tagged. All sympatric fishes collected during all sampling efforts will be identified and enumerated.

Capture-recapture data for humpback chub will be placed into a matrix and run through program MARK. A population estimate will be calculated using the model most suitable for the sampling methods used. Survival rates may also be estimated. Population trends and population size structure will be determined using standard techniques described in Recovery Program (2002). Analysis of similar data collected during 1998 to 2008 indicated that capture probabilities (P^) ranged from 0.04-0.14 and coefficient of variation (CV) ranged from 0.13-

0.98 (Francis and McAda 2011). These parameters varied with catch rates and number of sampling trips, but the current study will attempt to produce P^s > 0.07 and CVs of 0.25.

VII. Task Description and Schedule:

1. Sample humpback chubs in Black Rocks; fall 2016 (spanning FY 2016 and FY 2017); and fall 2017 (spanning FY 2017 and FY 2018).

2. Sample YOY *Gila* from Mee Canyon to Westwater Wash; July and August 2016; and July and August 2017.

3. Compile data annually, prepare preliminary and annual reports.

4. Complete final report describing population size and structure of humpback chub in Black Rocks during winter, spring, and summer 2018. Estimates will include numbers of adults ($\leq$ 200 mm TL) in the population, as well as recruitment by juveniles (150-199 mm TL) and young-of-year class strength. Draft report by December 15, 2018. Final report by March 15, 2019.

VIII. Deliverables, Due Dates, and Budget by Fiscal Year:

FY 2016

Tasks 1, 3 and 4

FY 2016									
	Labor	Title	# of employees	Hours	Reg. Rate	OT Hours	OT Rate		Total
		Project Leader GS-14	1	80	83.42	0	0		6673.6
		Administrative Officer GS-09	1	80	44.72	0	0		3577.6
		Fishery Biologist GS-11	1	280	49.36	0	0		13820.8
		Crew leader Tech. GS-07	1	220	33.7	64	50.54		10648.56
		Biological Tech. GS-05	2	220	24.96	64	37.44		15774.72
	Labor Subtotal								50495.28
	Equipment & Supplies	Category	Item	Quantity	Unit	Rate	Duration	PIT tag Contract[1]	Total
		Office Supplies	FEDEX charges for Biological samples						100
		Office Supplies	Rite in the rain paper						50
		Office Supplies	Data clipboards						50
		Office Supplies	Ink Cartridges and paper						200
		Office Supplies	Cell, SAT, and Office phone service						200
		Field Equipment[1]	Submersible PIT Antenna[1]	5	each	5000		25000	
		Field Equipment	GSA vehicle lease per month	2	each	364.97	2		1459.88
		Field Equipment	Mileage	2000	miles	0.33	1		660
		Field Equipment	Boat Gasoline 91 octane	240	gallons	4.37	1		1048.8
		Field Equipment	Trammel Nets	6	each	223	1		1338
		Field Equipment	Motor, Generator, Boat Repair (Based on 10 year depreciation and replacement costs)	1	see basis	1,300	1		1300
		Field Equipment	*Misc. Field Supplies See Justification	1	see basis	1,049	1		1049
									7455.68
		Type Of Travel	Number of Travelers	Hotel Costs	Per Diem	TAV Fee	# days	# of trips	Total
		Camping	4	0	28	15	17	4	2864
		Meetings/ Lakewood 2015 GSA Rate	2	163	66	15	3	1	1108
									3972
								PIT tag Contract[1]	Grand Total
	USFWS Grand Jct.							25000	61923
	CSU Larval Fish Lab	Statistical Assistance							5000
									66923
	[1] Funded through the Program's PIT tag funds from B.O.R.								

Task 2

YOY Gila sampling									
	Labor	**Title**	**# of employees**	**Hours**	**Reg. Rate**	**OT Hours**	**OT Rate**		**Total**
		Project Leader GS-14	1	100	83.42	0	0		8342
		Administrative Officer GS-09	1	40	44.72	0	0		1788.8
		Fishery Biologist GS-11	1	140	49.36	0	0		6910.4
		Crew leader Tech. GS-07	1	140	33.7	0	50.54		4718
		Biological Tech. GS-05	1	64	24.96	0	37.44		1597.44
	Labor Subtotal								23356.64
	Equipment & Supplies	**Category**	**Item**	**Quantity**	**Unit**	**Rate**	**Duration**		**Total**
		Office Supplies	Rite in the rain paper						50
		Office Supplies	Data clipboards						50
		Office Supplies	Ink Cartridges and paper						50
		Office Supplies	Cell, SAT, and Office phone service						100
		Field Equipment	GSA vehicle lease per month	2	each	364.97	2		1459.88
		Field Equipment	Mileage	2000	miles	0.33	1		660
		Field Equipment	Boat Gasoline 91 octane	160	gallons	4.37	1		699.2
		Field Equipment	Beach Seines	2	each	100	1		200
		Field Equipment	Motor, Generator, Boat Repair (Based on 10 year depreciation and replacement costs)	1	see basis	1,000	1		1000
		Field Equipment	*Misc. Field Supplies See Justification	1	see basis	1,000	1		1000
									5269.08
		Type Of Travel	**Number of Travelers**	**Hotel Costs**	**Per Diem**	**TAV Fee**	**# days**	**# of trips**	**Total**
		Camping	3	0	28	15	8	4	1212
									1212
									Grand Total
	USFWS Grand Jct.								29838
									29838

*Misc. Field Supplies

Exact use of the money in this line item will vary from year to year depending on what equipment needs to be maintained, repaired, or replaced, but use of these funds for a "typical" field season for one study would include the following:

Spark plugs for generators – 5 at $7 each = $35
Synthetic oil for generators - 5 quarts at $7 each = $35
Generator repair/tune-up - 5 hrs @ $75/hr = $375
2 stroke Optimax Oil – 20 gallons @ $38/Gallon = $760
Hip boots – 2 pair at $50/pair = $100
Breathable chest waders - 2 pair @ $125/pair = $250
Stearns Type III life jackets – 3 @ $70 each = $210
Electrical Gloves - 3 pairs @ $65/pair = $195
Dura-Frame electrofishing dip nets – 2 @ $300 each = $600
Boat trailer maintenance
    Signal light pigtail adapters – 2 @ $30 each = $60
Replace any missing NRS HD-brand tie-down straps:
    Ten 2-ft straps @ $4.20 each = $42
    Five 3-ft straps @ $4.30 each = $21.50
    Ten 4-ft straps @ $4.70 each = $47
    Five 6-ft straps @ $5.05 each = $25.25
    Five 9-ft straps @ $5.7 each = $28.50
    Five 12-ft straps @ $6.15 each = $30.75
Replace any missing D-style carabiners, each boat needs:
    10 @ $7.50 each = $75
Mesh rig bag – 1 @ $50 each = $50

Yeti 125-quart coolers – 1 @ $500 each = $500
Rafting oars, oar blades, and oar rowing sleeves
Carlisle 10-foot oar shafts – 2 @ $90 each = $180
Carlisle Oars blades – 4 @ $65 each = $260
Oar sleeves – 4 @ $12 each = $48
5-gallon plastic gasoline jerry cans – 5 @ $20 each = $100
River bags
NRS 3.8 heavy-duty Bill's Bag – 1 @ $100 each = $100
Clavey (green 7 X 17) dry bag – 3 @ $22 each = $66
Clavey (blue 10 X 24) dry bag) – 4 @ $26 each = $104
20 lb. propane tanks – 3 @ $20 each = $60

Other potential uses for these same funds could include replacing hand tools (ratchet and sockets, screw drivers, vise grips, pliers, Allen wrenches, crescent wrenches, hammer, etc.), WD-40, bailing wire, duct tape, electrical supplies (12 and 14 gage wire for the boats, junction boxes, extra male & female plugs, wire nuts, fuses, Ohm meter, electrical tape), batteries (C, AA and AAA), camp stoves, lanterns, lantern mantles, small "pony" propane bottles for lanterns, Gott 5-gallon water jugs, shovels, 5-gallon buckets, cargo nets, fix chips or cracks in vehicle windshields, bulbs, lenses, and wiring to fix trailer lights and pigtails, new electrofishing spheres, wire rope for replacing electrofishing "witches brooms," 2-man dome tents, NRS Canyon Box for dry storage, camping kitchen gear (roll-up camp tables, anodized dutch ovens, plates, bowls, cups, silverware), pencils, repair/replace river maps, etc. .

FY 2017

Tasks 1, 3 and 4

FY 2017									
	Labor	**Title**	**# of employees**	**Hours**	**Reg. Rate**	**OT Hours**	**OT Rate**		**Total**
		Project Leader GS-14	1	80	85.92	0	0		6873.6
		Administrative Officer GS-09	1	80	46.06	0	0		3684.8
		Fishery Biologist GS-11	1	280	50.84	0	0		14235.2
		Crew leader Tech. GS-07	1	220	34.71	64	52.06		10968.04
		Biological Tech. GS-05	2	220	25.7	64	38.55		16242.4
	Labor Subtotal								52004.04
	Equipment & Supplies	**Category**	**Item**	**Quantity**	**Unit**	**Rate**	**Duration**		**Total**
		Office Supplies	FEDEX charges for Biological samples						100
		Office Supplies	Rite in the rain paper						50
		Office Supplies	Data clipboards						50
		Office Supplies	Ink Cartridges and paper						200
		Office Supplies	Cell, SAT, and Office phone service						200
		Field Equipment	GSA vehicle lease per month	2	each	375.92	2		1503.68
		Field Equipment	Mileage	2000	miles	0.34	1		680
		Field Equipment	Boat Gasoline 91 octane	240	gallons	4.5	1		1080
		Field Equipment	Trammel Nets	6	each	223	1		1338
		Field Equipment	Motor, Generator, Boat Repair (Based on 10 year depreciation and replacement costs)	1	see basis	1,300	1		1300
		Field Equipment	*Misc. Field Supplies See Justification	1	see basis	1,049	1		1049
									7550.68
		Type Of Travel	**Number of Travelers**	**Hotel Costs**	**Per Diem**	**TAV Fee**	**# days**	**# of trips**	**Total**
		Camping	4	0	28	15	17	4	2864
		Meetings/ Lakewood 2015 GSA Rate	2	163	66	15	3	1	1108
									3972
									Grand Total
	USFWS Grand Jct.								63527
	CSU Larval Fish Lab	**Statistical Assistance**							5000
									68527

Task 2

YOY Gila sampling									
	Labor	**Title**	**# of employees**	**Hours**	**Reg. Rate**	**OT Hours**	**OT Rate**		**Total**
		Project Leader GS-14	1	100	85.92	0	0		8592
		Administrative Officer GS-09	1	40	46.06	0	0		1842.4
		Fishery Biologist GS-11	1	140	50.84	0	0		7117.6
		Crew leader Tech. GS-07	1	140	34.71	0	52.06		4859.4
		Biological Tech. GS-05	1	64	25.7	0	37.44		1644.8
	Labor Subtotal								24056.2
	Equipment & Supplies	**Category**	**Item**	**Quantity**	**Unit**	**Rate**	**Duration**		**Total**
		Office Supplies	Rite in the rain paper						50
		Office Supplies	Data clipboards						50
		Office Supplies	Ink Cartridges and paper						50
		Office Supplies	Cell, SAT, and Office phone service						100
		Field Equipment	GSA vehicle lease per month	2	each	375.92	2		1503.68
		Field Equipment	Mileage	2000	miles	0.34	1		680
		Field Equipment	Boat Gasoline 91 octane	160	gallons	4.5	1		720
		Field Equipment	Beach Seines	2	each	100	1		200
		Field Equipment	Motor, Generator, Boat Repair (Based on 10 year depreciation and replacement costs)	1	see basis	1,000	1		1000
		Field Equipment	*Misc. Field Supplies See Justification	1	see basis	1,000	1		1000
									5353.68
		Type Of Travel	**Number of Travelers**	**Hotel Costs**	**Per Diem**	**TAV Fee**	**# days**	**# of trips**	**Total**
		Camping	3	0	28	15	8	4	1212
									1212
									Grand Total
	USFWS Grand Jct.								30622
									30622

*Misc. Field Supplies

Exact use of the money in this line item will vary from year to year depending on what equipment needs to be maintained, repaired, or replaced, but use of these funds for a "typical" field season for one study would include the following:

Spark plugs for generators – 5 at $7 each = $35
Synthetic oil for generators - 5 quarts at $7 each = $35
Generator repair/tune-up - 5 hrs @ $75/hr = $375
2 stroke Optimax Oil – 20 gallons @ $38/Gallon = $760
Hip boots – 2 pair at $50/pair = $100
Breathable chest waders - 2 pair @ $125/pair = $250
Stearns Type III life jackets – 3 @ $70 each = $210
Electrical Gloves - 3 pairs @ $65/pair = $195
Dura-Frame electrofishing dip nets – 2 @ $300 each = $600
Boat trailer maintenance
    Signal light pigtail adapters – 2 @ $30 each = $60
Replace any missing NRS HD-brand tie-down straps:
    Ten 2-ft straps @ $4.20 each = $42
    Five 3-ft straps @ $4.30 each = $21.50
    Ten 4-ft straps @ $4.70 each = $47
    Five 6-ft straps @ $5.05 each = $25.25
    Five 9-ft straps @ $5.7 each = $28.50
    Five 12-ft straps @ $6.15 each = $30.75
Replace any missing D-style carabiners, each boat needs:
    10 @ $7.50 each = $75
Mesh rig bag – 1 @ $50 each = $50

Yeti 125-quart coolers – 1 @ $500 each = $500
Rafting oars, oar blades, and oar rowing sleeves
Carlisle 10-foot oar shafts – 2 @ $90 each = $180
Carlisle Oars blades – 4 @ $65 each = $260
Oar sleeves – 4 @ $12 each = $48
5-gallon plastic gasoline jerry cans – 5 @ $20 each = $100
River bags
NRS 3.8 heavy-duty Bill's Bag – 1 @ $100 each = $100
Clavey (green 7 X 17) dry bag – 3 @ $22 each = $66
Clavey (blue 10 X 24) dry bag) – 4 @ $26 each = $104
20 lb. propane tanks – 3 @ $20 each = $60

Other potential uses for these same funds could include replacing hand tools (ratchet and sockets, screw drivers, vise grips, pliers, Allen wrenches, crescent wrenches, hammer, etc.), WD-40, bailing wire, duct tape, electrical supplies (12 and 14 gage wire for the boats, junction boxes, extra male & female plugs, wire nuts, fuses, Ohm meter, electrical tape), batteries (C, AA and AAA), camp stoves, lanterns, lantern mantles, small "pony" propane bottles for lanterns, Gott 5-gallon water jugs, shovels, 5-gallon buckets, cargo nets, fix chips or cracks in vehicle windshields, bulbs, lenses, and wiring to fix trailer lights and pigtails, new electrofishing spheres, wire rope for replacing electrofishing "witches brooms," 2-man dome tents, NRS Canyon Box for dry storage, camping kitchen gear (roll-up camp tables, anodized dutch ovens, plates, bowls, cups, silverware), pencils, repair/replace river maps, etc.

Out-year budgets for Black Rocks Humpback Chub Population Estimate: 2018-2020

THESE BUDGETS ARE ESTIMATES ONLY AND MAY NOT REPRESENT ACTUAL COSTS

FY 2018

Tasks 1, 3 and 4. Final Draft Report to Coordinator by December 15, 2018

FY 2018									
	Labor	Title	# of employees	Hours	Reg. Rate	OT Hours	OT Rate		Total
		Project Leader GS-14	1	100	88.5	0	0		8850
		Administrative Officer GS-09	1	100	47.44	0	0		4744
		Fishery Biologist GS-11	1	280	52.37	0	0		14663.6
		Crew leader Tech. GS-07	1	160	35.75	48	53.62		8293.76
		Biological Tech. GS-05	2	120	26.48	48	39.72		10168.32
	Labor Subtotal								46719.68
	Equipment & Supplies	Category	Item	Quantity	Unit	Rate	Duration		Total
		Office Supplies	FEDEX charges for Biological samples						100
		Office Supplies	Rite in the rain paper						50
		Office Supplies	Data clipboards						50
		Office Supplies	Ink Cartridges and paper						200
		Office Supplies	Cell, SAT, and Office phone service						200
		Field Equipment	GSA vehicle lease per month	2	each	387.2	2		1548.8
		Field Equipment	Mileage	2000	miles	0.35	1		700
		Field Equipment	Boat Gasoline 91 octane	120	gallons	4.64	1		556.8
		Field Equipment	Trammel Nets	6	each	223	1		1338
		Field Equipment	Motor, Generator, Boat Repair (Based on 10 year depreciation and replacement costs)	1	see basis	1,300	1		1300
		Field Equipment	*Misc. Field Supplies See Justification	1	see basis	1,049	1		1049
									7092.6
		Type Of Travel	Number of Travelers	Hotel Costs	Per Diem	TAV Fee	# days	# of trips	Total
		Camping	4	0	28	15	9	2	1488
		Meetings/ Lakewood 2015 GSA Rate	2	163	66	15	3	1	1108
									2596
									Grand Total
	USFWS Grand Jct.								56408
	CSU Larval Fish Lab	Statistical Assistance							5000
									61408

Task 2 and 4

YOY Gila sampling									
	Labor	Title	# of employees	Hours	Reg. Rate	OT Hours	OT Rate		Total
		Project Leader GS-14	1	100	85.92	0	0		8592
		Administrative Officer GS-09	1	40	46.06	0	0		1842.4
		Fishery Biologist GS-11	1	100	50.84	0	0		5084
		Crew leader Tech. GS-07	1	100	34.71	0	52.06		3471
	Labor Subtotal								18989.4
	Equipment & Supplies	Category	Item	Quantity	Unit	Rate	Duration		Total
		Office Supplies	Rite in the rain paper						50
		Office Supplies	Ink Cartridges and paper						50
		Office Supplies	Cell, SAT, and Office phone service						100
		Field Equipment	GSA vehicle lease per month	1	each	375.92	1		375.92
		Field Equipment	Mileage	500	miles	0.34	1		170
									745.92
		Type Of Travel	Number of Travelers	Hotel Costs	Per Diem	TAV Fee	# days	# of trips	Total
			0	0	28	15	0	0	0
									0
									Grand Total
	USFWS Grand Jct.								19735
									19735

*Misc. Field Supplies

Exact use of the money in this line item will vary from year to year depending on what equipment needs to be maintained, repaired, or replaced, but use of these funds for a "typical" field season for one study would include the following:

Spark plugs for generators – 5 at $7 each = $35
Synthetic oil for generators - 5 quarts at $7 each = $35
Generator repair/tune-up - 5 hrs @ $75/hr = $375
2 stroke Optimax Oil – 20 gallons @ $38/Gallon = $760
Hip boots – 2 pair at $50/pair = $100
Breathable chest waders - 2 pair @ $125/pair = $250
Stearns Type III life jackets – 3 @ $70 each = $210
Electrical Gloves - 3 pairs @ $65/pair = $195
Dura-Frame electrofishing dip nets – 2 @ $300 each = $600
Boat trailer maintenance
    Signal light pigtail adapters – 2 @ $30 each = $60
Replace any missing NRS HD-brand tie-down straps:
    Ten 2-ft straps @ $4.20 each = $42
    Five 3-ft straps @ $4.30 each = $21.50
    Ten 4-ft straps @ $4.70 each = $47
    Five 6-ft straps @ $5.05 each = $25.25
    Five 9-ft straps @ $5.7 each = $28.50
    Five 12-ft straps @ $6.15 each = $30.75
Replace any missing D-style carabiners, each boat needs:
    10 @ $7.50 each = $75
Mesh rig bag – 1 @ $50 each = $50
Yeti 125-quart coolers – 1 @ $500 each = $500
Rafting oars, oar blades, and oar rowing sleeves
    Carlisle 10-foot oar shafts – 2 @ $90 each = $180
    Carlisle Oars blades – 4 @ $65 each = $260
    Oar sleeves – 4 @ $12 each = $48
5-gallon plastic gasoline jerry cans – 5 @ $20 each = $100
River bags
    NRS 3.8 heavy-duty Bill's Bag – 1 @ $100 each = $100
    Clavey (green 7 X 17) dry bag – 3 @ $22 each = $66
    Clavey (blue 10 X 24) dry bag) – 4 @ $26 each = $104
20 lb. propane tanks – 3 @ $20 each = $60

Other potential uses for these same funds could include replacing hand tools (ratchet and sockets, screw drivers, vise grips, pliers, Allen wrenches, crescent wrenches, hammer, etc.), WD-40, bailing wire, duct tape, electrical supplies (12 and 14 gage wire for the boats, junction boxes, extra male & female plugs, wire nuts, fuses, Ohm meter, electrical tape), batteries (C, AA and AAA), camp stoves, lanterns, lantern mantles, small "pony" propane bottles for lanterns, Gott 5-gallon water jugs, shovels, 5-gallon buckets, cargo nets, fix chips or cracks in vehicle windshields, bulbs, lenses, and wiring to fix trailer lights and pigtails, new electrofishing spheres, wire rope for replacing electrofishing "witches brooms," 2-man dome tents, NRS Canyon Box for dry storage, camping kitchen gear (roll-up camp tables, anodized dutch ovens, plates, bowls, cups, silverware), pencils, repair/replace river maps, etc.

FY 2019

No work, off year $0

FY 2020

Tasks 1, 3 and 4

FY 2020									
	Labor	**Title**	**# of employees**	**Hours**	**Reg. Rate**	**OT Hours**	**OT Rate**		**Total**
		Project Leader GS-14	1	80	93.89	0	0		7511.2
		Administrative Officer GS-09	1	80	50.33	0	0		4026.4
		Fishery Biologist GS-11	1	280	55.56	0	0		15556.8
		Crew leader Tech. GS-07	1	220	37.93	64	56.89		11985.56
		Biological Tech. GS-05	2	220	28.09	64	42.14		17753.52
	Labor Subtotal								56833.48
	Equipment & Supplies	**Category**	**Item**	**Quantity**	**Unit**	**Rate**	**Duration**		**Total**
		Office Supplies	FEDEX charges for Biological samples						100
		Office Supplies	Rite in the rain paper						50
		Office Supplies	Data clipboards						50
		Office Supplies	Ink Cartridges and paper						200
		Office Supplies	Cell, SAT, and Office phone service						200
		Field Equipment	GSA vehicle lease per month	2	each	410.78	2		1643.12
		Field Equipment	Mileage	2000	miles	0.37	1		740
		Field Equipment	Boat Gasoline 91 octane	240	gallons	4.92	1		1180.8
		Field Equipment	Trammel Nets	6	each	223	1		1338
		Field Equipment	Motor, Generator, Boat Repair (Based on 10 year depreciation and replacement costs)	1	see basis	1,300	1		1300
		Field Equipment	*Misc. Field Supplies See Justification	1	see basis	1,049	1		1049
									7850.92
		Type Of Travel	**Number of Travelers**	**Hotel Costs**	**Per Diem**	**TAV Fee**	**# days**	**# of trips**	**Total**
		Camping	4	0	28	15	17	4	2864
		Meetings/ Lakewood 2015 GSA Rat	2	163	66	15	3	1	1108
									3972
									Grand Total
	USFWS Grand Jct.								68656
	CSU Larval Fish Lab	**Statistical Assistance**							5000
									73656

Task 2

YOY Gila sampling									
	Labor	**Title**	**# of employees**	**Hours**	**Reg. Rate**	**OT Hours**	**OT Rate**		**Total**
		Project Leader GS-14	1	100	93.89	0	0		9389
		Administrative Officer GS-09	1	40	50.33	0	0		2013.2
		Fishery Biologist GS-11	1	140	55.56	0	0		7778.4
		Crew leader Tech. GS-07	1	140	37.93	0	56.89		5310.2
		Biological Tech. GS-05	1	64	28.09	0	42.14		1797.76
	Labor Subtotal								26288.56
	Equipment & Supplies	**Category**	**Item**	**Quantity**	**Unit**	**Rate**	**Duration**		**Total**
		Office Supplies	Rite in the rain paper						50
		Office Supplies	Data clipboards						50
		Office Supplies	Ink Cartridges and paper						50
		Office Supplies	Cell, SAT, and Office phone service						100
		Field Equipment	GSA vehicle lease per month	2	each	410.78	2		1643.12
		Field Equipment	Mileage	2000	miles	0.37	1		740
		Field Equipment	Boat Gasoline 91 octane	160	gallons	4.92	1		787.2
		Field Equipment	Beach Seines	2	each	100	1		200
		Field Equipment	Motor, Generator, Boat Repair (Based on 10 year depreciation and replacement costs)	1	see basis	1,000	1		1000
		Field Equipment	*Misc. Field Supplies See Justification	1	see basis	1,000	1		1000
									5620.32
		Type Of Travel	**Number of Travelers**	**Hotel Costs**	**Per Diem**	**TAV Fee**	**# days**	**# of trips**	**Total**
		Camping	3	0	28	15	8	4	1212
									1212
									Grand Total
	USFWS Grand Jct.								33121
									33121

*Misc. Field Supplies

Exact use of the money in this line item will vary from year to year depending on what equipment needs to be maintained, repaired, or replaced, but use of these funds for a "typical" field season for one study would include the following:

Spark plugs for generators – 5 at $7 each = $35
Synthetic oil for generators - 5 quarts at $7 each = $35
Generator repair/tune-up - 5 hrs @ $75/hr = $375
2 stroke Optimax Oil – 20 gallons @ $38/Gallon = $760
Hip boots – 2 pair at $50/pair = $100
Breathable chest waders - 2 pair @ $125/pair = $250
Stearns Type III life jackets – 3 @ $70 each = $210
Electrical Gloves - 3 pairs @ $65/pair = $195
Dura-Frame electrofishing dip nets – 2 @ $300 each = $600
Boat trailer maintenance
    Signal light pigtail adapters – 2 @ $30 each = $60
Replace any missing NRS HD-brand tie-down straps:
    Ten 2-ft straps @ $4.20 each = $42
    Five 3-ft straps @ $4.30 each = $21.50
    Ten 4-ft straps @ $4.70 each = $47
    Five 6-ft straps @ $5.05 each = $25.25
    Five 9-ft straps @ $5.7 each = $28.50
    Five 12-ft straps @ $6.15 each = $30.75
Replace any missing D-style carabiners, each boat needs:
    10 @ $7.50 each = $75
Mesh rig bag – 1 @ $50 each = $50

Yeti 125-quart coolers – 1 @ $500 each = $500
Rafting oars, oar blades, and oar rowing sleeves
Carlisle 10-foot oar shafts – 2 @ $90 each = $180
Carlisle Oars blades – 4 @ $65 each = $260
Oar sleeves – 4 @ $12 each = $48
5-gallon plastic gasoline jerry cans – 5 @ $20 each = $100
River bags
NRS 3.8 heavy-duty Bill's Bag – 1 @ $100 each = $100
Clavey (green 7 X 17) dry bag – 3 @ $22 each = $66
Clavey (blue 10 X 24) dry bag) – 4 @ $26 each = $104
20 lb. propane tanks – 3 @ $20 each = $60

Other potential uses for these same funds could include replacing hand tools (ratchet and sockets, screw drivers, vise grips, pliers, Allen wrenches, crescent wrenches, hammer, etc.), WD-40, bailing wire, duct tape, electrical supplies (12 and 14 gage wire for the boats, junction boxes, extra male & female plugs, wire nuts, fuses, Ohm meter, electrical tape), batteries (C, AA and AAA), camp stoves, lanterns, lantern mantles, small "pony" propane bottles for lanterns, Gott 5-gallon water jugs, shovels, 5-gallon buckets, cargo nets, fix chips or cracks in vehicle windshields, bulbs, lenses, and wiring to fix trailer lights and pigtails, new electrofishing spheres, wire rope for replacing electrofishing "witches brooms," 2-man dome tents, NRS Canyon Box for dry storage, camping kitchen gear (roll-up camp tables, anodized dutch ovens, plates, bowls, cups, silverware), pencils, repair/replace river maps, etc.

IX. Budget Summary:

FY2016	
USFWS-GJ	$ 66,923
USFWS-GJ YOY Gila	$ 29,838
CSU LFL	$ 5,000
Grand Total	**$101,761**
FY2017	
USFWS-GJ	$ 68,527
USFWS-GJ YOY Gila	$ 30,622
CSU LFL	$ 5,000
Grand Total	**$104,149**

2016-2017 Total = $205,910

Estimated Budget Summary for Fiscal Years 2018-2020:

FY2018	
USFWS-GJ	$ 61,408
USFWS-GJ YOY Gila	$ 19,735
CSU LFL	$ 5,000
Grand Total	**$ 86,143**
FY2019	
USFWS-GJ	$ 0
USFWS-GJ YOY Gila	$ 0
CSU LFL	$ 0
Grand Total	**$ 0**
FY2020	
USFWS-GJ	$ 73,656
USFWS-GJ YOY Gila	$ 33,121

CSU LFL	$ 5,000
Grand Total	**$111,777**

2018-2020 Total = $197,920

5-Year Total USFWS GJ = $403,830
5-Year Total CSU LFL = $ 20,000

X. Reviewers: Program Staff and Biology Committee

XI. References:

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USFWS (U.S. Fish and Wildife Service). 1987. Interagency Standardized Monitoring Program Handbook. U.S. Fish and Wildlife Service, Grand Junction, Colorado.