

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

FY 2022-23 SCOPE OF WORK

PROJECT: 169

Project Title

Monitoring spawning aggregations on the Green and Yampa Rivers with antennas.

Bureau of Reclamation Agreement Number:

R20PG00024

Reclamation Agreement Term

Oct. 1, 2019 – Sep. 30 2024

Note: Recovery Program FY22-23 scopes of work are drafted in May 2021. 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:

U.S. Fish and Wildlife Service Green River Basin FWCO

Principal Investigator:

Christian Smith, Fish Biologist
U.S. Fish and Wildlife Service
Green River Basin FWCO
1380 S. 2350 W.
Vernal, UT 84078
Phone: (435) 789-0351
Email: Principal Investigator’s e-mail

Category:

- Ongoing project
- Ongoing-revised project
- Requested new project
- Unsolicited proposal

Expected Funding Source:

- Annual funds
- Capital funds
- Other [explain]

Relationship to RIPRAP:

General Action Plan:

V.A.1.a.(2) Investigate improving recapture rates through passive PIT tag monitoring to improve population abundance estimates

Green River Action Plan:

V.D.1. Implement razorback sucker monitoring plan

Study Background/Rationale and Hypotheses:

Researchers monitor endangered fishes in the Upper Colorado River Basin. Periodic population abundances are estimated using capture-recapture techniques. This type of estimation requires that

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marked animals are recaptured in some way, and the more recaptures, the higher the precision of the estimate. Precise population estimates allow managers to be more confident about the status of the species in question.

In recent years, Colorado pikeminnow monitoring efforts have provided researchers with enough data to generate population estimates, however, captures and recaptures have been declining, and more recaptures are desired for better precision (K. Bestgen, personal communication). Razorback sucker are captured while conducting work to estimate Colorado pikeminnow. However, recaptures for this species are insufficient to generate a precise population estimate. Managers have identified a need to increase razorback sucker recaptures to thus generate population parameters (Bestgen et al. 2012, Zelasko et al. 2020). This study was initiated with this purpose: to document as many razorback sucker detections as possible in an attempt to generate data that can be used for estimating populations and survival using PIT tag antennas/Passive Interrogation Arrays (PIA). Added detections of PIT-tagged Colorado pikeminnow could also provide more robust population estimates of this long-lived species.

Study Goals, Objectives, End Product(s):

Goals:

1. Detect as many endangered fish as possible at Razorback Bar, Cleopatra's Couch bar, and Echo Park bar.
2. Find other locations where PIT-tag antenna technology can be used to obtain more detections, such as floodplain wetlands and tributary confluences.
3. Assist hatchery managers in determining the efficacy of fish rearing and stocking methods by determining the level of representation of hatchery fish cohorts within single and multi-year antenna datasets.

Objectives:

1. Deploy antennas at Razorback Bar, Cleopatra's Couch bar, and Echo Park bar.
2. Supplement traditional sampling gear at floodplain wetlands such as Johnson Bottom, Old Charley Wash, and Sheppard Bottom with antennas.

End Products:

All detection data will be provided electronically to the Recovery Program STReAMS database for future survival estimates. This project is not intended to estimate razorback sucker survival in and of itself, but rather to augment other datasets (ancillary captures through Colorado pikeminnow estimates and nonnative fish removal). We will also provide results of our findings in the form of an annual report.

Study Area:

Razorback Bar near Jensen, Utah, Echo Park and Cleopatra's Couch bars on the Yampa River in Dinosaur National Monument, Colorado, and other locations in the Green, White, and Yampa Rivers.

Study Methods/Approach:

Multiple 40" x 6" submersible antennas will be deployed in riverine and floodplain habitats in the Green River Basin. Since most of the spawning bars we sample are located within Dinosaur National Monument, we have acquired sampling permits from the National Park Service. We will deploy antennas several weeks before flows begin to rise on Razorback and Echo Park bars (typically late

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March or early April) to detect spawning razorback sucker. Detection of PIT- tagged Colorado pikeminnow will be attempted once peak flows begin to subside in the Yampa River (typically in early June). We will also deploy submersible antennas at Cleopatra’s Couch bar, which will coincide with an early pass on Project 110, which allows access to this location. The PIAs at Echo Park bar will additionally serve to detect Colorado pikeminnow in the Green-Yampa River confluence vicinity.

The standalone nature of submersible PIAs creates a much smaller footprint compared to antennas that require shore-based infrastructure, which makes them desirable in rivers managed as wilderness, such as the Yampa River and the Green River upstream of the Split Mountain boat ramp in Dinosaur National Monument. We will use appropriate lengths of weighted 1/8” wire rope to secure submersible PIAs to a fixed natural object on shore that will allow for easy retrieval and eliminate the chance of losing the antenna to the current. We will also attach an identification tag to the shore end of the anchor that will explain its purpose and provide our contact information to anyone interested. Batteries will be changed bi-weekly by driving to Echo Park and hiking batteries to/from the antenna, driving a john boat to Razorback Bar, stopping at Cleopatra’s Couch and Echo Park bars during Project 110 passes, or accessing the antennas via pack raft. Data retrieval will also occur during these weekly maintenance visits.

Task Description, Deliverables and Schedule :

Task 1: Document razorback sucker and Colorado pikeminnow associated PIT-tags on or near spawning bars.

Task 2: Data analysis, report writing, presentations.

Task	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1				X	X	X	X		X	X		
2									X	X	X	X

Budget Summary:

FY Year	
2022	\$30,014
2023	\$30,605
2024	\$31,420
2025	\$36,247
2026	\$36,960
Total	\$165,246

Reviewers:

References:

Bestgen, K. R., K. A. Zelasko, and G. C. White. 2012. Monitoring reproduction, recruitment and population status of razorback suckers in the upper Colorado River Basin. Report to the Upper Colorado

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River Endangered Fish Recovery Program. Larval Fish Laboratory Contribution 170, Colorado State University, Fort Collins.

Webber, P.A. and D. Beers. 2014. Detecting razorback suckers using passive integrated transponder tag antennas in the Green River, Utah. *Journal of Fish and Wildlife Management* 5: 191-196.

Webber, P. A., P. D. Thompson and P. Budy. 2012. Status and structure of two populations of bluehead suckers (*Catostomus discobolus*) in the Weber River, Utah. *Southwestern Naturalist* 57(3):267-276.

Zelasko, K.A., K.R. Bestgen, and G.C. White. 2020. Estimation challenges with large-river fish: Razorback sucker abundance and vital rates in the Green River, Utah. Report to the Upper Colorado River Endangered Fish Recovery Program. Larval Fish Laboratory Contribution 217, Colorado State University, Fort Collins.

SUMMARY OF PROPOSED COSTS

Name of Servicing Agency:	U.S. Fish & Wildlife Service Green River Basin FWCO
Project Name:	Recovery Program Project 169: Detecting endangered fishes using PIT tag antenna technology in the Upper Colorado River Basin

	YEAR 1		YEAR 2		YEAR 3		YEAR 4		YEAR 5		TOTAL
	10/1/2021	10/1/2022	10/1/2022	10/1/2023	10/1/2023	10/1/2024	10/1/2025	10/1/2025	10/1/2025		
	Through	Through	Through	Through	Through	Through	Through	Through	Through		
Enter the BEGINNING dates for each year ----->	9/30/2022	9/30/2023	9/29/2024	9/30/2025	9/30/2026						
Enter the ENDING dates for each year ----->											
DIRECT LABOR AND FRINGE BENEFIT COSTS:	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	TOTAL					
Direct Labor - Hourly	\$ 19,067.28	\$ 19,464.81	\$ 20,001.40	\$ 23,170.57	\$ 23,633.98	\$ 105,338.03					
Fringe Benefits - Hourly	\$ 7,086.32	\$ 7,221.07	\$ 7,415.33	\$ 8,870.18	\$ 9,047.58	\$ 39,640.48					
Subtotal of Direct Labor & Fringe Benefits:	\$ 26,153.60	\$ 26,685.88	\$ 27,416.73	\$ 32,040.75	\$ 32,681.56	\$ 144,978.51					
OTHER DIRECT COSTS:	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	TOTAL					
Materials and Supplies	\$ 2,052.12	\$ 2,093.16	\$ 2,135.03	\$ 2,177.72	\$ 2,221.28	\$ 10,679.31					
Travel Costs	\$ 934.34	\$ 934.34	\$ 953.29	\$ 972.36	\$ 980.88	\$ 4,775.21					
Equipment	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -					
Contractors	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -					
Subtotal of Other Direct Costs:	\$ 2,986.46	\$ 3,027.50	\$ 3,088.32	\$ 3,150.08	\$ 3,202.16	\$ 15,454.52					
INDIRECT/OVERHEAD COSTS:	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	TOTAL					
Subtotal of Labor and Other Direct Costs:	\$ 29,140.06	\$ 29,713.38	\$ 30,505.05	\$ 35,190.83	\$ 35,883.72						
Total dollars exempt from indirect/overhead base:	\$ -	\$ -	\$ -	\$ -	\$ -						
<Enter Description of Indirect/OH Cost #1>	3.00%	\$ 874.20	3.00%	\$ 891.40	3.00%	\$ 915.15	3.00%	\$ 1,055.72	3.00%	\$ 1,076.51	\$ 4,812.99
Total dollars exempt from indirect/overhead base:	\$ -	\$ -	\$ -	\$ -	\$ -						
<Enter Description of Indirect/OH Cost #2>	0.00%	\$ -	0.00%	\$ -	0.00%	\$ -	0.00%	\$ -	0.00%	\$ -	\$ -
Subtotal of Indirect/Overhead Costs:	\$ 874.20	\$ 891.40	\$ 915.15	\$ 1,055.72	\$ 1,076.51	\$ 4,812.99					
	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	TOTAL					
GRAND TOTAL:	\$ 30,014.26	\$ 30,604.78	\$ 31,420.20	\$ 36,246.55	\$ 36,960.23	\$ 165,246.03					

UMMARY OF DIRECT LABOR & FRINGE BENEFIT

Enter Escalation Rates ----->	Yr 2 Escalation Rate	0.00%
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Task # or Description	Position Title	GS/WG Grade	GS/WG Step	OPM Pay Location	Current Hourly Rate	YEAR 1					YEAR 2					
						10/1/2021		Through	9/30/2022		10/1/2022		Through	9/30/2023		
						# of Hours	Hourly Rate	Salary Cost	Fringe Rate	Fringe Cost	# of Hours	Hourly Rate	Salary Cost	Fringe Rate	Fringe Cost	
1	1	Fisheries Biologist	GS 12	2	Rest of US	\$ 38.37	100.0	\$ 38.37	\$ 3,837.00	37.00%	\$ 1,419.69	100.0	\$ 39.60	\$ 3,960.00	37.00%	\$ 1,465.20
2	1	Fisheries Biologist	GS 11	1	Rest of US	\$ 30.98	91.0	\$ 30.98	\$ 2,819.18	30.00%	\$ 845.75	91.0	\$ 32.01	\$ 2,912.91	30.00%	\$ 873.87
3	1	Fisheries Technician	GS 8	10	Rest of US	\$ 30.14	114.0	\$ 30.14	\$ 3,435.96	52.00%	\$ 1,786.70	114.0	\$ 30.14	\$ 3,435.96	52.00%	\$ 1,786.70
4	1	Biological Science Technician Crew Leader	GS 6	1	Rest of US	\$ 18.84	92.0	\$ 18.84	\$ 1,733.28	29.00%	\$ 502.65	92.0	\$ 18.84	\$ 1,733.28	29.00%	\$ 502.65
5	2	Fisheries Biologist	GS 12	2	Rest of US	\$ 38.37	80.0	\$ 38.37	\$ 3,069.60	37.00%	\$ 1,135.75	80.0	\$ 39.60	\$ 3,168.00	37.00%	\$ 1,172.16
6	2	Fisheries Biologist	GS 11	1	Rest of US	\$ 30.98	80.0	\$ 30.98	\$ 2,478.40	30.00%	\$ 743.52	80.0	\$ 32.01	\$ 2,560.80	30.00%	\$ 768.24
7	2	Administrative Officer	GS 9	9	Rest of US	\$ 32.43	26.0	\$ 32.43	\$ 843.18	37.00%	\$ 311.98	26.0	\$ 32.43	\$ 843.18	37.00%	\$ 311.98
8	2	Project Leader	GS 13	5	Rest of US	\$ 50.04	17.0	\$ 50.04	\$ 850.68	40.00%	\$ 340.27	17.0	\$ 50.04	\$ 850.68	40.00%	\$ 340.27
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						600.00		\$ 19,067.28		\$ 7,086.32		600.00		\$ 19,464.81		\$ 7,221.07

UMMARY OF DIRECT LABOR & FRINGE BENEFIT

Yr 3 Escalation Rate 2.00%

Yr 4 Escalation Rate 2.00%

Task # or Description	Position Title	GS/WG Grade	GS/WG Step	OPM Pay Location	Current Hourly Rate	YEAR 3					YEAR 4					
						10/1/2023		Through	9/29/2024		10/1/2024		Through	9/30/2025		
						# of Hours	Hourly Rate	Salary Cost	Fringe Rate	Fringe Cost	# of Hours	Hourly Rate	Salary Cost	Fringe Rate	Fringe Cost	
1	1	Fisheries Biologist	GS 12	2	Rest of US	\$ 38.37	100.0	\$ 40.84	\$ 4,084.00	37.00%	\$ 1,511.08	120.0	\$ 41.66	\$ 4,998.82	37.00%	\$1,849.56
2	1	Fisheries Biologist	GS 11	1	Rest of US	\$ 30.98	91.0	\$ 33.04	\$ 3,006.64	30.00%	\$ 901.99	80.0	\$ 34.08	\$ 2,726.40	30.00%	\$ 817.92
3	1	Fisheries Technician	GS 8	10	Rest of US	\$ 30.14	114.0	\$ 30.74	\$ 3,504.68	52.00%	\$ 1,822.43	175.0	\$ 31.36	\$ 5,487.59	52.00%	\$2,853.55
4	1	Biological Science Technician Crew Leader	GS 6	1	Rest of US	\$ 18.84	92.0	\$ 19.22	\$ 1,767.95	29.00%	\$ 512.70	109.0	\$ 19.60	\$ 2,136.52	29.00%	\$ 619.59
5	2	Fisheries Biologist	GS 12	2	Rest of US	\$ 38.37	80.0	\$ 40.84	\$ 3,267.20	37.00%	\$ 1,208.86	80.0	\$ 41.66	\$ 3,332.54	37.00%	\$1,233.04
6	2	Fisheries Biologist	GS 11	1	Rest of US	\$ 30.98	80.0	\$ 33.04	\$ 2,643.20	30.00%	\$ 792.96	80.0	\$ 34.08	\$ 2,726.40	30.00%	\$ 817.92
7	2	Administrative Officer	GS 9	9	Rest of US	\$ 32.43	26.0	\$ 33.08	\$ 860.04	37.00%	\$ 318.22	26.0	\$ 33.74	\$ 877.24	37.00%	\$ 324.58
8	2	Project Leader	GS 13	5	Rest of US	\$ 50.04	17.0	\$ 51.04	\$ 867.69	40.00%	\$ 347.08	17.0	\$ 52.06	\$ 885.05	40.00%	\$ 354.02
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						600.00	\$ 20,001.40			\$ 7,415.33	687.00	\$ 23,170.57		\$ 8,870.18		

UMMARY OF DIRECT LABOR & FRINGE BENEFIT

Yr 5 Escalation Rate	2.00%
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							YEAR 5							
							10/1/2025		Through	9/30/2026				
Task # or Description	Position Title	GS/WG Grade	GS/WG Step	OPM Pay Location	Current Hourly Rate	# of Hours	Hourly Rate	Salary Cost	Fringe Rate	Fringe Cost	Total Salary Cost	Total Fringe Cost	Total Labor Cost	
1	1	Fisheries Biologist	GS 12	2	Rest of US	\$ 38.37	120.0	\$ 42.49	\$ 5,098.79	37.00%	\$ 1,886.55	\$ 21,978.61	\$ 8,132.09	\$ 30,110.69
2	1	Fisheries Biologist	GS 11	1	Rest of US	\$ 30.98	80.0	\$ 34.76	\$ 2,780.93	30.00%	\$ 834.28	\$ 14,246.06	\$ 4,273.82	\$ 18,519.88
3	1	Fisheries Technician	GS 8	10	Rest of US	\$ 30.14	175.0	\$ 31.98	\$ 5,597.34	52.00%	\$ 2,910.62	\$ 21,461.53	\$ 11,160.00	\$ 32,621.53
4	1	Biological Science Technician Crew Leader	GS 6	1	Rest of US	\$ 18.84	109.0	\$ 19.99	\$ 2,179.25	29.00%	\$ 631.98	\$ 9,550.28	\$ 2,769.58	\$ 12,319.87
5	2	Fisheries Biologist	GS 12	2	Rest of US	\$ 38.37	80.0	\$ 42.49	\$ 3,399.19	37.00%	\$ 1,257.70	\$ 16,236.54	\$ 6,007.52	\$ 22,244.06
6	2	Fisheries Biologist	GS 11	1	Rest of US	\$ 30.98	80.0	\$ 34.76	\$ 2,780.93	30.00%	\$ 834.28	\$ 13,189.73	\$ 3,956.92	\$ 17,146.65
7	2	Administrative Officer	GS 9	9	Rest of US	\$ 32.43	26.0	\$ 34.41	\$ 894.79	37.00%	\$ 331.07	\$ 4,318.44	\$ 1,597.82	\$ 5,916.26
8	2	Project Leader	GS 13	5	Rest of US	\$ 50.04	17.0	\$ 53.10	\$ 902.75	40.00%	\$ 361.10	\$ 4,356.85	\$ 1,742.74	\$ 6,099.59
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							687.00		\$ 23,633.98		\$ 9,047.58	\$ 105,338.03	\$ 39,640.48	\$ 144,978.51

SUMMARY OF MATERIALS AND SUPPLIES

SUMMARY OF MATERIALS, SUPPLIES, AND SERVICES

Yr 2 Escalation Rate	2.00%
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	Task # or Description	Item Description	Rationale for Proposed Cost	Year 1			Year 2		
				Unit Price	Unit Quantity	Subtotal	Unit Price	Unit Quantity	Subtotal
1	1	GSA Lease of Equip Code 6351 (monthly lease)	http://www.gsa.gov/portal/category/21852	\$ 224.00	3	\$ 672.00	\$ 228.48	3	\$ 685.44
2	1	GSA Lease of Equip Code 6351 (mileage rate)	http://www.gsa.gov/portal/category/21852	\$ 0.31	1852	\$ 574.12	\$ 0.32	1852	\$ 585.60
3	1	Boat fuel (gal)	Please refer to Reclamation Agreement number R15PG00083	\$ 4.00	60	\$ 240.00	\$ 4.08	60	\$ 244.80
4	1	Boat oil (qt)	Please refer to Reclamation Agreement number R15PG00083	\$ 11.00	6	\$ 66.00	\$ 11.22	6	\$ 67.32
5	1	Sampling equipment repair/replacement	Please refer to Reclamation Agreement number R15PG00083	\$ 500.00	1	\$ 500.00	\$ 510.00	1	\$ 510.00
6				\$ -	0	\$ -	\$ -	0	\$ -
7				\$ -	0	\$ -	\$ -	0	\$ -
8				\$ -	0	\$ -	\$ -	0	\$ -
9				\$ -	0	\$ -	\$ -	0	\$ -
10				\$ -	0	\$ -	\$ -	0	\$ -
11				\$ -	0	\$ -	\$ -	0	\$ -
12				\$ -	0	\$ -	\$ -	0	\$ -
13				\$ -	0	\$ -	\$ -	0	\$ -
14				\$ -	0	\$ -	\$ -	0	\$ -
15				\$ -	0	\$ -	\$ -	0	\$ -
16				\$ -	0	\$ -	\$ -	0	\$ -
17				\$ -	0	\$ -	\$ -	0	\$ -
18				\$ -	0	\$ -	\$ -	0	\$ -
19				\$ -	0	\$ -	\$ -	0	\$ -
20				\$ -	0	\$ -	\$ -	0	\$ -
21				\$ -	0	\$ -	\$ -	0	\$ -
22				\$ -	0	\$ -	\$ -	0	\$ -
23				\$ -	0	\$ -	\$ -	0	\$ -
24				\$ -	0	\$ -	\$ -	0	\$ -
25				\$ -	0	\$ -	\$ -	0	\$ -
26				\$ -	0	\$ -	\$ -	0	\$ -
TOTAL:						\$ 2,052.12			\$ 2,093.16

SUMMARY OF MATERIALS AND SUPPLIES

SUMMARY OF MATERIALS, SUPPLIES, Services	A Yr 3 Escalation Rate	2.00%	Yr 4 Escalation Rate	2.00%
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	Task # or Description	Item Description	Year 3			Year 4		
			Unit Price	Unit Quantity	Subtotal	Unit Price	Unit Quantity	Subtotal
1	1	GSA Lease of Equip Code 6351 (monthly lease)	\$ 233.05	3	\$ 699.15	\$ 237.71	3	\$ 713.13
2	1	GSA Lease of Equip Code 6351 (mileage rate)	\$ 0.32	1852	\$ 597.31	\$ 0.33	1852	\$ 609.26
3	1	Boat fuel (gal)	\$ 4.16	60	\$ 249.70	\$ 4.24	60	\$ 254.69
4	1	Boat oil (qt)	\$ 11.44	6	\$ 68.67	\$ 11.67	6	\$ 70.04
5	1	Sampling equipment repair/replacement	\$ 520.20	1	\$ 520.20	\$ 530.60	1	\$ 530.60
6			\$ -	0	\$ -	\$ -	0	\$ -
7			\$ -	0	\$ -	\$ -	0	\$ -
8			\$ -	0	\$ -	\$ -	0	\$ -
9			\$ -	0	\$ -	\$ -	0	\$ -
10			\$ -	0	\$ -	\$ -	0	\$ -
11			\$ -	0	\$ -	\$ -	0	\$ -
12			\$ -	0	\$ -	\$ -	0	\$ -
13			\$ -	0	\$ -	\$ -	0	\$ -
14			\$ -	0	\$ -	\$ -	0	\$ -
15			\$ -	0	\$ -	\$ -	0	\$ -
16			\$ -	0	\$ -	\$ -	0	\$ -
17			\$ -	0	\$ -	\$ -	0	\$ -
18			\$ -	0	\$ -	\$ -	0	\$ -
19			\$ -	0	\$ -	\$ -	0	\$ -
20			\$ -	0	\$ -	\$ -	0	\$ -
21			\$ -	0	\$ -	\$ -	0	\$ -
22			\$ -	0	\$ -	\$ -	0	\$ -
23			\$ -	0	\$ -	\$ -	0	\$ -
24			\$ -	0	\$ -	\$ -	0	\$ -
25			\$ -	0	\$ -	\$ -	0	\$ -
26			\$ -	0	\$ -	\$ -	0	\$ -
					\$ 2,135.03			\$ 2,177.72

SUMMARY OF MATERIALS AND SUPPLIES

SUMMARY OF MATERIALS, SUPPLIES, Services	Yr 5 Escalation Rate	2.00%
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	Task # or Description	Item Description	Year 5			TOTAL
			Unit Price	Unit Quantity	Subtotal	
1	1	GSA Lease of Equip Code 6351 (monthly lease)	\$ 242.46	3	\$ 727.39	\$ 3,497.11
2	1	GSA Lease of Equip Code 6351 (mileage rate)	\$ 0.34	1852	\$ 621.45	\$ 2,987.74
3	1	Boat fuel (gal)	\$ 4.33	60	\$ 259.78	\$ 1,248.97
4	1	Boat oil (qt)	\$ 11.91	6	\$ 71.44	\$ 343.47
5	1	Sampling equipment repair/replacement	\$ 541.22	1	\$ 541.22	\$ 2,602.02
6			\$ -	0	\$ -	\$ -
7			\$ -	0	\$ -	\$ -
8			\$ -	0	\$ -	\$ -
9			\$ -	0	\$ -	\$ -
10			\$ -	0	\$ -	\$ -
11			\$ -	0	\$ -	\$ -
12			\$ -	0	\$ -	\$ -
13			\$ -	0	\$ -	\$ -
14			\$ -	0	\$ -	\$ -
15			\$ -	0	\$ -	\$ -
16			\$ -	0	\$ -	\$ -
17			\$ -	0	\$ -	\$ -
18			\$ -	0	\$ -	\$ -
19			\$ -	0	\$ -	\$ -
20			\$ -	0	\$ -	\$ -
21			\$ -	0	\$ -	\$ -
22			\$ -	0	\$ -	\$ -
23			\$ -	0	\$ -	\$ -
24			\$ -	0	\$ -	\$ -
25			\$ -	0	\$ -	\$ -
26			\$ -	0	\$ -	\$ -
					\$ 2,221.28	\$ 10,679.31

SUMMARY OF TRAVEL COSTS

Cost Element	Year 1	Year 2	Year 3	Year 4	Year 5	TOTAL
Trip #	1	1	1	1	1	
From-To	Vernal to Logan	Vernal to Logan	Vernal to Logan	Vernal to Logan	Vernal to Logan	
Reason	Equipment repair/transfer	Equipment repair/transfer	Equipment repair/transfer	Equipment repair/transfer	Equipment repair/transfer	
# of Days (include travel days)	2	2	2	2	2	
Airfare						
Lodging (Per Night)	\$ 96.00	\$ 96.00	\$ 94.00	\$ 95.88	\$ 94.00	
MI&E Per Day	\$ 48.63	\$ 48.63	\$ 55.00	\$ 56.10	\$ 55.00	
Auto Rental Per Day						
Total Per Trip	\$ 264.94	\$ 264.94	\$ 270.50	\$ 275.91	\$ 270.50	
No. of persons	1	1	1	1	1	
SUBTOTAL =	\$ 264.94	\$ 264.94	\$ 270.50	\$ 275.91	\$ 270.50	\$ 1,346.79

Cost Element	Year 1	Year 2	Year 3	Year 4	Year 5	TOTAL
Trip #	2	2	2	2	2	
From-To	Vernal to Durango	Vernal to Durango	Vernal to Durango	Vernal to Durango	Vernal to Durango	
Reason	Researchers Meeting	Researchers Meeting	Researchers Meeting	Researchers Meeting	Researchers Meeting	
# of Days (include travel days)	4	4	4	4	4	
Airfare						
Lodging (Per Night)	\$ 102.00	\$ 102.00	\$ 104.04	\$ 106.12	\$ 108.24	
MI&E Per Day	\$ 74.69	\$ 74.69	\$ 76.18	\$ 77.70	\$ 79.26	
Auto Rental Per Day						
Total Per Trip	\$ 669.41	\$ 669.41	\$ 682.79	\$ 696.45	\$ 710.38	
No. of persons	1	1	1	1	1	
SUBTOTAL =	\$ 669.41	\$ 669.41	\$ 682.79	\$ 696.45	\$ 710.38	\$ 3,428.44

	Year 1	Year 2	Year 3	Year 4	Year 5	TOTAL
TOTAL COST BY PERIOD =	\$ 934.34	\$ 934.34	\$ 953.29	\$ 972.36	\$ 980.88	\$ 4,775.21