FUTURE FISHERIES IMPROVEMENT PROGRAM GRANT APPLICATION

All sections must be addressed, or the application will be considered invalid

I. APPLICANT INFORMATION

A. Applicant Name: Trout Unlimited

Mailing Address: 312 N. Higgins Suite 200

City: Missoula State: MT Zip: 59802

Telephone: 406-552-2168 E-mail: TScanlon@tu.org

B. Contact Person (if different than applicant): Same as applicant

Address:

City: State: Zip:

Telephone: E-mail:

C. Landowner and/or Lessee Name (if different than applicant): The Ranch at Rock Creek

Mailing Address: 79 Carriage House Ln

City: Philipsburg State: MT Zip: 59858

Telephone: 406-859-6201 E-mail: jbelnap@theranchatrockcreek.com

II. PROJECT INFORMATION

A. Project Name: Middle Fork Rock Creek Fish Passage Reconnection Project

River, stream, or lake: Rock Creek

Location: Township: 6N Range: 15W Section: 19

Latitude: 46.24005 Longitude: -113.51794 *Within project (decimal degrees)*

County: Granite

B. Purpose of Project:

The purpose of the project is to restore connectivity and streamflows in the Rock Creek watershed of the Upper Clark Fork River Basin to promote diverse life history strategies and conserve genetic diversity for native and wild fish, including federally threatened bull trout, genetically non-hybridized westslope cutthroat trout, brown trout, and rainbow trout.

Project objectives are to enhance streamflows and reconnect 25 miles of fish passage by upgrading irrigation infrastructure and eliminating two fish passage barriers associated with irrigation diversions that have been documented to entrain and cause bull trout and other fish mortality in irrigation ditches. The project also increases the efficiency of the existing irrigation water delivery system. Irrigation infrastructure improvements will be made to combine water withdrawals from two irrigation diversions into one and eliminate 1.5 miles of leaky irrigation ditch. A fish screen will be installed to provide safe fish passage past the combined irrigation diversion. Project activities will fully reconnect fish passage in Middle Fork Rock Creek and improve connectivity in mainstem Rock Creek. Additional project benefits include improved angling opportunities, preserved boater safety in Rock Creek, riparian habitat enhancements, and reduced streambank erosion.

C. Brief Project Description (attach additional information to end of application):

Rock Creek is a major tributary to the Upper Clark Fork River located 20 miles east of Missoula, MT. The 600,000-acre drainage area is predominately comprised of forested lands, and it is an important source of both cold water and fish recruitment to the Clark Fork. According to the US Fish and Wildlife Service (USFWS), Rock Creek is Core Habitat and supports a metapopulation of federally threatened bull trout with some of the best remaining spawning and rearing habitat in the Columbia River Basin Headwaters Recovery Unit, where recovery efforts should be targeted. Rock Creek also supports populations of genetically non-hybridized westslope cutthroat trout, a species of concern for Montana Fish, Wildlife, & Parks (FWP) and healthy wild trout populations of brook trout, rainbow trout, and brown trout.

In 2018, Trout Unlimited (TU) completed an inventory of irrigation diversion fish passage barriers in the Rock Creek watershed. Since then, TU has coordinated with Montana Fish, Wildlife, and Parks (FWP), Montana Natural Resource Damage Program (NRDP), USFWS staff, and other stakeholders to prioritize tributaries for fish passage reconnection efforts and implement priority fish passage barrier removal projects. The Middle Fork Rock Creek Fish Passage Reconnection Project will eliminate two priority irrigation diversion fish passage barriers: one located on Rock Creek and the other on the Middle Fork of Rock Creek.

Project activities include:

1. Upgrade irrigation infrastructure to combine irrigation water withdrawals from the Middle Fork Irrigation Diversion with the Rock Creek 1 Irrigation Diversion and improve efficiency of water delivery.
2. Decommission and reclaim the Middle Fork Irrigation Diversion and 1.5 miles of the Middle Fork irrigation ditch to reduce sedimentation and improve riparian vegetation.
3. Install a fish screen at the consolidated Rock Creek 1 Irrigation Diversion to provide safe fish passage past the diversion site.

Current infrastructure for the Middle Fork Irrigation Diversion and the Rock Creek 1 Irrigation Diversion have been documented to entrain bull trout and high numbers of westslope cutthroat trout and other fish. The ditch infrastructure will be upgraded to allow for combined withdrawals from the Rock Creek 1 Irrigation Diversion without the need to upgrade the instream diversion structure. A fish screen will be installed at the combined Rock Creek 1 Irrigation Diversion to provide safe fish passage past the diversion site. Combined irrigation water withdrawals from the Rock Creek 1 Diversion will reduce maintenance and allow the Middle Fork diversion site to be decommissioned and reclaimed. The site will be restored by removing the headgate and plugging the irrigation ditch. Transplants will be planted to restore riparian vegetation, reduce sedimentation, and improve riparian habitat. Volunteers will support the effort by planting of willows throughout the restored Middle Fork site. Flow monitoring from the existing Middle Fork irrigation ditch indicates up to 8cfs of water is lost from evaporation and ditch seepage in

the upper 1.5 miles of the Middle Fork ditch. By upgrading irrigation infrastructure to combine water withdrawals into the Rock Creek 1 ditch and eliminate the Middle Fork diversion will also eliminate of 1.5 miles of leaky irrigation ditch. Estimates indicate up to 10cfs of water savings will be produced which will enhance streamflows.

No water right changes are required in order to combine the irrigation water withdrawals as proposed for this project. However, TU anticipates protecting the streamflow enhancements that result from project activities by completing a 30-year instream flow lease through a water right donation from the landowner. TU will work with the water right holder complete a Montana Department of Natural Resources and Conservation (DNRC) partial water right change application for a 30-year instream flow water right lease to benefit of the fishery. It should be noted that this is an additional component of the project and these costs are not included in the project budget.

The project restores connectivity in the Middle Fork of Rock Creek and improves habitat connectivity in mainstem Rock Creek by eliminating entrainment in two major diversions. Combined with the completion of a 30-year instream water right lease, this project provides long-term habitat protection to benefit species viability.

D. Length of stream or size of lake that will be treated (project extent): 0.5 miles

Length/size of impact, if larger than project extent (e.g. stream miles opened): 25

E. Project Budget:

Grant Request (Dollars):	**$**	**50,000**
Matching Dollars:	**$**	**48,500**
Matching In-Kind Services:*	**$**	**1,500**

**salaries of government employees <u>are not</u> considered matching contributions*

Other Contributions (not part of this app)	**$**	**283,530**
Total Project Cost:	**$**	**383,530**

F. **Attach** itemized (line item) budget – *see budget template*

G. **Insert** or **attach** a project location map showing the project area in relation to a major landmark or town. Please indicate if the project location is on public or private property.

See Map attachment. The project location is on private property.

H. **Attach** specific project plans (e.g. detailed sketches, plan views [showing location and type of channel modifications], example photographs), current condition photographs, and maps. **If project involves water leasing or water salvage complete and attach a supplemental questionnaire (fwp.mt.gov/habitat/futurefisheries/supplement2.doc).*

I. **Attach** letters or statements of support. This includes landowner consent, community or public support, and fish biologist support.

J The project agreement includes a 20-year maintenance commitment. Please indicate (yes or no) that you will ensure project protection for 20 years. Discuss your ability to meet this commitment.

Yes [x] No [ ]

TU is required by other project funders to have a 20-year landowner agreement for the project to protect the investment in the long-term. The landowner is committed to maintaining all improvements with assistance from TU to help with long-term fish screen maintenance. The landowner is aware that a formal agreement is required prior to project implementation.

K. **Describe** or **attach** land management & maintenance plans, including changing to grazing regimes, that will ensure protection of the restored area.

TU is working with the landowner on a project agreement to maintain the upgraded infrastructure as well as the fish screen for at least a 20-year period.

III. PROJECT BENEFITS (attach additional information to end of application):

A. What species of fish will benefit from this project?

Bull Trout, genetically non-hybridized westslope cutthroat trout, rainbow trout, brown trout, mountain whitefish and non-game fish.

B. How will the project protect or enhance wild fish habitat?

The project reconnects 25 miles of fish habitat by removing the only known fish passage barrier on Middle Fork Rock Creek and a second barrier on Rock Creek associated with irrigation diversions. Current infrastructure blows downstream migrations of fish and entrains bull trout and other high numbers of westslope cutthroat trout, rainbow trout, and bull trout in the irrigation ditches. The project will consolidate the diversion infrastructure and screen the combined ditch to eliminate entrainment of downstream migrating fish into the irrigation ditches.

The project will enhance streamflows by improving the efficiency of irrigation water withdrawals from two irrigation diversions from infrastructure upgrades. The project will protect the conserved water through a donated water right that will go through a Montana DNRC water right change and be leased by TU as an instream flow water right for a 30-year period to benefit the fishery.

C. Will the project improve fish populations and/or fishing? To what extent? What are the expected short term and long-term benefits to the fishery?

Yes, the project is intended to improve fish populations and quality of angling by improving fish passage in priority spawning and migratory corridors for native species. Improved habitat connectivity and reduced entrainment in irrigation diversions should increase fish survival and population densities over time. The project is located in a high-priority migration corridor for bull trout and westslope cutthroat trout between Rock Creek and high-quality spawning habitat in the Middle Fork.

The project is also intended to provide a demonstration project for neighboring ranches to assist with the long-term goal of implementing similar irrigation infrastructure and screening projects.

D. Will the project increase public fishing opportunity for wild fish and, if so, how?

While the project is located on private land, Rock Creek is comprised of 80% public lands. Rock Creek and its tributaries are very accessible to wade anglers on public lands upstream and downstream of the project site and through stream access from public bridge rights-of-way. Improvements to fish passage from the project may improve angling opportunity throughout Rock Creek and the Clark Fork River. FWP otolith microchemistry and radio telemetry studies have shown the importance of Rock Creek for recruitment to the Clark Fork River.

E. What was the cause of habitat degradation in the area of this project and how will the project correct the cause?

Habitat degradation in the area has largely been the result of past agricultural practices and channel alteration. In particular, the impacts of cattle grazing include reduced woody riparian vegetation, increased erosion and sediment loading into the stream, over-widened stream channel, and decreased pool frequency and depths. The project seeks to correct these impairments through a cost-effective combination of removing grazing pressure, restoring riparian vegetation through the reach, and actively restoring a targeted 600' of streambanks within the reach.

F. What public benefits will be realized from this project?

The public benefits of this project will be increased angling opportunities through improved habitat connectivity in the watershed.
.

G. Will the project interfere with water or property rights of adjacent landowners? (explain):

No.

H. Will the project result in the development of commercial recreational use on the site? (explain):

No. The landowners operate a guest ranch on the property but have no plans for further recreational development.

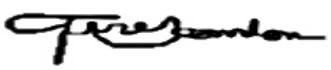
I. Is this project associated with the reclamation of past mining activity?

No.

Each approved project applicant must enter into a written agreement with Montana Fish, Wildlife & Parks specifying terms and duration of the project. The applicant must obtain all applicable permits prior to project construction. A competitive bid process must be followed when using State funds.

IV. AUTHORIZING STATEMENT

I (we) hereby declare that the information and all statements to this application are true, complete, and accurate to the best of my (our) knowledge and that the project or activity complies with rules of the Future Fisheries Improvement Program.

Applicant Signature:  Date: 5/8/2023

Sponsor (if applicable): _____

BUDGET TEMPLATE SHEET FOR FUTURE FISHERIES PROGRAM APPLICATIONS

Both tables must be completed or the application will be returned

PROJECT COSTS					CONTRIBUTIONS			
WORK ITEMS (Itemize by Category)	NUMBER OF UNITS	UNIT DESCRIPTION*	COST/UNIT	TOTAL COST	FUTURE FISHERIES REQUEST	MATCH (Cash or Services)**	OTHER (Not part of this application)	TOTAL
Personnel* **								
Project Coordination	1	LS	$8,000.00	$8,000.00			$8,000.00	$ 8,000.00
Engineered Design	1	LS	$50,000.00	$50,000.00		30,000.00	$20,000.00	$ 50,000.00
Project Monitoring	1	LS	$2,500.00	$2,500.00			$2,500.00	$ 2,500.00
			Sub-Total	$ 60,500.00	$ -	$ 30,000.00	$ 30,500.00	$ 60,500.00
Travel								
Mileage	2000	miles	$0.66	$ 1,310.00			1,310.00	$ 1,310.00
Per diem	-	-	-	-				$ -
			Sub-Total	$ 1,310.00	$ -	$ -	$ 1,310.00	$ 1,310.00
Construction Materials** **								
Furnish and Install Screen and Housing	1	ls	$110,000.00	$ 110,000.00	26,000.00	17,000.00	67,000.00	$ 110,000.00
Furnish and Install Pump	1	ft	$50,000.00	$ 50,000.00			50,000.00	$ 50,000.00
Furnish and Install Piping to Middle Fork Ditch	960	LS	$25.00	$ 24,000.00			24,000.00	$ 24,000.00
Furnish and Install Flow Meter	1	LS	$5,000.00	$ 5,000.00			5,000.00	$ 5,000.00
Furnish and Install Sluice Gate	1	LS	$4,000.00	$ 4,000.00	4,000.00			$ 4,000.00
			Sub-Total	$ 193,000.00	$ 30,000.00	$ 17,000.00	$ 146,000.00	$ 193,000.00
Equipment and Labor								
Construction Staking	1	LS	$6,500.00	$ 6,500.00			6,500.00	$ 6,500.00
Site Dewatering	1	LS	$5,000.00	$ 5,000.00	5,000.00			$ 5,000.00
Site Excavation and Embankment	1	LS	$10,000.00	$ 10,000.00			10,000.00	$ 10,000.00
Furnish and Install 3"minus backfill	1	LS	$4,000.00	$ 4,000.00			4,000.00	$ 4,000.00
Furnish and Install 1" minus bedding	1	LS	$1,500.00	$ 1,500.00			1,500.00	$ 1,500.00
Middle Fork site reclamation	1	LS	$18,000.00	$ 18,000.00	15,000.00	3,000.00		$ 18,000.00
			Sub-Total	$ 45,000.00	20,000.00	3,000.00	22,000.00	45,000.00
Mobilization								
Mobilization	1	LS	$30,100.00	$ 30,100.00			30,100.00	$ 30,100.00
Construction Contingency 20%				$ 53,620.00		$ -	$ 53,620.00	$ 53,620.00
			Sub-Total					
			TOTALS	**$ 383,530.00**	**$ 50,000.00**	**$ 50,000.00**	**$ 253,430.00**	**$ 353,430.00**

OTHER REQUIREMENTS:

All of the columns in the budget table and the matching contribution table MUST be completed appropriately or the application will be invalid. Please see the example budget sheet for additional clarification.

*Units = feet, hours, inches, etc. Do not use lump sum unless there is no other way to describe the costs.

**Can include in-kind materials. Justification for in-kind labor (e.g. hourly rates used). Do not use government salaries as match. In-kind match consists of TU volunteer to harvest and assist with planting of willow cuttings.

***The Review Panel suggests that design and oversight costs associated with a proposed project not exceed 15% of the total project budget. If design and oversight costs are in excess of 15%, applications must include a justification or minimum of two competitive bids for the cost of undertaking the project.

****The Review Panel recommends a maximum fencing cost of $1.50 per foot. Additional costs may be the responsibility of the applicant and/or partners.

Additional details: Project costs are estimated based on the the preliminary design construction estimates from Great West Engineering in Spring 2023. TU, GWE, and NRDP selected fish screen type does not require a new headgate. Input on the selected screen type from the landowner will be incorporated into the design plans in May/June 2023. If an alternative screen type is preferred by the landowner and a new headgate required to meet functional requirements for the the sceen type, TU and the landowner have agreed to jointly leverage any additional costs required for the project.

APPLICATION MATCHING CONTRIBUTIONS

(do not include requested funds or contributions not associated with the application)

CONTRIBUTOR	IN-KIND	CASH	TOTAL	Secured? (Y/N)
Montana NRDP	$ -	$ 30,000.00	$ 30,000.00	Y
Trout Unlimited	$ 1,500.00	$ 1,500.00	$ 3,000.00	Y
Western Native Trout Initiative	$ -	$ 17,000.00	$ 17,000.00	N
	$ -	$ -	$ -	
	$ -	$ -	$ -	
	$ -	$ -	$ -	
	$ -	$ -	$ -	
TOTALS	$ 1,500.00	$ 48,500.00	$ 50,000.00	

OTHER CONTRIBUTIONS

(contributions not associated with the application)

CONTRIBUTOR	IN-KIND	CASH	TOTAL	Secured? (Y/N)
Montana NRDP	$ -	$ 84,120.00	$ 84,120.00	Y
WestSlope Chapter TU	$ -	$ 10,000.00	$ 10,000.00	N, pending
USFWS	$ -	$ 60,000.00	$ 60,000.00	Y
USFWS		$ 50,000.00	$ 50,000.00	N, pending
Trout Unlimited	$	$ 11,410.00	$ 11,410.00	Y
Landowner	$ 2,000.00	$ 33,000.00	$ 35,000.00	Y
WNTI	$ -	$ 33,000.00	$ 33,000.00	N, pending
TOTALS	$ 2,000.00	$ 281,530.00	$ 283,530.00	

Middle Fork Rock Creek fish passage reconnection 016-2023

Rock Creek Watershed

TROUT UNLIMITED

Ravenna
Bearmouth
Drummond
Hall
Goldcreek
Maxville
Philipsburg

PROJECTS
CANALS/DITCHES
LANDS
FEDERAL
PRIVATE (LAND TRUST, NGO)
STATE

Ranch Cr
Upper Willow Cr
Stony Cr
Rock Cr
W Fk Rock Cr
E Fk Rock Cr
Elk Cr
Ross Fork
M Fk Rock Cr
Meadow Cr
Copper Cr
Carpp Cr

1

2

1– 6
Rock Creek
1 Irrigation Diversion

7
Middle Fork
Irrigation Diversion

0 2.5 5 10 Miles

GreatWest ENGINEERING

OPINION OF PROBABLE COST ***Preliminary Submittal***

PROJECT – Middle Fork Fish Passage Reconnection Project	DATE
Rock Creek Irrigation Improvements	***3/17/2023***

FCA ALTERNATIVE

ITEM	***AMOUNT***
Modular Farmers Conservation Alliance Screen with Pipe/Pump Infrastructure	$204,000.00
Concrete Headwall Structure with Rectangular Headgate & CMP Culvert	$97,800.00
SUBTOTAL:	**$301,800.00**
CONTINGENCY (20%)	**$60,360.00**
TOTAL W/CONTINGENCY (20%)	**$362,160.00**

CONICAL INTAKE SCREEN ALTERNATIVE

ITEM	***AMOUNT***
(2) Conical Intake Screens with Concrete Housing Structure & Pipe/Pump Infrastructure	$250,100.00
SUBTOTAL:	**$250,100.00**
CONTINGENCY (20%)	**$50,020.00**
TOTAL W/CONTINGENCY (20%)	**$300,120.00**

GreatWest ENGINEERING

OPINION OF PROBABLE COST *Preliminary Submittal*

PROJECT		DATE
Rock Creek Irrigation Improvements	***Farmers Conservation Alliance Screen - 2-7 CFS***	***3/17/2023***

BID ITEMS

ITEM NO.	*DESCRIPTION*	*UNIT*	*QUANTITY*	*PRICE*	*AMOUNT*
1	Mobilization & Demobilization	Lump Sum	1	$24,500.00	$24,500.00
2	Construction Staking	Lump Sum	1	$6,500.00	$6,500.00
3	Site Dewatering	Lump Sum	1	$2,500.00	$2,500.00
4	Unclassified Excavation & Embankment	Lump Sum	1	$15,000.00	$15,000.00
5	Furnish & Install 3"-Minus Backfill Material	Lump Sum	1	$5,000.00	$5,000.00
6	Furnish & Install 1"-Minus Bedding Material	Lump Sum	1	$2,500.00	$2,500.00
7	Furnish & Install FCA Fish Screens & Appurtenances	Lump Sum	1	$60,000.00	$60,000.00
8	Furnish & Install Fish Return Pipe (Approximately 275')	Lump Sum	1	$9,000.00	$9,000.00
9	Furnish & Install Centrifugal Pump	Lump Sum	1	$50,000.00	$50,000.00
10	Furnish & Install Piping to Middle Fork Ditch	Lump Sum	1	$24,000.00	$24,000.00
11	Furnish & Install Propeller-Type Flow Meter	Lump Sum	1	$5,000.00	$5,000.00
		SUBTOTAL:			**$204,000.00**
		CONTINGENCY (20%)			**$40,800.00**
		TOTAL W/CONTINGENCY (20%):			**$244,800.00**

GreatWest ENGINEERING

OPINION OF PROBABLE COST *Preliminary Submittal*

PROJECT		DATE
Rock Creek Irrigation Improvements	***Reinforced Concrete Headwall Structure with CMP Culvert***	***3/17/2023***

BID ITEMS

ITEM NO.	*DESCRIPTION*	*UNIT*	*QUANTITY*	*PRICE*	*AMOUNT*
1	Mobilization & Demobilization	Lump Sum	1	$11,800.00	$11,800.00
2	Construction Staking	Lump Sum	1	$3,000.00	$3,000.00
3	Site Demolition	Lump Sum	1	$3,500.00	$3,500.00
4	Erosion and Sediment Control (Includes Dewatering)	Lump Sum	1	$18,000.00	$18,000.00
5	Unclassified Excavation & Embankment	Lump Sum	1	$10,000.00	$10,000.00
6	Furnish & Install 3"-Minus Backfill Material	Lump Sum	1	$5,000.00	$5,000.00
7	Furnish & Install 1"-Minus Bedding Material	Lump Sum	1	$1,500.00	$1,500.00
8	Furnish & Install Trash Rack	Lump Sum	1	$15,000.00	$15,000.00
9	Furnish & Install Cast-In-Place Reinforced Concrete	Lump Sum	1	$15,000.00	$15,000.00
10	Furnish & Install Steel Rectangular Slidegate	Lump Sum	1	$10,000.00	$10,000.00
11	Furnish & Install 3' Diameter CMP Culvert	Lump Sum	1	$5,000.00	$5,000.00
		SUBTOTAL:			**$97,800.00**
		CONTINGENCY (20%)			**$19,560.00**
		TOTAL W/CONTINGENCY (20%):			**$117,360.00**

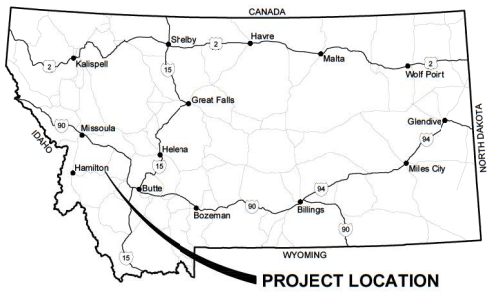
GreatWest ENGINEERING

OPINION OF PROBABLE COST *Preliminary Submittal*

PROJECT		DATE
Rock Creek Irrigation Improvements	***Conical Intake Screens - 2-7 CFS***	***3/17/2023***

BID ITEMS

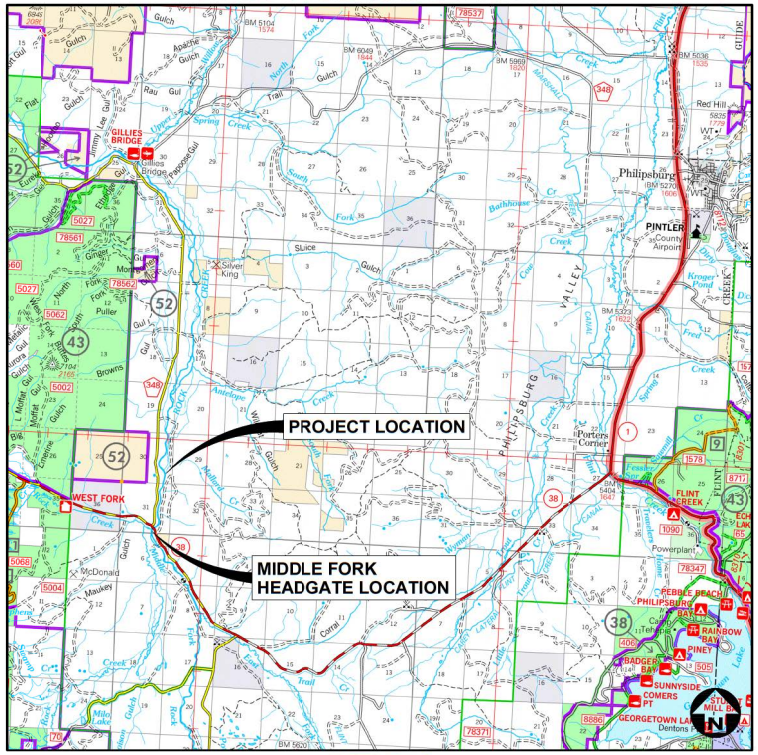
ITEM NO.	*DESCRIPTION*	*UNIT*	*QUANTITY*	*PRICE*	*AMOUNT*
1	Mobilization & Demobilization	Lump Sum	1	$30,100.00	$30,100.00
2	Construction Staking	Lump Sum	1	$6,500.00	$6,500.00
3	Site Dewatering	Lump Sum	1	$5,000.00	$5,000.00
4	Unclassified Excavation & Embankment	Lump Sum	1	$10,000.00	$10,000.00
5	Furnish & Install 3"-Minus Backfill Material	Lump Sum	1	$4,000.00	$4,000.00
6	Furnish & Install 1"-Minus Bedding Material	Lump Sum	1	$1,500.00	$1,500.00
7	Furnish & Install Cast-In-Place Concrete (Housing Structure)	Lump Sum	1	$15,000.00	$15,000.00
8	Furnish & Install Conical Intake Screens and Electrical Components	Lump Sum	1	$95,000.00	$95,000.00
9	Furnish & Install Centrifugal Pump and Electrical Components	Lump Sum	1	$50,000.00	$50,000.00
10	Furnish & Install Piping to Middle Fork Ditch	Lump Sum	1	$24,000.00	$24,000.00
11	Furnish & Install Propeller-Type Flow Meter	Lump Sum	1	$5,000.00	$5,000.00
12	Furnish & Install Sluice Gate (Sediment Flushing)	Lump Sum	1	$4,000.00	$4,000.00
		SUBTOTAL:			**$250,100.00**
		CONTINGENCY (20%)			**$50,020.00**
		TOTAL W/CONTINGENCY (20%):			**$300,120.00**



NATURAL RESOURCE DAMAGE PROGRAM
ROCK CREEK IRRIGATION IMPROVEMENTS

PRELIMINARY PLANS - NOT FOR CONSTRUCTION

SECTION 30, TOWNSHIP 6N, AND RANGE 15W
LATITUDE: 46°14'24.02"N; LONGITUDE: 113°31'5.40"W



NOT TO SCALE

SHEET INDEX

PROJECT: 1-21314-FO4
DATE: APRIL 19, 2023

PLANS PREPARED FOR:

NATURAL RESOURCE DAMAGE PROGRAM

APPROVED BY:

RYAN ELLIOTT, P.E.
GREAT WEST ENGINEERING, INC.

DRAFT

PLANS PREPARED BY:

EVAN CARROLL, E.I.
MATTESON SMITH, E.I.

GreatWest ENGINEERING
2501 BELT VIEW DRIVE
HELENA, MT 59601
(406)449-8627

NO.	REVISION DESCRIPTION	BY	DATE

SET NO.

SHEET NO. 1

OVERALL EXISTING SITE PLAN & CONTROL DIAGRAM

0 100 200
SCALE IN FEET

CONTROL POINT TABLE

POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
CP6	751,925.79	952,629.35	5,211.74	REBAR W/ CAP
CP7	751,751.44	952,750.70	5,213.95	REBAR W/ CAP
CP8	751,584.00	952,751.36	5,215.33	REBAR W/ CAP
CP9	752,451.13	953,275.98	5,228.04	REBAR W/ CAP
CP10	753,849.56	953,057.03	5,216.98	REBAR W/ CAP
CP99	752,176.01	952,129.25	5,213.42	REBAR W/ CAP

SURVEY NOTES:

1. THIS PROJECT UTILIZES A LOCAL GROUND COORDINATE SYSTEM. NORTHING AND EASTING COORDINATES ARE EXPRESSED IN UNITS OF INTERNATIONAL FEET BOTH HORIZONTALLY AND VERTICALLY. ELEVATIONS ARE REFERENCED TO THE NAVD88 VERTICAL DATUM.
2. RPC = RED PLASTIC CAP
3. SURVEY COMPLETED 10/22/2019.

NO.	REVISION DESCRIPTION	BY	DATE

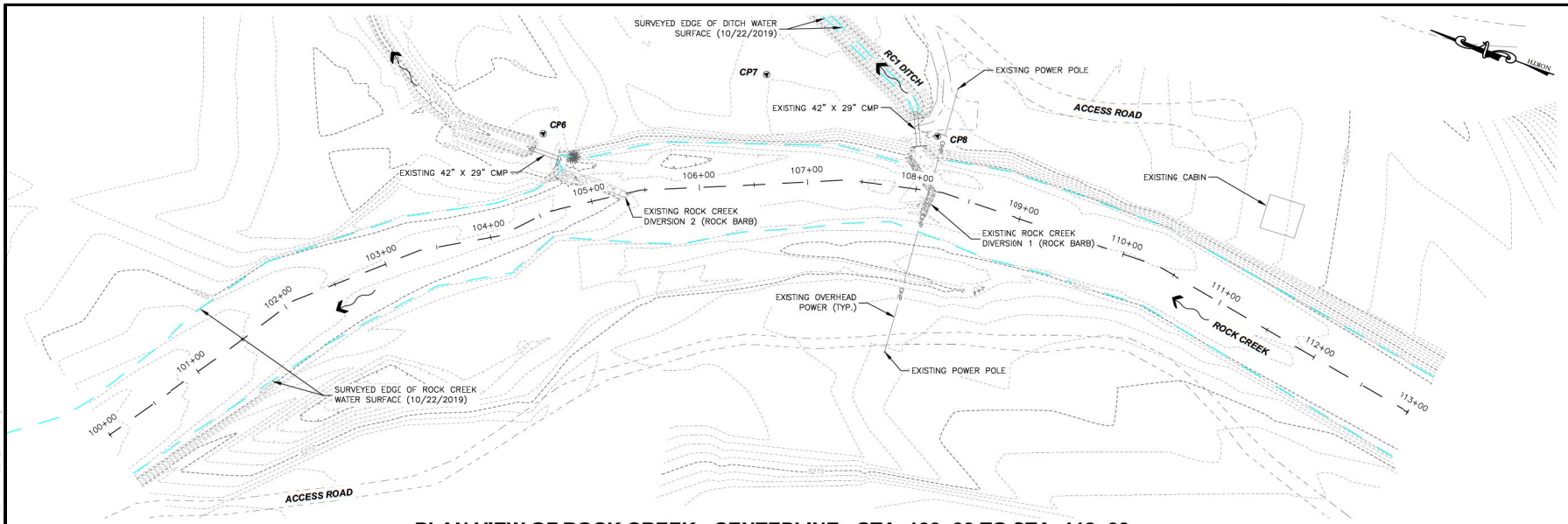
PROJECT: 1-21314-TO4
DESIGNED: EAC
DRAWN: EAC
CHECKED: RME
APPROVED: RME
DATE: APRIL 19, 2023

DRAFT

GreatWest ENGINEERING
2501 BELT VIEW DRIVE
HELENA, MT 59601
(406) 449-8627

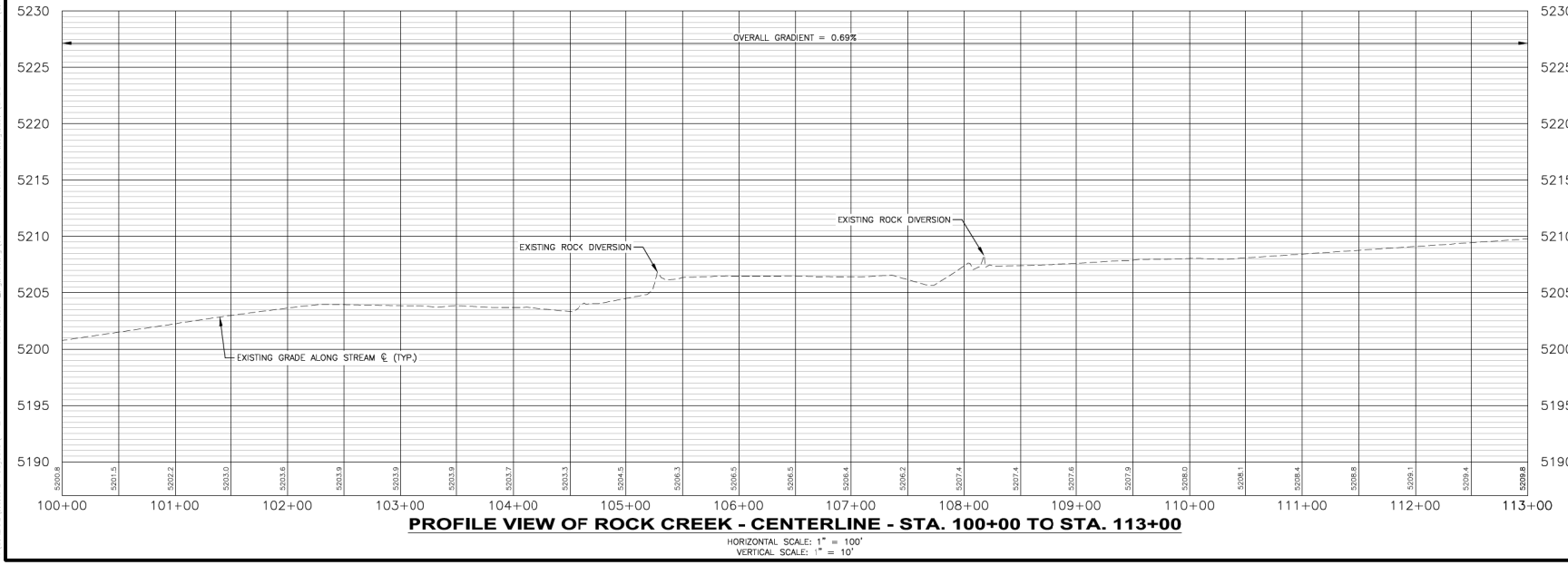
NATURAL RESOURCE DAMAGE PROGRAM
ROCK CREEK IRRIGATION IMPROVEMENTS
OVERALL EXISTING SITE PLAN & CONTROL DIAGRAM

SHEET NO.
2
OF 11



PLAN VIEW OF ROCK CREEK - CENTERLINE - STA. 100+00 TO STA. 113+00

0 50 100
SCALE IN FEET



PROFILE VIEW OF ROCK CREEK - CENTERLINE - STA. 100+00 TO STA. 113+00

HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 10'

NO.	REVISION DESCRIPTION	BY	DATE

PROJECT: 1-21314-T04
DESIGNED: EAC
DRAWN: EAC
CHECKED: RME
APPROVED: RME
DATE: APRIL 19, 2023

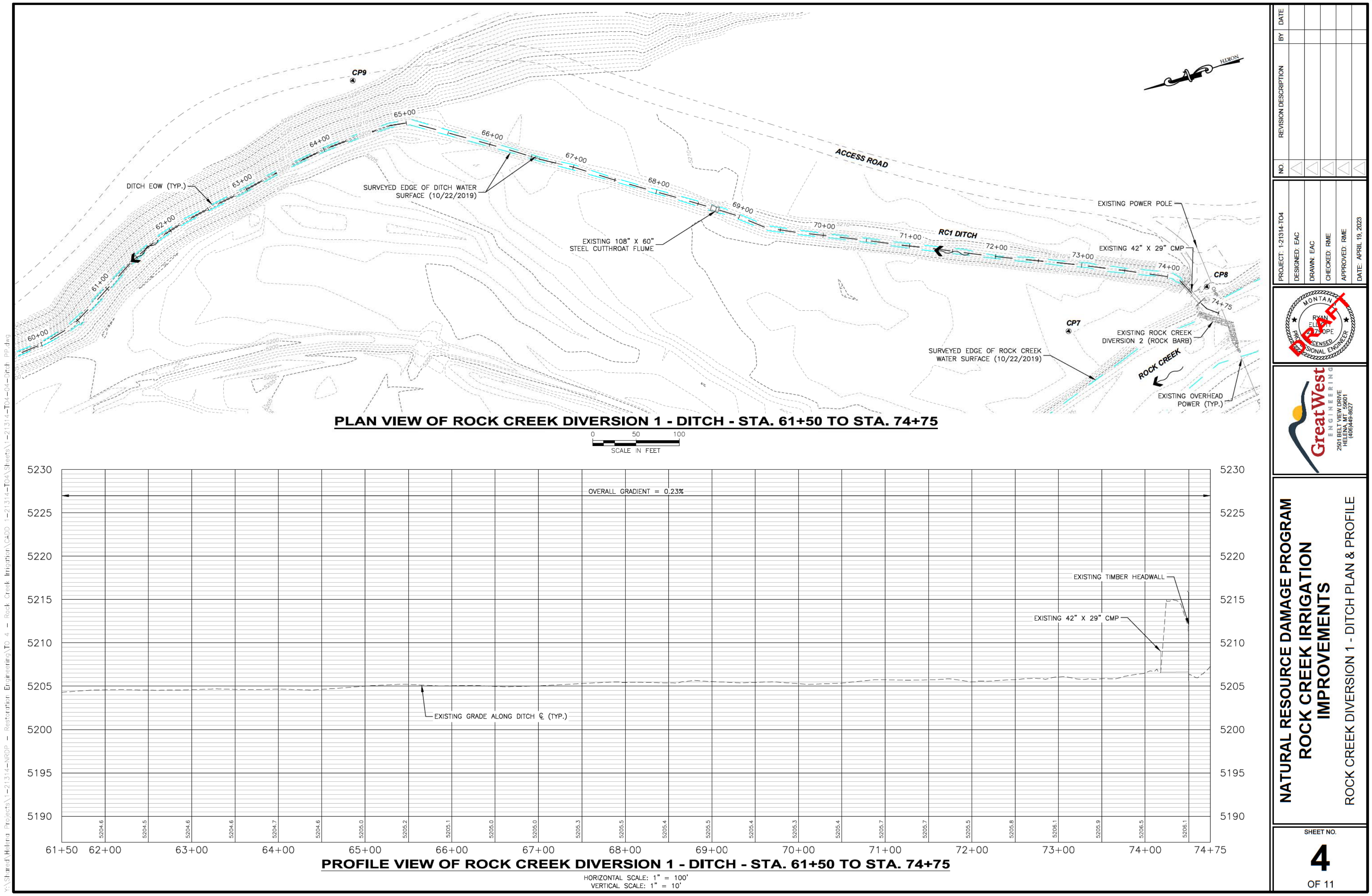
DRAFT

RYAN M. SLOPE
MONTANA
LICENSED PROFESSIONAL ENGINEER

GreatWest ENGINEERING
2501 BELT VIEW DRIVE
HELENA, MT 59601
(406)449-8627

NATURAL RESOURCE DAMAGE PROGRAM
ROCK CREEK IRRIGATION IMPROVEMENTS
ROCK CREEK PLAN & PROFILE

SHEET NO.
3
OF 11


NORTH
CP9
ACCESS ROAD
DITCH EOW (TYP.)
SURVEYED EDGE OF DITCH WATER SURFACE (10/22/2019)
EXISTING 108" X 60" STEEL CUTTHROAT FLUME
RC1 DITCH
EXISTING POWER POLE
EXISTING 42" X 29" CMP
CP8
CP7
EXISTING ROCK CREEK DIVERSION 2 (ROCK BARB)
SURVEYED EDGE OF ROCK CREEK WATER SURFACE (10/22/2019)
ROCK CREEK
EXISTING OVERHEAD POWER (TYP.)
60+00
61+00
62+00
63+00
64+00
65+00
66+00
67+00
68+00
69+00
70+00
71+00
72+00
73+00
74+00
74+75
PLAN VIEW OF ROCK CREEK DIVERSION 1 - DITCH - STA. 61+50 TO STA. 74+75
0 50 100
SCALE IN FEET
OVERALL GRADIENT = 0.23%
EXISTING TIMBER HEADWALL
EXISTING 42" X 29" CMP
EXISTING GRADE ALONG DITCH ℄ (TYP.)
5230
5225
5220
5215
5210
5205
5200
5195
5190
5204.6 5204.5 5204.6 5204.6 5204.7 5204.6 5205.0 5205.2 5205.1 5205.0 5205.0 5205.3 5205.5 5205.4 5205.5 5205.4 5205.3 5205.4 5205.7 5205.7 5205.5 5205.8 5206.1 5205.9 5206.5 5206.1
61+50 62+00 63+00 64+00 65+00 66+00 67+00 68+00 69+00 70+00 71+00 72+00 73+00 74+00 74+75
PROFILE VIEW OF ROCK CREEK DIVERSION 1 - DITCH - STA. 61+50 TO STA. 74+75
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 10'
NO. REVISION DESCRIPTION BY DATE
PROJECT: 1-21314-T04
DESIGNED: EAC
DRAWN: EAC
CHECKED: RME
APPROVED: RME
DATE: APRIL 19, 2023
DRAFT
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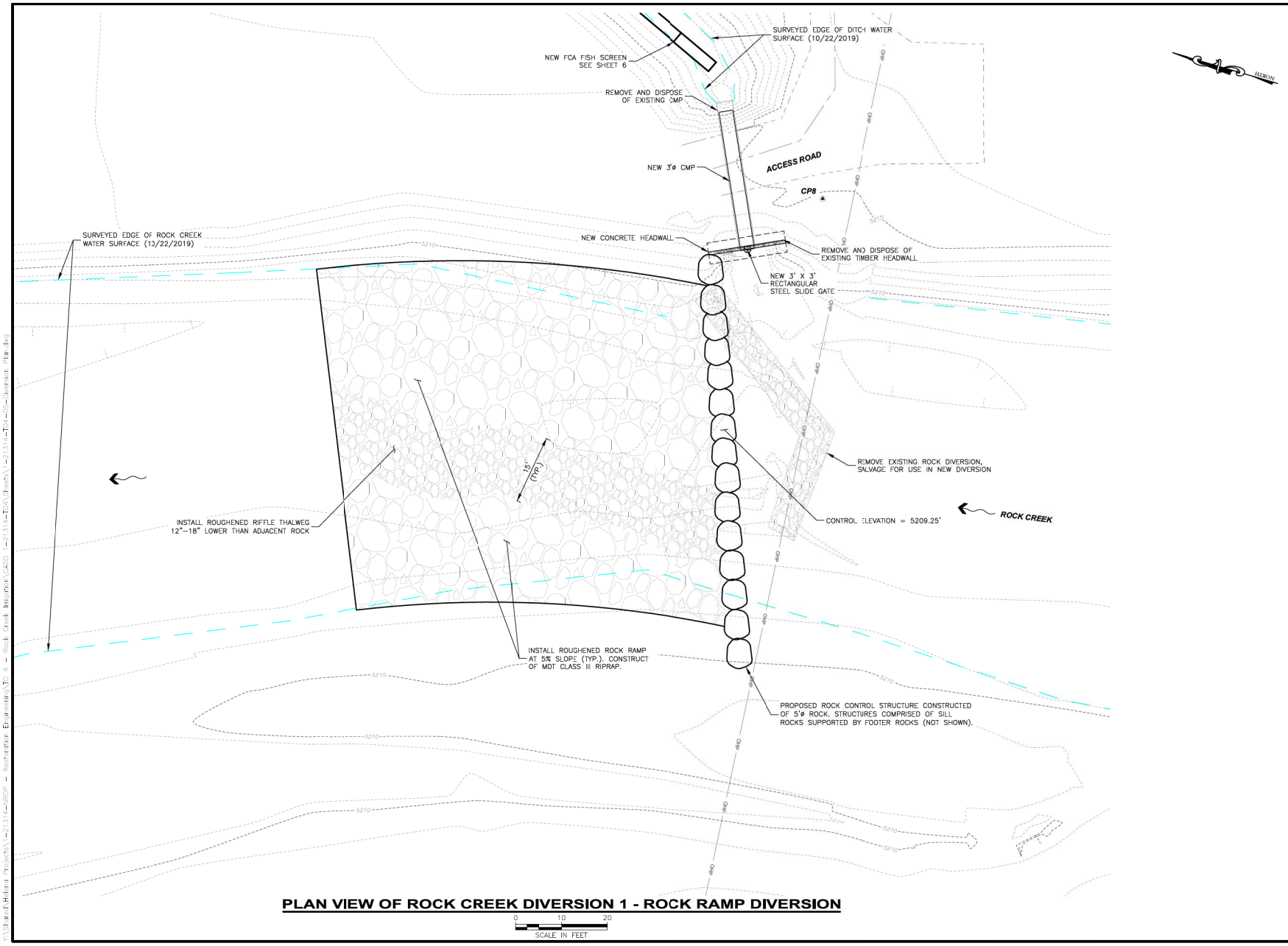
NATURAL RESOURCE DAMAGE PROGRAM
ROCK CREEK IRRIGATION IMPROVEMENTS
ROCK CREEK DIVERSION 1 - DITCH PLAN & PROFILE
SHEET NO.
4
OF 11



NO.	REVISION DESCRIPTION	BY	DATE

PROJECT: 1-21314-TO4
DESIGNED: EAC
DRAWN: EAC
CHECKED: RME
APPROVED: RME
DATE: APRIL 19, 2023

DRAFT

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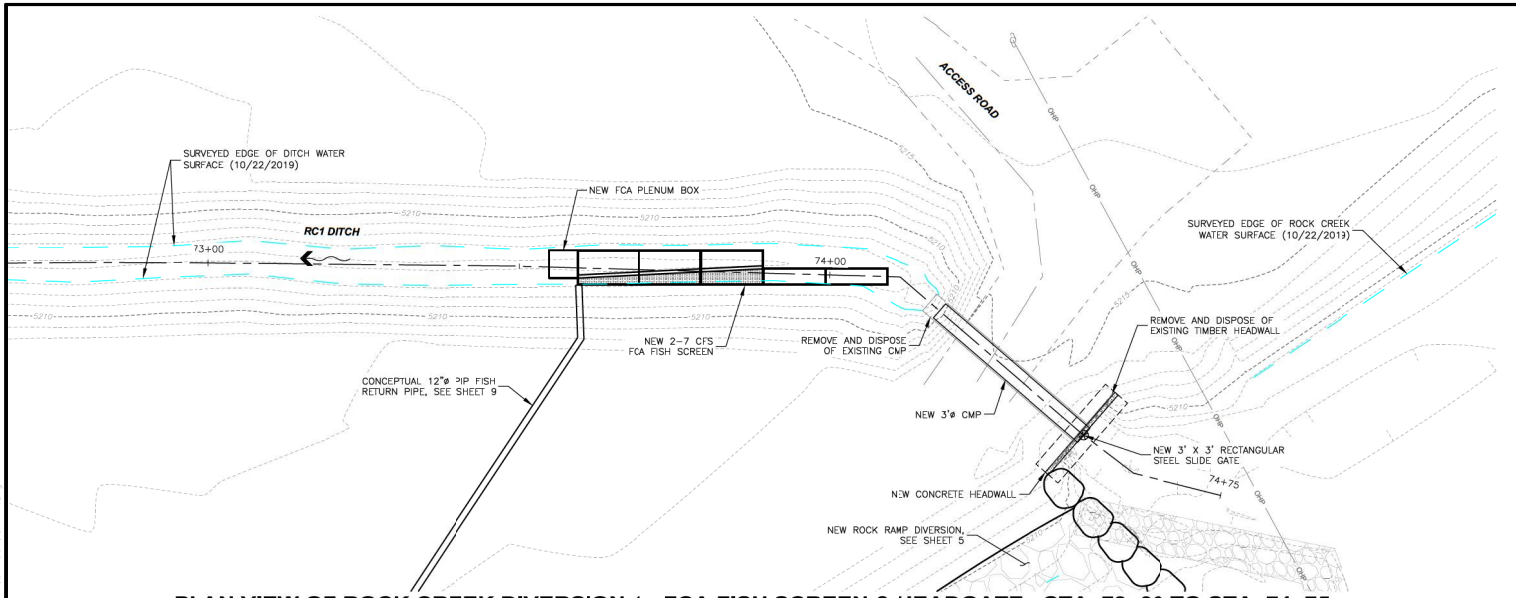
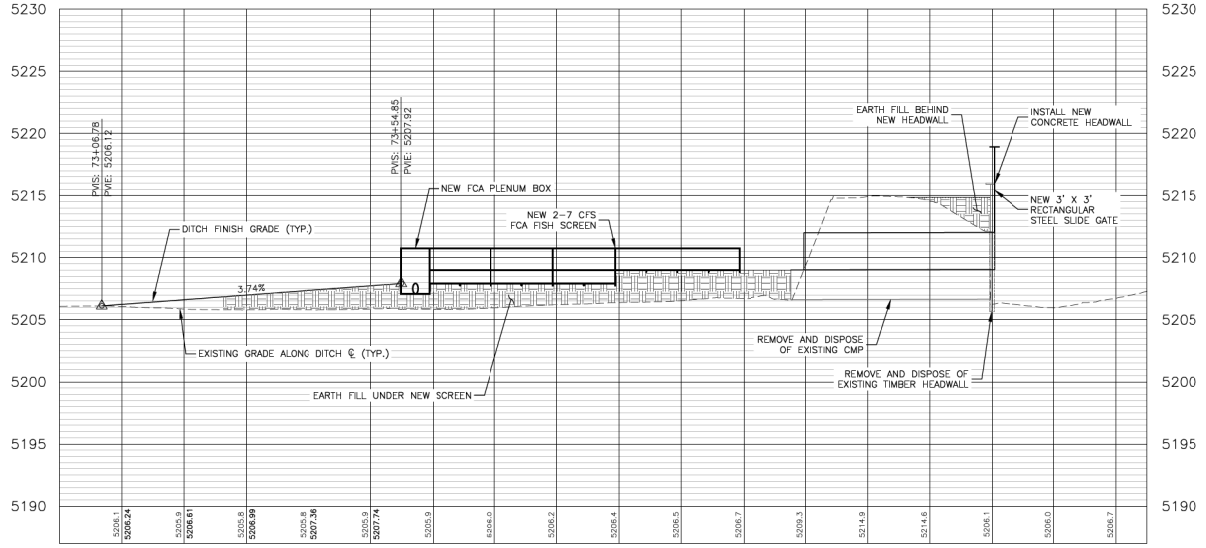
NATURAL RESOURCE DAMAGE PROGRAM
ROCK CREEK IRRIGATION IMPROVEMENTS
ROCK CREEK DIVERSION 1 - ROCK RAMP DIVERSION PLAN

SHEET NO.
5
OF 11



PLAN VIEW OF ROCK CREEK DIVERSION 1 - FCA FISH SCREEN & HEADGATE - STA. 73+00 TO STA. 74+75

0 10 20
SCALE IN FEET



PROFILE VIEW OF ROCK CREEK DIVERSION 1 - FCA FISH SCREEN & HEADGATE - STA. 73+00 TO STA. 74+75

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 10'

NO.	REVISION DESCRIPTION	BY	DATE

PROJECT: 1-21314-T04
DESIGNED: EAC
DRAWN: EAC
CHECKED: RME
APPROVED: RME
DATE: APRIL 19, 2023

DRAFT

RYAN M. SLOPE — MONTANA — LICENSED PROFESSIONAL ENGINEER

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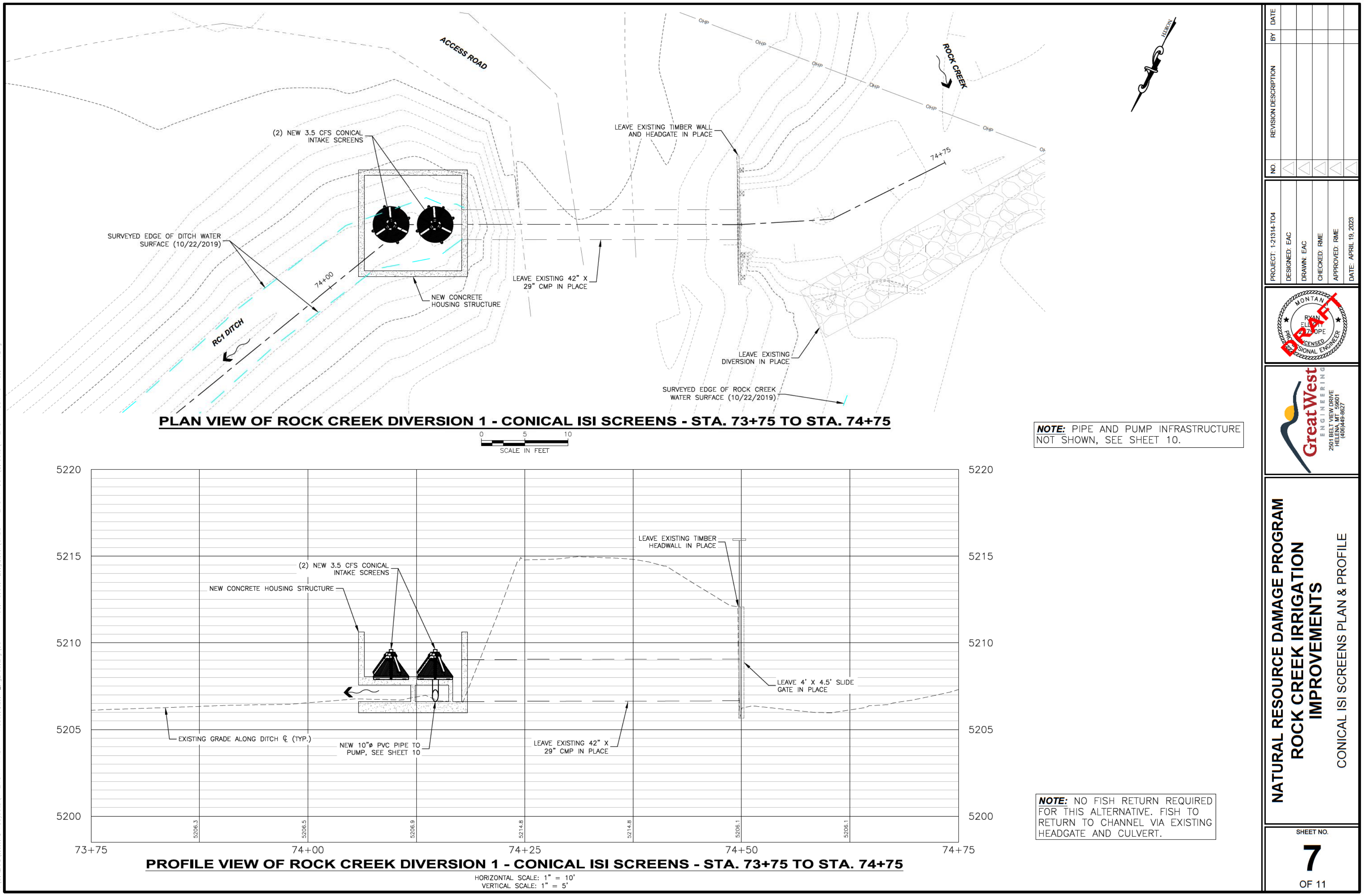
NATURAL RESOURCE DAMAGE PROGRAM
ROCK CREEK IRRIGATION IMPROVEMENTS
FCA FISH SCREEN AND HEADGATE PLAN & PROFILE

SHEET NO.
6
OF 11


ACCESS ROAD
ROCK CREEK
(2) NEW 3.5 CFS CONICAL INTAKE SCREENS
LEAVE EXISTING TIMBER WALL AND HEADGATE IN PLACE
SURVEYED EDGE OF DITCH WATER SURFACE (10/22/2019)
74+00
74+75
RC1 DITCH
NEW CONCRETE HOUSING STRUCTURE
LEAVE EXISTING 42" X 29" CMP IN PLACE
LEAVE EXISTING DIVERSION IN PLACE
SURVEYED EDGE OF ROCK CREEK WATER SURFACE (10/22/2019)
PLAN VIEW OF ROCK CREEK DIVERSION 1 - CONICAL ISI SCREENS - STA. 73+75 TO STA. 74+75
0 5 10
SCALE IN FEET
NOTE: PIPE AND PUMP INFRASTRUCTURE NOT SHOWN, SEE SHEET 10.
5220
5215
5210
5205
5200
LEAVE EXISTING TIMBER HEADWALL IN PLACE
(2) NEW 3.5 CFS CONICAL INTAKE SCREENS
NEW CONCRETE HOUSING STRUCTURE
LEAVE 4' X 4.5' SLIDE GATE IN PLACE
EXISTING GRADE ALONG DITCH ℄ (TYP.)
NEW 10"ø PVC PIPE TO PUMP, SEE SHEET 10
LEAVE EXISTING 42" X 29" CMP IN PLACE
5206.3
5206.5
5206.9
5214.8
5214.8
5206.1
5206.1
73+75
74+00
74+25
74+50
74+75
PROFILE VIEW OF ROCK CREEK DIVERSION 1 - CONICAL ISI SCREENS - STA. 73+75 TO STA. 74+75
HORIZONTAL SCALE: 1" = 10'
VERTICAL SCALE: 1" = 5'
NOTE: NO FISH RETURN REQUIRED FOR THIS ALTERNATIVE. FISH TO RETURN TO CHANNEL VIA EXISTING HEADGATE AND CULVERT.
NO
REVISION DESCRIPTION
BY
DATE
PROJECT: 1-21314-T04
DESIGNED: EAC
DRAWN: EAC
CHECKED: RME
APPROVED: RME
DATE: APRIL 19, 2023
MONTANA
RYAN ELLIOTT POPE
LICENSED PROFESSIONAL ENGINEER
DRAFT
GreatWest ENGINEERING
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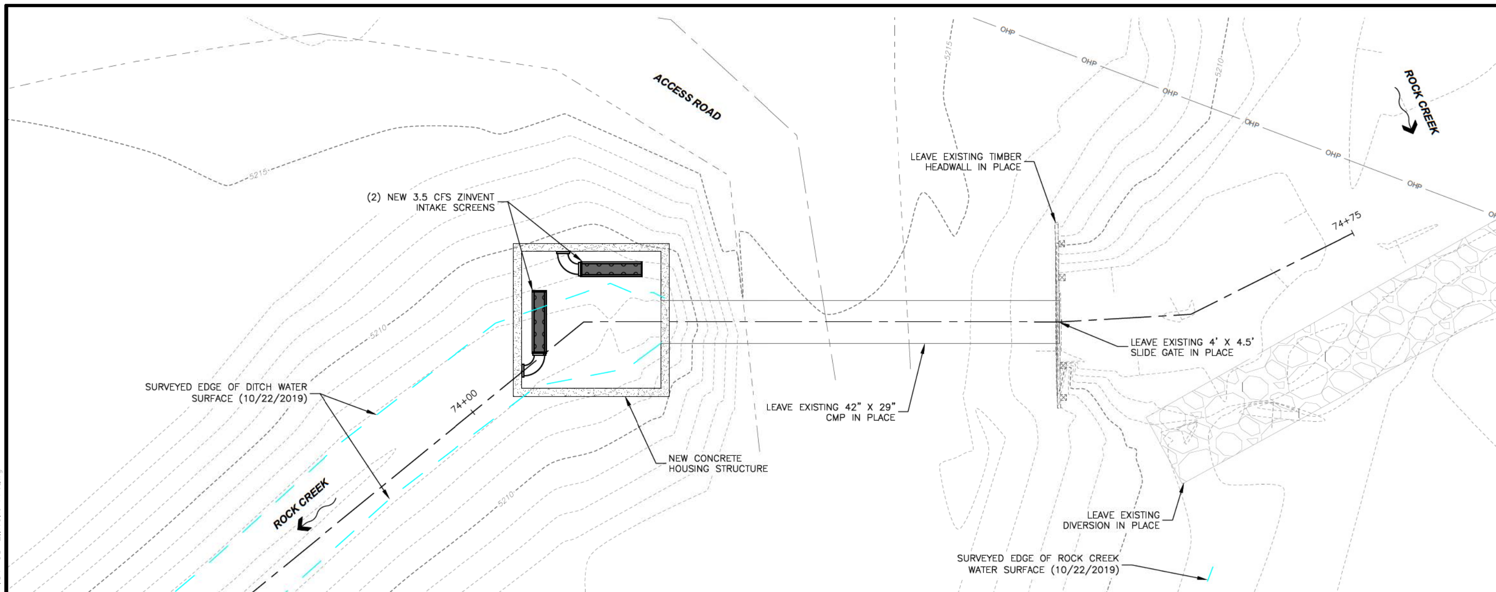
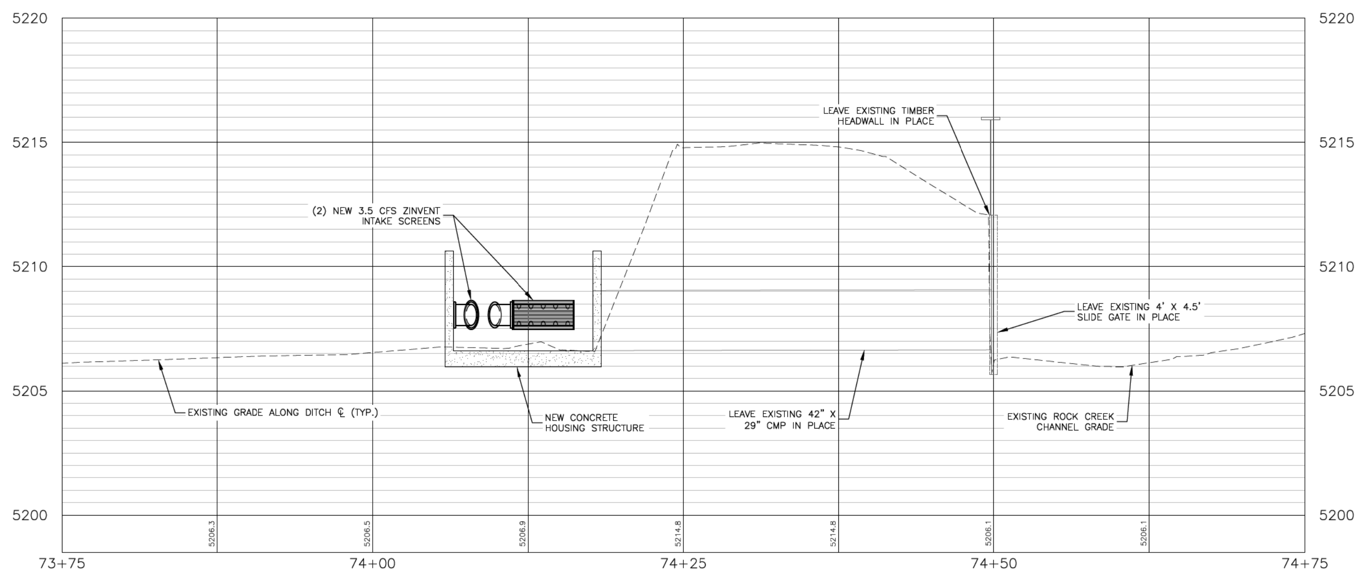
(406)449-8627
NATURAL RESOURCE DAMAGE PROGRAM
ROCK CREEK IRRIGATION IMPROVEMENTS
CONICAL ISI SCREENS PLAN & PROFILE
SHEET NO.
7
OF 11



PLAN VIEW OF ROCK CREEK DIVERSION 1 - STA. 73+75 TO STA. 74+75

NOTE: PIPE AND PUMP INFRASTRUCTURE NOT SHOWN, SEE SHEET 10.



PROFILE VIEW OF ROCK CREEK DIVERSION 1 - STA. 73+75 TO STA. 74+75

HORIZONTAL SCALE: 1" = 10'
VERTICAL SCALE: 1" = 5'

NOTE: NO FISH RETURN REQUIRED FOR THIS ALTERNATIVE. FISH TO RETURN TO CHANNEL VIA EXISTING HEADGATE AND CULVERT.

NO	REVISION DESCRIPTION	BY	DATE

PROJECT: 1-21314-T04
DESIGNED: EAC
DRAWN: EAC
CHECKED: RME
APPROVED: RME
DATE: APRIL 19, 2023

MONTANA RYAN ELLIOTT POPE LICENSED PROFESSIONAL ENGINEER — DRAFT

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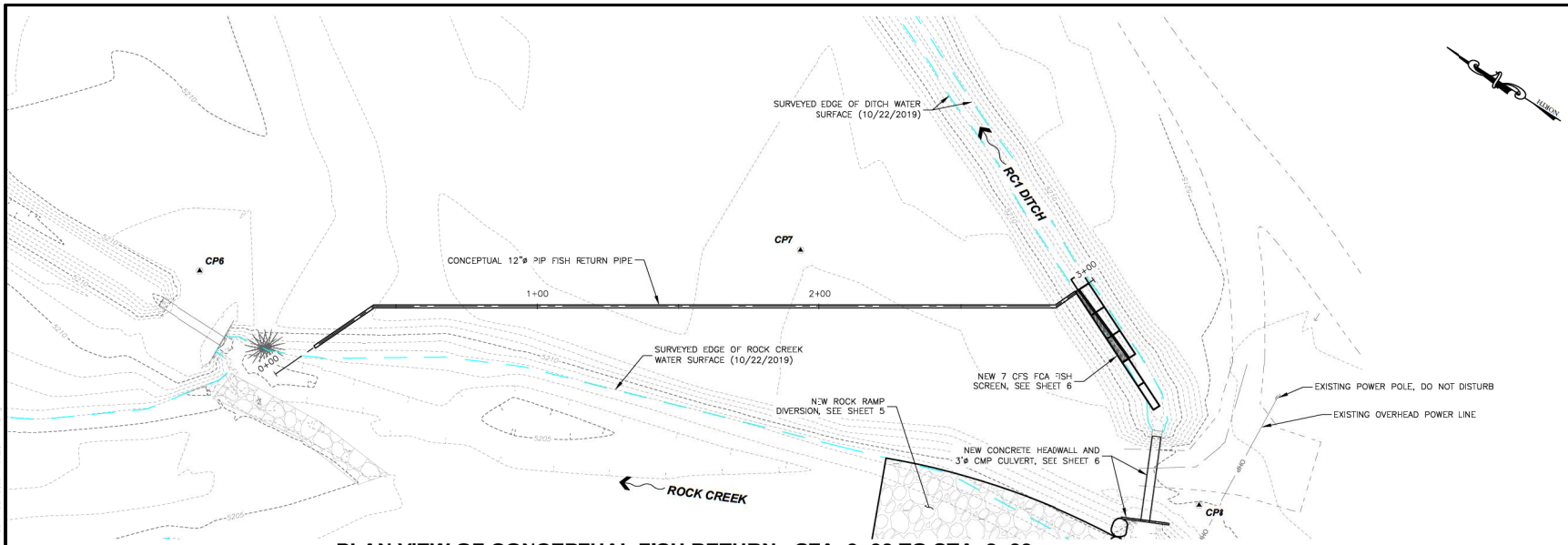
NATURAL RESOURCE DAMAGE PROGRAM
ROCK CREEK IRRIGATION IMPROVEMENTS
ZINVENT SCREEN PLAN & PROFILE

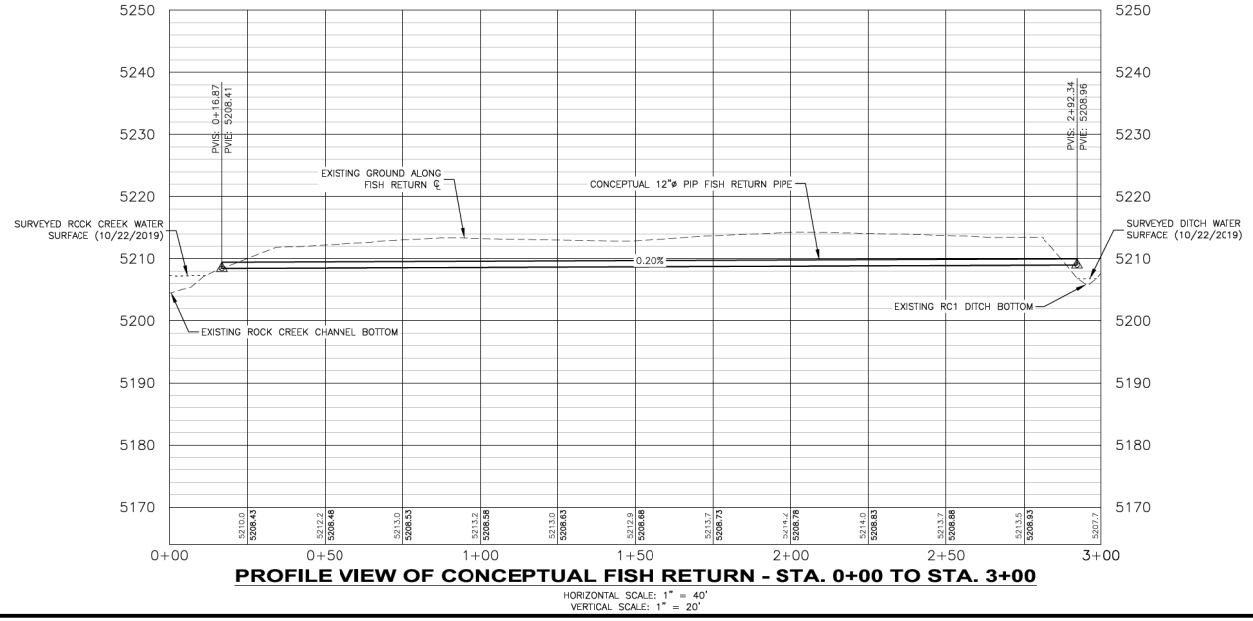
SHEET NO.
8
OF 11



PLAN VIEW OF CONCEPTUAL FISH RETURN - STA. 0+00 TO STA. 3+00

0 20 40
SCALE IN FEET

NOTE: PIPE AND PUMP INFRASTRUCTURE NOT SHOWN, SEE SHEET 10.



PROFILE VIEW OF CONCEPTUAL FISH RETURN - STA. 0+00 TO STA. 3+00

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 20'

NO.	REVISION DESCRIPTION	BY	DATE

PROJECT: 1-21314-T04
DESIGNED: EAC
DRAWN: EAC
CHECKED: RME
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DATE: APRIL 19, 2023

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NATURAL RESOURCE DAMAGE PROGRAM
ROCK CREEK IRRIGATION IMPROVEMENTS
CONCEPTUAL FISH RETURN PLAN & PROFILE

SHEET NO.
9
OF 11

PROPOSED PUMPING PLAN

0 35 70
SCALE IN FEET

NO.	REVISION DESCRIPTION	BY	DATE

PROJECT: 1-21314-T04
DESIGNED: EAC
DRAWN: EAC
CHECKED: RME
APPROVED: RME
DATE: APRIL 19, 2023

DRAFT

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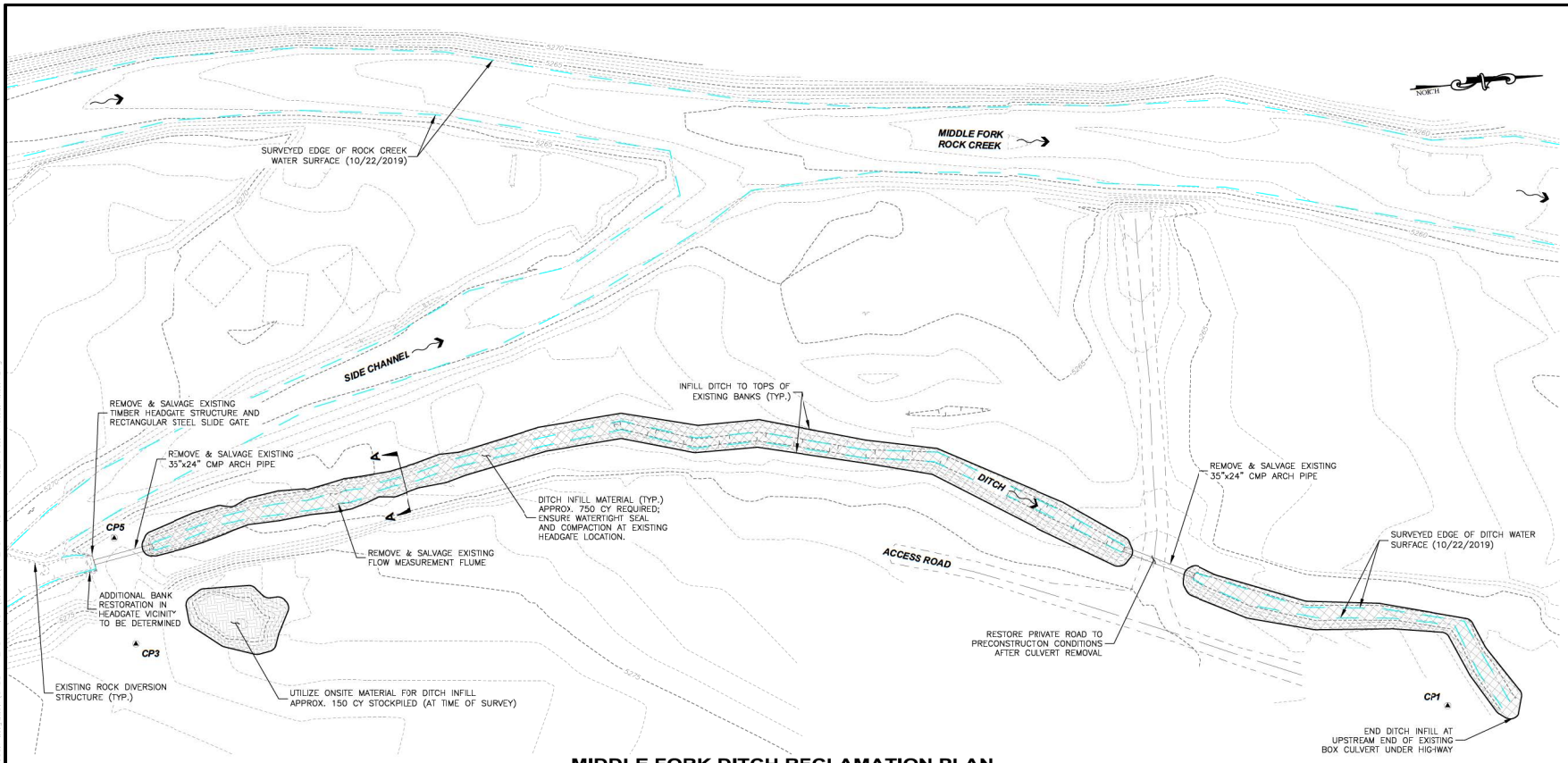
NATURAL RESOURCE DAMAGE PROGRAM
ROCK CREEK IRRIGATION IMPROVEMENTS
PROPOSED PUMPING PLAN

SHEET NO.
10
OF 11



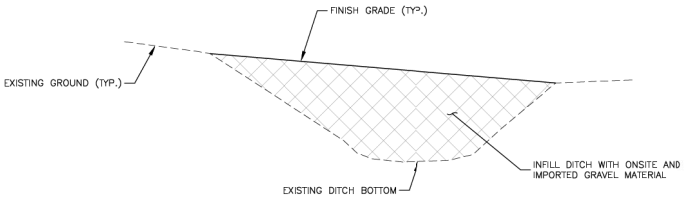
MIDDLE FORK DITCH RECLAMATION PLAN

0 30 60
SCALE IN FEET

ESTIMATED QUANTITIES*

ITEM	QUANTITY	
TOTAL DITCH INFILL	750	CY
AVAILABLE ONSITE MATERIAL	150	CY
IMPORTED MATERIAL	600	CY

*QUANTITIES ARE APPROXIMATE AND INTENDED FOR INFORMATIONAL PURPOSES ONLY



SECTION A-A - DITCH INFILL

NO SCALE

CONTROL POINT TABLE

POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
CP1	745,580.95	951,599.04	5,268.47	REBAR W/ CAP
CP2	745,756.41	951,414.73	5,258.86	REBAR W/ CAP
CP3	744,878.64	951,491.97	5,278.51	REBAR W/ CAP
CP4	744,833.54	951,258.26	5,272.85	REBAR W/ CAP
CP5	744,873.05	951,433.80	5,273.05	REBAR W/ CAP

SURVEY NOTES:

1. THIS PROJECT UTILIZES A LOCAL GROUND COORDINATE SYSTEM. NORTHING AND EASTING COORDINATES ARE EXPRESSED IN UNITS OF INTERNATIONAL FEET BOTH HORIZONTALLY AND VERTICALLY. ELEVATIONS ARE REFERENCED TO THE NAVD88 VERTICAL DATUM.
2. RPC = RED PLASTIC CAP
3. SURVEY COMPLETED 10/22/2019.

NO.	REVISION DESCRIPTION	BY	DATE

PROJECT: 1-21314-T04
DESIGNED: EAC
DRAWN: EAC
CHECKED: RME
APPROVED: RME
DATE: APRIL 19, 2023

DRAFT

MONTANA RYAN M. SLOPE LICENSED PROFESSIONAL ENGINEER

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(406) 449-8627

NATURAL RESOURCE DAMAGE PROGRAM
ROCK CREEK IRRIGATION IMPROVEMENTS
MIDDLE FORK DITCH RECLAMATION PLAN

SHEET NO.
11
OF 11

Montana Fish, Wildlife, & Parks
Future Fisheries Improvement Program
Helena, MT 59620-0701

May 15, 2023

Dear Future Fisheries Improvement Program Review Panel,

I am writing to express our support as the landowner of the "Middle Fork Rock Creek Fish Passage Reconnection Project" proposal submitted by Trout Unlimited. Our family has been a landowner on Rock Creek since purchasing what is now the Ranch at Rock Creek guest ranch. We value the fish and wildlife habitat on and surrounding our land. We want to help protect these resources and the environment while preserving ranching operations on the Ranch at Rock Creek.

Over the last two years, we have worked closely with TU staff to assess alternatives for modernizing and streamlining existing irrigation infrastructure in a way that benefits habitat for fish and wildlife. The selected design alternative will consolidate and upgrade existing infrastructure in a way that not only improves water management efficiency but also improves streamflows and habitat connectivity by protecting fish from entrainment and mortality in irrigation ditches. We will achieve these project goals by completing the following activities and objectives:

1. Reduce maintenance of irrigation infrastructure by combining irrigation water withdrawals from the Middle Fork irrigation diversion with the Rock Creek irrigation diversion.
2. Install a fish screen in the combined Rock Creek irrigation ditch to reduce fish entrainment in mainstem Rock Creek.
3. Decommission and reclaim the Middle Fork irrigation diversion to reduce streambank erosion and reconnect fish habitat in Middle Fork Rock Creek.
4. Decommission 1.5 miles of the irrigation ditch associated with the Middle Fork irrigation diversion to reduce water loss from ditch seepage.
5. Donate "water savings" – the portion of water and water right no longer needed because of reduced ditch loss – to Trout Unlimited for a 30-year instream flow water right lease.

We will help cover project costs for any modifications to the existing headworks for the Rock Creek diversion and supply power for the proposed irrigation pump in the ditch for a total estimated cost-share of $100,000 over the next 10 years. We will also maintain upgraded infrastructure and assist TU with future fish screen maintenance.

We are excited about the opportunity to work with Trout Unlimited on this project, and we hope it will encourage neighboring landowners to invest in similar projects that improve the overall health of Rock Creek in the long-term.

Thank you for your consideration.

Sincerely,

Conor J Manley
Conor Manley

State of Montana

Natural Resource Damage Program

May 11, 2023

Montana Fish Wildlife and Parks
Future Fisheries Improvement Program
1420 E. Sixth Ave.
P.O. Box 200701
Helena, MT 59620-0701

Dear Future Fisheries Review Panel,

The Montana Natural Resource Damage Program (NRDP) supports Trout Unlimited's (TU) Future Fisheries grant application for the Middle Fork Rock Creek Fish Passage Reconnection Project on the Ranch at Rock Creek resort in the Rock Creek Watershed of Western Montana. This project will benefit streamflows and reconnect habitat in the Middle Fork while improving connectivity in mainstem Rock Creek for native bull trout and westslope cutthroat trout and other sport fish, helping to meet the goals of NRDP's *Upper Clark Fork River Basin Aquatic Resources Restoration Plan*.

NRDP is a major partner in the Middle Fork Rock Creek Reconnection Project, funding the engineered design for the project and coordinating with TU to provide input into the design process. NRDP and TU are pursuing this and other, similar projects in partnership with Montana Fish, Wildlife, & Parks and the US Fish & Wildlife Service in Rock Creek. This joint strategy is creating a contiguous corridor of high-quality aquatic and riparian habitat in Rock Creek that supports robust Bull Trout and Westslope Cutthroat Trout populations and a recreational wild trout fishery.

NRDP is committed to funding the final design for the project and recognizes that the Future Fisheries Program will improve capacity to achieve this work and fully supports the project components identified for funding through the Future Fisheries Program.

Sincerely,

Doug Martin

NRDP Restoration Program Chief
1720 9th Ave.
Helena, MT 59620

Montana Fish, Wildlife and Parks - Region 2
3201 Spurgin Road
Missoula, MT 59804
(406) 542-5500
05-05-2023

Montana Fish, Wildlife and Parks
Future Fisheries Program, Attn: Michelle McGree
PO Box 200701
Helena, MT 59621

RE: Middle Fork Rock Creek Fish Passage Reconnection Project

Fish, Wildlife and Parks (FWP) supports the Middle Fork Rock Creek Fish Passage Reconnection Project proposal submitted by Trout Unlimited for funding consideration by the Future Fisheries Improvement Program. This proposal implements a priority project for bull trout and westslope cutthroat trout by improving critical bull trout habitat connectivity in Middle Fork Rock Creek and mainstem Rock Creek. Habitat restoration efforts in the Rock Creek watershed have increased in recent years and completed projects are believed to have significantly improved bull and westslope cutthroat trout habitat in the drainage. This project will benefit the recreational fisheries of Rock Creek by reducing entrainment of trout in irrigation diversions, subsequently increasing production and recruitment to downstream reaches in Rock Creek on public lands.

Rock Creek is a relatively intact watershed supporting native bull trout and non-hybridized westslope cutthroat trout populations. Furthermore, the upper mainstem of Rock Creek and Middle Fork Rock Creek are priority reaches with relatively high densities of native trout with the Middle Fork Rock Creek drainage maintaining extensive spawning and rearing habitat for bull trout. These populations are impacted by infrastructure associated with irrigation diversions that block migratory pathways and entrain fish in irrigation ditches. Collaborative efforts to remove these barriers and reduce fish entrainment are a top priority for Montana Fish, Wildlife, and Parks.

The project will consolidate irrigation diversion infrastructure by decommissioning a diversion on Middle Fork Rock Creek and upgrading irrigation infrastructure to combine water withdrawals and screen another ditch on mainstem Rock Creek. The project will utilize the current diversion dam and does not include any diversion dam upgrades or alterations. This project will reconnect fish passage in the Middle Fork and improve connectivity in the upper mainstem of Rock Creek. In addition, it reduces sediment loads and two miles of ditch seepage and evaporation, benefiting water quality and streamflows. This will be the second major diversion screening project on mainstem Rock Creek, advancing broader fisheries management and conservation objectives in the watershed.

Thank you for your consideration of this funding application. This project meets the goals of the Future Fisheries Program by restoring wild native fish populations in Browns Gulch. We encourage you to reach out with any questions to Brad Liermann, Fisheries Biologist, (406) 825-5225, Bradley.Liermann@mt.gov.

Sincerely,

Randy Arnold
Regional Supervisor, Region 2