FUTURE FISHERIES IMPROVEMENT PROGRAM GRANT APPLICATION

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

I. APPLICANT INFORMATION

A. Applicant Name: Christine Brissette, Trout Unlimited

Mailing Address: 312 North Higgins Ave, Suite 200

City: Missoula State: MT Zip: 59802

Telephone: 406-544-9649 E-mail: cbrissette@tu.org

B. Contact Person (if different than applicant): N/A

Address:

City: State: Zip:

Telephone: E-mail:

C. Landowner and/or Lessee Name (if different than applicant): Bitterroot National Forest, West Fork Ranger District

Mailing Address: 6735 W. Fork Road

City: Darby State: MT Zip: 59829

Telephone: 406-821-3269 E-mail: mike.jakober@usda.gov

II. PROJECT INFORMATION

A. Project Name: Chicken Creek Fish Screen, Upper West Fork Bitterroot

River, stream, or lake: Chicken Creek

Location: Township: 3 Range: 22W Section: 4

Latitude: 45.5980 Longitude: -114.3255 *Within project (decimal degrees)*

County: Ravalli

B. Purpose of Project:

The Chicken Creek Fish Screen project will eliminate native trout entrainment in the Hawkes Ditch, which diverts water from high quality Bull Trout and Westslope Cutthroat Trout habitat in the Bitterroot Watershed. In a 2017 prioritization of Bitterroot Irrigation Ditches by Trout Unlimited, Montana FWP and Bitterroot National Forest, this project ranked among the highest for Bull trout conservation in the Upper Bitterroot based on the following:

1. The Hawkes ditch is located on Chicken Creek, a tributary to the Upper West Fork Bitterroot River, above Painted Rocks reservoir. This Bull trout population, including adfluvial and resident life histories, is recognized as one of the highest conservation priorities in the Bitterroot because of the long-term cold water refugia predicted for these waterbodies, and its generally intact habitat. Chicken creek is an important spawning tributary for bull trout, Westslope cutthroat trout, longnose sucker and sculpin.
2. Bitterroot National Forest regularly documents 1-5" Westslope cutthroat trout and bull trout in the Hawkes ditch during their electrofishing surveys. This project is a key opportunity to reduce juvenile and young-of-year entrainment and enhance these native populations.
3. The diversion is one of only two diversions on Chicken Creek. Once installed, it will reconnect 4.2 miles of stream, all considered Bull trout critical habitat. Trout Unlimited aims to develop a project to screen the other diversion just upstream, reconnecting the entire waterbody.

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

Trout Unlimited will install a passive, self-cleaning corrugated water screen in the Hawkes ditch to eliminate fish entrainment. The diversion is located on Bitterroot National Forest land, and the ditch provides water to a pond on adjacent private land. In 2008, because of the diversion's likelihood for bull trout entrainment, Bitterroot National Forest worked with the water user to install a "window-style" passive screen (see photos in attached planset). While this screen likely reduced entrainment, fish are still regularly found down-ditch, and the "window-style" screen has created a maintenance burden for the landowners as it regularly clogs with leaves and needles. Given the small scale of this project and its relatively high conservation benefits it emerged as a high priority for Bitterroot partners.

In 2021, TU led conversations with the water users on the Hawkes ditch and contracted the survey and design of this project. Great West Engineering developed conceptual designs and cost estimates for 4 fish screen alternatives (Coanda, Paddlewheel, FCA and Corrugated Water Screen). Ultimately, a 15-inch corrugated water screen was selected based on ease of maintenance for the water user, proven success passing young-of-year and juvenile fish (the target of this project), and cost (the corrugated water screen costs at least $30,000 less than the FCA screen, the next best alternative). The water users were also able to visit the corrugated water screen installed on the Wilson ditch in 2020, with support from Future Fisheries. That screen continues to perform well and has made a positive impression on the water users in the area.

The Corrugated Water Screen design and cost estimate include a fish screen, a new headgate, minor ditch regrading and replacement of an undersized culvert on the ditch. The project will not alter the in-stream diversion structure. The screen will be sized to accommodate 0.5-2.5 cfs, the range of flows measured at the site. TU has talked at length with the water users who are supportive of the project and have agreed to operate and maintain the screen in exchange for financial support for the diversion infrastructure upgrade (see attached draft agreement). The property has been in the family for several generations and the family would like to eliminate entrainment in their ditch to protect both the native fishery, and the stocked fishery in their pond.

Chicken Creek, at this location, is a perennial stream with approximately 8-foot bankfull width and 3-foot bankfull depth. The ditch runs for 500 feet before reaching a 5-acre pond. The diversion is associated with a series of water rights totaling 2.5 cfs.

D. What was the cause of habitat degradation and how will the project correct the cause?

The Hawkes ditch water right dates back to 1879, meaning that for over 150 years, this ditch has entrained native West Fork Bitterroot fish. Our project will eliminate this entrainment hazard by screening the ditch.

E. Length of stream or size of lake that will be treated (project extent): 10 feet of stream bank will be impacted at the point of diversion
Length/size of impact, if larger than project extent (e.g., stream miles opened): 4.2 miles reconnected

F. Project Budget Summary:

Grant Request (Dollars):	$	25,750.00
Matching Dollars:	$	25,750.00
Matching In-Kind Services:*	$	

**salaries of government employees are not considered matching contributions*

Other Contributions (not part of this app)	$	19,224.00
Total Project Cost:	$	70,724.00

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

H. Attach project location map(s) that include:

- [x] Extent of the project, including context (relation to major landmark or town)
- [x] Indication of public and private property
- [ ] Riparian buffer locations and widths (if applicable) and grazing locations

I. Attach project plans:

- [x] Detailed sketches or plan views with the location and proposed restoration
- [x] Pre-project photographs (GPS location strongly recommended)
- [ ] If water leasing or water salvage is involved, attach a supplemental questionnaire (*https://myfwp.mt.gov/getRepositoryFile?objectID=36110*)

J. Attach letters or statements of support (e.g., landowner consent, community or public support, and fish biologist support). List any other project partners:

Letters from Bitterroot National Forest (landowner and fisheries biologist) and MFWP are attached. Additional partners include the Hawkes family (water user).

III. MAINTENANCE AND MONITORING (attach additional information to end of application):

A. A 20-year maintenance commitment is required*. Please confirm that you will ensure this protection and describe your approach. Attach any relevant maintenance plans. Yes [x] No [ ]
**If it is a water leasing project, describe the length of the agreement.*

TU and the water users on the diversion will enter into a funding, operation and maintenance agreement that will include a 20-year maintenance commitment (see attached draft agreement). While the irrigator will assume primary maintenance responsibilities, Bitterroot NF is the landowner at the point of diversion, with staff available to visit the site when working in the area (typically 3x/year). TU, additionally, is committed to ensuring the function of the screen and will be the point of contact for irrigators if problems arise. We have included 20 hours of TU staff time under "maintenance" in this request to cover any initial maintenance, adjustments and training in the year following installation. In our experience, follow-up with the irrigator in Year 1 is essential to making sure the irrigator is comfortable with the new technology. 20 hours covers up to 3 site visits and/or time troubleshooting modifications to the screen, if necessary.

B. Will grazing be part of or adjacent to the project? If so, describe or attach land management plans, including short term and long term grazing regimes. If the landowner is not the applicant, please describe their involvement in the project. *If you want assistance with grazing plan development, note your need.*

No

C. Will the project be monitored to determine if goals were met? If so, what are the short-term and long-term plans to assess benefits and lessons learned? Were pre-project data collected? Will monitoring information be shared with FWP?

Bitterroot National Forest uses electrofishing to monitor ditch entrainment associated with diversions on their land. The Hawkes ditch has been sampled in 18 of the last 23 years. Upon completion of this project, the ditch will be sampled annually for 5 years.

The Forest has also committed to visually inspecting the diversion 3 times per year (April-November) to document if the passive screen is properly attached and sealed to the headgate, or if the corrugated water screen has been installed, it is properly functioning. The inspections would start in 2022 and continue through 2026.

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

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

The project will benefit bull trout, Westslope cutthroat trout, brook trout, longnose sucker and sculpin.

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

The project will eliminate ditch entrainment in one of only two ditches in Chicken Creek, reconnecting 4.2 miles of habitat in a spawning tributary of the West Fork Bitterroot River.

C. What is the expected improvement to fish populations, both short term and long term? How might the project translate to angler success?

The project will eliminate entrainment of juvenile and young-of-year fish, enhancing recruitment and overall populations in the area. The Upper West Fork Bitterroot, above Painted Rocks, is not heavily fished but is accessed by anglers for wade fishing. It is an area predicted to maintain the cold water temperatures required by native fish and, because of Painted Rocks dam does not currently support rainbow or brown trout. This area, therefore, will provide unique angling opportunities in the future, especially for Westslope Cutthroat trout, as their habitats further contract and hybridization increases elsewhere.

D. Will the project increase public fishing opportunity for wild fish and, if so, how? Is public fishing allowed onsite? If not, describe how the public would access the project benefits.

Chicken Creek is accessible to fishing through a Forest Service trail adjacent to the project area. The benefits of the project, in terms of increased fish recruitment, will also be seen in the upper West Fork Bitterroot which is readily accessible for wade fishing.

E. Aside from angling, what local or large-scale public benefits will be realized from this project?

This project will serve as an example for irrigators in the Upper West Fork, of a functional fish screen that delivers water with minimal maintenance. This will be the second screen in the area, with the Wilson Ditch screen (completed in 2020) being the first. The success of the Wilson ditch project catalyzed the Hawkes Screen, and has opened doors to several other potential projects. A second example in the area will only further our ability to work with irrigators in this important native fish conservation area.

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

No. The fish screen is being built to fully deliver the 2.5 cfs water rights associated with the ditch. There are no downstream irrigators.

G. Will the project result in the development of commercial recreational use on the site (including paid access)? Explain:

No

H. 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.

V. 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: Christine Brissette Digitally signed by Christine Brissette DN: cn=Christine Brissette, o=Trout Unlimited, ou, email=cbrissette@tu.org, c=US Date: 2023.05.12 15:21:49 -06'00' Date: _____

Submittal: **Applications must be signed and received on or before November 15 and May 15 to be considered for the subsequent funding period**. Late or incomplete applications will be rejected.

Mail to:	FWP Future Fisheries Fish Habitat Bureau PO Box 200701 Helena, MT 59620-0701	Email:	Future Fisheries Coordinator FWPFFIP@mt.gov (electronic submissions must be signed) For files over 10MB, use https://transfer.mt.gov and send to mmcgree@mt.gov

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***								
Survey	1	lump sum	$3,000.00	$ 3,000.00			3,000.00	$ 3,000.00
Design				$ -				$ -
Engineering	1	lump sum	$9,000.00	$ 9,000.00			9,000.00	$ 9,000.00
Permitting	8	hours	$60.00	$ 480.00			480.00	$ 480.00
Project Preparation & Construction Oversight (Trout Unlimited)	100	hours	$60.00	$ 6,000.00	6,000.00			$ 6,000.00
Oversight (landowner, in-kind)	20	hours	$31.80	$ 636.00			636.00	$ 636.00
Maintenance (Trout Unlimited)	20	hours	$60.00	$ 1,200.00	600.00			$ 600.00
			Sub-Total	$ 20,316.00	$ 6,600.00	$ -	$ 13,116.00	$ 19,716.00
Travel								
Mileage	600	miles	$0.66	$ 393.00	385.00		8.00	$ 393.00
Per diem				$ -				$ -
			Sub-Total	$ 393.00	$ 385.00	$ -	$ 8.00	$ 393.00
Construction Materials****								
Furnish and install 3" minus Structural backfill	21	cubic yards	$65.00	$ 1,365.00	1,365.00			$ 1,365.00
Furnish and install 1" minus bedding material	4	cubic yards	$150.00	$ 600.00	600.00			$ 600.00
Furnish and install Non-woven separation geotextile	3	square yards	$100.00	$ 300.00		300.00		$ 300.00
Furnish and install Class 1 rip-rap	8	cubic yards	$200.00	$ 1,600.00	1,600.00			$ 1,600.00
Furnish and 18-24" rock	6	each	$150.00	$ 900.00	900.00			$ 900.00
Furnish and install steel modular screen structure	1	lump sum	$7,300.00	$ 7,300.00		1,200.00	6,100.00	$ 7,300.00
Furnish and install corrugated water screen	1	lump sum	$7,000.00	$ 7,000.00		7,000.00		$ 7,000.00
Furnish and install steel modular headgate structure	1	lump sum	$9,000.00	$ 9,000.00		9,000.00		$ 9,000.00
Furnish and insall stainless steel slide gate	1	lump sum	$8,000.00	$ 8,000.00		8,000.00		$ 8,000.00
Furnish and install 12" dia. PIP (fish return pipe)	1	lump sum	$2,200.00	$ 2,200.00	2,200.00			$ 2,200.00
Furnish and install 24"x18" corrugated metal pipe arch culvert	1	lump sum	$2,200.00	$ 2,200.00	2,200.00			$ 2,200.00
Seed	1	lump sum	$150.00	$ 150.00		150.00		$ 150.00
				$ -				$ -
				$ -				$ -
			Sub-Total	$ 40,615.00	8,865.00	25,650.00	6,100.00	$ 40,615.00
Equipment, Labor, and Mobilization								
Mobilization	1	lump sum	$5,000.00	$ 5,000.00	5,000.00			$ 5,000.00
Site demolition and salvage	1	lump sum	$1,200.00	$ 1,200.00	1,200.00			$ 1,200.00
Structure excavation	1	lump sum	$1,700.00	$ 1,700.00	1,700.00			$ 1,700.00
Ditch excavation	1	lump sum	$2,000.00	$ 2,000.00	2,000.00			$ 2,000.00
Seed and mulch disturbed areas	1	lump sum	$100.00	$ 100.00		100.00		$ 100.00

(Revised 5/16/2023)

BUDGET TEMPLATE SHEET FOR FUTURE FISHERIES PROGRAM APPLICATIONS

				$ -				$ -
			Sub-Total	$ 10,000.00	$ 9,900.00	$ 100.00	$ -	$ 10,000.00
			TOTALS	$ 71,324.00	$ 25,750.00	$ 25,750.00	$ 19,224.00	$ 70,724.00

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. Describe here or in text.

***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 may require a justification or minimum of two competitive bids for the cost of undertaking the project. For projects that include a maintenance request, it must not exceed 10% of the total project cost.

****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:

APPLICATION MATCHING CONTRIBUTIONS

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

CONTRIBUTOR	IN-KIND	CASH	TOTAL	Secured? (Y/N)
US Forest Service	$ -	$ 25,750.00	$ 25,750.00	Y
	$ -	$ -	$ -	
	$ -	$ -	$ -	
	$ -	$ -	$ -	
	$ -	$ -	$ -	
	$ -	$ -	$ -	
	$ -	$ -	$ -	
TOTALS	$ -	$ 25,750.00	$ 25,750.00	

OTHER CONTRIBUTIONS

(contributions not associated with the application)

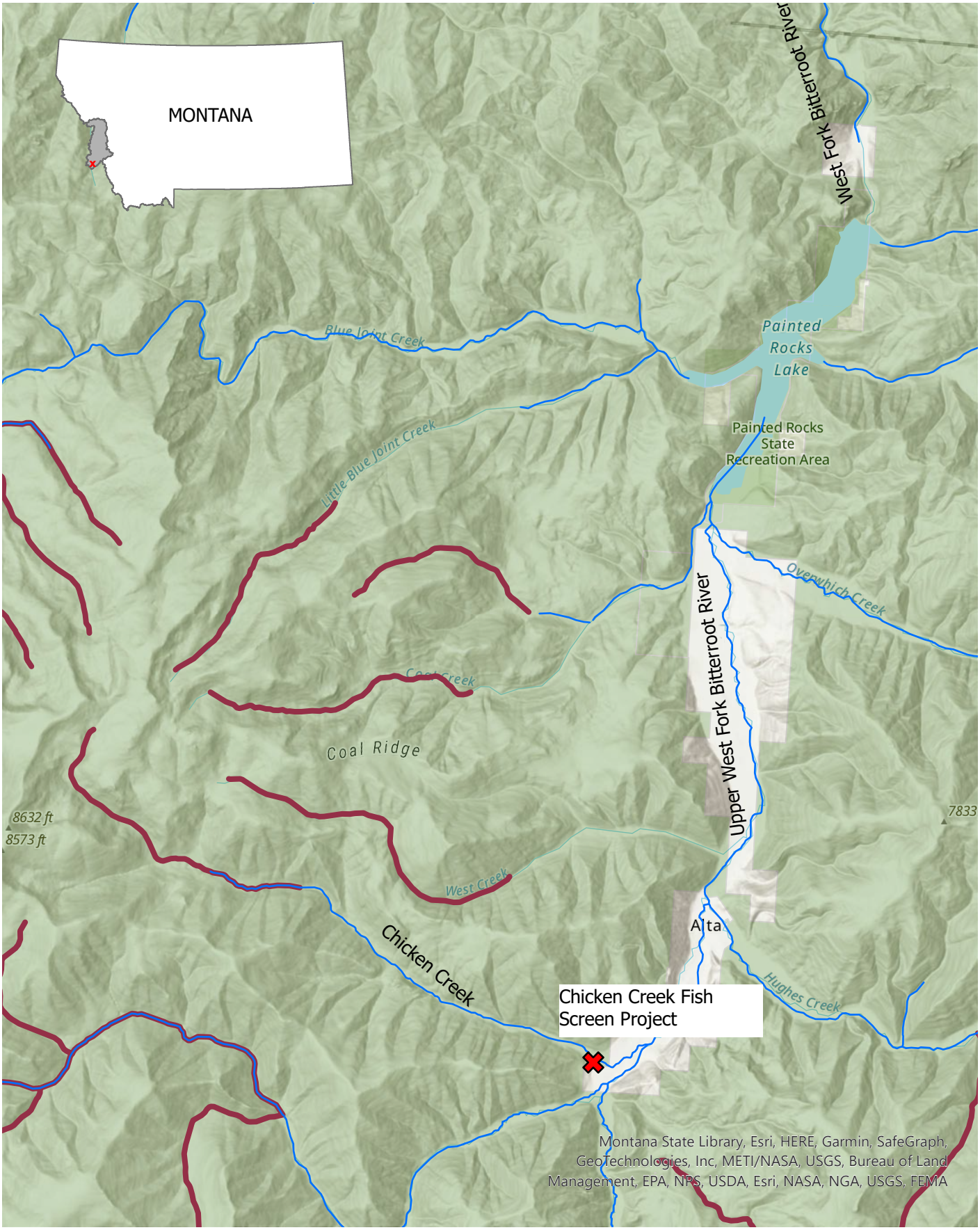
CONTRIBUTOR	IN-KIND	CASH	TOTAL	Secured? (Y/N)
Landowner	$ 636.00	$ -	$ 636.00	Y
US Forest Service	$ -	$ 10,450.00	$ 10,450.00	Y
Private	$ -	$ 8,138.00	$ 8,138.00	Y
	$ -	$ -	$ -	
	$ -	$ -	$ -	
	$ -	$ -	$ -	
	$ -	$ -	$ -	
	$ -	$ -	$ -	
TOTALS	$ 636.00	$ 18,588.00	$ 19,224.00	

Chicken Creek Fish Screen, Upper West Fork Bitterroot

Trout Unlimited

Chicken Creek fish screen

014-2023



Bull Trout Streams (Bitterroot National Forest)

Cold Water Refugia (Climate Shield, 2040 Bull Trout)

Public Lands

0 0.5 1 2 Miles

N

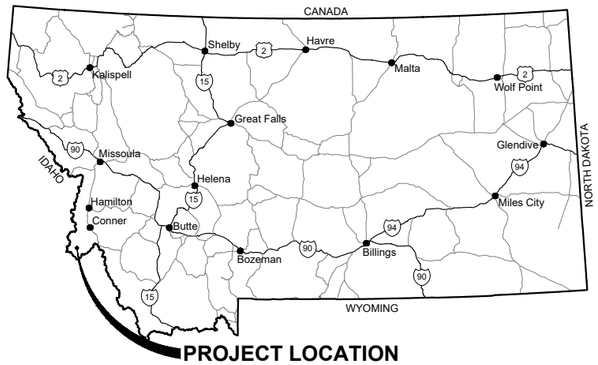
Chicken Creek Fish Screen Project: Photopoints

All photos taken at the point of diversion on Chicken Creek: 45.59799997406, -114.32552126610

Top left and right: Existing “window-style” screen on headgate.

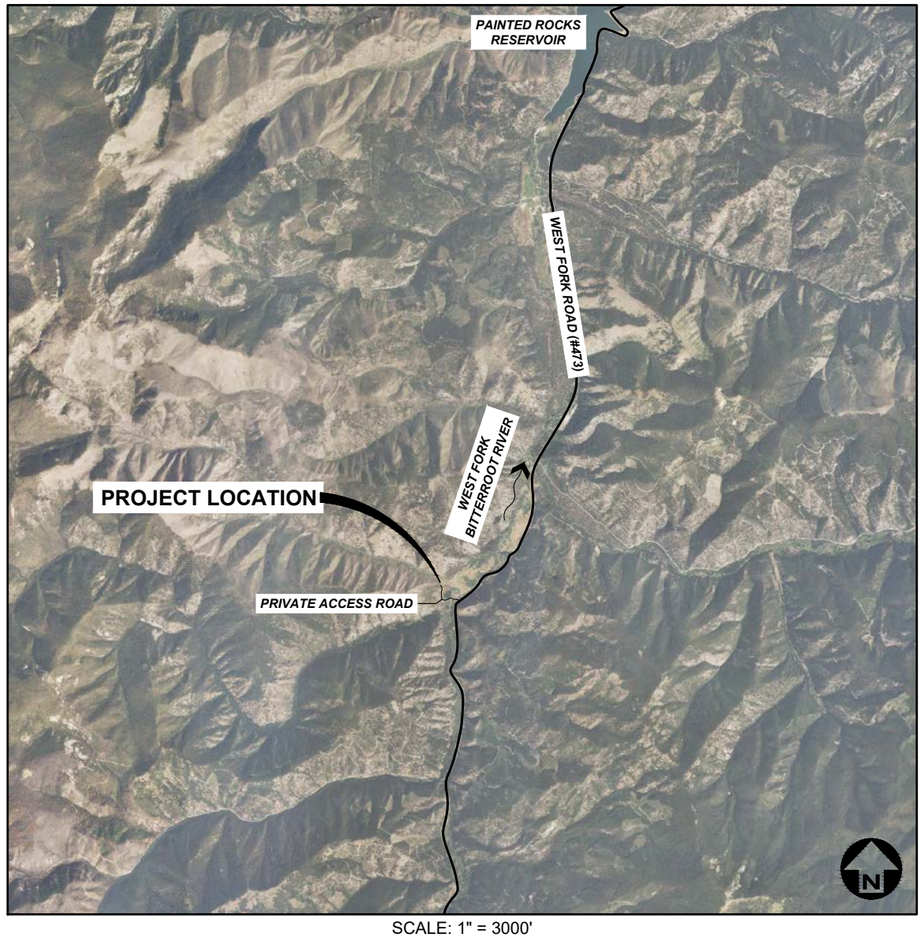
Middle left: Hawkes ditch (looking down ditch).

Middle Bottom: Rock Step diversion structure (looking downstream).



TROUT UNLIMITED
CHICKEN CREEK IRRIGATION IMPROVEMENTS

SECTION 4, TOWNSHIP 3S, AND RANGE 22W
LATITUDE: 45°35'52.44"N; LONGITUDE: 114°19'31.85"W



SCALE: 1" = 3000'

SHEET INDEX

PROJECT: 1-22219
DATE: MAY 11, 2023

PLANS PREPARED FOR:

TROUT UNLIMITED

QA/QC BY:

RYAN ELLIOTT, P.E.
GREAT WEST ENGINEERING

MONTANA RYAN ELLIOTT 23790PE 5/1/23 LICENSED PROFESSIONAL ENGINEER

PLANS PREPARED BY:

EVAN CARROLL, E.I.

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

NO.	REVISION DESCRIPTION	BY	DATE
1			
2			
3			
4			
5			
6			

SET NO.

SHEET NO. 1

X:\shared\Helena Projects\1-22219-TU ? Chicken Creek Fish Screen\CADD 1-22219\Sheets\1-22219-01-Cover.dwg

ABBREVIATIONS

@	AT
Δ	ANGLE OF DEFLECTION, DELTA ANGLE
<PT	ANGLE POINT
AB	ANCHOR BOLT
ABDN	ABANDON
AC	ASBESTOS CONCRETE
ADDN	ADDITIONAL
ADJ	ADJACENT
AFF	ABOVE FINISHED FLOOR
ALT	ALTERNATE
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
APPROX	APPROXIMATE
APVD	APPROVED
ARCH	ARCHITECTURE, ARCHITECTURAL
ASPH	ASPHALT
AVE	AVENUE
AVG	AVERAGE
BFV	BUTTERFLY VALVE
BLDG	BUILDING
BLK	BLOCK
BLVD	BOULEVARD
BM	BEAM, BENCHMARK
BOT	BOTTOM
BRG	BEARING
BRKT	BRACKET
BVC	BEGIN VERTICAL CURVE
C-C	CENTER TO CENTER
CHAN	CHANNEL
CHK	CHECK
CI	CAST IRON
CIPC	CAST-IN-PLACE CONCRETE
CIRC	CIRCULAR
CJ	CONSTRUCTION JOINT, CONTROL JOINT
℄	CENTER LINE
CLR	CLEAR, CLEARANCE
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNITS
CO	CLEANOUT
COL	COLUMN
CONC	CONCRETE
CONSTR	CONSTRUCTION
CONT	CONTINUE, CONTINUED, CONTINUOUS
CONTR	CONTRACTOR
COORD	COORDINATE
CP	CONTROL PANEL, CONTROL POINT
CPLG	COUPLING
CTR	CENTER
CTV	CABLE TELEVISION
CU	CUBIC, COPPER
CF	CUBIC FEET
CULV	CULVERT
CY	CUBIC YARD
DET	DETAIL
DI	DUCTILE IRON, DRAIN INLET
DIA, ⌀	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DR	DRIVE
DWG	DRAWING
E	EAST
EA	EACH
EL, ELEV	ELEVATION
ELB	ELBOW
ELEC	ELECTRIC, ELECTRICAL
ENCL	ENCLOSE
ENGR	ENGINEER
EOP	EDGE OF PAVEMENT
EQ	EQUAL, EQUALLY
EQ SP	EQUALLY SPACED
EQUIP	EQUIPMENT
EQUIV	EQUIVALENT
EVC	END VERTICAL CURVE
EW	EACH WAY
EXC	EXCAVATE
EXP	EXPANSION
EXP JT	EXPANSION JOINT
EXST	EXISTING
FCV	FLOW CONTROL VALVE
FD	FLOOR DRAIN
FDN	FOUNDATION
FES	FLARED END SECTION
FET	FLARED END TERMINAL
FF	FINISHED FLOOR
FG	FINISH GRADE
FHYD	FIRE HYDRANT
FJ	FLANGE JOINT
FL	FLOW LINE
FLEX	FLEXIBLE
FM	FORCEMAIN
FT	FOOT, FEET
FO	FIBER OPTIC
FTG	FOOTING, FITTING
G	NATURAL GAS
GA	GAGE, GAUGE
GAL	GALLON
GALV	GALVANIZED
GND	GROUND
GVL	GRAVEL
HB	HOSE BIB
HDPE	HIGH DENSITY POLYETHYLENE
HOR, HORIZ	HORIZONTAL
HWY	HIGHWAY
HYD	HYDRANT
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IN	INCH
INV	INVERT
JB	JUNCTION BOX
JT	JOINT
K	RATE OF VERTICAL CURVATURE
LBS	POUNDS
LF	LINEAR FEET
LN	LANE
LPG	LIQUID PROPANE GAS
LT	LEFT
MAX	MAXIMUM
MD	MEASURE DOWN
MFD	MANUFACTURED
MFR	MANUFACTURE, MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MJ	MECHANICAL JOINT
MOV	MOTOR OPERATED VALVE
MPWSS	MONTANA PUBLIC WORKS STANDARD SPECIFICATIONS
N	NORTH
NE	NORTHEAST
NG	NATURAL GAS
NIC	NOT IN CONTRACT
NO	NUMBER
NOM	NOMINAL
NTS	NOT TO SCALE
NW	NORTHWEST
OC	ON CENTER
OD	OUTSIDE DIAMETER
OF	OVERFLOW
OH	OVERHEAD
OHP	OVERHEAD POWER
OHT	OVERHEAD TELEPHONE
OPNG	OPENING
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVATURE
PE	PLAIN END, POLYETHYLENE
PERP	PERPENDICULAR
PI	POINT OF INTERSECTION
ℙ	PROPERTY LINE
PNL	PANEL
PRC	POINT OF REVERSE CURVATURE
PREFAB	PREFABRICATED
PRELIM	PRELIMINARY
PREP	PREPARE, PREPARATION
PROP	PROPERTY
PRV	PRESSURE REDUCING VALVE
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	POINT, POINT OF TANGENCY
PVC	POLYVINYL CHLORIDE
PVI	POINT OF VERTICAL INTERSECTION
PVMT	PAVEMENT
R, RAD	RADIUS
RC	REINFORCED CONCRETE
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
RDCR	REDUCER
REBAR	REINFORCEMENT BAR
REF	REFERENCE
REINF	REINFORCE
REQD	REQUIRED
RR	RAILROAD
RST	REINFORCING STEEL
RT	RIGHT
R/W	RIGHT-OF-WAY
S	SOUTH, SANITARY SEWER
SAN	SANITARY
SCH	SCHEDULE
SD	STORM DRAIN
SDWK	SIDEWALK
SE	SOUTHEAST
SECT	SECTION
SF	SQUARE FOOT
SHT	SHEET
SIM	SIMILAR
SLP	SLOPE
SPEC	SPECIFICATION
SQ	SQUARE
SSTL	STAINLESS STEEL
STA	STATION
SS	SANITARY SEWER SERVICE
STD	STANDARD
ST	STREET
STL	STEEL
STRUCT	STRUCTURE
SW	SOUTHWEST
SYM	SYMMETRICAL
TB	THRUST BLOCK
TBC	TOP BACK OF CURB
TBM	TEMPORARY BENCH MARK
TEL	TELEPHONE
TEMP	TEMPORARY
THRU	THROUGH
TYP	TYPICAL
UG	UNDERGROUND
UGP	UNDERGROUND POWER
UGT	UNDERGROUND TELEPHONE
UTIL	UTILITY
V	VALVE, VOLT
VB	VALVE BOX
VERT	VERTICAL
VOL	VOLUME
W	WEST, WATER
WTR	WATER
WD	WOOD
W/	WITH
W/O	WITHOUT
WL	WETLAND
WM	WIRE MESH, WATER METER
WS	WATERSTOP, WATER SURFACE, WATER SERVICE
WT	WEIGHT
WV	WATER VALVE
WWF	WELDED WIRE FABRIC
WWM	WELDED WIRE MESH
XFMR	TRANSFORMER
X-ING	CROSSING
XS	CROSS SECTION
YD	YARD

LEGEND

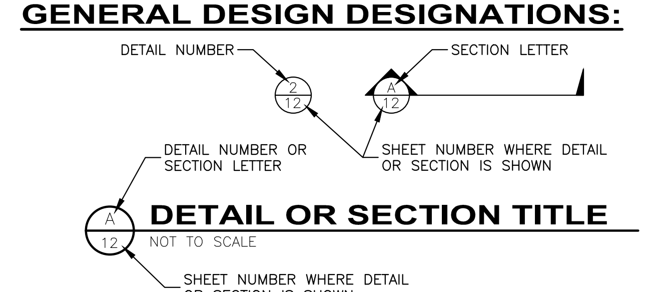
EXISTING	PROPOSED	DESCRIPTION
		MAJOR CONTOUR
		MINOR CONTOUR
OHT	OHT	OVERHEAD TELEPHONE
UGT	UGT	UNDERGROUND TELEPHONE
CTV	CTV	CABLE TELEVISION
FO	FO	FIBER OPTIC
G	G	NATURAL GAS
OHP	OHP	OVERHEAD POWER
UGP	UGP	UNDERGROUND POWER
S	S	SANITARY SEWER
SS SS	SS SS	SANITARY SEWER SERVICE
FM	FM	SANITARY SEWER FORCEMAIN
SD	SD	STORM DRAIN
		STORM CULVERT
W	W	WATER
WS WS	WS WS	WATER SERVICE
		CHAINLINK FENCE
X X X	X X X	BARBED WIRE FENCE
		WOOD FENCE
		PAVED ROAD
		GRAVEL ROAD
		PROPERTY/LOT LINE
		PROPERTY EASEMENT
		PROPERTY SETBACK
		RIGHT-OF-WAY
		CITY LIMIT/DISTRICT BOUNDARY
		RAILROAD
		DITCH
		WATER EDGE
WL		WETLAND
		BUILDING
		BENCHMARK
		CONTROL POINT
		PROPERTY PIN
		BORING
		MONITORING WELL
		TEST PIT
		BOLLARD
		MAIL BOX
		SIGN

EXISTING	PROPOSED	DESCRIPTION
		STUMP
		SHRUB/BUSH
		TREE-CONIFER
		TREE-DECIDUOUS
		TREE LINE
		COMMUNICATION MANHOLE
C	C	COMMUNICATION VAULT
T	T	TELEPHONE RISER
TV	TV	CABLE TV RISER
		NATURAL GAS METER
G	G	NATURAL GAS RISER
		NATURAL GAS VALVE
		LIGHT POLE
		STREET LIGHT POLE
P	P	POWER RISER
		PAD MOUNTED TRANSFORMER
P	P	POWER VAULT
		UTILITY POLE
		GUY WIRE
S	S	SANITARY MANHOLE
CO	CO	SANITARY CLEANOUT
		SANITARY LAMPHOLE
ST	ST	STORM MANHOLE
		STORM ROUND INLET
		STORM SQUARE INLET
		STORM CATCH BASIN
		11.25° ELBOW
		22.50° ELBOW
		45° ELBOW
		90° ELBOW
		TEE
		CROSS
		CAP
		FIRE HYDRANT
		GATE VALVE
		REDUCER
		WATER METER
W	W	WELL
		CURB STOP
		FROST FREE HYDRANT

GENERAL NOTES:

1. THIS IS A STANDARD LEGEND AND ABBREVIATION LIST. THEREFORE, NOT ALL SYMBOLS AND ABBREVIATIONS MAY BE USED ON THIS PROJECT.
2. UNLESS MODIFIED BY THE CONTRACT DOCUMENTS, ALL WORK WILL CONFORM TO THE MONTANA PUBLIC WORKS STANDARD SPECIFICATIONS, SIXTH EDITION, APRIL 2010 (REFERRED TO COLLECTIVELY AS MPWSS).
3. EXISTING UNDERGROUND UTILITIES SHOWN ARE FROM THE BEST INFORMATION AVAILABLE. THIS INFORMATION IS APPROXIMATE AND MAY BE INCOMPLETE. FOR ACCURATE LOCATION, THE CONTRACTOR SHALL CONTACT, PRIOR TO EXCAVATION, THE UTILITIES UNDERGROUND LOCATION CENTER AT: 1-800-424-5555.

GENERAL DESIGN DESIGNATIONS:



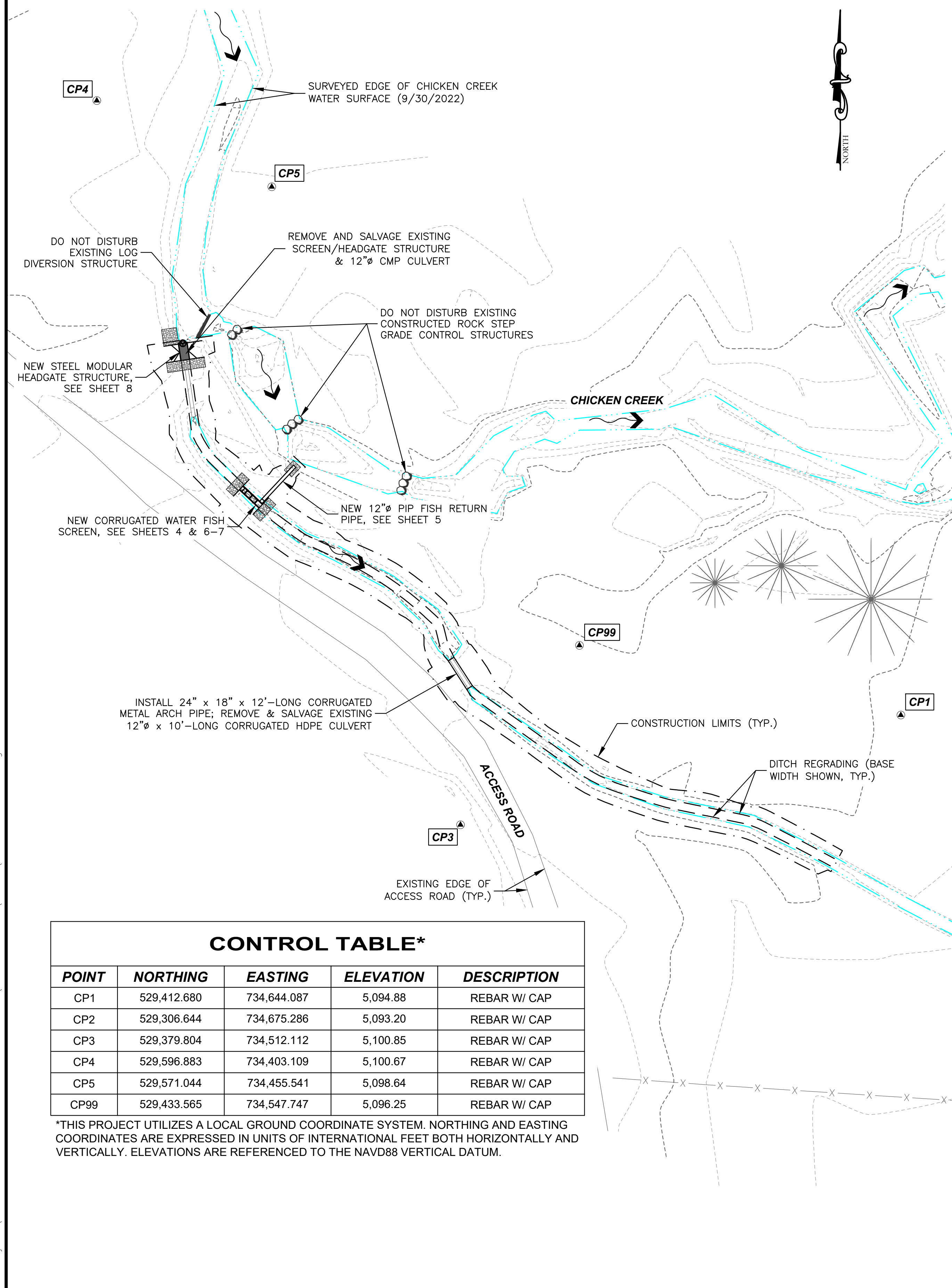
NO.	REVISION DESCRIPTION	BY	DATE

PROJECT: 1-22219
DESIGNED: EAC
DRAWN: EAC
CHECKED: RME
APPROVED: RME
DATE: MAY 11, 2023

MONTANA RYAN ELLIOTT 23790PE LICENSED PROFESSIONAL ENGINEER 5/11/23

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

TROUT UNLIMITED
CHICKEN CREEK IRRIGATION IMPROVEMENTS
GENERAL NOTES & LEGEND



SITE PHOTO: VIEW OF EXISTING DIVERSION AND SCREENED HEADGATE

SITE PHOTO: VIEW OF EXISTING HEADGATE, SCREEN MATERIAL AND STEEL HEADWALL

SITE PHOTO: VIEW OF EXISTING DITCH (LOOKING DOWNSTREAM)

SITE PHOTO: VIEW OF EXISTING CONSTRUCTED ROCK STEP AND CHICKEN CREEK (LOOKING DOWNSTREAM)

CONTROL TABLE*

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
CP1	529,412.680	734,644.087	5,094.88	REBAR W/ CAP
CP2	529,306.644	734,675.286	5,093.20	REBAR W/ CAP
CP3	529,379.804	734,512.112	5,100.85	REBAR W/ CAP
CP4	529,596.883	734,403.109	5,100.67	REBAR W/ CAP
CP5	529,571.044	734,455.541	5,098.64	REBAR W/ CAP
CP99	529,433.565	734,547.747	5,096.25	REBAR W/ CAP

*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.

PLAN VIEW OF CHICKEN CREEK FISH SCREEN

0 20 40
SCALE IN FEET

NO.	REVISION DESCRIPTION	BY	DATE

PROJECT: 1-22219
DESIGNED: EAC
DRAWN: EAC
CHECKED: RME
APPROVED: RME
DATE: MAY 11, 2023

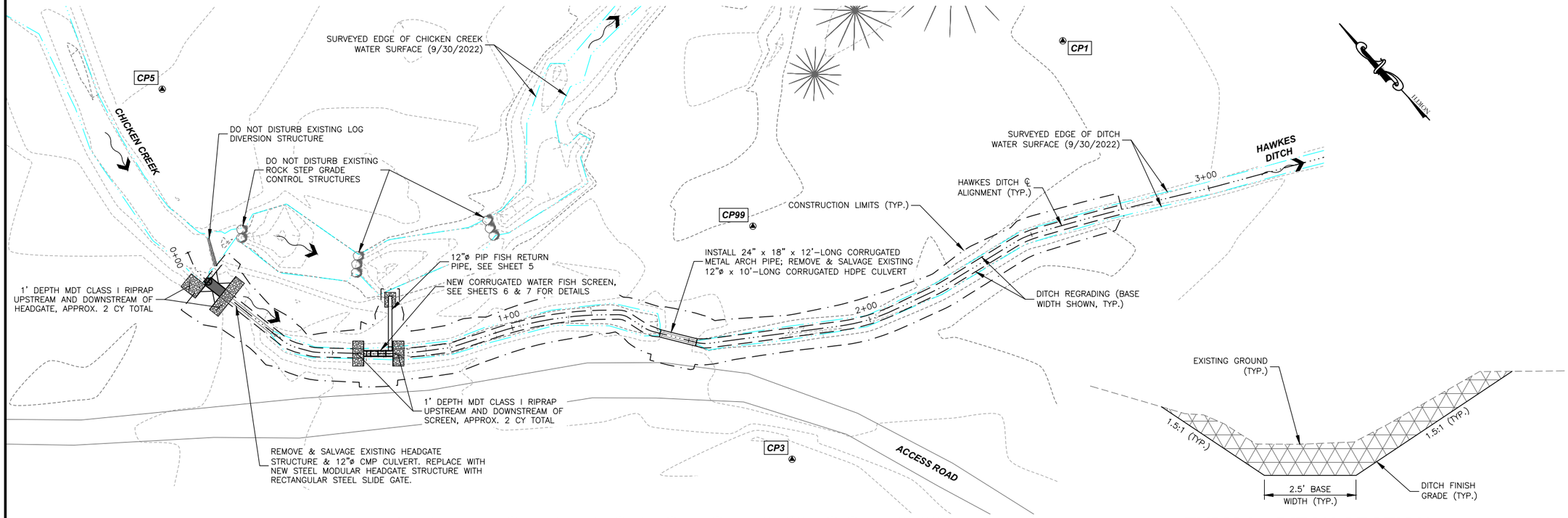
MONTANA ELLIOTT 23790PE PROFESSIONAL ENGINEER

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

TROUT UNLIMITED
CHICKEN CREEK IRRIGATION IMPROVEMENTS
SITE PLAN & CONTROL TABLE

SHEET NO.
3
OF 9

Y:\shared\Helena Projects\1-22219-TU ? Chicken Creek Fish Screen\CADD 1-22219\Sheets\1-22219-03-SP.dwg

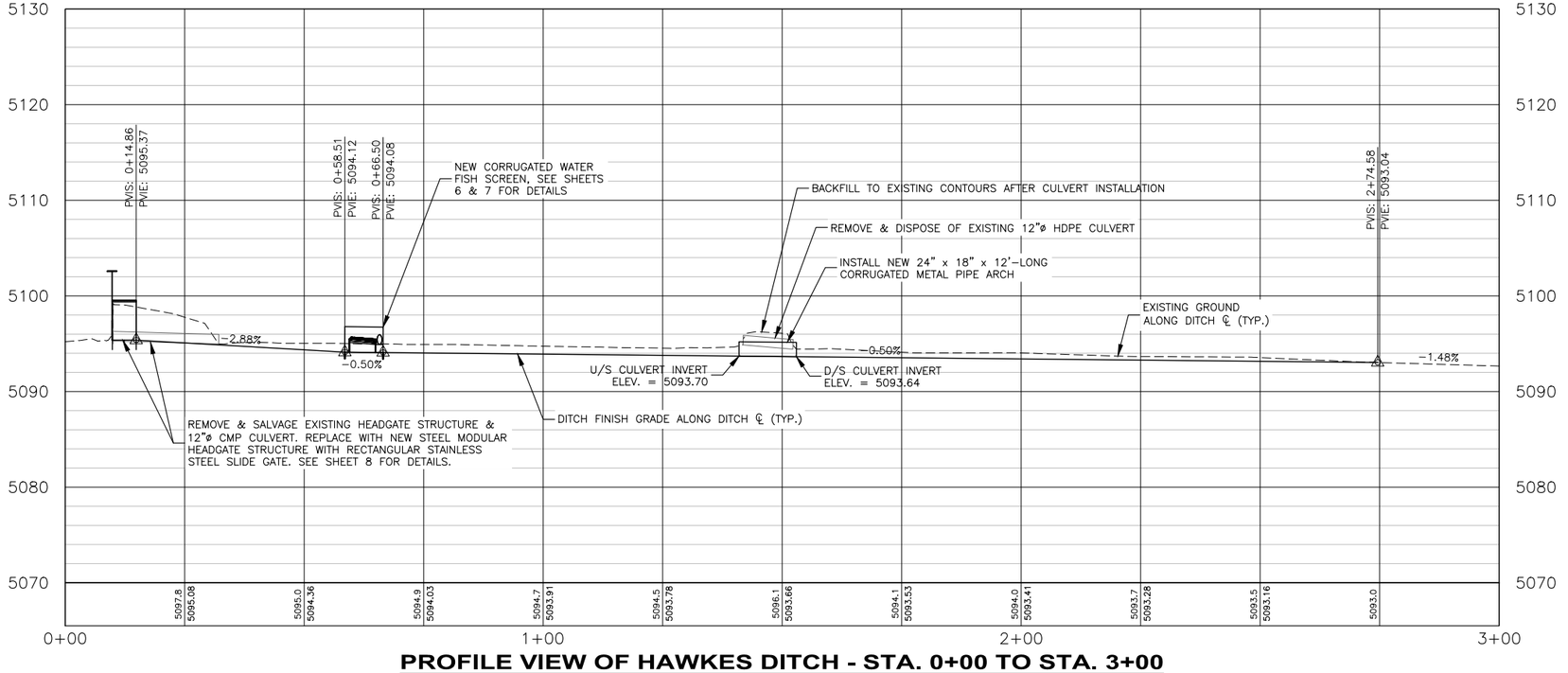


PLAN VIEW OF HAWKES DITCH - STA. 0+00 TO STA. 3+00

0 15 30
SCALE IN FEET

TYPICAL DITCH SECTION

NO SCALE



PROFILE VIEW OF HAWKES DITCH - STA. 0+00 TO STA. 3+00

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 15'

GENERAL NOTES:

1. CONTRACTOR TO PRESERVE LARGE DIAMETER COTTONWOOD TREES ON-SITE TO THE EXTENT POSSIBLE. TREES THAT EXIST ON-SITE MAY NOT BE SHOWN ON THESE PLANS. TREE REMOVAL MAY BE NECESSARY FOR INSTALLATION OF SCREEN, DITCH REGRADING, OR FISH RETURN. REMOVAL AND DISPOSAL OF TREES AT AN OFF-SITE LOCATION IS PAID UNDER THE EXCAVATION BID ITEMS.
2. WHEN EXCAVATING FOR STRUCTURES AND DITCH REGRADING, CONTRACTOR TO STOCKPILE MATERIAL FOR USE AS EMBANKMENT ADJACENT TO THE DITCH.
3. IF UNSATISFACTORY BEDDING SOILS ARE ENCOUNTERED FOR PLACEMENT OF THE FISH SCREEN AND FLUME, CONTRACTOR TO NOTIFY OWNER & ENGINEER IMMEDIATELY.
4. IF NECESSARY, CONTRACTOR SHALL DEWATER DITCH WORK AREAS PRIOR TO CONSTRUCTION AND ANTICIPATE WATER INFILTRATING INTO EXCAVATIONS. ALL WORK IN THE CHANNEL AND BELOW ORDINARY HIGH WATER SHALL TAKE PLACE IN ACCORDANCE WITH APPLICABLE PERMITS. METHODS AND MEANS OF DEWATERING TO BE DETERMINED BY CONTRACTOR. ALL WORK ASSOCIATED WITH DITCH DEWATERING IS INCLUDED IN THE STRUCTURE EXCAVATION BID ITEM.
5. ALL MATERIALS TO BE SALVAGED ARE TO BE PLACED AT LOCATION ON LANDOWNER'S PROPERTY AS INDICATED BY TROUT UNLIMITED.

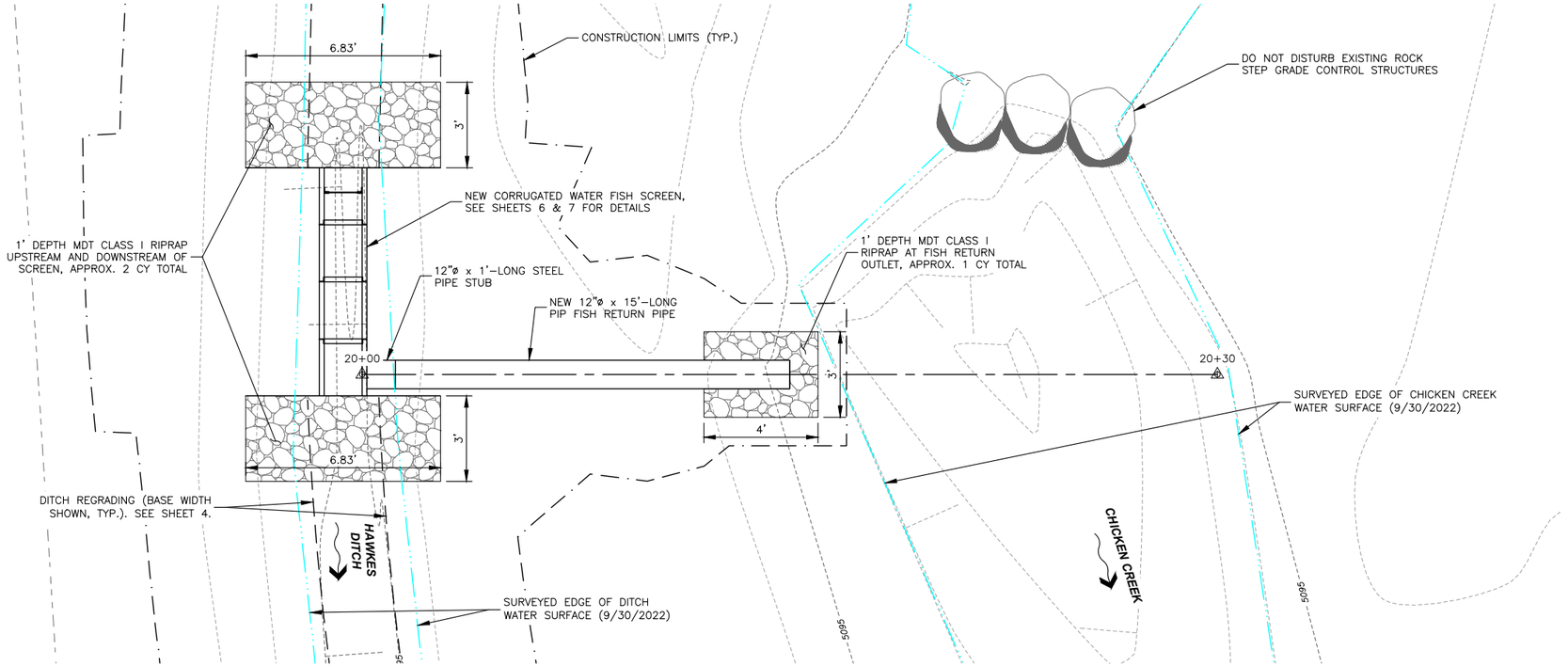
NO.	REVISION DESCRIPTION	BY	DATE

PROJECT: 1-22219
DESIGNED: EAC
DRAWN: EAC
CHECKED: RME
APPROVED: RME
DATE: MAY 11, 2023

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

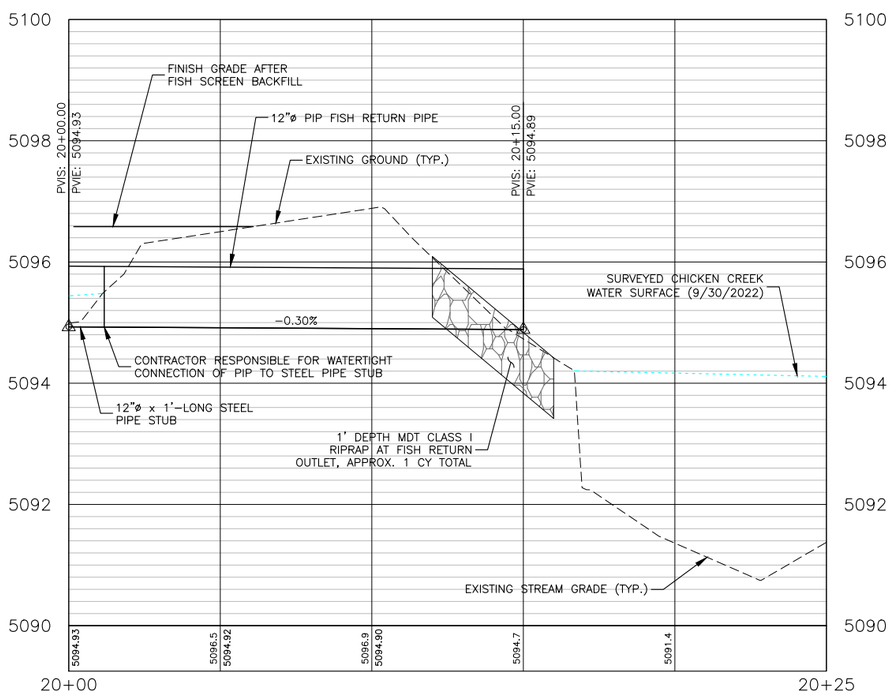
TROUT UNLIMITED
CHICKEN CREEK IRRIGATION IMPROVEMENTS
HAWKES DITCH PLAN & PROFILE

SHEET NO.
4
OF 9



PLAN VIEW OF FISH RETURN - STA. 20+00 TO STA. 20+25

SCALE IN FEET

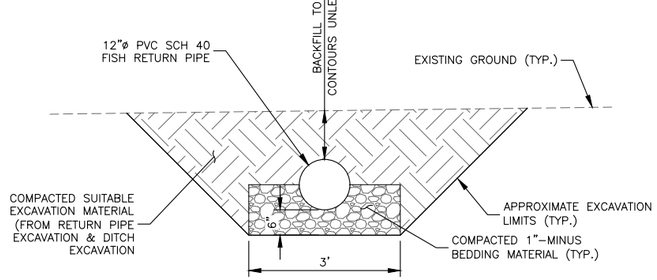


PROFILE VIEW OF FISH RETURN - STA. 20+00 TO STA. 20+25

HORIZONTAL SCALE: 1" = 5'
VERTICAL SCALE: 1" = 2.5'

NOTES:

1. IF UNSATISFACTORY BEDDING SOILS ARE ENCOUNTERED FOR PLACEMENT OF THE FISH RETURN, CONTRACTOR TO NOTIFY OWNER & ENGINEER IMMEDIATELY.
2. CONTRACTOR TO BACKFILL FISH RETURN PIPE TO EXISTING GROUND CONTOURS UNLESS OTHERWISE SHOWN.



FISH RETURN BEDDING DETAIL

NO SCALE

NO.	REVISION DESCRIPTION	BY	DATE

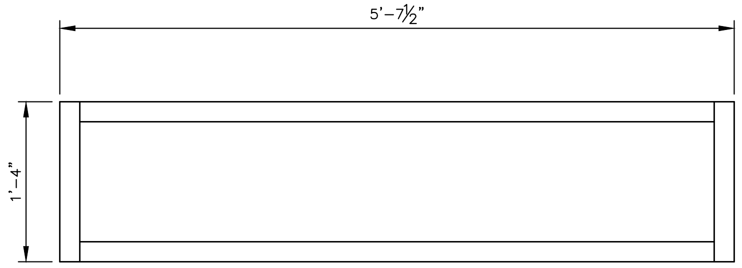
PROJECT: 1-22219
DESIGNED: EAC
DRAWN: EAC
CHECKED: RME
APPROVED: RME
DATE: MAY 11, 2023

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

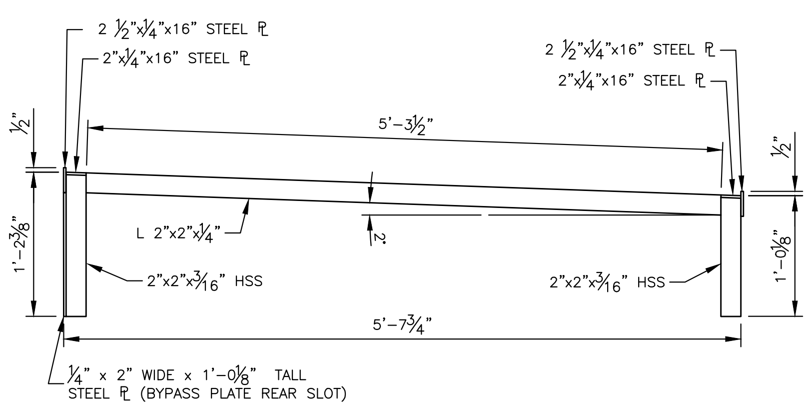
TROUT UNLIMITED
CHICKEN CREEK IRRIGATION IMPROVEMENTS

FISH RETURN PLAN & PROFILE

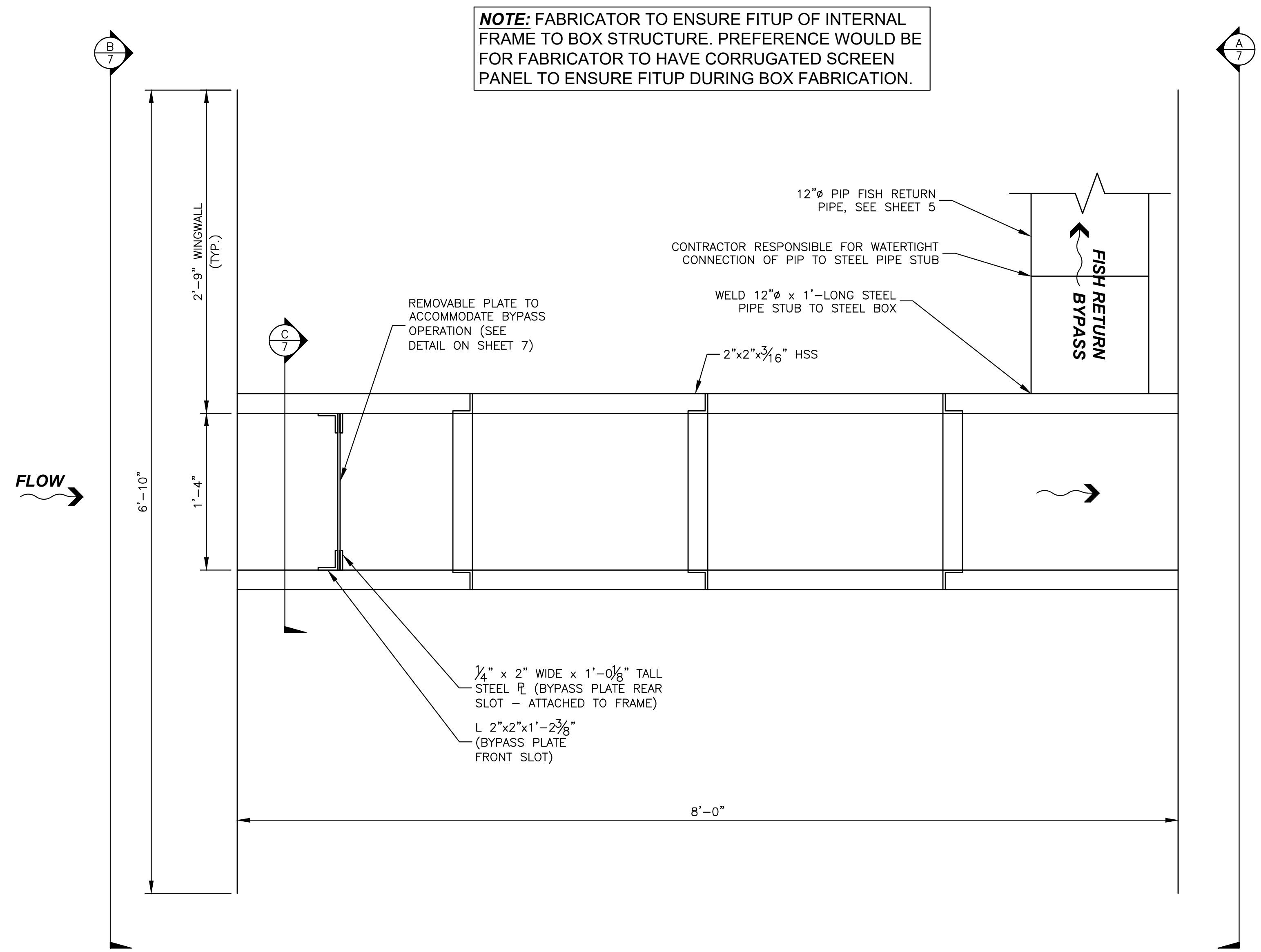
SHEET NO.
5
OF 9



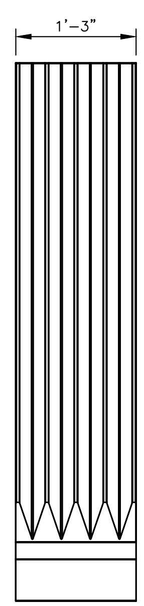
INTERNAL FRAME - PLAN VIEW
SCALE: 5/8" = 1'-0"



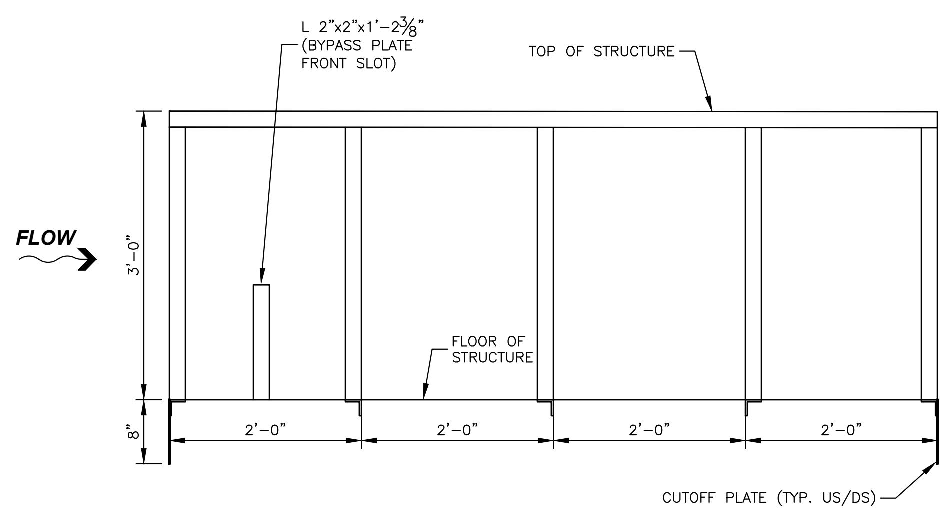
INTERNAL FRAME - PROFILE VIEW
SCALE: 5/8" = 1'-0"



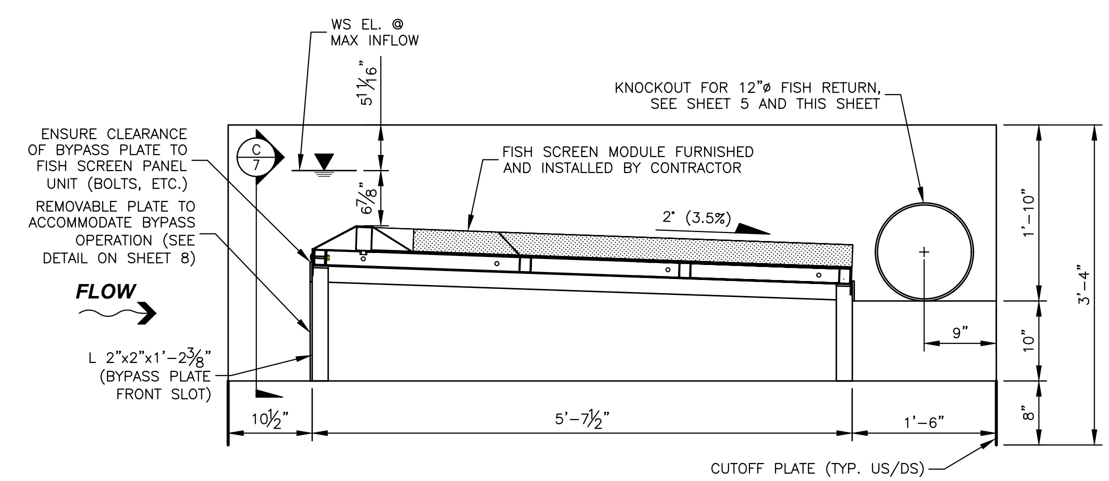
PLAN VIEW - MODULAR BOX STRUCTURE
SCALE: 3/4" = 1'-0"
FRAME NOT SHOWN FOR CLARITY



SCREEN PANEL - TOP SIDE
NO SCALE



SIDE VIEW - MODULAR BOX STRUCTURE
SCALE: 1/2" = 1'-0"
FRAME NOT SHOWN FOR CLARITY



PROFILE VIEW @ CL - MODULAR BOX STRUCTURE
SCALE: 1/2" = 1'-0"
FRAME NOT SHOWN FOR CLARITY

NO.	REVISION DESCRIPTION	BY	DATE

PROJECT: 1-22219
DESIGNED: EAC
DRAWN: EAC
CHECKED: RME
APPROVED: RME
DATE: MAY 11, 2023

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

TROUT UNLIMITED
CHICKEN CREEK IRRIGATION IMPROVEMENTS
CORRUGATED WATER FISH SCREEN DETAILS

SHEET NO.
6
OF 9

Y:\shared\Helena Projects\1-22219-TU ? Chicken Creek Fish Screen\CADD 1-22219\Sheets\1-22219-06-CWS Dtls.dwg

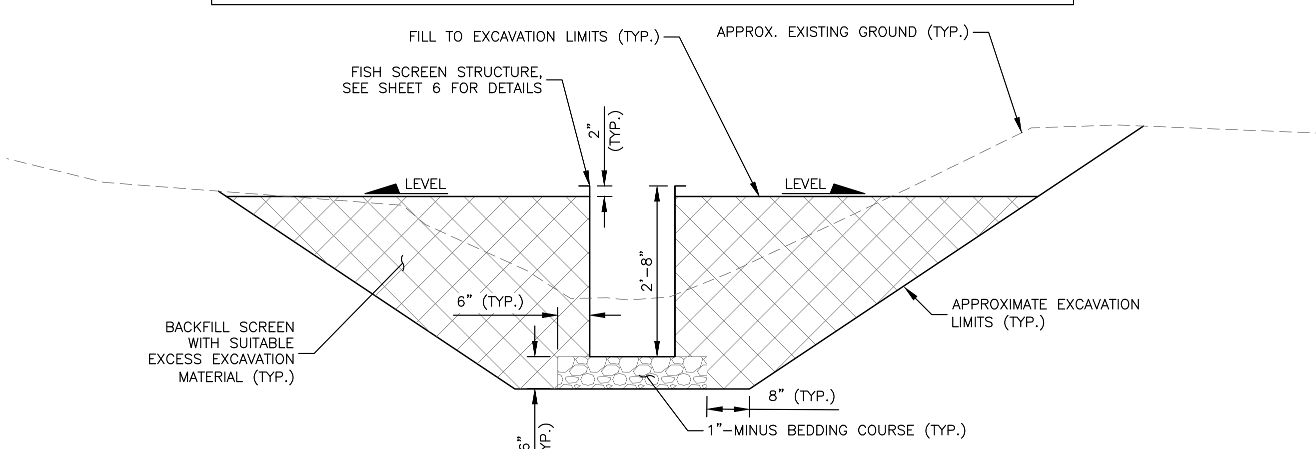
GENERAL NOTES:

1. OWNER WILL FURNISH (1) 1'–3" WIDE x 5' LONG CORRUGATED STAINLESS STEEL SCREEN MODULE WITH SUPPORT ANGLES FOR THE CONTRACTOR TO INSTALL PER THE MANUFACTURER'S RECOMMENDATIONS. CORRUGATED SCREEN PANELS ARE 16 GAGE, STAINLESS STEEL PERFORATED PLATE W/ 3/32" DIAMETER HOLES WITH A 40 PERCENT OPEN AREA.
2. THE CONTRACTOR SHALL FURNISH AND INSTALL THE REMAINDER OF THE STRUCTURE, APPURTENANCES AND ATTACHMENTS SHOWN ON THE DRAWINGS.
3. ALL PLATE STEEL SHALL BE 3/16" THICK, A36. STEEL FOR THE MODULAR SCREEN BOX AND ALL FRAMING SHALL BE COATED WITH EPOXY PAINT OR POWDER COATED. COATING SHALL BE DETERMINED BY OWNER AND SUPPLIER PRIOR TO FABRICATION.
4. FINISH GRADE ELEVATIONS SHOWN ON SHEET 4.
5. FABRICATOR TO PROVIDE SHOP DRAWINGS TO THE OWNER FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.

VIEW OF SIMILAR MODULAR CORRUGATED WATER SCREEN

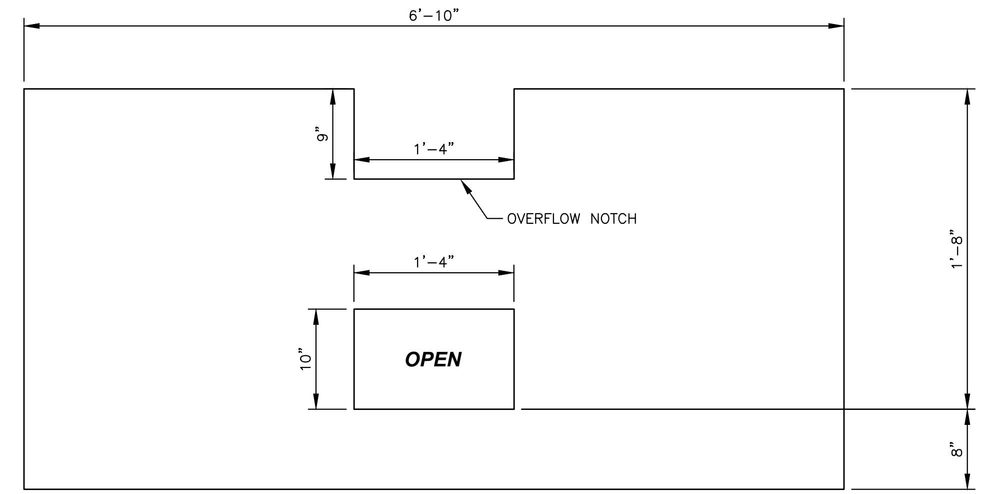
EXCAVATION/BACKFILL NOTES:

1. USE SUITABLE BACKFILL AND COMPACTION TECHNIQUES TO PREVENT DAMAGE TO STEEL FISH SCREEN STRUCTURE. DAMAGE TO STRUCTURE DURING BACKFILL ACTIVITIES IS THE RESPONSIBILITY OF THE CONTRACTOR.
2. IF FROZEN CONDITIONS EXIST, CONTRACTOR MAY PROPOSE ALTERNATE BEDDING COURSE TO ASSIST IN FINE GRADING.
3. IF UNSUITABLE MATERIALS ARE PRESENT BELOW PROPOSED BEDDING COURSE, NOTIFY OWNER IMMEDIATELY.



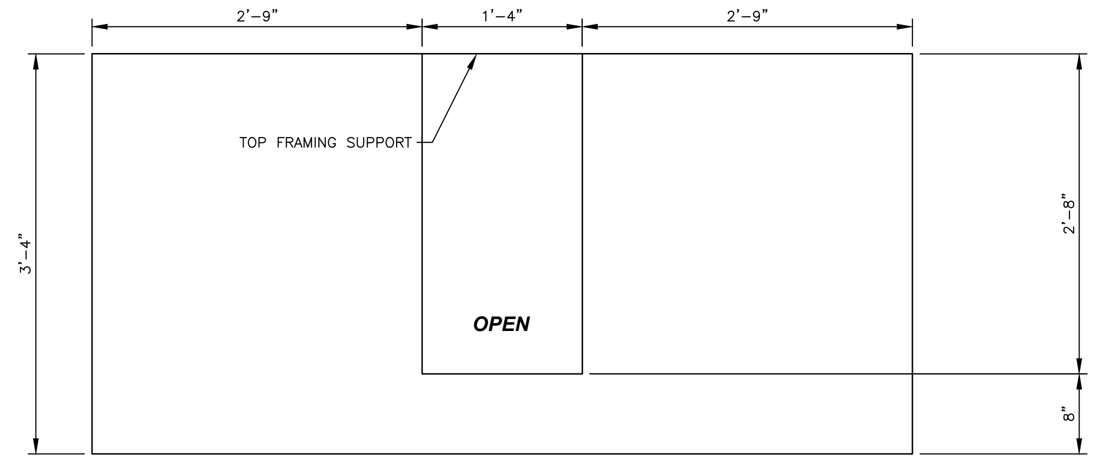
FISH SCREEN EXCAVATION BACKFILL SECTION

NO SCALE



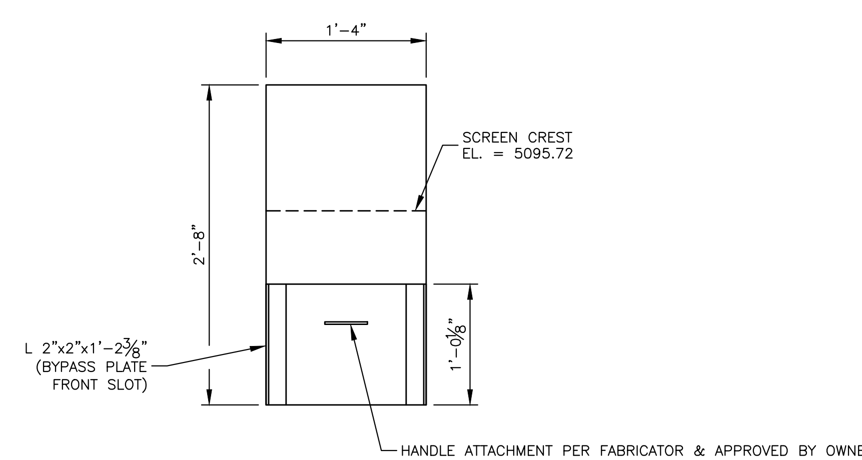
A/7 END PLATE - DOWNSTREAM

SCALE: 1/2" = 1'–0"



B/7 END PLATE - UPSTREAM

SCALE: 1/2" = 1'–0"



C/7 BYPASS PLATE DETAIL

SCALE: 1/2" = 1'–0"

NO.	REVISION DESCRIPTION	BY	DATE

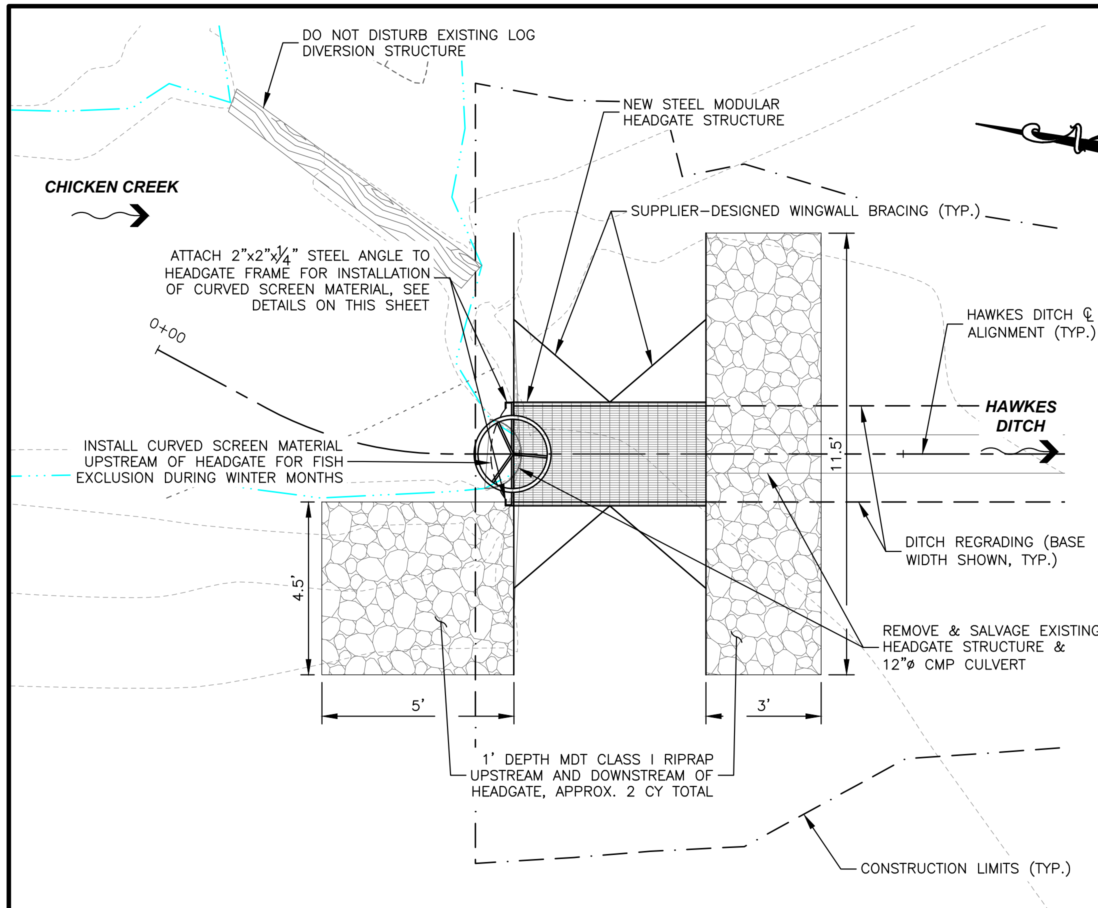
PROJECT: 1-22219
DESIGNED: EAC
DRAWN: EAC
CHECKED: RME
APPROVED: RME
DATE: MAY 11, 2023

MONTANA · ELLIOTT · 23790PE · LICENSED · PROFESSIONAL ENGINEER

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

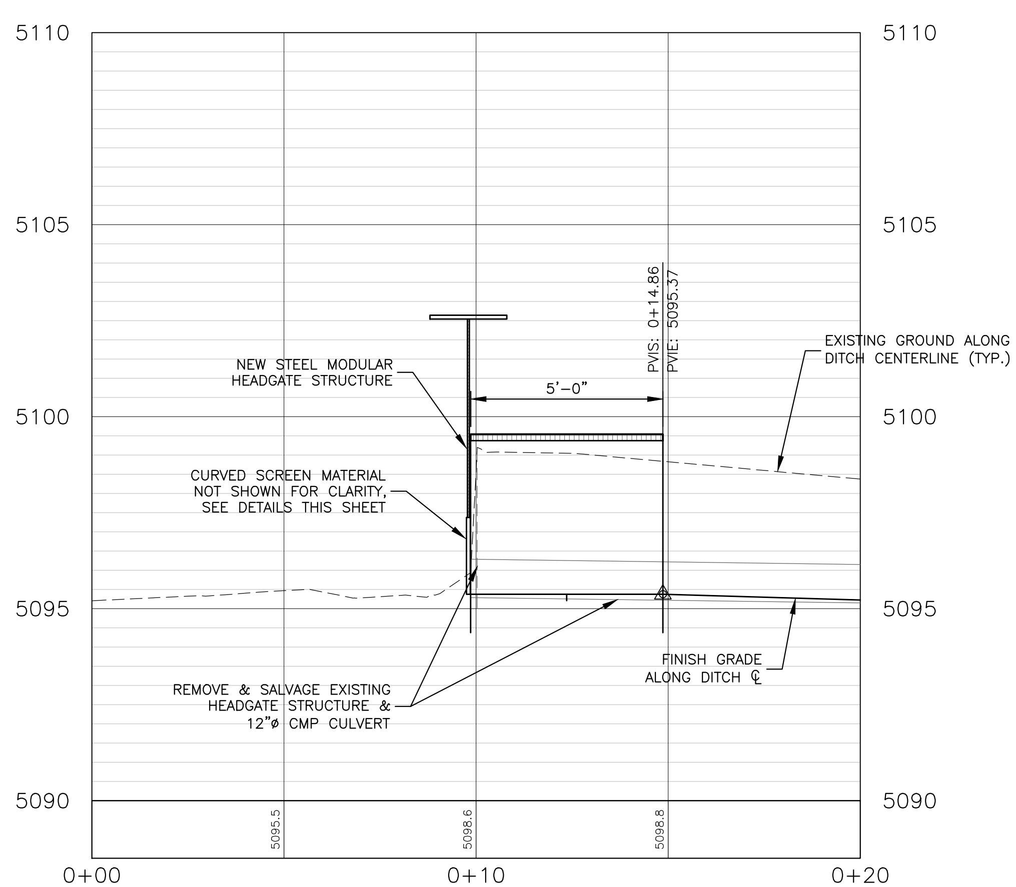
TROUT UNLIMITED
CHICKEN CREEK IRRIGATION IMPROVEMENTS
CORRUGATED WATER FISH SCREEN DETAILS

SHEET NO. **7** OF 9



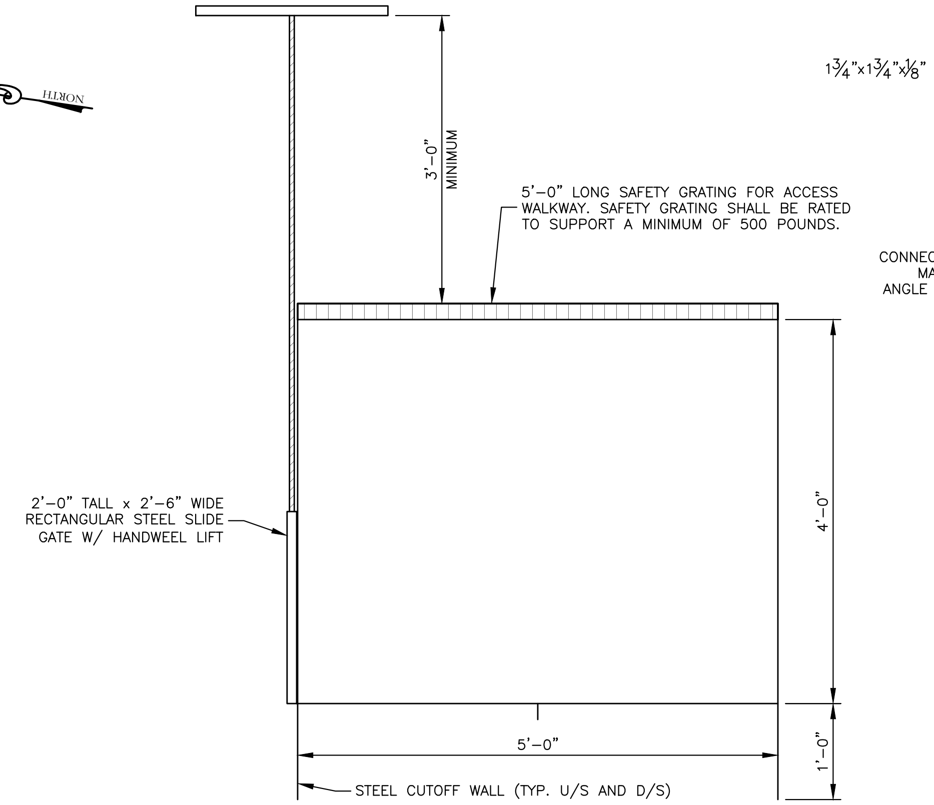
PLAN VIEW OF HAWKES DITCH - STA. 0+00 TO STA. 0+20

0 2.5 5
SCALE IN FEET



PROFILE VIEW OF HAWKES DITCH - STA. 0+00 TO STA. 0+20

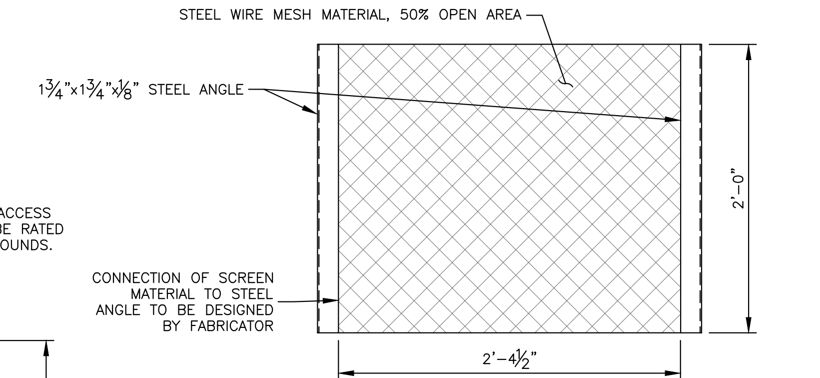
HORIZONTAL SCALE: 1" = 5'
VERTICAL SCALE: 1" = 5'



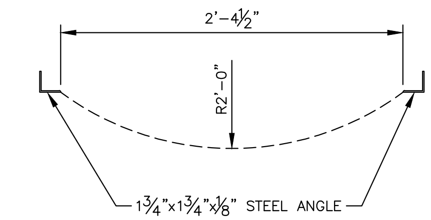
A
8

STEEL MODULAR HEADGATE - SECTION VIEW

NO SCALE
CURVED SCREEN MATERIAL NOT SHOWN FOR CLARITY

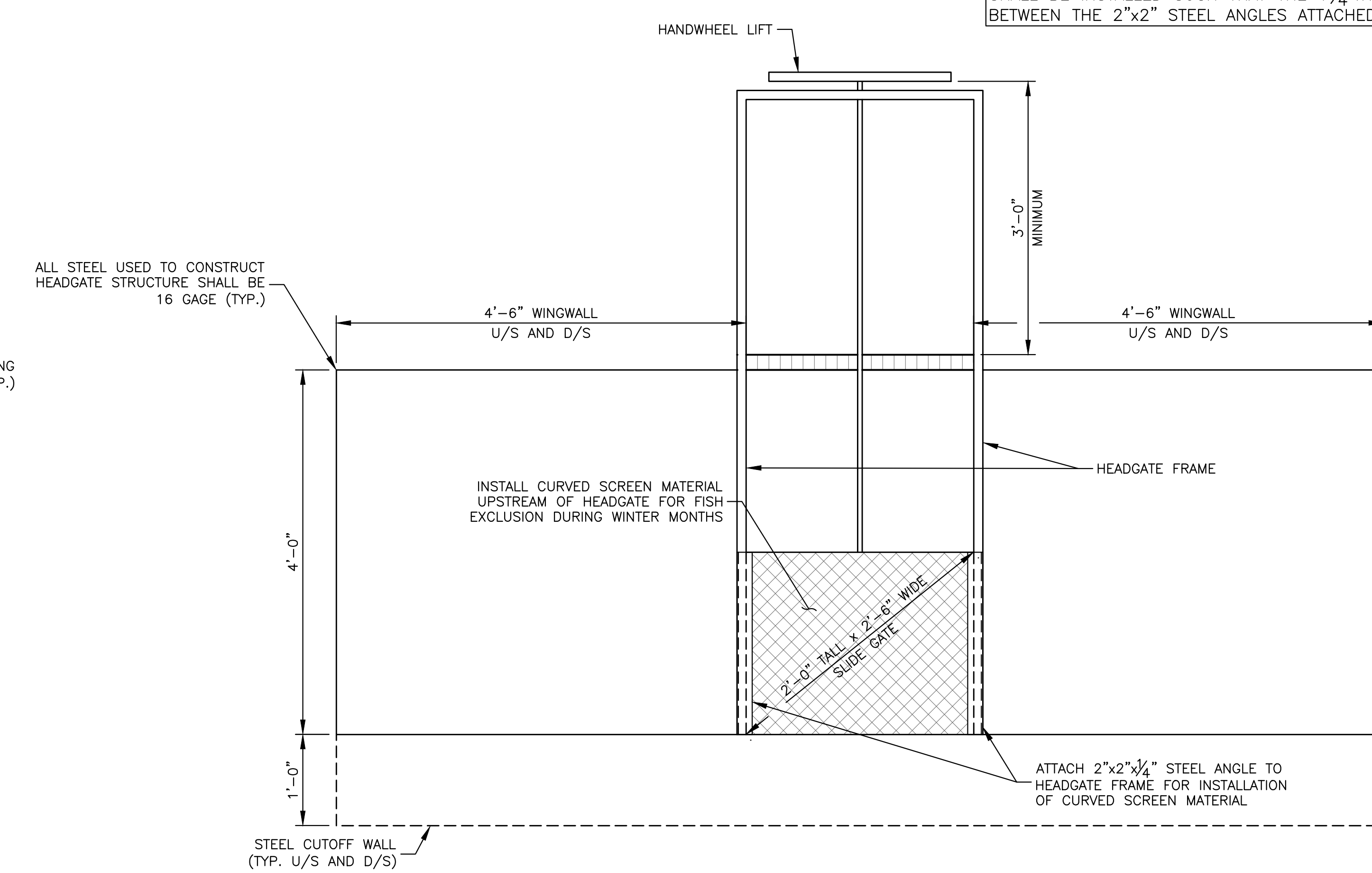


ELEVATION VIEW OF CURVED SCREEN



PLAN VIEW OF CURVED SCREEN

NOTE: CURVED SCREEN PANEL IS INTENDED TO BE REMOVABLE AND SHALL BE INSTALLED SUCH THAT THE 1¾"x1¾" STEEL ANGLES SIT BETWEEN THE 2"x2" STEEL ANGLES ATTACHED TO THE HEADGATE FRAME.



B
8

STEEL MODULAR HEADGATE - ELEVATION VIEW

NO SCALE

NO.	REVISION DESCRIPTION	BY	DATE

PROJECT: 1-22219
DESIGNED: EAC
DRAWN: EAC
CHECKED: RME
APPROVED: RME
DATE: MAY 11, 2023

STATE OF MONTANA — ROBERT ELLIOTT — 23790PE — LICENSED PROFESSIONAL ENGINEER

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

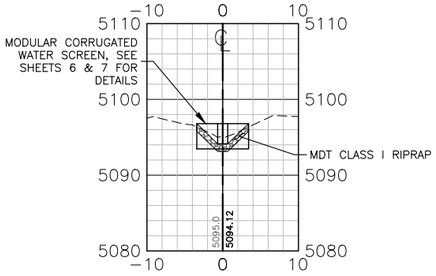
TROUT UNLIMITED CHICKEN CREEK IRRIGATION IMPROVEMENTS

HEADGATE DETAILS

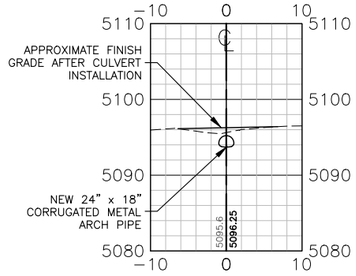
SHEET NO.
8
OF 9

Y:\shared\Helena Projects\1-22219-TU ? Chicken Creek Fish Screen\CADD 1-22219\Sheets\1-22219-08-Headgate Dtls.dwg

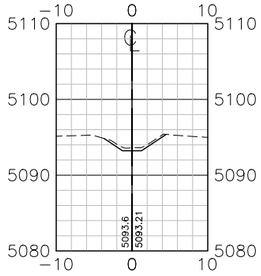
0+58.50 **U/S FACE OF SCREEN**



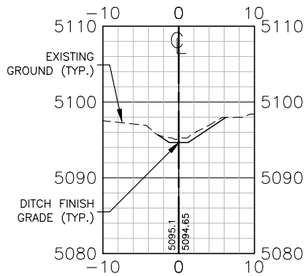
1+41.98 **U/S CULVERT INVERT**



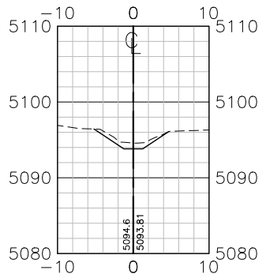
2+40.00



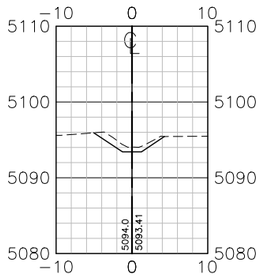
0+40.00



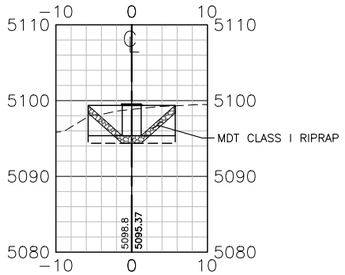
1+20.00



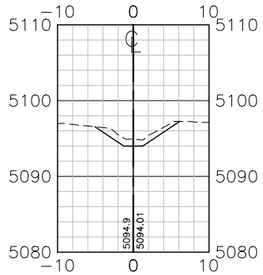
2+00.00



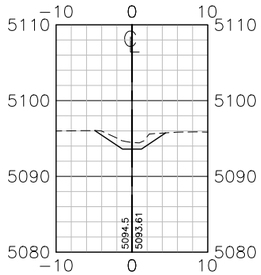
0+14.86 **D/S FACE OF HEADGATE**



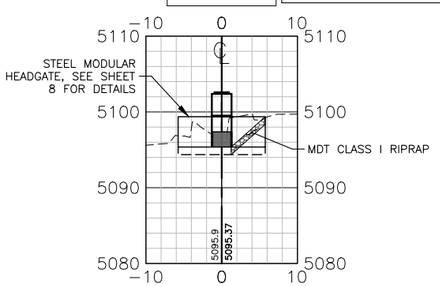
0+80.00



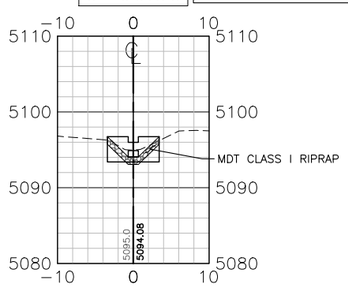
1+60.00



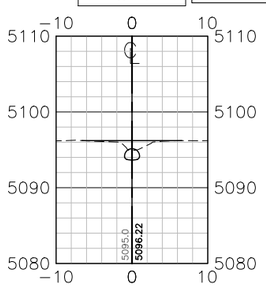
0+09.86 **U/S FACE OF HEADGATE**



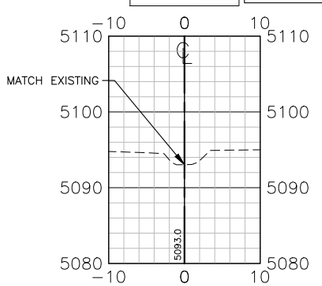
0+66.50 **D/S FACE OF SCREEN**



1+52.14 **U/S CULVERT INVERT**



2+74.58 **END STREAM REGRADING**



HAWKES DITCH CROSS-SECTIONS

0 10 20
SCALE IN FEET

NO.	REVISION DESCRIPTION	BY	DATE

PROJECT: 1-22219
DESIGNED: EAC
DRAWN: EAC
CHECKED: RME
APPROVED: RME
DATE: MAY 11, 2023

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

TROUT UNLIMITED
CHICKEN CREEK IRRIGATION IMPROVEMENTS
HAWKES DITCH CROSS-SECTIONS

SHEET NO.
9
OF 9

DRAFT agreement between Trout Unlimited and Hawkes Ditch water users, outlining roles and responsibilities for implementation and maintenance. Language is subject to change depending on funding sources and ongoing negotiations.

RESTORATION PROJECT AGREEMENT
for
Hawkes Ditch Diversion Improvement and Fish Screen Project

This Agreement between Trout Unlimited (TU), and _____(Water Users) is entered into to authorize natural resource restoration and improvements (Work) to irrigation diversion infrastructure owned and maintained by the Water User on West Fork Bitterroot River. The restoration project site is located in the __1/4 of the ___1/4 of Section T__R with property owned by Bitterroot National Forest.

1. Project Description. The Work to be performed for these projects is defined in the attached Scope of Work (Attachment A).

2. Coordination of Work. TU shall coordinate the Work on the diversion infrastructure, including permitting, contracting and construction, with the Water Users and Landowners in partnership.

3. Funding. TU shall provide _____Water users shall provide_____

4. Term of Agreement. The term of this Agreement is twenty (20) years.

5. Water User's Responsibilities. The restoration project is intended to provide long-term improvement to natural resources in the West Fork Bitterroot watershed. Therefore, the Water User agrees to operate and maintain the infrastructure installed with the project according to the Project Operation and Maintenance Plan (Attachment B) for a minimum of 20 years following mutual execution of this Agreement.

6. Binding Effect. The provisions of this Agreement are binding on the heirs, personal representatives, administrators, and successors of the parties to the same extent as on the original parties, except as otherwise provided by mutual written consent.

7. Reasonable Access. Water Users shall allow Trout Unlimited and Bitterroot National Forest agents access to the infrastructure as necessary for: (1) construction of the projects defined in the Scope of Work (Attachment A-1); (2) performance of the maintenance practices specified in the Operation and Maintenance Plan (Attachment B); and (3) to inspect project improvements to ensure the goals of all projects are being met, including monitoring, evaluating ongoing operation and maintenance, and determining project effectiveness over time.

8. Modification of Agreement. This Agreement, including the Operation and Maintenance Plan (Attachment B), may be modified through a written modification to this Agreement that is approved by all parties to this Agreement.

9. Ownership of Real Property. Water User guarantees ownership of the above-described infrastructure and warrants that, to its best knowledge, there are no outstanding rights that will interfere with this Agreement. Water User shall promptly notify Trout Unlimited if the associated water rights are sold or transferred during the Term of this Agreement. In addition, Water User agrees to coordinate contact between the subsequent owner or their agent and Trout Unlimited for the purpose of discussing potential future management plans.

10. Notice. Any notice given under this Agreement must be in writing and served to all parties of this Agreement by registered or certified mail, return receipt requested and sent to the parties' addresses as set forth below. A party wishing to change its designated address must do so in a writing sent to all parties of this Agreement. Notice served under this provision shall be complete when deposited in the United States mail. Refusal to accept or failure of delivery because of a changed address for which no change-in-address was given shall be considered receipt of notice.

Trout Unlimited liaison and address:

Christine Brissette
Trout Unlimited
312 N. Higgins Ave, Suite 500
Missoula, MT 59802

Water User liaison and address:

_____
_____

11. Termination of Agreement. Any party may terminate this Agreement for failure of the other party to perform any of the services, duties, or conditions contained in this Agreement after giving thirty (30) days written notice to the other parties.

12. No Assumption of Jurisdiction. Trout Unlimited do not assume jurisdiction over any property as a result of this Agreement. Nothing in this Agreement conveys title, possessory interest, or any other property right associated with the Water User's property.

IN WITNESS WHEREOF, the parties have caused this Agreement to be duly executed intending to be bound thereby, effective as of the latest date below.

BY: _____ _____
Trout Unlimited Date

BY: _____ _____
Water Users Date

Attachment A-1

Scope of Work

Hawkes Ditch Diversion Improvement and Fish Screen Project

PURPOSE

The purpose of this project is to reduce fish entrainment by installing a fish screen and improving the Hawkes diversion on Chicken Creek, a tributary to the West Fork Bitterroot River, above Painted Rocks Reservoir.

BACKGROUND

Trout Unlimited (TU) conducted fish passage and entrainment assessment and prioritization of upper Bitterroot River diversion structures during the 2017 field season. Since then, TU has coordinated with Fish Wildlife and Parks (FWP) and Bitterroot National Forest (BNF) to develop fish passage project priorities in this region, with the goal of reconnecting priority bull trout streams. The Hawkes Ditch, located on BNF land, was identified as a high priority for screening due to its high location in the watershed and proximity to native trout spawning reaches. In 2022, TU contracted with Great West Engineering to survey and design fish screens for the Wilson Diversion.

TASKS

TU will hire a fabricator and equipment operator to complete the scope of work, with oversight by Trout Unlimited. Landowners will be included in the contractor selection process.

Task 1 – Fabricate fish screen and new headgate structure

A fabricator will build the fish screen box and new headgate, as detailed in the Great West Engineering Final Design plan set.

Task 2 – Install fish screen and headgate
A contractor will be hired to remove the existing headgate, install the new headgate, fish screen and culvert and grade the ditch as detailed in the Great West Engineering Final Design plan set. Construction oversight will be supplied by Trout Unlimited. Landowners are invited and encouraged to be on site during construction.

.

SCHEDULE

TU will coordinate construction schedule with landowners, water users, and contractors. Construction is projected to take approximately 2 days to complete. Construction will be coordinated with water users to not interfere with irrigation water delivery during construction. Anticipated construction is August or September 2023.

Attachment A-2
Project Plans

Attachment B
Operation and Maintenance Plan

Goals: The project is intended to ensure efficient delivery of irrigation water and minimize maintenance for water users while protecting and enhancing the West Fork Bitterroot fishery by operation and maintenance of a fish screen and fish-friendly irrigation diversion system. The fish screen will prevent Chicken Creek fish from becoming entrained into the irrigation system and the diversion will allow for upstream fish passage while providing delivery and control of irrigation water.

Fish Screen and Diversion Operation and Maintenance:

The Water Users will be responsible for operation and maintenance of the diversion and headgate. Trout Unlimited will assist the Water Users to coordinate optimal performance of the fish screen along with operation of the diversion and headgate for water delivery.

The diversion and fish screen are designed to function and deliver irrigation water through the typical range of seasonal conditions on Chicken Creek and irrigation demand. Water users agree to maintain and use the fish screen during normal circumstances. Fish screen panels are designed to be removable in the event of a mechanical failure, extreme flow event or during any other conditions that might prevent the screen from delivering full legal irrigation water demand down ditch. All parties agree that Water Users may *temporarily* lift screen panels as necessary to deliver water in the event that legal flow is impaired. In this case, the water user will notify TU within 24-hours. All parties agree that water users may remove screen panels during any period that TU or a contractor is unable to repair or adjust the screen to perform as designed.

Recurring maintenance will include, but is not limited to the following:

1. Water Users. The Water Users will be responsible for day to day operation of the diversion and headgate. The Water User can expect some seasonal variation in the frequency of operation and maintenance tasks at the headgate and screen necessary for optimal function of the irrigation system and fish screen.

As necessary:

- Clean any accumulated debris from trash rack and headgate.
- Adjust headgate as necessary to maintain bypass flow and irrigation flow through screen.
- Clean debris from screen
- Contact Trout Unlimited if screen is not functioning as designed, i.e. debris accumulation on the screen or problems delivering full legal irrigation demand.

Annually:

- Inspect headgate for function and perform maintenance as necessary.
- Close headgate and coordinate winterizing the screen system after irrigation season with Trout Unlimited.

2. Trout Unlimited. Trout Unlimited and/or a contractor will perform the following operation and maintenance tasks:

As necessary:

- Respond to notification from water users to address unscheduled screen maintenance needs.

Annually:

- Inspect the screen for function and repair as necessary.

Michael J. Jakober
Bitterroot National Forest
West Fork Ranger District
6735 West Fork Road
Darby, MT 59829
April 13, 2023

Dear Sir or Madam:

My name is Michael Jakober, and I am a fisheries biologist for the Bitterroot National Forest. I am writing this letter in support of Trout Unlimited's proposal to install a corrugated water screen in the Hawkes irrigation ditch and replace the headgate at its point of diversion (POD) on Chicken Creek. The Hawkes ditch and its POD are located entirely on Bitterroot National Forest lands.

Chicken Creek is a 3rd order tributary to the upper West Fork Bitterroot River in Ravalli County, Montana. Chicken Creek contains populations of westslope cutthroat trout (abundant), bull trout (uncommon), brook trout (common), longnose sucker (uncommon), and sculpin (common). It is an important spawning and rearing tributary for bull trout and westslope cutthroat trout, and also supports a small spawning run of longnose sucker during the summer months.

Efforts to screen the Hawkes ditch to prevent fish entrainment began in 2008 with the installation of a ¼ inch mesh vertical passive "window-style" screen on the headgate at the POD. Monitoring over the past 15 years indicates that the passive screen at best does a mediocre job of preventing fish entry. Gaps chronically form along the bottom edge of the screen during higher flows and these gaps allow fish to swim under the screen and become entrained in the ditch. Once in the ditch it is impossible for the fish to get back into Chicken Creek.

Over the course of a typical summer, at least several dozen fish manage to get past the passive screen and become entrained in the ditch or in the private pond that the ditch empties into. Most are westslope cutthroat trout, although bull trout, an ESA threatened species, have also been captured in the ditch during Forest sampling efforts and are caught several times annually by the landowner who fishes in that pond. The primary goal for installing the passive screen was to prevent the entrainment of bull trout. The passive screen has not been able to meet this goal, but the corrugated water screen would have a much better chance of doing so.

I am hoping that you will fund Trout Unlimited's proposal. Since 2000, they have partnered with the Bitterroot National Forest to install two other corrugated water screens on Forest POD's. The installation of the screen on the Hawkes ditch would be a positive step for the fishery in Chicken Creek and would give us another example to show to local water right holders who are currently operating unscreened ditches.

If you have any questions, feel free to contact me by phone (406-821-3269, M-F 0800-1630) or email (michael.jakober@usda.gov).

Sincerely,

Michael J. Jakober, Bitterroot NF fisheries biologist

Region 2 Headquarters
3201 Spurgin Road
Missoula, MT 59804
Phone 406-542-5500
05-11-2023

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

RE: Chicken Creek Fish Screen Future Fisheries Application

Dear Future Fisheries Panel:

Fish, Wildlife and Parks (FWP) is in support of the Chicken Creek Fish Screen application submitted by Christine Brissette of Trout Unlimited. Chicken Creek is a tributary to the upper West Fork of the Bitterroot River that supports populations of native westslope cutthroat trout, bull trout, longnose sucker, and slimy sculpin, as well as non-native brook trout. This project would replace a low cost, passive screen that currently exists on the headgate of the Hawkes Ditch with a more effective corrugated water screen that is like two others currently functioning well in the upper Bitterroot drainage.

The Hawkes Ditch is one of several ditches identified in a 2017 prioritization of upper Bitterroot irrigation ditches completed by Trout Unlimited, in cooperation with Montana FWP and the Bitterroot National Forest, that ranked highest for bull trout conservation need. The existing passive screen on the headgate of the Hawkes Ditch has been shown to be ineffective at reducing fish entrainment into the ditch. It also requires regular maintenance to remain functional. Replacing the existing structure with one better designed to reduce fish entrainment and require less regular maintenance will have direct benefits to fish populations in Chicken Creek as well as the upper West Fork of the Bitterroot River, a popular wade fishery.

We encourage you to reach out to Jason Lindstrom, Fisheries Biologist, (406) 529-8058, Jason.Lindstrom@mt.gov with any questions regarding this project.

Thank you for considering funding this application.

Sincerely,

Randy Arnold