



**FUTURE FISHERIES IMPROVEMENT PROGRAM GRANT APPLICATION**

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



**I. APPLICANT INFORMATION**

A. Applicant Name: Prickly Pear Land Trust

Mailing Address: P.O. Box 892

City: Helena State: MT Zip: 59624

Telephone: (406) 442-0490 E-mail: nate@pricklypearlt.org

B. Contact Person (if different than applicant): Nate Kopp

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Telephone: \_\_\_\_\_ E-mail: \_\_\_\_\_

C. Landowner and/or Lessee Name (if different than applicant): \_\_\_\_\_

Mailing Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Telephone: \_\_\_\_\_ E-mail: \_\_\_\_\_

**II. PROJECT INFORMATION**

A. Project Name: Sevenmile Creek Restoration Final Phase

River, stream, or lake: stream

Location: Township: 10N Range: 4W Section: 10

Latitude: 46.64064 N Longitude: 112.10256 W *within project (decimal degrees)*

County: Lewis & Clark

B. Purpose of Project:

To provide permanent fish passage reconnecting two fragmented populations of brown trout and Eastern brook trout in Sevenmile Creek. This is the final 0.6 mile restoration of a project to restore 2.2 miles of Sevenmile Creek, expected to substantially improve brown and brook trout populations and enhance public fishing opportunity one mile from Helena. All previous phases are complete, and the previous reach benefitted from FFIP support.

Sevenmile Creek restoration phase 2

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

Prickly Pear Land Trust (PPLT) seeks \$69,000 from the Future Fisheries Improvement Program to complete the construction of a permanent fish passage and restore the final phase (0.6 mile) of a 2.2 mile-restoration project on Sevenmile Creek, about 1 mile from Helena.

In early 2016, PPLT acquired a 350-acre parcel in the Helena Valley (**Figure 1**), harboring a 2.2-mile reach of Sevenmile Creek that had suffered: heavy grazing for decades, willow removal from the riparian corridor, channelization of the stream, and topsoil scalping adjacent to the riparian corridor. An existing irrigation diversion prevented fish passage, disconnecting fisheries habitat for brown and Eastern brook trout. By the end of 2018, with support from the FFIP, PPLT had secured all funding and completed the first three phases (1.6 miles) of restoration, including removal of an irrigation diversion and installation of a temporary step-pool fish passage.

Since then, PPLT has secured \$65,000, — all the necessary funding for final-phase (SM4) restoration design and permitting — but must secure an estimated \$343,431 for construction, oversight, FEMA approval, and revegetation. SM4 (**Figure 2**) is the straightest and most degraded stream reach in the project area, and has not regained sufficient length to support any sort of complex bed morphology or associated fish habitat. The riparian corridor is either completely lacking, or is limited to a very thin band of woody shrubs growing near the bottom of the incised streambed (**Figure 3**). Downcutting has resulted in the exposure of high fine-grained banks that are actively contributing large quantities of fine sediment to the system. The overall condition of SM4 with respect to floodplain function, riparian vegetation, sediment loading, fish habitat, and geomorphic stability is exceedingly poor (**Figure 3**). With an investment by the FFIP in SM4 restoration, an opportunity exists to accelerate Sevenmile's recovery process by restoring the creek's alignment, dimension, and floodplain to a more historic configuration. Restoration of the creek throughout the reach will provide immediate benefits to fish populations, water quality, aquatic habitat, floodplain function, and wildlife along the creek corridor, all of which will benefit the public.

**(For further Project Description and figures, please see attachment at end of application.)**

D. Length of stream or size of lake that will be treated: 3,188 ft. (0.6 mile) of stream

E. Project Budget:

Grant Request (Dollars):	\$	69,000
Matching Dollars:	\$	268,671
Matching In-Kind Services*:	\$	5,760
<i>*salaries of government employees are not considered matching contributions</i>		
<b>Total Project Cost:</b>	<b>\$</b>	<b>343,431</b>

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

G. **Attach** specific project plans, detailed sketches, plan views, photographs, maps, evidence of landowner consent, evidence of public support and fish biologist support, and/or other information necessary to evaluate the merits of the project. If project involves water leasing or water salvage complete a *supplemental questionnaire*. (<http://fwp.mt.gov/fwpDoc.html?id=36110>)

H. **Attach** land management & maintenance plans that will ensure protection of the reclaimed area.

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

## Sevenmile Creek restoration phase 2

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

Brown and brook trout.

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

Prior to restoration of Reach 3 in 2018, an irrigation structure physically segregated fish populations by partially or fully blocking upstream passage. The structure also thermally segregated fish by impounding water above the dam and creating a heat sink. While the restoration of Reach 3 removed this barrier, fish are required to navigate a very steep, step-pool bypass channel which was constructed as a temporary measure until restoration of Reach 4 could be accomplished. Restoration of Reach 4 will include 1) reconstructing a 2,800-foot segment of the channel to its historic elevation, 2) constructing 350 feet of cascade-type channel to connect the restored stream alignment to meet the existing stream elevation, and 3) constructing an inset floodplain along the lower 200 feet of incised channel. Fish passage will be improved over the temporary step-pool feature which will be eliminated as a result of the project. The deactivated channel alignment will be plugged with material generated by the realignment, and will result in a series of groundwater fed ponds and wetlands. The project will enhance wild fish habitat by reducing fine sediment contributions to the channel from terrace erosion, improving habitat complexity along the restored alignment, improving function of the revegetated riparian corridor, and allowing the channel to reconnect with its historic floodplain.

- C. Will the project improve fish populations and/or fishing? To what extent?

Self-sustaining populations of brown and brook trout currently exist in this reach, but permanent fish passage is expected to improve fish abundance by allowing trout at multiple life stages to pass up- and downstream, enabling access to preferred spawning and nursery habitats. Fish passage coupled with other proposed restoration activities is expected to also improve water quality by reducing stream bank erosion and sedimentation, providing vegetative cover, improving stream flows, and improving stream shading. Both brook trout and brown trout are highly susceptible to angling, and increased abundance in this stream reach is expected to provide additional public opportunity. PPLT intends to manage the property as open space with public recreational opportunities (including fishing).

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

Both brook trout and brown trout are highly susceptible to angling, and increased abundance in this stream reach is expected to provide additional public opportunity. PPLT intends to manage the property as open space with public recreational opportunities (including fishing).

- E. The project agreement includes a 20-year maintenance commitment. Please discuss your ability to meet this commitment.

PPLT would make the 20-year maintenance commitment for SM4 restoration. The organization is currently fundraising for a permanent stewardship endowment of \$200,000 to meet annual property maintenance and stewardship. Currently, Montana Aquatic Resource Services, Inc. has obligated \$50,000 toward the endowment that will be received in 2022. Other private funding requests have been submitted and grazing fees may supplement this fundraising. In the unlikely event that PPLT sold the land, a legal maintenance agreement and any residual maintenance endowment would transfer with the land.

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

## Sevenmile Creek restoration phase 2

Former owners of the property removed willows from the riparian corridor, channelized the stream, scalped topsoil adjacent to the riparian corridor, and substantially overgrazed the property. An irrigation diversion blocked fish passage, subsequently disconnecting fisheries habitat. Since PPLT acquired the parcel in early 2016, cattle have been removed from the property, substantial weed infestations have been mapped and treated annually, and restoration of 1.6 miles of the stream corridor has been completed. Proposed off-stream fencing will allow about 120 acres of sub-irrigated pasture to be grazed in the future. The fish passage will allow brown and brook trout populations to reconnect at all life stages.

### G. What public benefits will be realized from this project?

Permanent fish passage in SM4 will allow fish to reach critical habitats, which is expected to increase fish abundance. Planned restoration throughout this 2.2 mile section of Sevenmile is also expected to: improve water quality by reducing bank erosion and sedimentation, create additional wetland acreage by plugging the old stream channel and re-establishing vegetative cover, improve bird and other wildlife habitat, and provide a recreational resource for the Helena area.

Further, one of the Lake Helena Watershed Restoration Plan —2016-2023 (December 2015) top three restoration priorities is for “Sediment reduction activities throughout the watershed.” The Plan notes that removal of woody vegetation has largely reduced the natural protections from stream bank erosion in all parts of the watershed. Sevenmile Creek is one of twelve streams identified as not meeting its full potential to support fish and aquatic life due to excessive levels of sediment. Excessive sedimentation impacts fish spawning and aquatic insect habitat, fills pools, and alters channel morphology. Sevenmile Creek contributes the fifth largest sediment load in the watershed; the sediment load reduction target is 1,475 tons less per year than its current 1,855 tons per year. This project is expected to contribute to sediment-load reduction in Sevenmile.

PPLT plans to maintain the parcel as open space and provide public access for recreational use. Improved land and grazing management practices will enhance riparian and upland habitats and improve diversity of flora and fauna in the area. The proximity of the parcel to the city of Helena offers one of very few accessible sites to a riparian area with fishing opportunities in the arid Helena Valley.

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

PPLT has a strong priority and a well-documented and adjudicated water right. The water right claim #411 190990 00 is in shared ownership between PPLT and the Lazy E Ranch. The flow rate is listed as 3.13 cfs for 334 acres with a period of use January 1 to December 31. The right lists the main diversion as the IOOF ditch in section 10 that has in the past irrigated most of the PPLT property in Section 10. Ownership of the right has been stipulated to be split 65 miners inches (1.63 cfs) to PPLT, and 60 MI (1.5 cfs) to the Lazy E Ranch. The fish passage is designed to assure that irrigation flows are maintained for the historic purpose and season of use. The fish bypass channel outlined in this proposal was chosen partially because it does not interfere with water rights and historic agricultural uses.

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

No.

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

No.
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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: Mary Horn Date: 5-29-19

Sponsor (if applicable): \_\_\_\_\_

Submittal: **Applications must be signed and received before December 1 and June 1 of each year to be considered for the subsequent funding period.** Late or incomplete applications will be rejected.

Mail to: Montana FWP Fish Management Bureau PO Box 200701 Helena, MT 59620-0701	Email: Michelle McGree <a href="mailto:mmcgree@mt.gov">mmcgree@mt.gov</a> (electronic submissions must be signed) For files over 10MB, use <a href="https://transfer.mt.gov">https://transfer.mt.gov</a>
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*Applications may be rejected if this form is modified.*

**Project Description (cont.)**

In fall 2018, PPLT contracted with Confluence Consulting, Inc. to design a restoration approach for SM4. The proposed design approach involves constructing a new channel alignment along Sevenmile Creek's historic floodplain prior to channelization, and would create a channel with improved habitat complexity and stability. Selecting an alignment during the preliminary design process for a restored channel through SM4 involved analyzing historic imagery and LiDAR data to help determine the most likely route of the historic channel. Based on these images and existing topography, the historic channel likely flowed north of the existing channel throughout the majority this reach. Channelization of the creek subsequently pushed the channel to the southern edge of the historic floodplain, where it currently remains. The new channel will cross over the existing channel to maintain a proper gradient and prevent the need to regrade a new floodplain.

Relocating the channel across its historic floodplain (**Figure 4**) requires a segment of the new alignment to transition between the restored elevation and the existing, incised elevation before departing the Prickly Pear Land Trust's property. This transition will be accomplished by constructing a "cascading" channel segment, which will be lined with boulders, cobble, and gravel over 350 feet (**Figure 5**). The cascading channel segment will mimic a steep mountain stream with frequently spaced pocket pools for fish to utilize while navigating this steeper segment. The existing step-pool feature used to temporarily maintain fish passage at the downstream end of SM3 will be deactivated.

The proposed cascade feature to connect the restored channel with the existing channel lies approximately 120 feet upstream of the PPLT parcel boundary. This 120-foot segment of the channel will be improved by constructing a vegetated, inset floodplain that extends 20 feet on either side of the channel. The inset floodplain tapers before the channel departs the PPLT property. The newly excavated floodplain will be vegetated with wetland seed and shrubs to establish an improved riparian corridor. The new floodway will be graded with 2:1 slopes to tie into the existing ground surface.

Re-aligning Sevenmile Creek through SM4 will require more extensive (and more costly) permitting than previous reaches because it lies in a FEMA-mapped floodplain. This will require PPLT to obtain 310, 404, and 401 permits, as well as a Floodplain Development and Floodplain Map Revision permit. Since this project will likely result in a rise to the base flood elevation by more than 0.5 feet, it would require a floodplain map revision process with FEMA (a Conditional Letter of Map Revision [CLOMR]) prior to constructing the project, and a LOMR (Letter of Map Revision) post construction.

Proposed restoration is expected to: permanently improve fish passage, improve water quality by reducing bank erosion and sedimentation, create additional wetlands by plugging the old stream channel and re-establishing vegetative cover, improve bird and other wildlife habitat, and provide a recreational resource for the Helena area.

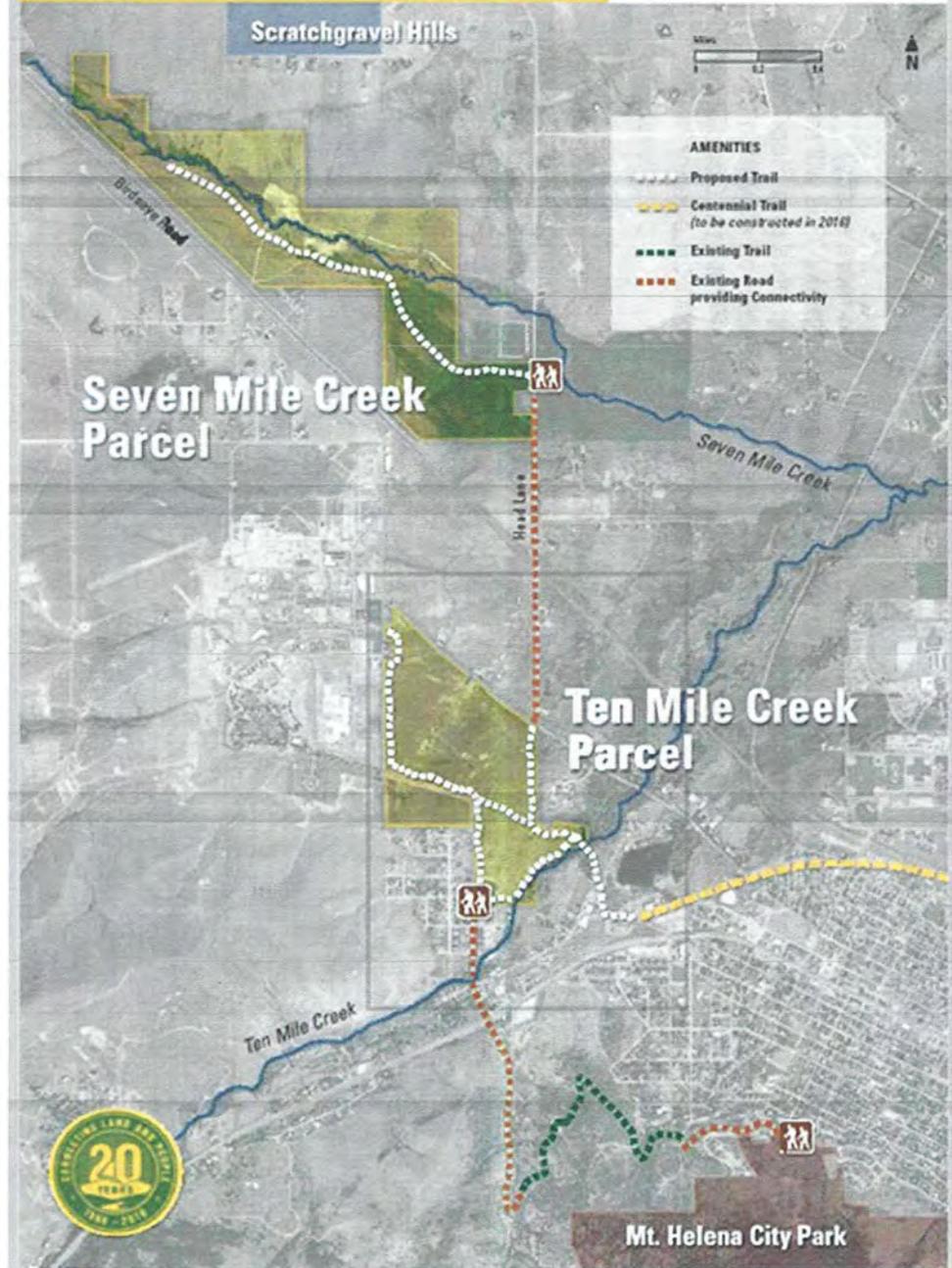


Figure 1: Area Map showing Sevenmile Creek parcel proximity to Helena

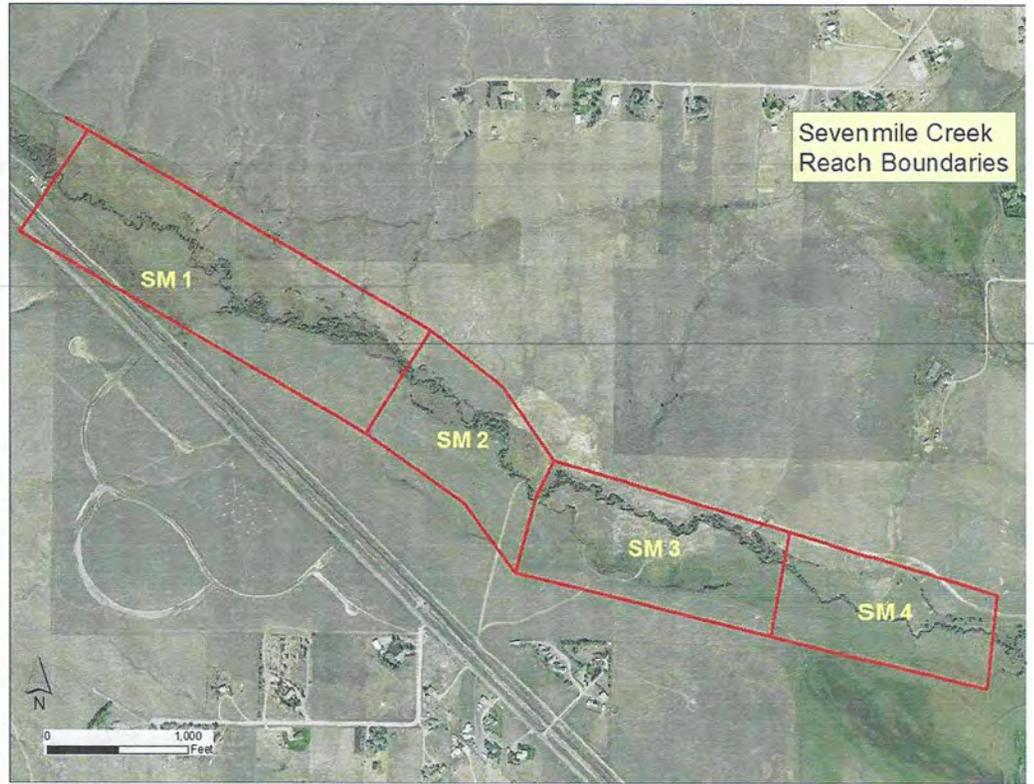


Figure 2: Sevenmile Creek sub-reaches

# Sevenmile Creek restoration phase 2



Figure 3: Photo of reach 4 showing its disconnection from the floodplain and lack of vegetation.

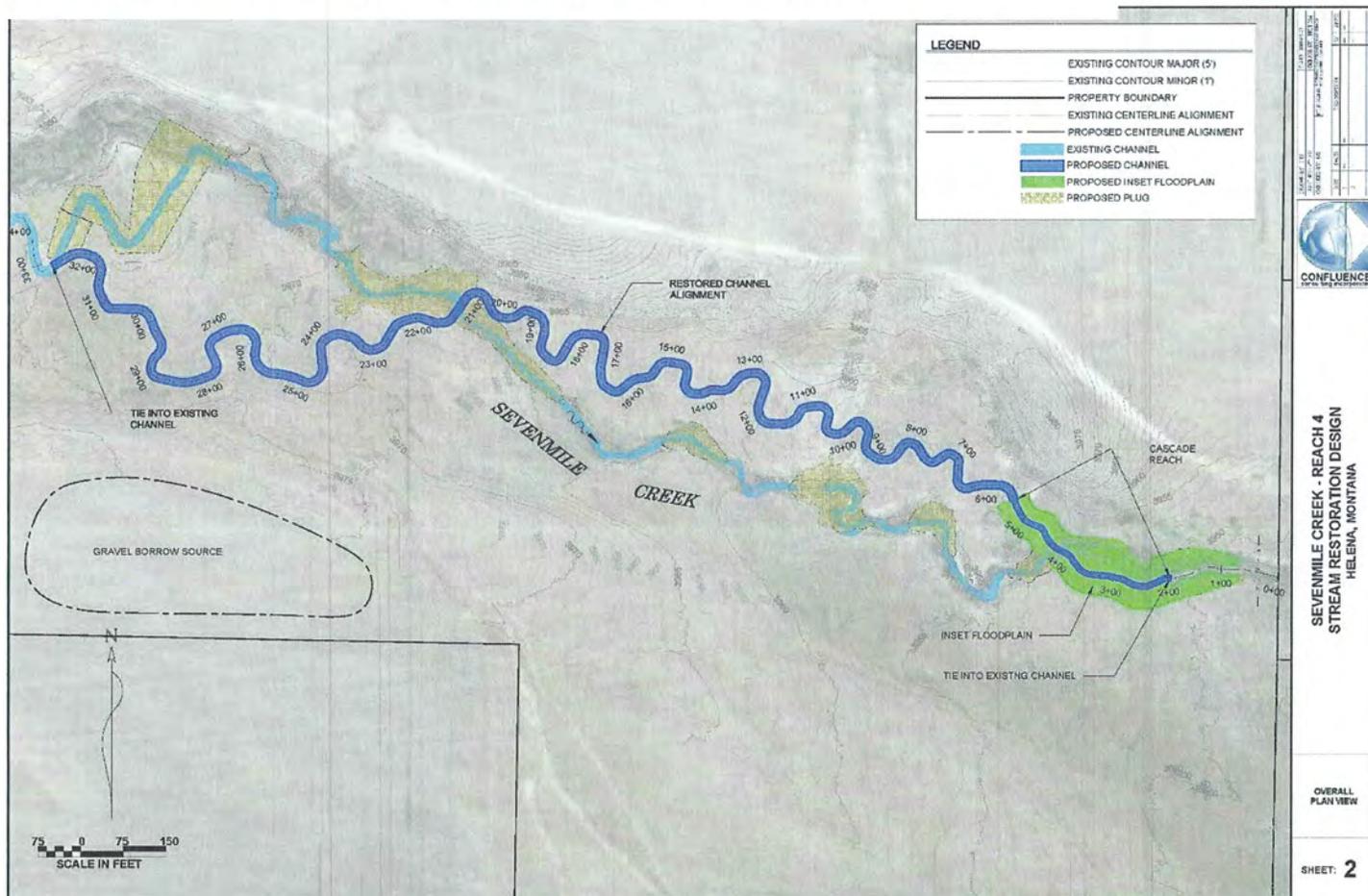
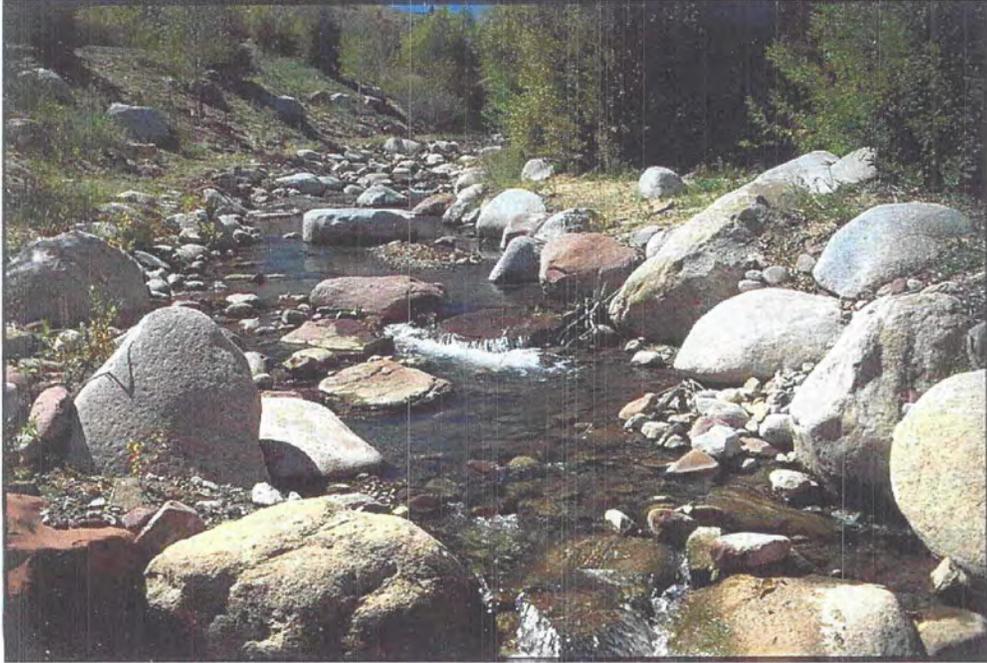


Figure 4: Proposed Plainview of SM4 Final Restoration Plan

Sevenmile Creek restoration phase 2



*Figure 5. Example of "cascade" type stream channel proposed to transition restored stream elevation to incised elevation.*

Sevenmile Creek restoration phase 2  
 BUDGET TEMPLATE SHEET FOR FUTURE FISHERIES PROGRAM APPLICATIONS

WORK ITEMS (ITEMIZE BY CATEGORY)	NUMBER OF UNITS	UNIT DESCRIPTION*	COST/UNIT	TOTAL COST	CONTRIBUTIONS			
					FUTURE FISHERIES REQUEST	IN-KIND SERVICES**	IN-KIND CASH	TOTAL
<b>Personnel***</b>								
Survey	20	HR	\$100.00	\$ 2,000.00			2,000.00	\$ 2,000.00
Design	116		\$120.00	\$ 13,920.00			13,920.00	\$ 13,920.00
Engineering	35		\$125.00	\$ 4,375.00			4,375.00	\$ 4,375.00
Permitting	64	HR	\$105.00	\$ 6,720.00			6,720.00	\$ 6,720.00
PPLT Admin		HR	\$4,400.00	\$ 4,400.00			4,400.00	\$ 4,400.00
Oversight	172	HR	\$100.00	\$ 17,200.00			17,200.00	\$ 17,200.00
Insurance req'd by Northwestern Energy	1	LS	\$4,000.00	\$ 4,000.00			4,000.00	\$ 4,000.00
			Sub-Total	\$ 52,615.00	\$ -	\$ -	\$ 52,615.00	\$ 52,615.00
<b>Travel</b>								
Mileage				\$ -				\$ -
Per diem				\$ -				\$ -
			Sub-Total	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Construction Materials****</b>								
mature willows	55	EA	\$40.00	\$ 2,200.00			2,200.00	\$ 2,200.00
revegetate floodplain & gravel borrow	6.8	AC	\$7,000.00	\$ 47,600.00			47,600.00	\$ 47,600.00
revegetate inset floodplains	0.4	AC	\$7,000.00	\$ 2,800.00			2,800.00	\$ 2,800.00
seed upland slopes	0.6	AC	\$500.00	\$ 300.00			300.00	\$ 300.00
15% Contingency				\$ 7,935.00			7,935.00	\$ 7,935.00
				\$ -				\$ -
				\$ -				\$ -
				\$ -				\$ -
				\$ -				\$ -
			Sub-Total	\$ 60,835.00	\$ -	\$ -	\$ 60,835.00	\$ 60,835.00
<b>Equipment and Labor</b>								
<b>New Channel Alignment</b>								

Sevenmile Creek restoration phase 2  
**BUDGET TEMPLATE SHEET FOR FUTURE FISHERIES PROGRAM APPLICATIONS**

Excavate and stockpile topsoil along new channel	2260	CY	\$3.00	\$	6,780.00	6,780.00		\$	6,780.00
Excavate and stockpile subgrade along new channel	2,920	CY	\$3.00	\$	8,760.00	8,760.00		\$	8,760.00
Generate gravel for new channel bed	2,040	CY	\$4.00	\$	8,160.00	8,160.00		\$	8,160.00
Grade riffle and pool habitats	2,710	FT	\$3.00	\$	8,130.00	8,130.00		\$	8,130.00
Replace topsoil and general fill along new channel	1,440	CY	\$1.50	\$	2,160.00	2,160.00		\$	2,160.00
Pool bank treatments	1,300	FT	\$75.00	\$	97,500.00	21,555.00	75,945.00	\$	97,500.00
Transplant sod mats	1170	SQ YD	\$9.00	\$	10,530.00		10,530.00	\$	10,530.00
Construct channel plugs	8,970	CY	\$1.50	\$	13,455.00	13,455.00		\$	13,455.00
Haul existing, stockpiled material	3,000	CY	\$4.00	\$	12,000.00		12,000.00	\$	12,000.00
<b>Cascade Channel and Inset Floodplain</b>									
Strip topsoil for inset floodplain	640	CY	\$3.00	\$	1,920.00		1,920.00	\$	1,920.00
Excavate inset floodplain	2,660	CY	\$3.00	\$	7,980.00		7,980.00	\$	7,980.00
Import cobble and boulder bed material	150	CY	\$50.00	\$	7,500.00		7,500.00	\$	7,500.00

Sevenmile Creek restoration phase 2  
**BUDGET TEMPLATE SHEET FOR FUTURE FISHERIES PROGRAM APPLICATIONS**

Grade gravel bed materials	350	FT	\$6.00	\$	2,100.00			2,100.00	\$	2,100.00	
Install boulders	180	EA	\$7.00	\$	1,260.00			1,260.00	\$	1,260.00	
Replace topsoil to inset floodplain surface	760	CY	\$1.50	\$	1,140.00			1,140.00	\$	1,140.00	
Construct rock grade controls	40	CY	\$40.00	\$	1,600.00			1,600.00	\$	1,600.00	
Volunteer willow planting (no contingency)	384	HR	\$15.00	\$	5,760.00		5,760.00		\$	5,760.00	
15% Contingency	1	LS		\$	28,646.00			28,646.00	\$	28,646.00	
			Sub-Total	\$	225,381.00	\$	69,000.00	\$	5,760.00	\$	150,621.00
<b>Mobilization</b>											
Equipment mobe	4	EA	\$1,000.00	\$	4,000.00			4,000.00	\$	4,000.00	
15% Contingency	1	LS	\$600.00	\$	600.00			600.00	\$	600.00	
				\$	-				\$	-	
				\$	-				\$	-	
			Sub-Total	\$	4,600.00	\$	-	\$	-	\$	4,600.00
<b>TOTALS</b>				\$	343,431.00	\$	69,000.00	\$	5,760.00	\$	268,671.00
				\$		\$		\$		\$	343,431.00

**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 for calculations). Describe here or in text.

Reminder: Government salaries cannot be used as in-kind match

\*\*\*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 minimum of two competitive bids for the cost of undertaking the project.

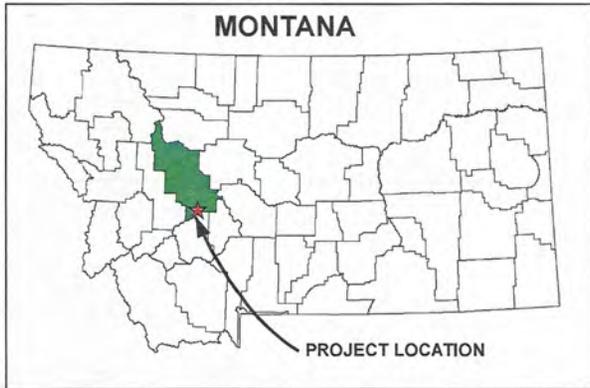
\*\*\*\*The Review Panel recommends a maximum fencing cost of \$1.50 per foot. Additional costs may be the responsibility of the applicant and/or partners.

Sevenmile Creek restoration phase 2  
**BUDGET TEMPLATE SHEET FOR FUTURE FISHERIES PROGRAM APPLICATIONS**

Explanation of in-kind contribution: \* Volunteer Labor for willow harvesting  
 1,200 feet of the new channel alignment and the pool construction treatment calls for placing 3 willow stems/foot  
 1200 feet \* 3 willows / foot = 3,600 willow stems  
 Typical install cost of \$2 per stem, about 80% attributed to harvesting.  
 \$3600 \* 2 = \$7,200  
 \$7,200 \* 0.8 = \$5760  
 \$5760 / \$15/hour = 384 labor hours. (about 1 willow stem harvested every 3.2 minute)

**MATCHING CONTRIBUTIONS** (do not include requested funds)

CONTRIBUTOR	IN-KIND SERVICE	IN-KIND CASH	TOTAL	Secured? (Y/N)
Cross Foundation	\$ -	\$ 25,000.00	\$ 25,000.00	Y
Trout Unlimited Pat Barnes Chapter		\$ 4,000.00	\$ 4,000.00	Y
Montana Trout Unlimited		\$ 4,000.00	\$ 4,000.00	Y
Patagonia Large Grant Program	\$ -	\$ 12,000.00	\$ 12,000.00	Y
Patagonia Large Grant Program		\$ 13,000.00	\$ 13,000.00	N
PPLT	\$ -	\$ 5,000.00	\$ 5,000.00	Y
City of Helena	\$ -	\$ 4,300.00	\$ 4,300.00	Y
Volunteer Willow Planting	\$ 5,760.00	\$ -	\$ 5,760.00	Y
Northwestern Energy	\$ -	\$ 131,621.00	\$ 131,621.00	N
Willow Springs Foundation	\$ -	\$ 44,750.00	\$ 44,750.00	N
223 Grant Program	\$ -	\$ 20,000.00	\$ 20,000.00	N
Private donors	\$ -	\$ 5,000.00	\$ 5,000.00	Y
<b>TOTALS</b>	\$ 5,760.00	\$ 268,671.00	\$ 274,431.00	



- SHEET INDEX**
1. COVER SHEET / PROJECT LOCATION
  2. OVERALL PLAN VIEW
  3. PLAN VIEW
  4. PLAN VIEW
  5. PLAN VIEW
  6. PLAN VIEW
  7. CHANNEL PROFILE
  8. TYPICAL CHANNEL DETAILS
  9. TYPICAL RIFFLE DETAILS
  10. TYPICAL POOL DETAILS
  11. TYPICAL CASCADE DETAILS
  12. INSET FLOODPLAIN DETAILS
  13. PLUG PROFILE
  14. TYPICAL PLUG DETAILS
  15. SPECIFICATIONS
  16. MATERIAL SPECIFICATIONS & PROJECT QUANTITIES

# SEVENMILE CREEK - REACH 4 STREAM RESTORATION DESIGN



**PREPARED FOR:**

PRICKLY PEAR LAND TRUST  
40 WEST LAWRENCE ST.  
HELENA, MT 59601

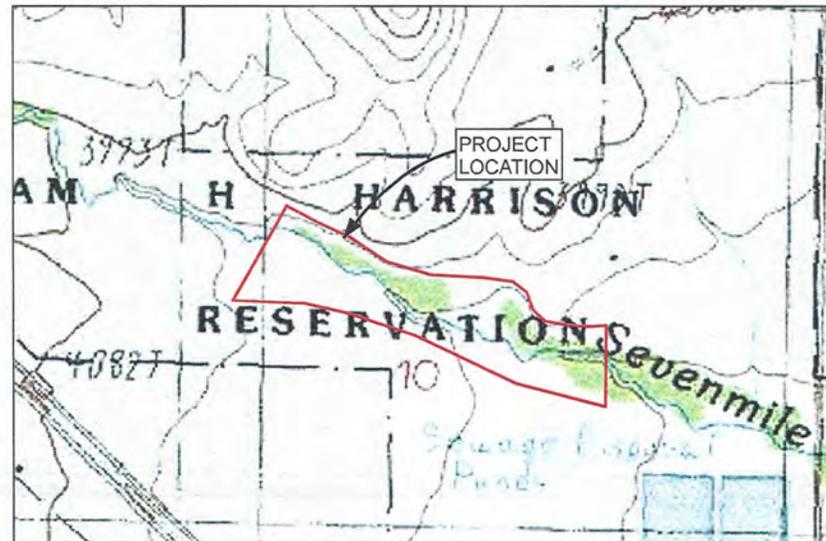


**PREPARED BY:**

CONFLUENCE CONSULTING, INC  
PO BOX 1133  
BOZEMAN, MT 59771



PROJECT VICINITY AERIAL PHOTO



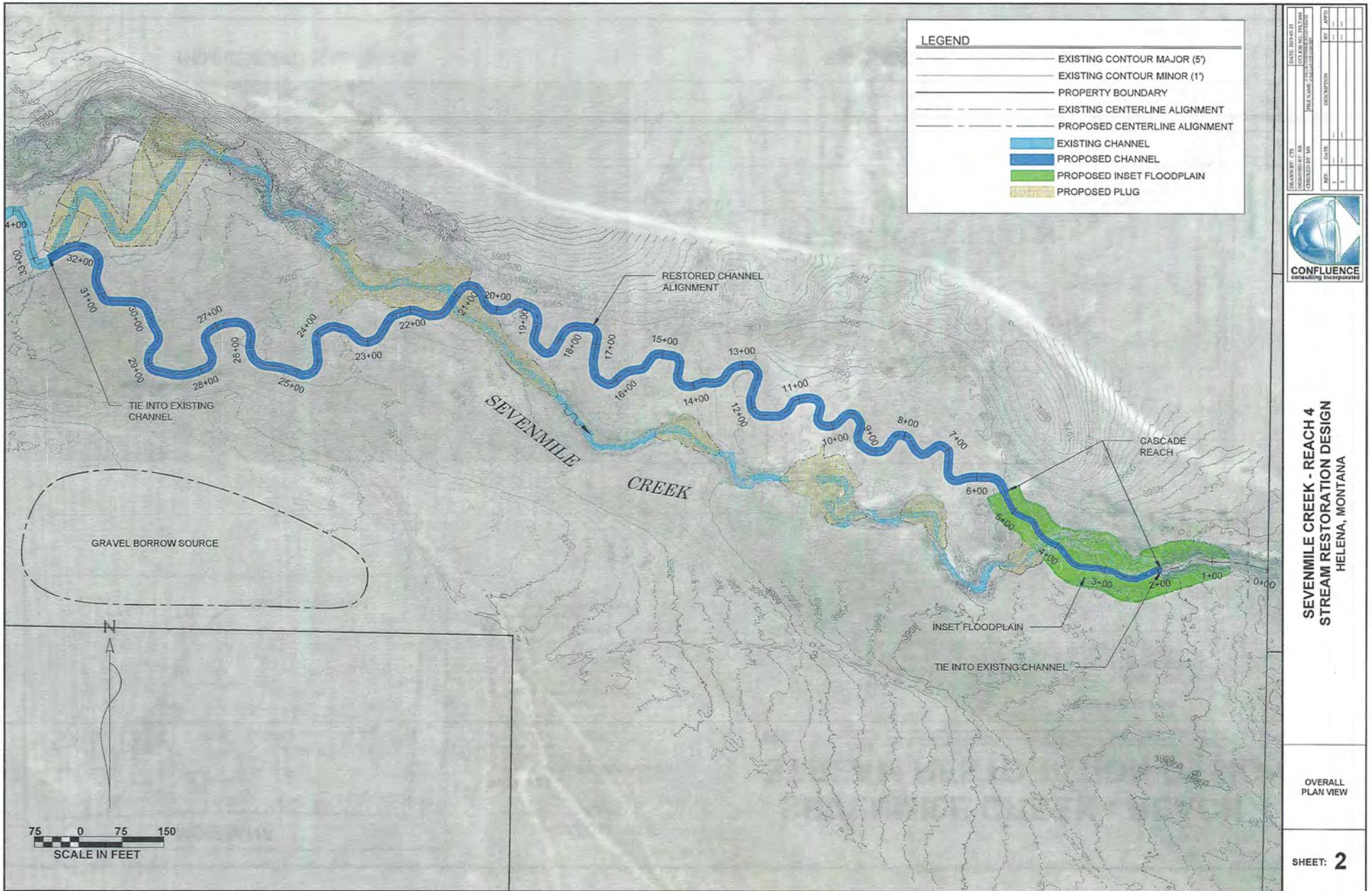
PROJECT VICINITY TOPOGRAPHIC MAP

COVER SHEET  
PROJECT  
LOCATION

SHEET: **1**

PLAN DATE: 05/23/19

# Sevenmile Creek restoration phase 2



LEGEND	
	EXISTING CONTOUR MAJOR (5')
	EXISTING CONTOUR MINOR (1')
	PROPERTY BOUNDARY
	EXISTING CENTERLINE ALIGNMENT
	PROPOSED CENTERLINE ALIGNMENT
	EXISTING CHANNEL
	PROPOSED CHANNEL
	PROPOSED INSET FLOODPLAIN
	PROPOSED PLUG

DATE	BY	APPROVED

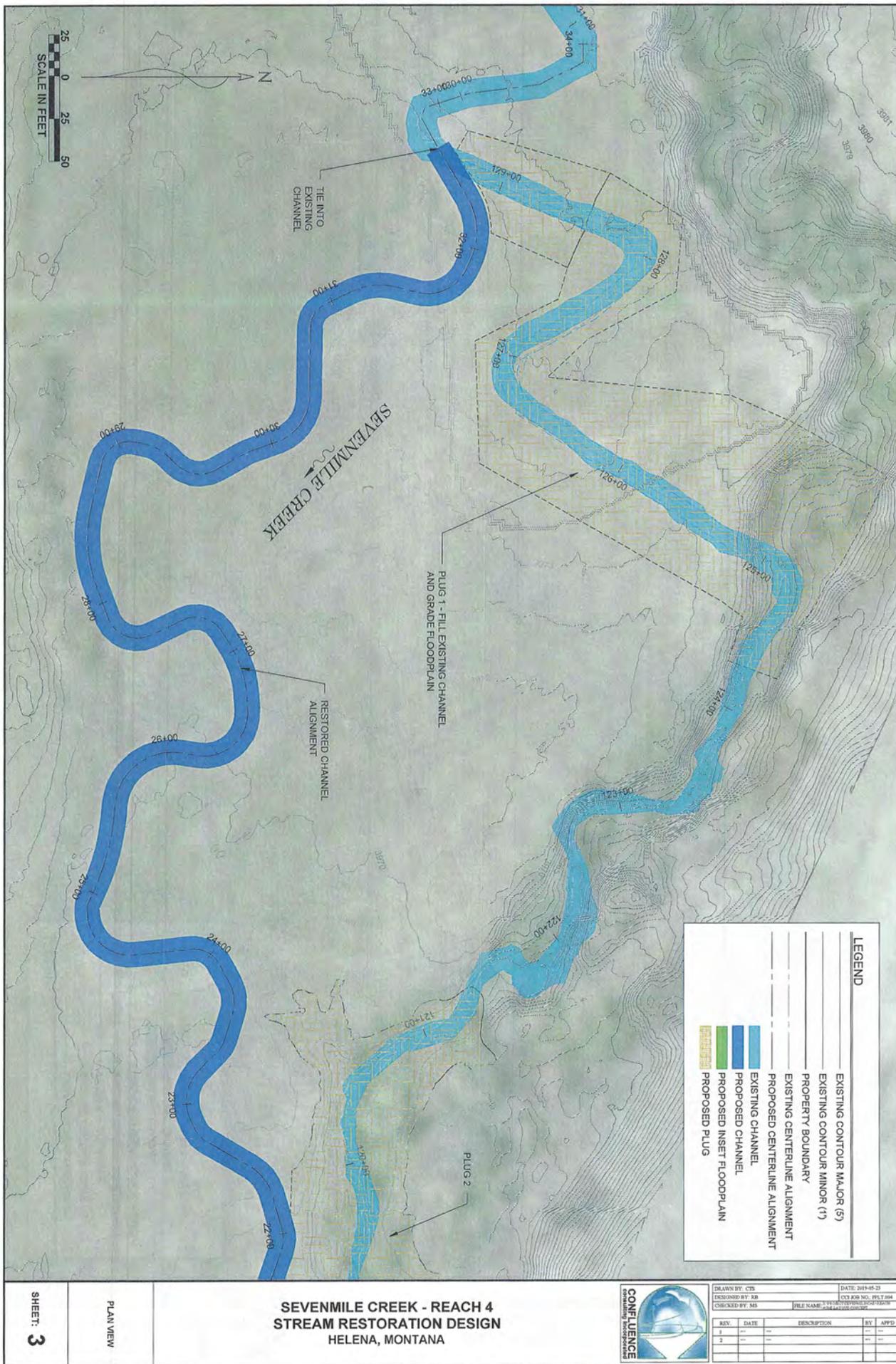


**SEVENMILE CREEK - REACH 4**  
**STREAM RESTORATION DESIGN**  
 HELENA, MONTANA

OVERALL  
 PLAN VIEW

SHEET: **2**

# Sevenmile Creek restoration phase 2



**LEGEND**

- EXISTING CENTERLINE ALIGNMENT
- PROPOSED CENTERLINE ALIGNMENT
- EXISTING CHANNEL
- PROPOSED CHANNEL
- EXISTING INSET FLOODPLAIN
- PROPOSED INSET FLOODPLAIN
- PROPOSED PLUG
- PROPERTY BOUNDARY
- EXISTING CONTOUR MAJOR (5')
- EXISTING CONTOUR MINOR (1')

SHEET: **3**

PLAN VIEW

**SEVENMILE CREEK - REACH 4  
STREAM RESTORATION DESIGN  
HELENA, MONTANA**



DESIGNED BY: RB	DATE: 2019-05-23
CHECKED BY: MS	CYR RB NO. PPLT RM
	FILE NAME: 190707SEVENMILE.CADD
	DATE PLOTTED: 2019-05-23 10:00:00
	SCALE: 1"=50'
	PROJECT: SEVENMILE CREEK RESTORATION
	SHEET: 3

REV	DATE	DESCRIPTION	BY	APPD
1				
2				



# Sevenmile Creek restoration phase 2

## SEVENMILE CREEK - REACH 4 STREAM RESTORATION DESIGN HELENA, MONTANA

PLAN VIEW

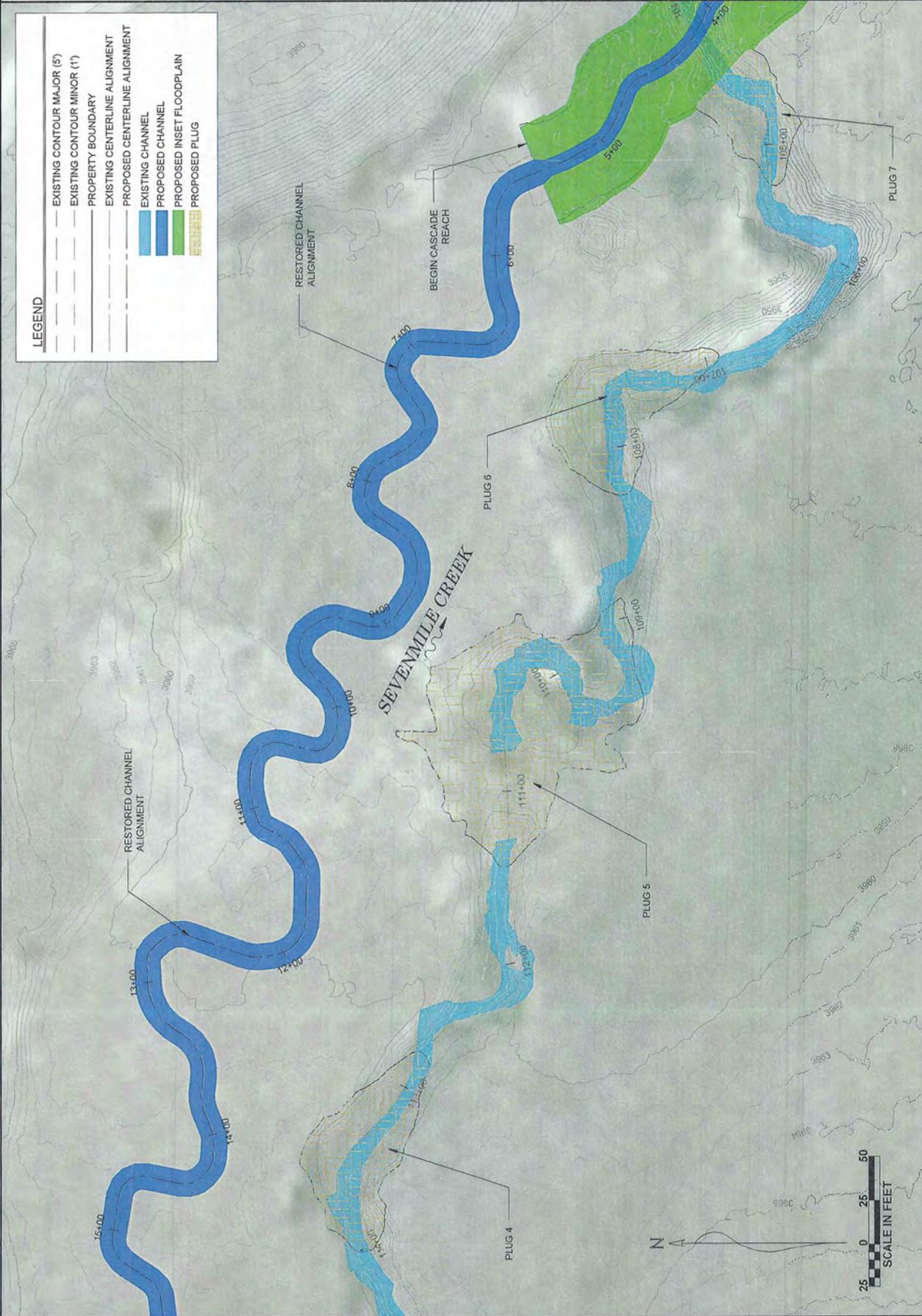
SHEET: **5**

DATE: 08-14-13	BY: CTS	CHK: CTS	APP: CTS
DATE: 08-14-13	BY: CTS	CHK: CTS	APP: CTS
DATE: 08-14-13	BY: CTS	CHK: CTS	APP: CTS
DATE: 08-14-13	BY: CTS	CHK: CTS	APP: CTS
DATE: 08-14-13	BY: CTS	CHK: CTS	APP: CTS
DATE: 08-14-13	BY: CTS	CHK: CTS	APP: CTS
DATE: 08-14-13	BY: CTS	CHK: CTS	APP: CTS
DATE: 08-14-13	BY: CTS	CHK: CTS	APP: CTS
DATE: 08-14-13	BY: CTS	CHK: CTS	APP: CTS
DATE: 08-14-13	BY: CTS	CHK: CTS	APP: CTS



**LEGEND**

- EXISTING CONTOUR MAJOR (5')
- EXISTING CONTOUR MINOR (1')
- PROPERTY BOUNDARY
- EXISTING CENTERLINE ALIGNMENT
- PROPOSED CENTERLINE ALIGNMENT
- EXISTING CHANNEL
- PROPOSED CHANNEL
- PROPOSED INSET FLOODPLAIN



# Sevenmile Creek restoration phase 2

DATE	BY	DESCRIPTION
11/14/13	AV	REVISED



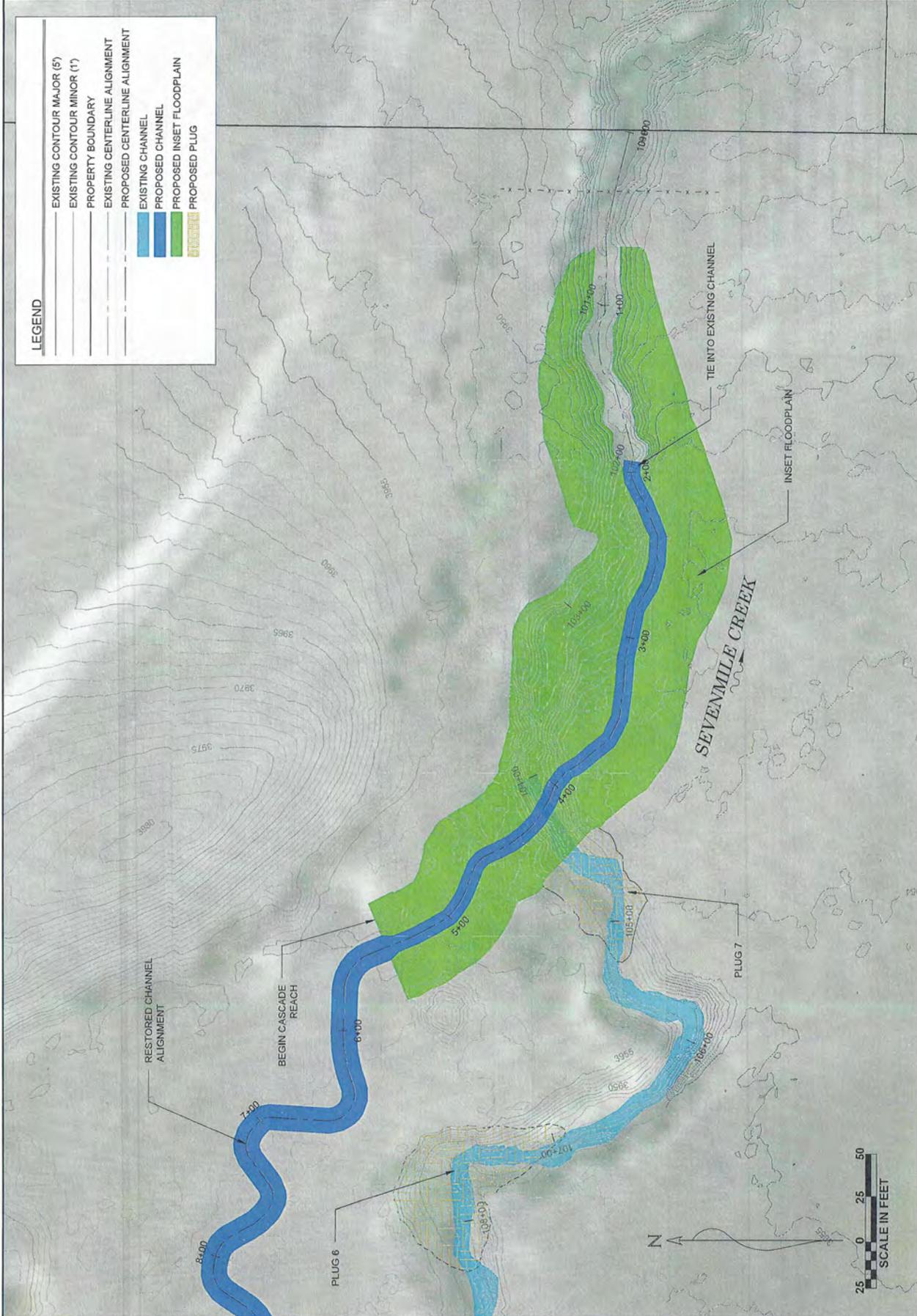
## SEVENMILE CREEK - REACH 4 STREAM RESTORATION DESIGN HELENA, MONTANA

PLAN VIEW

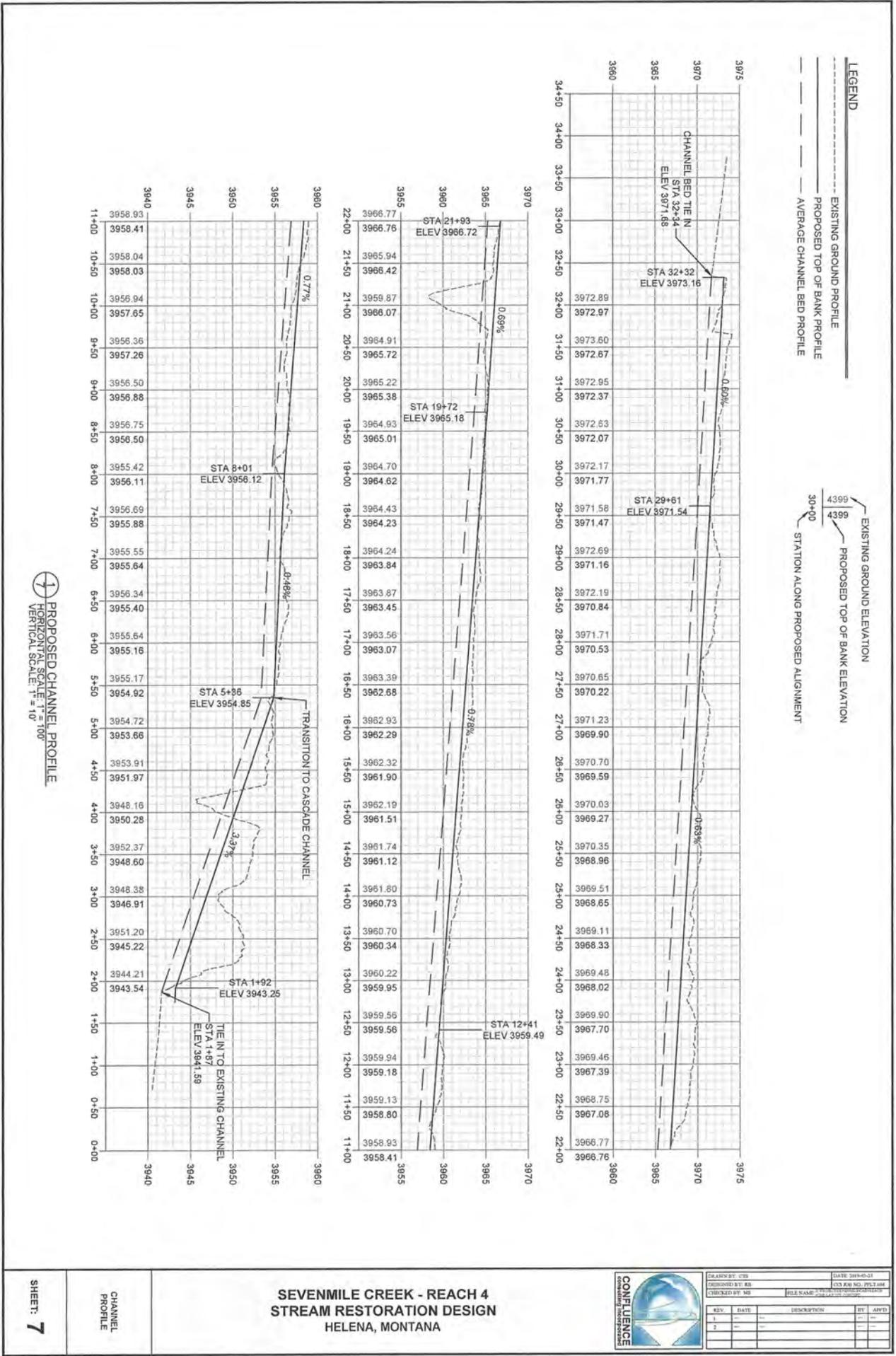
SHEET: **6**

**LEGEND**

- EXISTING CONTOUR MAJOR (5')
- EXISTING CONTOUR MINOR (1')
- PROPERTY BOUNDARY
- EXISTING CENTERLINE ALIGNMENT
- - - PROPOSED CENTERLINE ALIGNMENT
- EXISTING CHANNEL
- PROPOSED CHANNEL
- PROPOSED INSET FLOODPLAIN
- PROPOSED PLUG



# Sevenmile Creek restoration phase 2



## SEVENMILE CREEK - REACH 4 STREAM RESTORATION DESIGN HELENA, MONTANA

SHEET: **7**

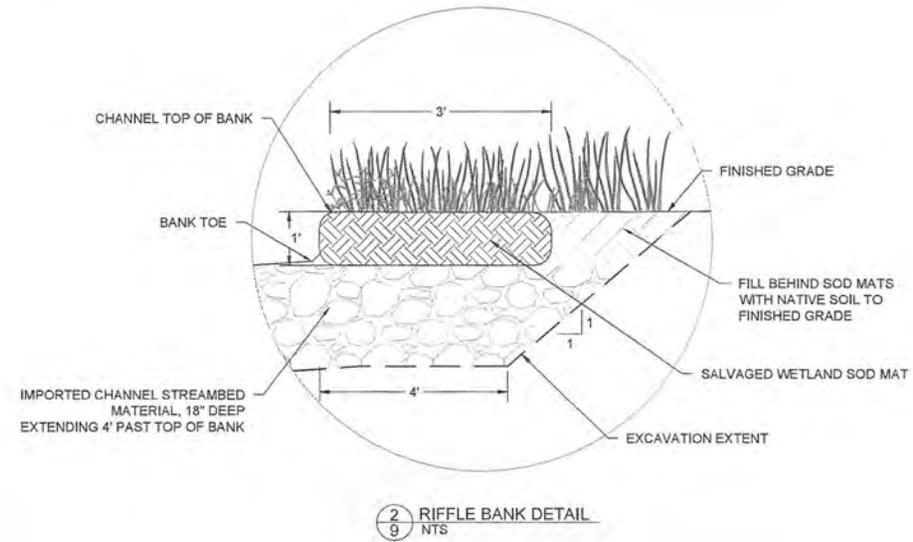
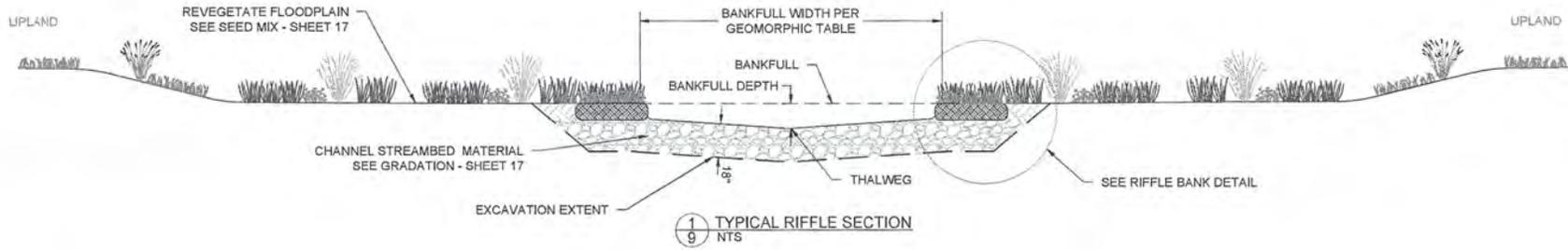
CHANNEL  
PROFILE



DESIGNED BY: CTD	DATE: 2016-05-21			
CHECKED BY: MB	FILE NAME: SEVENMILE CREEK RESTORATION - REACH 4 - CH 07.DWG			
CHECKED BY: MB				
REV	DATE	DESCRIPTION	BY	APPD
1				
2				



# Sevenmile Creek restoration phase 2



DATE: 2016-05-20	DESIGNED BY: JH	DATE: 2016-05-20	BY: JH
PROJECT NO: 16-001	PROJECT NAME: SEVENMILE CREEK RESTORATION	DATE: 2016-05-20	BY: JH
DATE: 2016-05-20	DATE: 2016-05-20	DATE: 2016-05-20	DATE: 2016-05-20
DATE: 2016-05-20	DATE: 2016-05-20	DATE: 2016-05-20	DATE: 2016-05-20

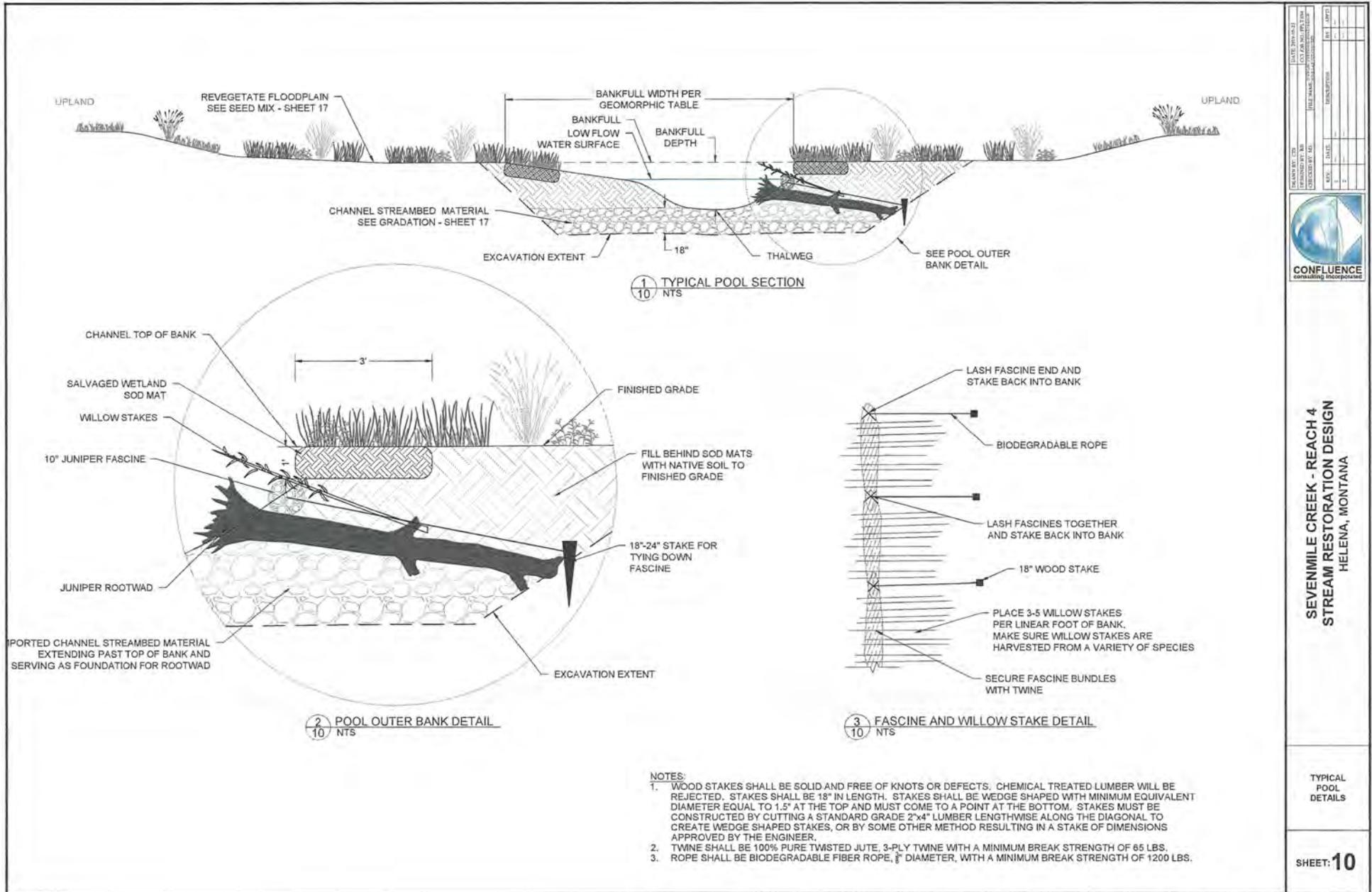


**SEVENMILE CREEK - REACH 4**  
**STREAM RESTORATION DESIGN**  
 HELENA, MONTANA

TYPICAL RIFFLE DETAILS

SHEET: **9**

# Sevenmile Creek restoration phase 2



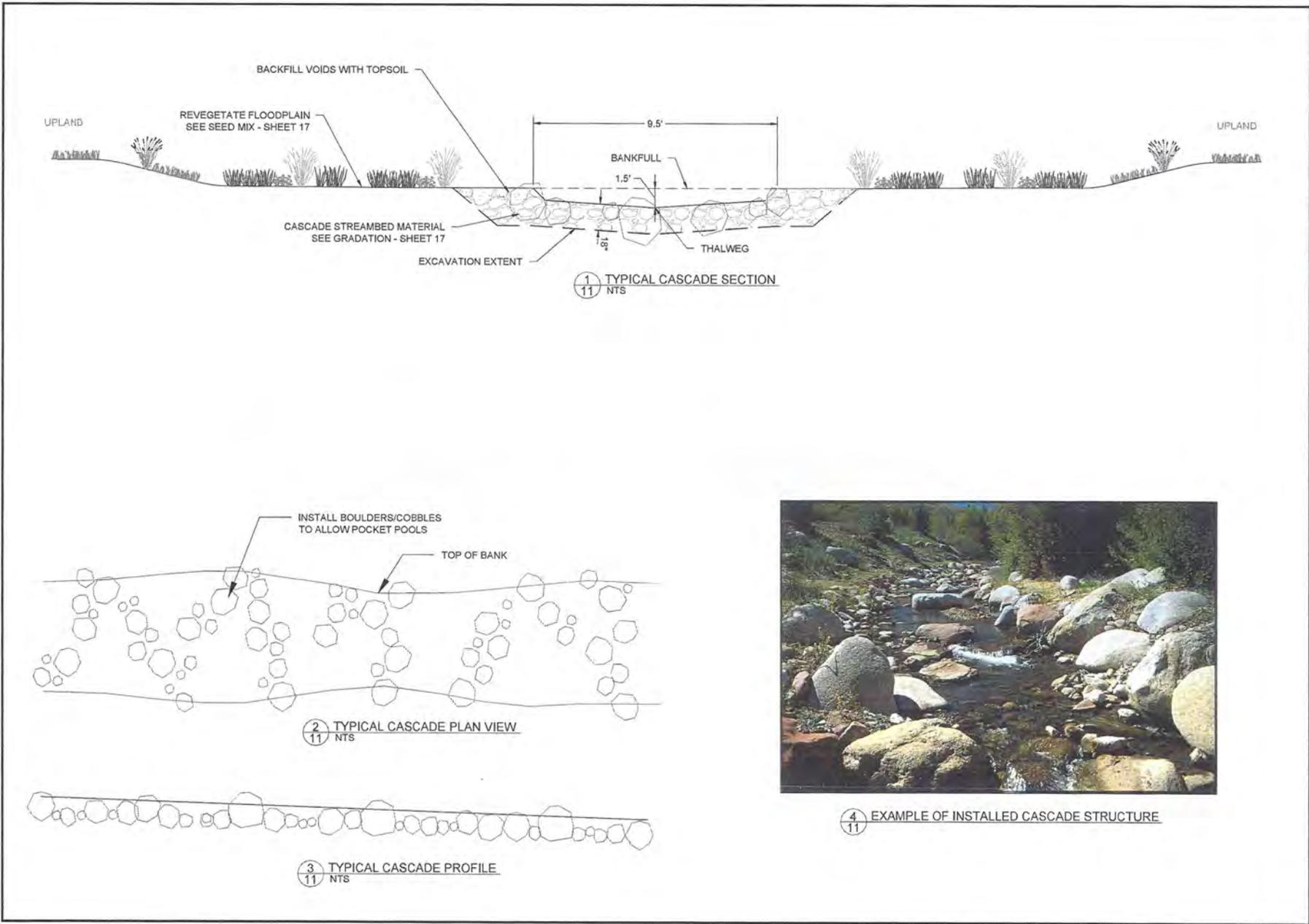
DATE PLOTTED	BY	DATE	BY
DESIGNED BY	DATE	BY	DATE
CHECKED BY	DATE	BY	DATE
APPROVED BY	DATE	BY	DATE



SEVENMILE CREEK - REACH 4  
STREAM RESTORATION DESIGN  
HELENA, MONTANA

TYPICAL  
POOL  
DETAILS

Sevenmile Creek restoration phase 2



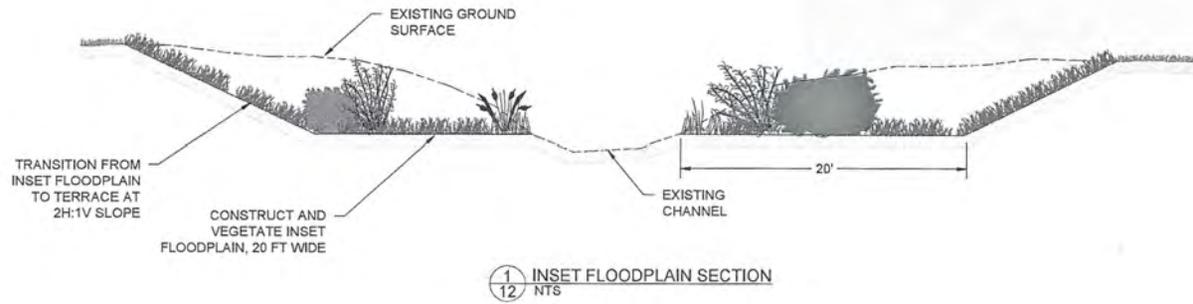
DATE: 08/24/2011	PROJECT: SEVENMILE CREEK RESTORATION
DESIGNED BY: JLB	CHECKED BY: JLB
DATE: 08/24/2011	DATE: 08/24/2011
DESCRIPTION:	REV:
	DATE:
	DATE:



**SEVENMILE CREEK - REACH 4  
STREAM RESTORATION DESIGN**  
HELENA, MONTANA

TYPICAL CASCADE DETAILS

# Sevenmile Creek restoration phase 2



PROJECT: CTR	DATE: 08/13/21			
DRAWN BY: AS	CAD FILE NO: 171118			
CHECKED BY: MS	FILE NAME: 171118_02.dwg			
REV	DATE	DESCRIPTION	BY	APP
1				
2				

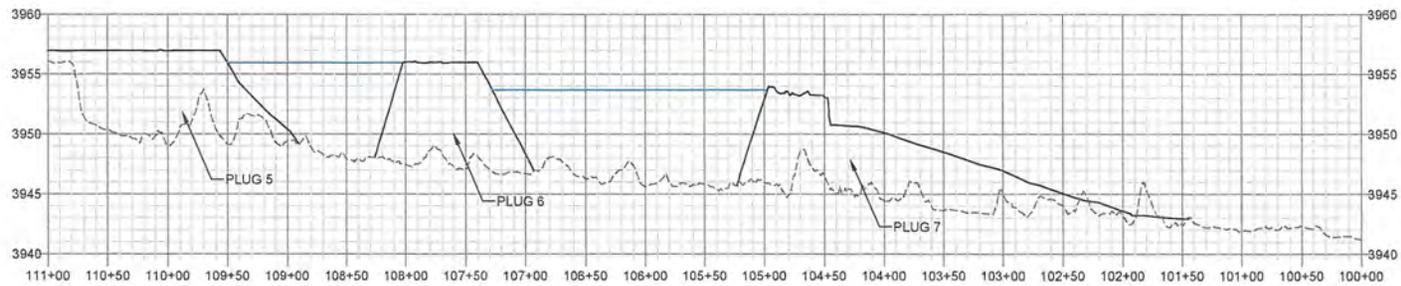
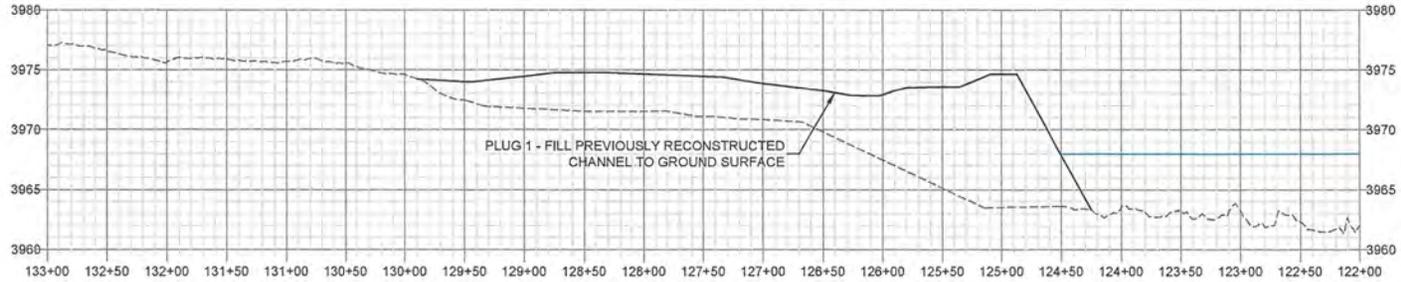


SEVENMILE CREEK - REACH 4  
STREAM RESTORATION DESIGN  
HELENA, MONTANA

INSET  
FLOODPLAIN  
DETAILS

SHEET: 12

# Sevenmile Creek restoration phase 2



- LEGEND**
- EXISTING CHANNEL PROFILE
  - PROPOSED PLUG PROFILE
  - PONDED WATER SURFACE ELEVATION

①  
13 PROPOSED PLUG PROFILE  
HORIZONTAL SCALE: 1" = 100'  
VERTICAL SCALE: 1" = 10'

DATE: 2/14/23	FILE NAME: 13
DESIGNED BY: JLS	DESCRIPTION:
CHECKED BY: JLS	DATE:
BY:	DATE:
BY:	DATE:
BY:	DATE:

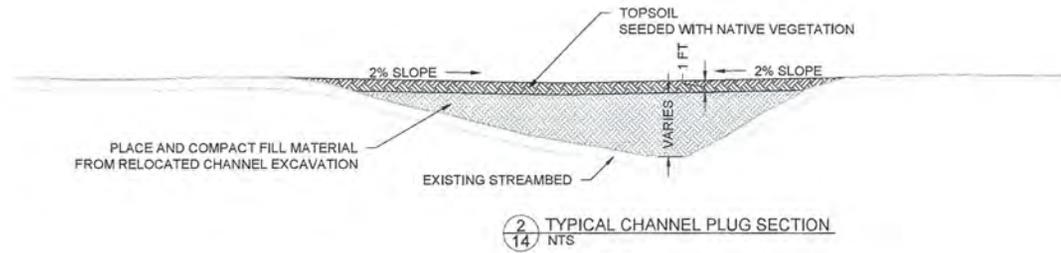
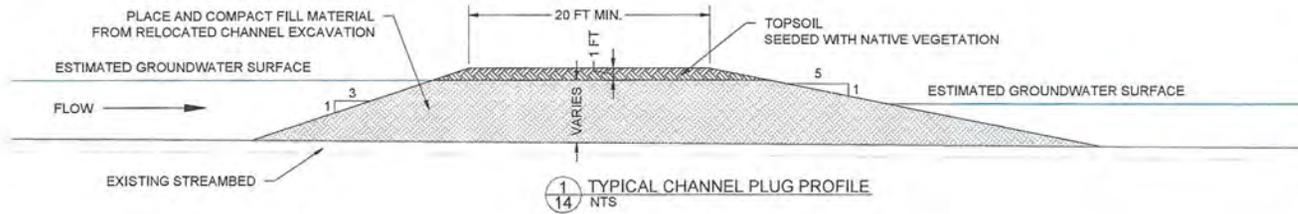


SEVENMILE CREEK - REACH 4  
STREAM RESTORATION DESIGN  
HELENA, MONTANA

PLUG  
PROFILE

SHEET: 13

Sevenmile Creek restoration phase 2



DESIGNED BY: CH	CHECKED BY: MS	DATE: 10/11/11	SCALE: AS SHOWN
PROJECT NO.: 11-001	PROJECT NAME: SEVENMILE CREEK RESTORATION	DATE: 10/11/11	SCALE: AS SHOWN
BY: CH	DATE: 10/11/11	DESCRIPTION:	
BY: MS	DATE: 10/11/11	DESCRIPTION:	
BY: CH	DATE: 10/11/11	DESCRIPTION:	



SEVENMILE CREEK - REACH 4  
STREAM RESTORATION DESIGN  
HELENA, MONTANA

TYPICAL  
PLUG  
DETAILS



## Sevenmile Creek restoration phase 2

NATIVE UPLAND SEED MIX		
SPECIES	PLS LBS PER AC (BROADCAST SEED RATE)	PERCENT BY SEED
Great Basin Wildrye var. Trailhead ( <i>Leymus cinereus</i> )	3.86	6.2
Slender Wheatgrass var. Pryor ( <i>Elymus trachycaulus</i> )	7.9	14.6
Western Wheatgrass var. Rosana ( <i>Pascopyrum smithii</i> )	17.31	23.5
Idaho Fescue var. Winchester ( <i>Festuca idahoensis</i> )	4.41	24.5
White Sagebrush ( <i>Artemisia ludoviciana</i> )	0.44	24.5
Lewis Flax var. Appar ( <i>Linum lewisii</i> )	1.49	5.4
Annual Sunflower ( <i>Helianthus annuus</i> )	0.7	0.5
<b>TOTAL</b>	<b>36.1</b>	<b>100</b>

NATIVE WETLAND SEED MIX		
SPECIES	PLS LBS PER AC (BROADCAST SEED RATE)	PERCENT BY SEED
Bluejoint Reedgrass ( <i>Calamagrostis canadensis</i> )	0.14	5.7
Nebraska Sedge ( <i>Carex nebrascensis</i> )	1.45	14.1
Woolly Sedge ( <i>Carex pellita</i> )	7.45	42.4
American Mannagrass ( <i>Glyceria grandis</i> )	0.48	11.3
Baltic Rush ( <i>Juncus balticus</i> )	0.01	1.4
American Sloughgrass ( <i>Beckmannia syzigachne</i> )	0.18	3.7
Canada Milkvetch ( <i>Astragalus canadensis</i> )	2.81	10.7
Blue Vervain ( <i>Verbena hastata</i> )	0.11	3.7
Fowl Mannagrass ( <i>Glyceria striata</i> )	2.15	7.1
<b>TOTAL</b>	<b>14.58</b>	<b>100</b>

**NOTE:**

- NATIVE GRASS SEED SHALL BE SOWN AT THE RATE SPECIFIED IN THE SEED TABLE ON ALL DISTURBED AREAS USING BROADCAST METHODS. THE DRILL SEED RATE IS HALF THE BROADCAST APPLICATION RATE. SEEDING BY HAND OR MECHANICAL BROADCASTING WILL BE PERMITTED ON AREAS INACCESSIBLE TO DRILLS OR IMPRACTICAL TO SEED BY OTHER PRESCRIBED METHODS AS APPROVED BY THE ENGINEER. SEED SHALL BE LIGHTLY TILLED BY RAKE OR OTHER MEANS INTO FIRST INCH OF TOPSOIL DEPTH.
- ADD 3 LBS/ACRE OF RICE HULLS TO THE WETLAND SEED MIX FOR BETTER BROADCAST SEED SPREADABILITY.

CASCADE STREAMBED GRADATION	
EQUIVALENT SPHERICAL DIAMETER (FT)	% SMALLER THAN GIVEN SIZE
24.0	100
20.0	70 - 90
16.0	40 - 60
12.0	20 - 30
CHANNEL STREAMBED MATERIAL	0 - 10

CHANNEL STREAMBED GRADATION	
EQUIVALENT SPHERICAL DIAMETER (IN)	% SMALLER THAN GIVEN SIZE
7.0	100
4.5	70 - 90
1.8	40 - 60
0.4	20 - 30
0.1	0 - 10

**NOTES:**

- FILL VOIDS IN CASCADE STREAMBED MATERIAL WITH CHANNEL STREAMBED MATERIAL.
- ADDITIONALLY, HABITAT BOULDERS WILL BE RANDOMLY PLACED IN THE CASCADE CHANNEL TO CREATE RESTING HABITAT FOR FISH. BOULDERS WILL BE 3 FT IN DIAMETER.

PROJECT QUANTITIES		
ITEM	QUANTITY	UNITS
<b>CHANNEL EARTH WORK</b>		
TOPSOIL STRIPPING	2,260	CY
EXCAVATION	2,920	CY
<b>CHANNEL CONSTRUCTION</b>		
CHANNEL STREAMBED MATERIAL	2,040	CY
NATIVE BACKFILL AND TOPSOIL	1,440	CY
WELTAND SOD	1,170	SQ YD
JUNIPER FASCINE	1,300	LF
JUNIPER ROOTWAD	190	EA
WILLOW STAKES	4,000	EA
REVEGETATION AREA	5.5	ACRES
MATURE WILLOW TRANSPLANTS	55	EA
<b>FILL AREAS</b>		
CHANNEL PLUGS	6,430	CY
RE-GRADE AREA AT UPSTREAM TIE IN	2,540	CY
MOVE REACH 2 STOCKPILE	3,000	CY
<b>CASCADE AND INSET FLOODPLAIN EARTH WORK</b>		
TOPSOIL STRIPPING	640	CY
EXCAVATION	2,660	CY
<b>CASCADE AND INSET FLOODPLAIN CONSTRUCTION</b>		
CASCADE STREAMBED MATERIAL	170	CY
NATIVE BACKFILL AND TOPSOIL	760	CY
HABITAT BOULDERS	70	EA
REVEGETATION AREA	1.0	ACRES

DESIGNED BY: CTR	DATE: 01/20/21
CHECKED BY: JAL	DATE: 01/20/21
IN CHARGE: JAL	DATE: 01/20/21
BY: JAL	DATE: 01/20/21
BY: JAL	DATE: 01/20/21
BY: JAL	DATE: 01/20/21
BY: JAL	DATE: 01/20/21
BY: JAL	DATE: 01/20/21
BY: JAL	DATE: 01/20/21
BY: JAL	DATE: 01/20/21



**SEVENMILE CREEK - REACH 4**  
**STREAM RESTORATION DESIGN**  
 HELENA, MONTANA

MATERIAL SPECIFICATIONS & PROJECT QUANTITIES

### **Sevenmile Creek Restoration Land Management & Maintenance Plan**

The management and maintenance plan is split into three main categories: livestock, weeds, and recreation. PPLT's priority for the property is protecting the restoration investment that has been made, any future land management decisions will be made with this in mind.

#### **Livestock:**

Cattle will be confined to a 120-acre off stream pasture. PPLT will use a high-intensity, short-duration grazing system and ensure that there will be no cattle within the riparian area. It is anticipated that 2019 would be the earliest grazing would be reintroduced to the property.

#### **Weeds:**

PPLT has prepared a weed assessment of the entire property and has begun integrating pest-management approach using mechanical, chemical and biological control. To date there has been annual weed spraying as well as strategic biological control releases. These treatments will continue until the invasive weeds under control.

#### **Recreation:**

PPLT intends to provide recreational opportunities to the public while protecting the restoration by using deliberate access points to the stream. Management of public access will include planting certain areas with thick vegetation and monitoring the stream and vegetative damage to assess the need for further public access control through adaptive management processes such as fencing and signage. We expect to do this most intensively during the first three years, post-restoration.



May 28, 2019

Board and Staff of the Montana Future Fisheries Improvement Program:

Prickly Pear Land Trust (PPLT) in Helena, Montana, thanks you for considering a \$69,000 gift for completing the Sevenmile Creek Restoration Project. By year's end 2018, with support from the FFIP, PPLT had secured all necessary funding and completed the first three phases (1.6 miles) of restoration, including removal of an irrigation diversion and installation of a temporary step-pool fish passage.

To date in 2019, PPLT has secured all the necessary funding for final-phase (Stream Reach 4) restoration design and permitting, but must secure an estimated \$343,431 for construction, oversight, and revegetation. Stream Reach 4 is the straightest and most degraded stream reach in the project area, and has not regained sufficient length to support any sort of complex bed morphology or associated fish habitat. Its overall condition with respect to floodplain function, riparian vegetation, sediment loading, fish habitat, and geomorphic stability is exceedingly poor. With an investment by the FFIP this final phase of restoration, an opportunity exists to accelerate Sevenmile's recovery process by restoring the creek's alignment, dimension, and floodplain to a more historic configuration, and thereby enhance fish habitat.

Investment in this project to date has included private donations, foundation, non-profit, and corporate support, and numerous volunteer hours to pull weeds, harvest and plant willow sprigs, and document changing riparian conditions. Private citizens, non-profits, and public agencies have also installed stream-monitoring gauges, monitored flow, and used the site as an outdoor classroom for college students. Last Chance Audubon has monitored the site weekly for bird species and numbers for two years and established a Sevenmile Creek e-bird site at Cornell University. Public engagement in this project has been phenomenal.

We sincerely hope the FFIP also sees the incredible merit of this project and approves the requested funding.

With best regards,

Mary Hollow, Executive Director



Michelle McGree  
Future Fisheries Improvement Program  
Fish Management Bureau  
Montana Fish, Wildlife & Parks  
PO Box 200701  
Helena, MT 59620-0701

May 13, 2019

Dear Ms. McGree,

I am writing to support Prickly Pear Land Trust's (PPLT) *Sevenmile Creek Final Phase* application to fund riparian corridor restoration efforts the near Helena, MT.

Over the past two decades Montana Fish, Wildlife & Parks (FWP) has worked with the local Conservation District to address resource issues associated with poor land management activities on this parcel by the previous landowner. Continued rehabilitation of the riparian corridor and open space on this PPLT parcel provides another opportunity to enhance public recreational resources for the community.

This reach of Sevenmile Creek already contains sustainable populations of Eastern brook trout and brown trout, but the fishery remains substantially impacted by habitat degradation from previous land use practices. Finalizing the restoration footprint on the property, using restoration efforts similar to previous years on this parcel, is expected to positively benefit the fishery through moderated stream temperatures, reduced rate of bank erosion, improvement of fish passage, improvements to overall water quality. The proximity of the stream reach to Helena also provides additional fishing opportunity to the community.

FWP has worked with PPLT on previous restoration projects; most recently on the 1.2-mile reach of Sevenmile Creek immediately upstream from this parcel that will benefit the fishery, riparian corridor and community in perpetuity. The Sevenmile Creek Final Phase restoration effort aligns well with FWP's mission and core values and we look forward to continuing our relationship with PPLT on this and future projects.

Thank you for considering our comments.

Sincerely,

Adam Strainer  
Helena Area Fish Biologist  
Montana Fish, Wildlife and Park  
PO Box 200701 or 930 Custer Ave W  
Helena, MT 59620



Michelle McGree  
Future Fisheries Improvement Program  
Fish Management Bureau  
Montana Fish, Wildlife & Parks  
PO Box 200701  
Helena, MT 59620-0701

April 24, 2019

Dear Ms. McGree,

I'm writing this letter of support for the *Sevenmile Creek Restoration Final Phase* application that was recently submitted to you by the Prickly Pear Land Trust.

NorthWestern Energy has provided funding for the Sevenmile Creek restoration project through our FERC-ordered Missouri River Technical Advisory Committee. The Committee is comprised of representatives of Montana Fish, Wildlife & Parks, US Forest Service, US Fish & Wildlife Service, US Bureau of Land Management and NorthWestern Energy. Each year the Committee reviews up to 35 proposals and makes a determination whether to fund based on available funding and how the proposed project protects, mitigates and enhances fish and wildlife populations and habitat.

In 2017 and 2018, NorthWestern Energy funded \$112,000 for planning, design and construction in the SM3 phase of this restoration project. Our current 2019 contribution of \$39,000 is dedicated to design and permitting for the SM4 (Final) phase. The construction phase of this project fits the requirements of our Fisheries funding program. Given our commitment to survey, design and construction for this project in three previous funding cycles, the SM4 construction phase will likely rank competitively in the next funding cycle.

I strongly urge you to approve funding the *Sevenmile Creek Restoration Final Phase* application. Please feel free to contact me if you have any questions. With regards.



Grant Grisak  
Fish Biologist - Hydro License Compliance  
[Grant.Grisak@NorthWestern.com](mailto:Grant.Grisak@NorthWestern.com)  
O 406-268-2299  
C 406-403-1967  
6700 Rainbow Dam Road  
Great Falls, MT 59404



**NorthWestern**  
**Energy**  
Delivering a Bright Future



**Jeff Dunn**

*Project Manager, Upper Missouri and Yellowstone  
Western Water & Habitat Project*

Montana Fish, Wildlife, and Parks  
Future Fisheries Improvement Program  
Attn: Michelle McGree

May 23, 2019

Dear Michelle and Citizen's Review Panel,

I'm writing in support of a restoration project in which Trout Unlimited has participated in the Helena area. Prickly Pear Land Trust has led an impressive stream and wetlands restoration project at Sevenmile Creek near Helena, Montana. The first three phases of the restoration at Sevenmile restored nearly 2 miles of a stream corridor that suffered decades of abuse, rebuilding lost wetlands and riparian floodplain, and restoring fish passage past an old diversion. The final restoration phase of the project shows equal promise and is worthy of your continued support.

Like Trout Unlimited's work restoring streams across Montana, Prickly Pear Land Trust continues to make an impact on the ground and in their community. We will continue to collaborate with the Land Trust to assist this remarkable project and look forward to someday securing water rights to ensure Sevenmile Creek continues to convey cold, clean water through its newly restored channel.

Thank you for your generous support.

Sincerely,

Jeff Dunn



May 24, 2019

Montana Fish Wildlife and Parks  
Fish Management Bureau  
PO Box 200701  
Helena, MT 59620-0701

Dear Michelle and Panel,

Montana Aquatic Resources Services (MARS) is writing in support of Prickly Pear Land Trust's (PPLT) application for funding to restore Reach 4 of Sevenmile Creek.

MARS is a non-profit organization that conducts compensatory stream and wetland mitigation across the state of Montana. In 2017, MARS funded the restoration of Reaches 1 & 2 of Sevenmile Creek using fees from impacts to aquatic resources in the watershed. The restoration of Reaches 1 & 2 resulted in greater floodplain connectivity, improved riparian health, larger wetland complexes, a reduction in noxious weeds, and an improved visitor experience for the public (e.g., birdwatching, weed control). Habitat connectivity was restored to Reach 3 in 2018 with the creation of step pools and removal of an irrigation diversion structure. The restoration of Reach 4 would allow greater fish passage and habitat access to the previously restored reaches of the stream.

PPLT are excellent stewards of the Sevenmile Creek property and have prioritized the long-term ecological function of the stream, riparian buffer, and adjacent uplands while balancing public access and recreation. During the construction of Reach 2, PPLT recruited volunteers to cut willows from an upstream location to use for bank stabilization. The property is located in close proximity to downtown Helena and affords hiking and birdwatching opportunities, and the restoration of Reach 4 will increase the quality of the fishing experience for the public.

Thank you for your time and consideration in support of this incredibly valuable restoration project.

Sincerely,

Lauren Alleman  
Project Manager



## Lewis and Clark County Water Quality Protection District

316 North Park, Room 230  
Helena, MT 59623  
(406) 447-8351 Fax: (406) 447-8398

May 23<sup>rd</sup>, 2019

Dear Michelle and Citizens Panel,

The Lewis and Clark County Water Quality Protection District (WQPD) would like to offer our support to Prickly Pear Land Trust's (PPLT) application for funding the Final Phase of the Sevenmile Creek Restoration Project near Helena, Montana.

As an agency that strives to preserve, protect and improve water quality and quantity within the District boundaries, we see an incredible benefit this project has not only for Sevenmile Creek but also the surrounding watershed and community. Improving instream habitat, decreasing sediment and nutrient loads to Sevenmile Creek, and creating additional floodplain capacity, the Sevenmile Creek Restoration Project directly aligns with the mission of the District. Already, we have seen improvements in the health of Sevenmile Creek since the earlier phases of the project, and are excited to see the results once the entire reach is restored.

Since 2018, the WQPD has provided in-kind support for the Sevenmile Restoration Project through technical assistance in monitoring the stream restoration site to track the physical, chemical and biological responses. Collecting stream flow measurements, groundwater level data, macroinvertebrate diversity and abundance information, as well as substrate characterization, the WQPD will continue to provide these monitoring services on an annual basis to help PPLT evaluate and interpret the longitudinal results of the restoration efforts. In conjunction with data collected by the Montana Department of Fish, Wildlife and Parks, we anticipate that we will be able to quantify a significant improvement this restoration project will have on the overall hydrology and function of the riparian area, as well as the instream habitat quality that will support a more diverse or abundant macroinvertebrate community and fishery.

Thank you for your time and consideration for funding the final phase of the Sevenmile Creek Restoration Project. If you have any questions regarding the project or our involvement, please feel free to contact me.

Best Regards,

A handwritten signature in black ink that reads "Valerie Stacey". The signature is written in a cursive, flowing style.

Valerie Stacey  
Lewis and Clark County  
406-457-8891  
[lstacey@lccountymt.gov](mailto:lstacey@lccountymt.gov)