

Montana Department of Transportation Stream Mitigation Monitoring Report
SWAMP CREEK EAST MITIGATION SITE

Project Overview

Watershed: Watershed #1 - Kootenai

Monitoring Year: 2020

Years Monitored: 2nd year of monitoring

Corps Permit Number: NWO-2012-00146-MTM

Monitoring Conducted By: Confluence Consulting Inc.

Monitoring Dates: August 4 – 5, 2020

Purpose of the approved project:

As part of the U.S. Highway 2 – Swamp Creek East road reconstruction project (NH 1-1(35)49 F), the Montana Department of Transportation (MDT) modified two reaches of Swamp Creek to allow for highway widening and roadway improvements. MDT mitigated for these impacts on-site by reconstructing 1,069 feet of Swamp Creek adjacent to U.S. Highway 2. The project was broken up into “upper” and “lower” reaches. The lower reach is located east of the U.S. Highway 2 corridor and is approximately 170 linear feet. The upper reach is located west of the U.S. Highway 2 corridor and is approximately 899 linear feet. Construction was completed on the lower reach prior to the 2019 monitoring event and was assessed in 2019. The upper reach was completed in 2020 and assessed for the first time during the 2020 monitoring event.

Site Location:

Upper Reach Upstream Coordinates: 48.1341951, -115.432838

Upper Reach Downstream Coordinates: 48.135767, -115.4337009

Lower Reach Upstream Coordinates: 48.135914, -115.4335097

Lower Reach Downstream Coordinates: 48.137279, -115.4341232

County: Lincoln **Nearest Town:** Libby

Map Included: Yes, see Appendix A

Mitigation Site Construction Started: Summer 2018 **Construction Ended:** Winter 2020

Dates of any recent corrective or maintenance activities (since previous report):

Activity: None **Date:** NA

Specific recommendations for additional corrective actions: Weed control for riparian areas within each reach.

Previous Monitoring Reports and Methods Descriptions:

<https://www.mdt.mt.gov/publications/brochures/stream-mitigation.shtml>

Monitoring methods followed are described in the 2019 monitoring report, with the exception of two new transects and three new photo points that were established in the upper reach. These transects and photo points were installed to establish baseline monitoring locations along the upper reach, that was only recently completed in the spring of 2020.

Requirements (from approved mitigation plan, banking instrument, or DA permit conditions)

Monitoring Period: Minimum of 3 years from construction completion or until concurrence by US Army Corps of Engineers (USACE).

Performance Standards:

Results from the 2020 monitoring event indicate the lower reach of the site is meeting the single quantitative success criteria, while the upper reach is not. The upper reach was completed in early 2020, after the initial 2019 monitoring effort; therefore, these results represent the baseline conditions for the upper reach.

Table 1. Summary of performance standards

| Performance Standard | Success Criteria | Criteria Achieved? | Discussion |
|----------------------|--|--------------------|--|
| Vegetation Success | Areal cover of riparian and streambank vegetation is $\geq 75\%$ | Yes | The lower reach exhibits an average of 77% areal vegetation cover. |
| | | No | The upper reach exhibits an average of 48% areal vegetation cover. |

Summary Data

Riparian Vegetation Inventory

In 2020, the total areal vegetation cover, averaged across transects, was 77% for the lower reach (Table 2). The dominant species recorded along the vegetation transects within this reach included ripgut brome (*Bromus diandrus*) and reed canary grass (*Phalaris arundinacea*). The total areal vegetation cover, averaged across transects, was 48% for the upper reach (Table 2). The dominant species recorded along the vegetation transects in the upper reach included tall hedge-mustard (*Sisymbrium altissimum*) and creeping wild rye (*Elymus repens*). Fourteen of the 35 plant species observed in 2020 were hydrophytic (Appendix C), based on the 2018 National Wetland Plant List (USACE 2018). Half of the plant species observed were native and considered beneficial to the restoration efforts within the project area. Four Montana state- listed Priority 2B noxious weed species, including Canada thistle (*Cirsium arvense*), ox-eye daisy (*Leucanthemum vulgare*), common tansy (*Tanacetum vulgare*), and spotted knapweed (*Centaurea stoebe*) were observed on site in 2020.

Table 2. Percent cover of vegetation transects within the Lower and Upper Reaches of Swamp Creek East in 2019 and 2020.

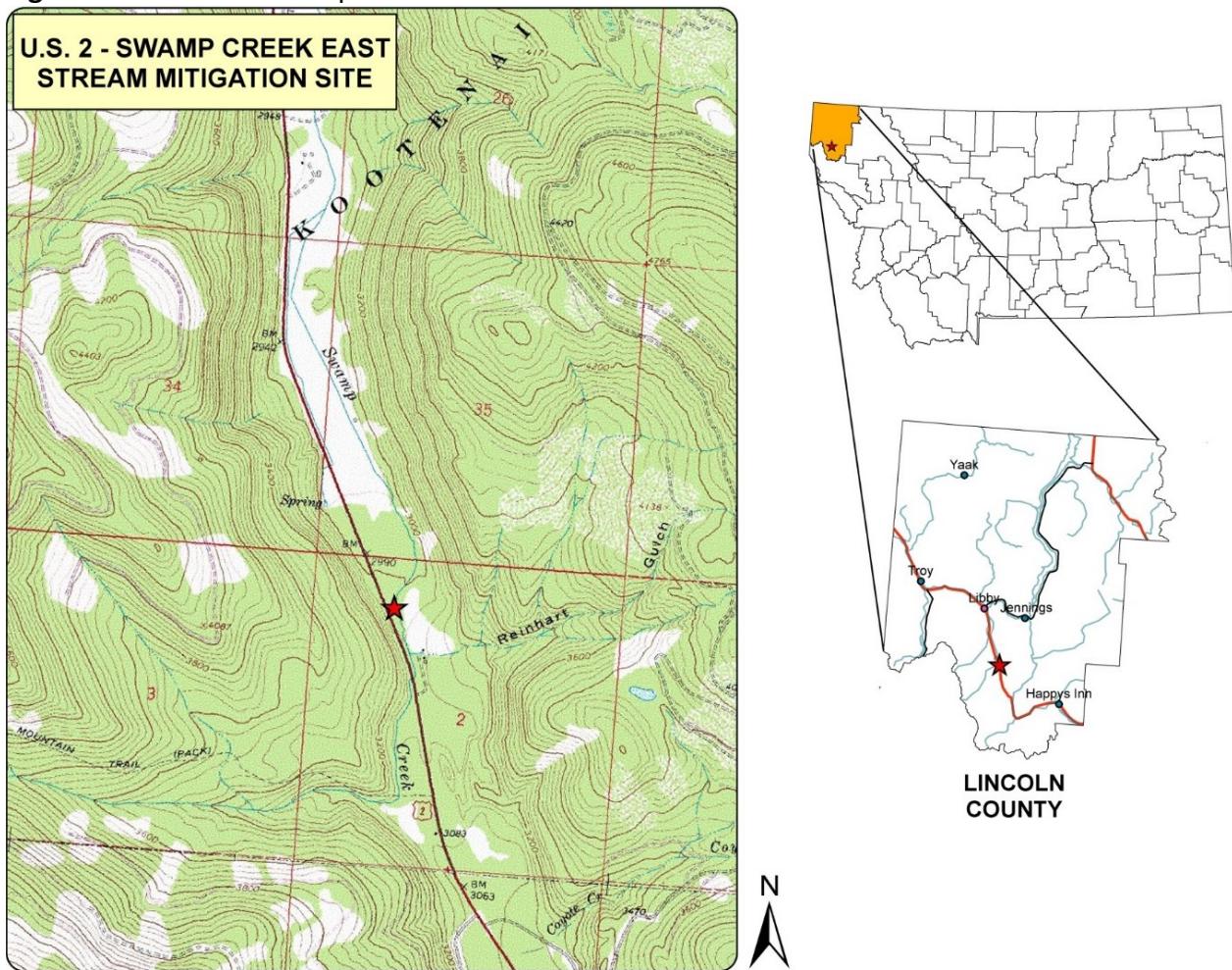
| Reach | Location | Length (ft) | % Cover | | | |
|-------|--------------|----------------|------------------------|------------|------------------------|------------|
| | | | 2019 | | 2020 | |
| | | | Bare Ground/ Fabric | Vegetation | Bare Ground/ Fabric | Vegetation |
| Lower | Transect 1 | 42 | 25 | 75 | 18 | 82 |
| | Transect 2 | 42 | 17 | 83 | 27 | 73 |
| | Total | 84 | 21 | 79 | 23 | 77 |
| Upper | Transect 3 | 40 | -- | -- | 59 | 41 |
| | Transect 4 | 36 | -- | -- | 46 | 55 |
| | Total | 76 | -- | -- | 52 | 48 |

Conclusions

Vegetation cover was relatively high in both the upper and lower reaches, given how recently the project was completed. The vegetation observed throughout the majority of both reaches was dominated by early successional non-native annual to perennial species which generally provide some stability over bare ground and cover for small animals. Plant cover is expected to increase within both reaches during subsequent monitoring years which will allow the site to meet the established success criteria.

Maps, Plans, Photos:

Figure 1. Site Location Map



Project Area Maps/Figures: See Appendix A

Photos: See Appendix B

Comprehensive Plant List: See Appendix C

Plans: See Appendix D of 2019 Monitoring Report

https://www.mdt.mt.gov/other/webdata/external/planning/STREAM-MITIGATION/2019_REPORTS/2019-FINAL-Swamp-Creek-East.PDF

References

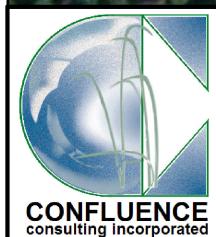
Montana Department of Agriculture. June 2019. *Montana Noxious Weed List*. Accessed October 2020 at:
<https://agr.mt.gov/Portals/168/Documents/Weeds/2019%20Montana%20Noxious%20Weed%20List.pdf?ver=2019-07-02-095540-487>

U.S. Army Corps of Engineers (USACE). 2018. *National Wetland Plant List* (Version 3.4), prepared by U.S. Army Corps of Engineers, U.S. Army Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, NH

APPENDIX A

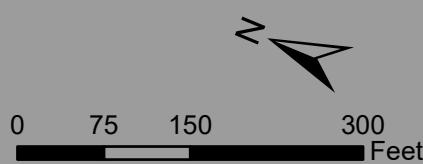
PROJECT AREA MAPS

MDT Stream Mitigation Monitoring
Swamp Creek East
Lincoln County, Montana



Legend

- Approximate Channel Reach Breaks
- Vegetation Transects
- ★ Photo Points



Swamp Creek East 2020 Monitoring Features

Map 1

Date: 11/30/2020

SwampEast_monitor2020.mxd

APPENDIX B

PROJECT AREA PHOTOGRAPHS

MDT Stream Mitigation Monitoring
Swamp Creek East
Lincoln County, Montana

Monitoring Photo Log

SITE NAME: Swamp Creek East
MONITORING YEAR: 2020



2019



2020

Photo Point 1: Looking south (upstream) of lower reach.



2019



2020

Photo Point 2: Looking north (downstream) of lower reach.



2019



2020

Photo Point 3: Looking south (upstream) from the bottom of upper reach during (2019) and after construction (2020).

SITE NAME: Swamp Creek East

MONITORING YEAR: 2020



2020

Photo Point 4: Looking north (downstream) at the downstream end of the upper reach.



2020

Photo Point 5.1: Looking south (upstream) from below the culvert mid-way up the upper reach.



2020

Photo Point 5.2: Looking east at the culvert mid-way up the upper reach.



2020

Photo Point 5.3: Looking north (downstream) from the culvert mid-way up the upper reach.



2020

Photo Point 5.4: Looking south (upstream) from the culvert mid-way up the upper reach.

SITE NAME: Swamp Creek East

MONITORING YEAR: 2020



2020

Photo Point 6.1: Looking southwest (upstream) from the upper end of the upper reach.



2020

Photo Point 6.2: Looking west from the upper end of the upper reach.



2020

Photo Point 6.3: Looking northwest (upstream) from the upper end of the upper reach.



2020

Photo Point 6: Looking north (downstream) from the top of the upper reach.



2019

Additional Photo 1: View looking west across Vegetation Transect #1.



2020

SITE NAME: Swamp Creek East

MONITORING YEAR: 2020



2019



2020

Additional Photo 2: View looking east across Vegetation Transect #1



2019



2020

Additional Photo 3: View looking west across Vegetation Transect #2.



2019



2020

Additional Photo 4: View looking east across Vegetation Transect #2.

SITE NAME: Swamp Creek East

MONITORING YEAR: 2020



2020

Additional Photo 5: View looking west across vegetation transect #3.



2020

Additional Photo 6: View looking east across vegetation transect #3.



2020

Additional Photo 7: View looking west across vegetation transect #4.



2020

Additional Photo 8: View looking west across vegetation transect #4.

APPENDIX C

2019 – 2020 COMPREHENSIVE PLANT SPECIES LIST

MDT Stream Mitigation Monitoring
Swamp Creek East
Lincoln County, Montana

Comprehensive list of plant species observed at the Swamp Creek East Stream Mitigation Site from 2019 through 2020.

| Scientific Name | Common Name | WMVC Indicator Status* |
|-------------------------------|-------------------------------|------------------------|
| <i>Achillea millefolium</i> | Common Yarrow | FACU |
| <i>Agrostis stolonifera</i> | Spreading Bent | FAC |
| <i>Alnus incana</i> | Speckled Alder | FACW |
| <i>Amelanchier alnifolia</i> | Saskatoon Service-Berry | FACU |
| <i>Bromus diandrus</i> | Ripgut Brome | UPL |
| <i>Bromus inermus</i> | Smooth Brome | UPL |
| <i>Bromus japonicus</i> | Japanese Brome | UPL |
| <i>Bromus squarrosus</i> | Corn Brome | UPL |
| <i>Bromus tectorum</i> | Cheatgrass | UPL |
| <i>Centaurea stoebe</i> | Spotted Knapweed | UPL |
| <i>Cerastium fontanum</i> | Common Mouse-Ear Chickweed | FACU |
| <i>Chenopodium album</i> | Lamb's-Quarters | FACU |
| <i>Chenopodium capitatum</i> | Strawberry Goosefoot | UPL |
| <i>Cirsium arvense</i> | Canada Thistle | FAC |
| <i>Cornus alba</i> | Red Osier | FACW |
| <i>Elymus repens</i> | Creeping Wild Rye | UPL |
| <i>Elymus trachycaulus</i> | Slender Wild Rye | FAC |
| <i>Epilobium brachycarpum</i> | Willowherb | FAC |
| <i>Heuchera parviflora</i> | Littleleaf Alumroot | UPL |
| <i>Lactuca serriola</i> | Prickly Lettuce | FACU |
| <i>Leucanthemum vulgare</i> | Ox-Eye Daisy | FACU |
| <i>Maianthemum canadense</i> | Feathery False Solomon's-Seal | FAC |
| <i>Phalaris arundinacea</i> | Reed Canary Grass | FACW |
| <i>Plantago major</i> | Great Plantain | FAC |
| <i>Poa palustris</i> | Fowl Blue Grass | FAC |
| <i>Populus balsamifera</i> | Balsam Poplar | FAC |
| <i>Potentilla norvegica</i> | Norwegian Cinquefoil | FAC |
| <i>Salix exigua</i> | Narrow-leaf Willow | FACW |
| <i>Salix lasiandra</i> | Pacific Willow | FACW |
| <i>Sisymbrium altissimum</i> | Tall Hedge-Mustard | FACU |
| <i>Sonchus arvensis</i> | Field Sow-Thistle | FACU |
| <i>Spiraea betulifolia</i> | Shiny-Leaf Meadowsweet | FACU |
| <i>Symphoricarpos albus</i> | Common Snowberry | FACU |
| <i>Tanacetum vulgare</i> | Common Tansy | FACU |
| <i>Thlaspi arvense</i> | Field Pennycress | UPL |
| <i>Verbascum thapsus</i> | Great Mullein | FACU |
| <i>xTriticale</i> | Triticale | UPL |

* 2018 National Wetland Plant List; Western Mountains, Valleys, and Coast Region (WMVC) (USACE 2018)